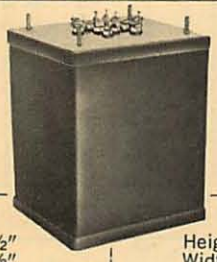
FREED TRANSFORMER CO., INC.

BROADCAST QUALITY COMPONENTS

CASE DIMENSIONS

DC-2B CASE		DC-4A CASE	
Height:	3½"	Height:	3¾"
Width:	2⅝"	Width:	3⅛"
Depth:	2¼"	Depth:	3"
Mtg. Cen.:	2"x1¾"	Mtg. Cen.:	2½"x2½"
Studs:	4 8-32	Studs:	4 8-32
Knockout:	1½" dia.	Knockout:	2" dia.



DC-2B CASE		DC-4A CASE	
Height:	3½"	Height:	3¾"
Width:	2⅝"	Width:	3⅛"
Depth:	2¼"	Depth:	3"
Mtg. Cen.:	2"x1¾"	Mtg. Cen.:	2½"x2½"
Studs:	4 8-32	Studs:	4 8-32
Knockout:	1½" dia.	Knockout:	2" dia.
		DC-4B CASE	
		Same as 4A—4" high	

DC-5B CASE		DC-6A CASE	
Height:	4½"	Height:	4⅞"
Width:	4⅛"	Width:	5"
Depth:	3½"	Depth:	4⅛"
Mtg. Cen.:	3"x2⅝"	Mtg. Cen.:	3¾"x3"
Studs:	4 10-32	Studs:	4 10-32
Knockout:	3" dia.	Knockout:	3" dia.

DC-6B CASE		DC-7 CASE	
Height:	6"	Height:	5⅜"
Width:	5"	Width:	5½"
Depth:	4⅛"	Depth:	5"
Mtg. Cen.:	3¾"x3"	Mtg. Cen.:	4⅜"x3¾"
Studs:	4 10-32	Studs:	4 ¼"-20
Knockout:	3" dia.	Knockout:	3" dia.

INPUT TRANSFORMERS
Frequency Response 20-20,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Equivalent Shielding D.B.	Maximum Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 1	Universal 500 ohm line to push-pull grids	U-500	100,000 split	+10	1:14.1	70	0	0	DC-2B
QGA 2	Universal 500 ohm line to push-pull grids	U-500	100,000 split	+10	1:14.1	90	0	0	DC-2B
QGA 3	Universal 500 ohm line to single or push-pull grids	U-500	60,000 split	+10	1:11	70	0	0	DC-2B
QGA 4	Universal 500 ohm line to single or push-pull grids	U-500	60,000 split	+10	1:11	90	0	0	DC-2B
QGA 5	Universal low impedance microphone, pickup or line to single or push-pull grids	U-60	60,000 split	+10	1:31.6	70	0	0	DC-2B
QGA 6	Universal low impedance microphone, pickup or line to single or push-pull grids	U-60	60,000 split	+10	1:31.6	90	0	0	DC-2B

U-60 IMPEDANCES IN OHMS:
2.5, 5, 10, 15, 20, 30, 40, 60

U-500 IMPEDANCES IN OHMS:
50, 125, 200 CT, 250, 330, 500 CT.
125 and 500 ohms can be used for 150 and 600 ohms.

HYBRID AND REPEAT COILS
Frequency Response 20-20,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Equivalent Shielding D.B.	Maximum Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 7	Hybrid. Unbalanced 500/600 ohm lines to 600 ohms.	Total Pri 1200/1000 split 300/250 300/250	600/150 or 500/125 split	+10	1.41:1	70	0	0	DC-2B
QGA 8	Hybrid. Balanced 500/600 ohm lines to 600 ohms. Longitudinal balance 70 DB	Total Pri 1200/1000 split 300/250 C.T. 300/250 C.T.	600/150 or 500/125 split	+10	1.41:1	70	0	0	DC-2B
QGA 9	Hybrid. Unbalanced 500/600 ohm lines to triode plate. No. D.C. in secondary	Total Pri 1200/1000 split 300/250 300/250	15,000 or 12,500	+10	1:3.54	70	0	0	DC-2B
QGA 10	Hybrid. Balanced 500/600 ohm lines to triode plate. No. D.C. in secondary. Longitudinal balance 70 DB.	Total Pri 1200/1000 split 300/250 C.T. 300/250 C.T.	15,000 or 12,500	+10	1:3.54	70	0	0	DC-2B
QGA 11	Repeat coil for low frequency ringing. Longitudinal balance 70 DB.	600/500 split	600/500 split Balanced		1:1	90	0	0	DC-4A

INTERSTAGE TRANSFORMERS
Frequency Response 20-20,000 C.P.S. ±10 D.B. *50-20,000 C.P.S. ±1.0 D.B.

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Equivalent Shielding D.B.	Maximum Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 12	Bridging line to single or push-pull grids.	10,000	60,000 split	+10	1:2.45	70	0	0	DC-2B
QGA 13	Single 6C4, 6J5 ½ 6SN7 triode to push-pull grids. Shunt feed.	15,000	60,000 split	+18	1:2	45	0	0	DC-2B
QGA 14*	Single 6C4, 6J5 ½ 6SN7 triode to push-pull grids.	15,000	60,000 split	+18	1:2	45	8	8	DC-2B
QGA 15	Push-pull triode plates to push-pull class A grids.	20,000 split	45,000 split	+25	1:1.5	30	8	0.5	DC-4A

HIGH LEVEL OUTPUT TRANSFORMERS
Frequency Response 20-30,000 C.P.S. ±0.5 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Watts	Ratio	Maximum D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 25	PP5881, 6B4, 6L6, 300A, 275A to Universal 500 ohm line.	5,000 split	U-500	+42	15	3.16:1	70	7	DC-5B
QGA 26	As above to Universal voice coil.	5,000 split	U-16	+42	15	17.7:1	70	7	DC-5B
QGA 27	Push-pull 6V6, 6AQ5, 7C5, 6N7 to Universal 500 ohm line.	8,000 split	U-500	+42	15	4:1	50	5	DC-5B
QGA 28	As above to Universal voice coil.	8,000 split	U-16	+42	15	22.4:1	50	5	DC-5B
QGA 29	P.P. 6F6, 6V6, 6AQ5, 7C5, 7B5, 6AR5, 6K6, 6L6 to Universal 500 ohm line.	10,000 split	U-500	+42	15	4.47:1	40	4	DC-5B
QGA 30	As above to Universal voice coil.	10,000 split	U-16	+42	15	25:1	40	4	DC-5B
QGA 31	P.P. 807, 1614, KT-66, (Williamson Amplifier) to Universal 500 ohm line.	10,000 split	U-500	+45.5	36	4.47:1	60	6	DC-6A
QGA 32	As above to Universal voice coil.	10,000 split	U-16	+45.5	36	25:1	60	6	DC-6A
QGA 33	P.P. Parallel, 6A5G, 300A to Universal 500 ohm line.	2,500 split	U-500	+45.5	36	2.24:1	100	10	DC-6A
QGA 34	As above to Universal voice coil.	2,500 split	U-16	+45.5	36	12.5:1	100	10	DC-6A
QGA 35	P.P. 6L6 or P.P. Parallel 6L6 to Universal 500 ohm line.	3,800 split	U-500	+47	50	2.75:1	140	14	DC-6B
QGA 36	As above to Universal voice coil.	3,800 split	U-16	+47	50	15.4:1	140	14	DC-6B
QGA 37	High level multiple line to Universal voice coil.	U-500	U-16	+42	15	5.6:1	0	0	DC-5B
QGA 38	High level multiple line to Universal voice coil.	U-500	U-16	+47	50	5.6:1	0	0	DC-6B
QGA 39*	5881 or 6146 Class AB1 to Universal 500 ohm line.	6,600 split	U-500	+45.5	36	3.64:1	70	7	DC-6A
QGA 40*	5881 or 6146 Class AB1 to Universal voice coil.	6,600 split	U-16	+45.5	36	20:1	70	7	DC-6A
QGA 41	6550 AB1 or 6146 AB2 to Universal 500 ohm line.	5,000 split	U-500	+50	100	3.16:1	140	14	DC-7
QGA 42	6550AB1 or 6146AB2 to Universal voice coil.	5,000 split	U-16	+50	100	17.7:1	140	14	DC-7

*These units supplied with taps for applying screen feedback
U-16 IMPEDANCES IN OHMS: 2, 4, 8, 12, 16.

U-500 IMPEDANCES IN OHMS. 50, 125, 200, C.T., 250, 330, 500 C.T.
125 and 500 ohms can be used for 150 and 600 ohms.

LOW LEVEL OUTPUT, MIXING, MATCHING TRANSFORMERS
Frequency Response 20-20,000 C.P.S. ±1.0 DB *50-20,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Equivalent Shielding D.B.	Maximum Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 16	Single plate or bridging line to Universal 500 ohm line. Shunt feed.	15,000	U-500	+18	5.5:1	70	0	0	DC-2B
QGA 17*	Single plate to Universal 500 ohm line.	15,000	U-500	+18	5.5:1	70	8	8	DC-2B
QGA 18	Push-pull triode plates to Universal 500 ohm line.	20,000 C.T.	U-500	+25	6.3:1	70	8	0.5	DC-2B
QGA 19	Mixing, low impedance microphone or line to Universal 500 ohm line.	U-500	U-500	+12	1:1	70	0	0	DC-2B
QGA 20	Line level mixing and matching.	U-500	U-500	+30	1:1	70	0	0	DC-2B
QGA 21	High mu triode photo-cell to Universal 500 ohm line.	100,000	U-500	+12	14.1:1	70	0	0	DC-2B

DRIVER TRANSFORMERS
Frequency Response 20-20,000 C.P.S. ±1.0 DB

Catalog No.	Application	Primary Impedance Ohms	Maximum Power Level DBM	Turn Ratio Pri.: ½ Sec.	Maximum Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
QGA 22	Universal 500 ohm line to Class B grids.	U-500	+40	1:1	0	0	DC-4A
QGA 23	Push-pull 6J5, etc. to push-pull 2A3's, 6L6's, etc.	20,000 C.T.	+30	3.2:1	8	0.5	DC-2B
QGA 24	Push-pull 2A3, 6B4 to push-pull 809, T2-40, 4/125A.	5,000 C.T.	+40	3.1:1	50	5	DC-4B

See Freed Price Pages 1478 — 1480

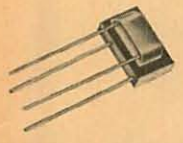
FREED TRANSFORMER CO., INC.

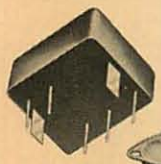
MINIATURE TRANSISTOR AUDIO TRANSFORMERS

These high quality miniature transformers are high efficiency audio components featuring hermetic sealing for maximum protection against electrolysis and subsequent corrosion of fine wires caused by moisture penetration. The units are constructed in accordance with MIL-T-27A Specifications. Transistor transformers can also be supplied in an open or encapsulated type of construction.

TYPE		TSA	TNA	TPA	TTA
MAX. POWER		500 MW	1 W	3 W	5 W
FREQ. RESPONSE		.3 — 15 KC ± 2DB	.2 — 15 KC ± 2 DB	.15 — 15 KC ± 2 DB	.15 — 15 KC ± 2 DB
SIZE	UNCASED	———	———	7/16 x 13/32 x 3/4	13/16 x 13/16 x 13/16
	CASED MIL-T-27A-4RX	3/4 D., 13/32 H.	3/4 D. x 25/32 H.	13/16 D. x 13/16 H.	13/16 D. x 1 1/4 H.
	MOLDED MIL-T-27A-5RX	1/2 D. x 1/2 H.	25/32 x 25/32 x 25/32	7/8 x 25/32 x 25/32	1 3/32 x 1 x 25/32

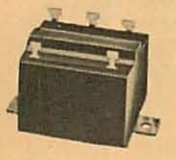
MATCHING IMP. Pri.	MATCHING IMP. Sec.	TSA Cat. No.	TSA Max. I (MA) Total Pri.	TSA Max I dc (MA) Unbal. ½ Pri.	TNA Cat. No.	TNA Max. I (MA) Total Pri.	TNA Max I dc (MA) Unbal. ½ Pri.	TPA Cat. No.	TPA Max. I (MA) Total Pri.	TPA Max I dc (MA) Unbal. ½ Pri.	TTA Cat. No.	TTA Max. I (MA) Total Pri.	TTA Max I dc (MA) Unbal. ½ Pri.
150 (CT)	3.2	28	35	12	28	40	16	30	45	20	15	130	50
150 (CT)	12	29	35	12	29	40	16	31	45	20	17	130	50
150 (CT)	50	30	35	12	30	40	16	32	45	20	18	130	50
300 (CT)	3.2	31	30	8	31	32	14	33	35	16	20	100	35
300 (CT)	12	32	30	8	32	32	14	34	35	16	21	100	35
300 (CT)	50	33	30	8	33	32	14	35	35	16	22	100	35
500 (CT)	500	34	20	6	34	22	10	36	25	12	1	80	25
600 (SP)	3.2	1	16	6	1	18	8	1	20	10	23	65	25
600 (SP)	12	2	16	6	2	18	8	2	20	10	24	65	25
600 (SP)	50	35	16	6	35	18	8	3	20	10	25	65	25
600 (SP)	600 (SP)	3	16	6	3	18	8	4	20	10	26	65	25
600 (SP)	1.2K (CT)	22	16	6	22	18	8	37	20	10	7	65	25
1K (CT)	3.2	36	14	4	36	15	6	38	16	8	19	50	20
1K (CT)	12	37	14	4	37	15	6	39	16	8	27	50	20
1K (CT)	50	26	14	4	26	15	6	40	16	8	13	50	20
1.2K (SP)	3.2	4	12	4	4	14	6	5	16	8	28	40	15
1.2K (SP)	12	5	12	4	5	14	6	6	16	8	29	40	15
1.2K (SP)	50	38	12	4	38	14	6	7	16	8	30	40	15
1.2K (SP)	600 (SP)	6	12	4	6	14	6	8	16	8	31	40	15
2K (SP)	3.2	7	9	3	7	10	5	9	14	6	10	25	12
2K (SP)	12	8	9	3	8	10	5	10	14	6	32	25	12
2K (SP)	600 (SP)	9	9	3	9	10	5	11	14	6	33	25	12
4K (SP)	3.2	10	6.5	2	10	8	3	12	9	4	11	20	10
4K (SP)	12	11	6.5	2	11	8	3	13	9	4	34	20	10
4K (SP)	600 (SP)	12	6.5	2	12	8	3	14	9	4	9	20	10
10K (SP)	3.2	13	5	1	13	6	2	15	7	3	35	15	9
10K (SP)	12	14	5	1	14	6	2	16	7	3	36	15	9
10K (CT)	50	39	5	1	39	6	2	17	7	3	37	15	9
10K (SP)	600 (SP)	15	5	1	15	6	2	18	7	3	38	15	9
10K	1K	40	5	1	40	6	1.5	19	7	1.8	39	15	5
10K	10K (SP)	16	5	1	16	6	1.5	20	7	1.8	40	15	5
20K (CT)	50	25	2.5	.8	25	3	1	21	5	2	12	8	6
20K (CT)	600 (CT)	41	2.5	.8	41	3	1	22	5	2	16	8	6
25K (CT)	600 (CT)	23	2.5	.8	23	3	1	23	5	2	8	6	4
25K (CT)	1.2K (CT)	21	2.5	.8	21	3	1	24	5	2	5	6	4
50K (CT)	6 (CT)	18	2	.6	18	2.5	1	25	3.5	1	3	5	3
50K (CT)	500 (CT)	17	2	.6	17	2.5	1	26	3.5	1	2	5	3
50K (CT)	1.2K (CT)	20	2	.6	20	2.5	1	27	3.5	1	6	5	3
100K (CT)	1K (CT)	27	2	.4	27	2	.8	28	2	1	14	4	2
100K (CT)	1.2K (CT)	19	2	.4	19	2	.8	29	2	1	4	4	2


TTA, TPA UNCASED


TPA MOLDED


TTA, TPA CASED


TNA MOLDED


TTA MOLDED


TUA, TSA, TNA CASED TSA MOLDED

TYPE		TUA
MAX. POWER		500 MW
FREQ. RESPONSE		.4 — 15 KC ± 2 DB
SIZE	UNCASED	———
	CASED MIL-T-27A-4RX	13/32 D. x ½ H.
	MOLDED	———

MATCHING IMP. Pri.	MATCHING IMP. Sec.	Cat. No.	Max. I (MA) Total Pri.	Max. I dc (MA) Unbal. ½ Pri.	MATCHING IMP. Pri.	MATCHING IMP. Sec.	Cat. No.	Max. I (MA) Total Pri.	Max. I dc (MA) Unbal. ½ Pri.
150 (CT)	3.2	16	15	10	2K (CT)	3.2	28	3.5	2.5
150 (CT)	12	17	15	10	2K (CT)	12	29	3.5	2.5
150 (CT)	50	21	15	10	2K (CT)	600	30	3.5	2.5
300 (CT)	3.2	20	9	7	4K (CT)	3.2	8	3.5	1.5
300 (CT)	12	19	9	7	4K (CT)	12	9	3.5	1.5
300 (CT)	50	22	9	7	4K (CT)	600	10	3.5	1.5
500 (CT)	500	23	7	5	10K (CT)	3.2	7	2	1
600 (CT)	3.2	1	7	5	10K (CT)	12	11	2	1
600 (CT)	12	2	7	5	10K (CT)	50	12	2	1
600 (CT)	50	13	7	5	10K (CT)	600	15	2	1
600 (CT)	600	3	7	5	10K (CT)	1K	18	2	1
600 (CT)	1.2K	24	7	5	10K	10K (CT)	31	2	1
1K (CT)	3.2	4	6	3.5	20K (CT)	50	32	2	.8
1K (CT)	12	25	6	3.5	20K (CT)	600 (CT)	33	2	.8
1K (CT)	50	14	6	3.5	25K (CT)	600 (CT)	34	2	.8
1.2K (CT)	3.2	26	6	3.5	25K (CT)	1.2K (CT)	35	2	.8
1.2K (CT)	12	5	6	3.5	50K (CT)	6 (CT)	36	2	.6
1.2K (CT)	50	27	6	3.5	50K (CT)	500 (CT)	37	2	.5
1.2K (CT)	600	6	6	3.5	50K (CT)	1.2K (CT)	38	2	.5

CT = Center Tap. SP = Split Winding.

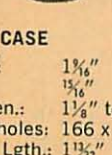
MINIATURE AUDIO TRANSFORMERS

These high quality, miniature transformers feature hermetically sealing for maximum protection from moisture penetration with subsequent electrolysis and corrosion of fine wires. While primarily intended for non-military equipment, these units are constructed in accordance with MIL-T-27A Specifications.

Frequency response: ± 2DB 30-20,000 CPS *± 2DB 200-10,000 CPS.

Catalog No.	Application	MIL Type	Impedance Level Ohms Primary	Impedance Level Ohms Secondary	Max. Power Level DBM	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
PMA 1	Line or microphone to single or push-pull grids.	TF4RX10YY	50/200/500	60,000 C.T.	+8	1:11		0	0	DM-20
PMA 2	Dynamic microphone or speaker voice coil to single or P.P. grid.	TF4RX10YY	4/8	60,000 C.T.	+8	1:86.6		0	0	DM-20
PMA 3	Line or microphone to single or push-pull grids. Magnetically shielded.	TF4RX10YY	50/200/500	60,000 C.T.	+8	1:11	30	0	0	DM-20
PMA 4	Single triode plate to single or push-pull grids.	TF4RX10YY	15,000	60,000 C.T.	+8	1:2		0	0	DM-20
PMA 5*	Single triode plate to push-pull grids.	TF4RX12YY	15,000	60,000 C.T.	+8	1:2		2	2	DM-20
PMA 6	Single triode plate to multiple line.	TF4RX16YY	15,000	50/200/500	+8	5.48:1		0	0	DM-20
PMA 7*	Single triode plate to multiple line.	TF4RX12YY	15,000	50/200/500	+8	5.48:1		2	2	DM-20
PMA 8	Push-pull triode plates to multiple line.	TF4RX12YY	30,000 C.T.	50/200/500	+8	7.75:1		2	0.25	DM-20
PMA 9	Crystal mike or pickup to multiple line.	TF4RX16YY	60,000 C.T.	50/200/500	+8	11:1		0	0	DM-20
PMA 10	Mixing or matching.	TF4RX16YY	50/200	50/200/500	+8	1:1.50		0	0	DM-20
PMA 11	Parallel Feed Reactor.	TF4RX20YY	40 hy, 3 ma dc, 3500 ohms d.c. resistance							DM-20
PMA 12	Microphone or line to grid.	TF4RX10YY	50/200/500 C.T.	60,000 C.T.	+5	1.11		0	0	DM-20
PMA 13	Mixing and matching.	TF4RX16YY	150/600	600 C.T.	+8	1.1		0	0	DM-20
PMA 14	Single triode plate to push-pull grids.	TF4RX15YY	15,000	95,000 Split	+5	1:2.5		0	0	DM-20
PMA 15*	Single triode plate to push-pull grids.	TF4RX15YY	15,000	95,000 Split	15	1:2.5		4	4	DM-20

CASE DIMENSIONS



DM-20 CASE

Height: 1 3/16"
Dia.: 15/16"
Mtg. Cen.: 1 1/8" to 1 7/32"
Mtg. 2 holes: 166 x .120
Flange Lgth.: 1 13/32"
Flange D.: .975"

FREED TRANSFORMER CO., INC.

MINIATURE TRANSISTOR TRANSFORMERS

These high quality miniature transformers are high efficiency audio components featuring hermetically sealing for maximum protection against electrolysis and subsequent corrosion of fine wires caused by moisture penetration. The units are constructed in accordance with MIL-T-27A Specifications.

Transistor Transformers can also be supplied in an open or encapsulated type of construction

CASE DIMENSIONS

DM-01 CASE

Height: 2″
Width: 1½″
Depth: 1½″
Mtg. Cen.: 1⅛″x1⅛″
Studs: 4 6-32
Knockout: 1⅜″ dia.

UNCASED DIMENSIONS

TMO 1 TO 14

Height: 1⅜″
Width: 1¼″
Depth: 21/32″
Mtg. Cen.: 1⅜″
2 Mtg. Holes: .120 dia.
Flange Lgth: 1¾″

TMO 15 TO 18

Height: 31/32″
Width: ⅞″
Depth: 1⅜″

TMO-19

Height: 1¾″
Width: 1 13/32″
Depth: 1½″
Mtg. Cen.: 1¾″
2 Mtg. Holes: ⅜″ dia.
Flange Lgth: 2⅛″

Catalog No.	MIL Type	Impedance Ohms Pri.	Ct.	Sec.	Ct.	*D.B.	Frequency Response C.P.S.	Unbalance Primary Current M.A./D.C.	D.C. Resistance Ohms Pri.	Sec.	Max. Power Output M.W.	Case No.
TMA 1*	TF4RX16YY	500		500		1	200 to 15,000	0	18	24	250	DM-20
TMA 2*	TF4RX12YY	50K		500		2	300 to 15,000	3	2,200	49	250	DM-20
TMA 3*	TF4RX13YY	50K		6		2	300 to 15,000	3	2,200	.55	250	DM-20
TMA 4*	TF4RX12YY	100K		1.2K	✓	3	300 to 15,000	1	2,790	95	100	DM-20
TMA 5*	TF4RX12YY	25K		1.2K	✓	2	200 to 15,000	3	1,740	110	250	DM-20
TMA 6*	TF4RX12YY	50K		1.2K	✓	2	300 to 15,000	3	2,200	106	250	DM-20
TMA 7*	TF4RX17YY	600/150		1.2K	✓	1	200 to 15,000	4	30	95	250	DM-20
TMA 8*	TF4RX12YY	25K		600		2	200 to 15,000	3	1,740	61	250	DM-20
TMA 9*	TF4RX12YY	4K	✓	600/150	✓	1	200 to 15,000	1	274	43	250	DM-20
TMA 10*	TF4RX13YY	2K		3.2		2	200 to 15,000	10	160	.28	250	DM-20
TMA 11*	TF4RX13YY	4K	✓	3.2		1	200 to 15,000	1	274	.26	250	DM-20
TMA 12*	TF4RX13YY	20K		50		2	300 to 15,000	4	1,340	2.9	250	DM-20
TMA 13*	TF4RX17YY	1K		50		2	300 to 15,000	8	42.6	2.5	250	DM-20
TMA 14*	TF4RX16YY	100K		1K		2	300 to 15,000	0	1,550	16.8	100	DM-20
TMO 15		20K		50		2	300 to 15,000	1	2,215	7.25	40	open
TMO 16		20K		600		2	300 to 15,000	1	2,215	102	40	open
TMO 17		1K		50		2	300 to 15,000	3	93	5.6	60	open
TMO 18		100K		1K		2	300 to 15,000	0	3,000	57.5	100	open
TMA 19*	TF4RX13YY	1K		3.2		2	200 to 15,000	20	38	.19	1000	DM-01

*When ordering open units specify TMO — when ordering encapsulated units specify TMC.

PROFESSIONAL GRADE COMPONENTS

This group of components has been designed for use in high fidelity and professional equipment and for public address service. Freed has developed this series of units employing the latest design techniques and the best commercially available materials. Except for units carrying unbalanced direct current the frequency response is ± 1 DB from 30 to 15,000 cps. All units feature excellent performance characteristics with minimum size and weight.

All units are vacuum varnished and then potted in compound to insure long life and trouble free performance.

Professional Grade components are supplied cased. Upon request these units can be supplied open or in shell type construction.

All cased Professional Grade Components supplied with terminals meet "EIA" standards.

Transformers PGA 1 through PGA 10 are supplied in hermetically sealed cases.

CASE DIMENSIONS

DM-01 CASE

Height: 2¼″
Width: 1½″
Depth: 1½″
Mtg. Cen.: 1⅛″x1⅛″
Studs: 2 6-32
Knockout: 1⅜″ dia.

DC-1A CASE

Height: 2½″
Width: 2 1/16″
Depth: 1 13/16″
Mtg. Cen.: 1½″x1¼″
Studs: 4 8-32

DC-2A CASE

Height: 3″
Width: 2⅝″
Depth: 2¼″
Mtg. Cen.: 2″x1¾″
Studs: 4 8-32

INPUT TRANSFORMERS

Frequency Response 30-15,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Equivalent Shielding D.B.	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Case Number
PGA 1	Universal 500 ohm line to single grid.	U-500	50,000	+12	1:10	50	0	0	DM-01
PGA 2	Universal 500 ohm line to push-pull grids.	U-500	60,000 split	+12	1:11	50	0	0	DM-01
PGA 3	Universal 500 ohm line to push-pull grids.	U-500	100,000 split	+12	1:14.1	50	0	0	DM-01
PGA 4	Bridging line to single grid.	10,000	60,000	+12	1:2.45	50	0	0	DM-01
PGA 5	Bridging line to push-pull grids.	10,000	60,000 center tap	+12	1:2.45	50	0	0	DM-01
PGA 6	Low level line matching.	U-500	U-500	+18	1:1	50	0	0	DM-01

LOW LEVEL OUTPUT AND MIXING TRANSFORMERS

Frequency Response 30-15,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Ratio	Max. Pri. D.C. Per Side Ma.	D.C. Unbalance Ma.	Case Number
PGA 7	Single triode plate to Universal 500 ohm line. Shunt feed.	15,000	U500	+18	5.48:1	0	0	DM-01
PGA 8	Single triode plate to Universal 500 ohm line.	15,000	U500	+18	5.48:1	8	8	DM-01
PGA 9	Push-pull triode plates to Universal 500 ohm	20,000 CT	U500	+30	6.32:1	8	0.5	DM-01
PGA 10	Low level line matching.	U500	U500	+18	1:1	0	0	DM-01

U-500 IMPEDANCES IN OHMS: 50, 125, 200 CT, 250, 330, 500 CT. 125 and 500 ohms can be used for 150 and 600 ohms.

DRIVER TRANSFORMERS

Frequency Response 30-15,000 C.P.S. ±1.0 DB

Catalog No.	Application	Primary Impedance Ohms	Turn Ratio Pri: ½ Sec.	Max. Level DBM	Max. Pri. D.C. Per Side Ma.	Max. D.C. Unbalance Ma.	Case Number
PGA 11	Universal 500 ohm line to push-pull grids.	U500	1:1	+40	0	0	DC-2A
PGA 12	Push-pull 6C4, 6SN7 triodes to push-pull 2A3, 6L6 grids.	20,000 C.T.	3.0:1	+30	10	1	DC-1A
PGA 13	Push-pull 2A3, 6B4, 6A5G to push-pull 809, TZ-40, 4/125A	5,000 C.T.	3.2:1	+40	50	5	DC-2A

All units supplied with leads.

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

PROFESSIONAL GRADE COMPONENTS

HIGH LEVEL OUTPUT TRANSFORMERS

Frequency Response 30-15,000 C.P.S. ±1.0 DB

Catalog No.	Application	Impedance Level Ohms Primary	Secondary	Maximum Power Level DBM	Watts	Ratio	Max. Pri. D.C. Per Side Ma	DC Unbalance Ma	Case Number
PGA 14	P.P. 6K6, 6AR5, 7B5 Class A to Universal voice coil.	12,000 C.T.	U16	+40	10	27.4:1	40	4	DC-2B
PGA 15	P.P. 6F6 Cl. AB_2, P.P. 6V6, 6AQ5, 7C5, Cl. AB_1, 6L6 or 5881 Triode to Universal voice coil.	10,000 C.T.	U16	+43	20	25:1	50	5	DC-4A
PGA 16	P.P. 6L6 Cl. AB_2, self bias to Universal 500 ohm line.	9,000	U500	+44.8	30	4.23:1	50	5	DC-4A
PGA 17	As above to Universal voice coil.	9,000	U16	+44.8	30	23.7:1	50	5	DC-4A
PGA 18	P.P. 6N7 Cl. B, P.P. 6V6, 6AQ5, 7C5, Cl. AB_1 to Universal voice coil.	8,000 C.T.	U16	+41.8	15	22.3:1	45	5	DC-4A
PGA 19*	P.P. 6L6, fixed bias, Cl. AB_1, to Universal 500 ohm line.	6,600 C.T.	U500	+44.8	30	3.63:1	70	7	DC-4A
PGA 20	As above to Universal voice coil.	6,600 C.T.	U16	+44.8	30	20.3:1	70	7	DC-4A
PGA 21	P.P. 6L6 Cl. A, P.P. 2A3, 6A5G, 6B4 self bias P.P. Par. 6V6 Cl. AB_1 to Universal voice coil.	5,000 C.T.	U16	+43	20	17.7:1	80	8	DC-4A
PGA 22	P.P. Par 6L6 Cl. AB_1, self bias P. P. 6L6 Cl. AB_2 fixed bias PP807 Cl. AB_2 to Universal 500 ohm line.	4000 C.T.	U500	+47	50	2.83:1	100	10	DC-5A
PGA 23	As above to Universal voice coil.	4000 C.T.	U16	+47	50	15.8:1	100	10	DC-5A
PGA 24	P.P. 6A5G, 6B4, 2A3, fixed bias Universal voice coil.	3000 C.T.	U16	+41.8	15	13.7:1	75	7.5	DC-4A
PGA 25	P.P. Par. 807 Cl. AB_2 to Universal 500 ohm line.	2100 C.T.	U500	+51.8	150	2.05:1	240	12	DC-6A
PGA 26	P.P. Par 2A3, 6A5G, fixed bias 6B4, 300A Cl. AB_1, P.P. Par 6L6 Cl. A to Universal 500 ohm line.	1500 C.T.	U500	+44.8	30	1.73:1	180	15	DC-4A
PGA 27	As above to Universal voice coil.	1500 C.T.	U16	+44.8	30	9.7:1	150	15	DC-4A
PGA 28	Matching line to Universal voice coil.	U500	U16	+44.8	30	5.6:1	0	0	DC-4A
PGA 29	Matching line to Universal voice coil.	U500	U16	+47	50	5.6:1	0	0	DC-5A
PGA 30	Matching line to Universal voice coil.	U500	U16	+50	100	5.6:1	0	0	DC-6A

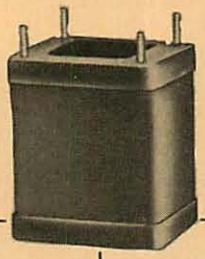
†Available with taps to apply screen feedback.

U-16 IMPEDANCES IN OHMS:
2, 4, 8, 12, 16
U-500 IMPEDANCES IN OHMS:
50, 125, 200 C.T., 250, 330, 500 C.T., 125 and 500 ohms can be used for 150 and 600 ohms.

*PGA 28, 29 & 30 supplied with terminals, all other units with leads.

A 70 volts level can be obtained for the following impedances:
500 ohms — 10 watts +40 DBM
330 ohms — 15 watts +42 DBM
250 ohms — 20 watts +43 DBM
200 ohms — 25 watts +44 DBM
125 ohms — 40 watts +46 DBM
50 ohms — 100 watts +50 DBM

CASE DIMENSIONS



DC-1A CASE
Height: 2½"
Width: 2 1/16"
Depth: 1 13/16"
Mtg. Cen.: 1½"x1¼"
Studs: 4 8-32
Knockout: 1¼" dia.

DC-4A CASE
Height: 3¾"
Width: 3⅛"
Depth: 3"
Mtg. Cen.: 2½"x2½"
Studs: 4 8-32
Knockout: 2"x1¾"

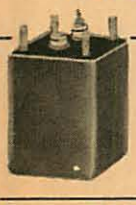
DC-2A CASE
Height: 3"
Width: 2⅝"
Depth: 2¼"
Mtg. Cen.: 2"x1¾"
Studs: 4 8-32
Knockout: 1½"x1⅜"

DC-5A CASE
Height: 3⅞"
Width: 4⅛"
Depth: 3½"
Mtg. Cen.: 3⅛"x2⅝"
Studs: 4 10-32
Knockout: 2½"x2"

DC-2B CASE
Height: 3½"
Width: 2⅝"
Depth: 2¼"
Mtg. Cen.: 2"x1¾"
Studs: 4 8-32
Knockout: 1½"x1⅜"

DC-6A CASE
Height: 4⅞"
Width: 5"
Depth: 4⅛"
Mtg. Cen.: 3¾"x3"
Studs: 4 10-32
Knockout: 3"x2½"

CASE DIMENSIONS



DM-01 CASE
Height: 2"
Width: 1½"
Depth: 1½"
Mtg. Cen.: 1 1/16"x1 1/16"
Studs: 4 6-32

DC CASE STYLE

DC-2B
Height: 3½"
Width: 2⅝"
Depth: 2¼"
Mtg. Cen.: 2"x1¾"
Studs: 4 8-32

DC-1A
Height: 2½"
Width: 2 1/16"
Depth: 1 13/16"
Mtg. Cen.: 1½"x1¼"
Studs: 4 8-32

DC-4A
Height: 3¾"
Width: 3⅛"
Depth: 3"
Mtg. Cen.: 2½"x2½"
Studs: 4 8-32

DC-2A
Height: 3"
Width: 2⅝"
Depth: 2¼"
Mtg. Cen.: 2"x1¾"
Studs: 4 8-32

DC-5A CASE
Height: 3⅞"
Width: 4⅛"
Depth: 3½"
Mtg. Cen.: 3⅛"x2⅝"
Studs: 4 10-32

DC-5B
Height: 4½"
Width: 4⅛"
Depth: 3½"
Mtg. Cen.: 3⅛"x2⅝"
Studs: 4 10-32

FILTER REACTORS

Inductance measured at 50V, 60 cycles with rated direct current in the winding

Catalog No.	Inductance in Henries	Rated Current D.C. Ma.	D.C. Resistance Ohms	Dielectric Test Voltage VRMS	Case Number
PGC 1	40	15	2000	1000	DM-01
PGC 2	12	40	400	1000	DC-1A
PGC 3	8	50	300	1000	DC-1A
PGC 4	20	50	425	2500	DC-2A
PGC 5	10	70	250	2500	DC-2A
PGC 6	6	100	160	2500	DC-2A
PGC 7	6	150	115	2500	DC-2B
PGC 8	10	150	160	2500	DC-4A
PGC 9	5.5	200	95	2500	DC-4A
PGC 10	10	200	150	2500	DC-4A
PGC 11	10	250	135	2500	DC-5B
PGC 12	8	300	95	2500	DC-5B
PGC 13	7	400	60	2500	DC-5B
		PARALLEL FEED	AUDIO CHOKES		
PGC 14	100	10	3500	1000	DM-01
PGC 15	30	50	650	1500	DC-2A
PGC 16	400	1	6000	1000	DM-01

SWINGING INPUT REACTORS

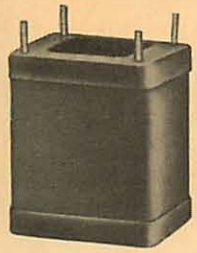
Catalog No.	Inductance in Henries*	Rated Current D.C. Ma.	D.C. Resistance Ohms	Dielectric Test Voltage VRMS	Case Number
PGC 17	5-20	150	160	1500	DC-4A
PGC 18	5-20	250	135	1500	DC-5B
PGC 19	3-15	300	95	1500	DC-5B
PGC 20	3-15	400	60	1500	DC-5B

*Inductance values for 100% and 10% of rated Direct Current.

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

PROFESSIONAL GRADE COMPONENTS



DC-2B
Height: 3½"
Width: 2⅝"
Depth: 2¼"
Mtg. Cen.: 2"x1¾"
Studs: 4 8-32

DC-5B
Height: 4½"
Width: 4⅛"
Depth: 3½"
Mtg. Cen.: 3½"x2⅝"
Studs: 4 10-32

DC-4A
Height: 3¾"
Width: 3⅛"
Depth: 3"
Mtg. Cen.: 2½"x2½"
Studs: 4 8-32

DC-6A CASE
Height: 4⅞"
Width: 5"
Depth: 4⅛"
Mtg. Cen.: 3¾"x3"
Studs: 4 10-32

DC-5A CASE
Height: 3⅞"
Width: 4⅛"
Depth: 3½"
Mtg. Cen.: 3⅛"x2⅝"
Studs: 4 10-32

DC-7B CASE
Height: 6¾"
Width: 5½"
Depth: 5"
Mtg. Cen.: 4⅜"x3¾"
Studs: 4½-20

POWER TRANSFORMERS

ALL PRIMARIES ARE FOR 115V., 50/60 c.p.s. Temperature rises range from 45° to 50°C.

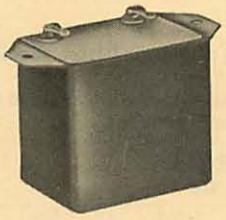
Catalog No.	Py Va	Hi Volt	Choke Input D.C.V.	D.C. Ma	Con. Input D.C.V.	D.C. Ma.	Bias Tap.	Rectifier	Fil. No. 1	Fil. No. 2	Fil. No. 3	Case No.
PGP 1	15	440V C.T.	Low flux density, hum-bucking. For Preamplifier service.		270	15		6X4	6.3VCT @ 0.6A	6.3V @ 0.3A		DC-2B
PGP 2	30	550V C.T.	Low flux density, hum-bucking. For Preamplifier service.		310	35		6X4	6.3VCT @ 0.6A	6.3VCT@0.9A		DC-4A
PGP 3	45	500V C.T.			270	40		6X4, 5Y3	5/6.3V @ 2A	6.3V @ 2A		DC-4A
PGP 4	57	600V C.T.			330	50		6X4, 5Y3	5/6.3V @ 2A	6.3V @ 2.5A		DC-4A
PGP 5	64	650V C.T.			370	50		6X4, 5Y3	5/6.3V @ 2A	6.3V @ 3A		DC-4A
PGP 6	73	600V C.T.			320	70		6X4, 5Y3	5/6.3V @ 2A	6.3V @ 3A		DC-4A
PGP 7	110	650V C.T.	225	140	330	100		5Y3, 5U4	5V @ 3A	6.3V @ 5A		DC-5B
PGP 8	76	700V C.T.	260	100	385	70		5Y3	5V @ 2A	6.3V @ 2.5A		DC-5A
PGP 9	108	700V C.T.	250	125	370	90		5Y3, 5U4	5V @ 3A	6.3V @ 5A		DC-5B
PGP 10	127	700V C.T.	260	170	350	120		5U4	5V @ 3A	6.3V @ 5A		DC-5B
PGP 11	146	700V C.T.	260	210	350	150		5U4	5V @ 3A	6.3V @ 5A	6.3V @ 1A	DC-6A
PGP 12	207	800V C.T.	295	280	400	200		5U4, 2-5Y3	5V @ 4A	6.3V @ 6A		DC-6A
PGP 13	225	800V C.T.	295	280	400	200	80	5U4, 2-5Y3	5V @ 4A	6.3V @ 6A	5/6.3V @ 2A	DC-6A
PGP 14	268	840V C.T.	330	350	450	250	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	DC-6A
PGP 15	320	900V C.T.	340	420	490	300	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	DC-7B
PGP 16	127	900V C.T.	360	150				5U4	5V @ 3A	6.3V @ 5A		DC-6A
PGP 17	150	900V C.T.	350	200				5U4	5V @ 3A	6.3V @ 5A		DC-6A
PGP 18	203	1100V C.T.	400	250				5R4GY	5V @ 3A	6.3V @ 5A		DC-6A
PGP 19	248	1100V C.T.	420	300				2-5R4GY	5V @ 4A	6.3V @ 7A		DC-6A
PGP 20	310	1280V C.T.	480	350				2-5R4GY	5V @ 4A	6.3V @ 7A		DC-7B

All units supplied with leads.

PQC HIGH Q REACTORS

PQC-Reactors are low-priced High Q components designed for use in selective circuits such as wave filters, wave traps, and noise suppressors.

CASE DIMENSIONS



DM-02 CASE
Height: 1 7/32"
Width: 1 21/32"
Depth: 1 13/32"
Flange L: 2⅜"
Mtg. Cen.: 2"

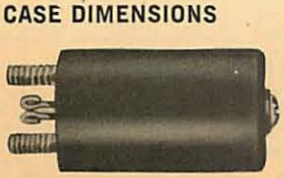
Catalog No.	Application	Rated Ind. in Henries	Q	Tuning Capacitor (MF)	Case Size
PQC 1	60 cps resonant trap	14.00	10	.5	DM-02
PQC 2	400 cps resonant trap	1.58	15	.1	DM-02
PQC 3	1000 cps resonant trap	1.00	20	.025	DM-02
PQC 4	Dynamic noise suppression inductor	2.40	20 @ 4 KC		DM-02
PQC 5	Dynamic noise suppression inductor	2.00	15 @ 4 KC		DM-02
PQC 6	Dynamic noise suppression inductor	1.30	15 @ 4 KC		DM-02
PQC 7	Dynamic noise suppression inductor	.80	15 @ 4 KC		DM-02
PQC 8	Dynamic noise suppression inductor	.60	15 @ 4 KC		DM-02
PQC 9	Dynamic noise suppression inductor	.40	15 @ 4 KC		DM-02

MINIATURE VARIABLE HIGH FREQUENCY INDUCTORS

- Continuous variation of inductance
- Q practically constant over whole range of variation
- Hermetically sealed
- Inductances other than those listed can be supplied to special order

Catalog No.	Test Freq. (MC)	Inductance Min.	Inductance Max.	Variations of Q @ L Min.	Variations of Q @ L Max.	RDC (Ω) Nominal	Self Res. Freq. (MC) @ L Max.	Max. Non Destruct Current (MA)	Case Size
VHI-1	.1	1.1 MH	1.75 MH	93.5	100.5	.75	2.2	250	VI-1
VHI-2	.1	1.7 MH	2.5 MH	94.5	96.5	1.1	1.9	200	VI-1
VHI-3	.1	2.3 MH	3.7 MH	94.5	97.2	1.4	1.6	200	VI-1
VHI-4	.1	3. MH	4.5 MH	100.7	101.7	1.9	1.4	160	VI-1
VHI-5	.1	4. MH	5.7 MH	107.	108.	2.2	1.3	160	VI-1
VHI-6	.1	5.5 MH	7.5 MH	112.	119.	3.1	1.	130	VI-1
VHI-7	.1	7. MH	10.5 MH	116.	120.5	4.5	.9	100	VI-1
VHI-8	.1	10. MH	15. MH	106.	109.	6.6	.85	80	VI-1
VHI-9	.1	14.5 MH	20.5 MH	101.	101.5	9.2	.6	60	VI-1
VHI-10	.1	20. MH	30. MH	105.	115.	13.7	.55	50	VI-1
VHI-11	1.	9.50 μH	11.0 μH	104.	114.	.24	>10	150	VI-1
VHI-12	1.	14.0 μH	15.6 μH	113.	127.	.29	>10	150	VI-1
VHI-13	1.	24.5 μH	28.0 μH	145.	156.	.37	>10	150	VI-1
VHI-14	1.	47.0 μH	52.0 μH	178.	195.	.46	>10	150	VI-1
VHI-15	.5	71.0 μH	79.5 μH	152.	168.	.56	>10	150	VI-1
VHI-16	.5	94.0 μH	105.0 μH	165.	173.	.64	>10	150	VI-1
VHI-17	.5	145.0 μH	165.0 μH	200.	222.	.75	9.7	150	VI-1
VHI-18	.5	191.0 μH	218.0 μH	204.	229.	.9	9.4	150	VI-1
VHI-19	.5	234.0 μH	265.0 μH	216.	238.	1.0	8.3	150	VI-1
VHI-20	.5	279.0 μH	318.0 μH	219.	236.	1.1	7.	150	VI-1
VHI-21	.5	380.0 μH	416.0 μH	216.	230.	1.3	6.5	150	VI-1
VHI-22	.5	480.0 μH	545.0 μH	220.	237.	1.5	7.	150	VI-1

CASE DIMENSIONS



VI-1
Height: 1"
Diameter: ¾"
2 Studs: 4-40
Mtg. Cen.: ⅜"

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

HIGH "Q" REACTORS

QGC—are hermetically sealed, MIL-T-27A, Grade 4, Class R, High Q Reactors for low audio frequency application with an excellent inductance stability with variations of A.C. and D.C. currents, frequencies and temperatures.

SPECIAL REACTORS:
(1) with a center tap
(2) with a split winding
(3) with inductances other than those listed can be supplied.

DC-2A CASE
Height: 3"
Width: 2⅜"
Depth: 2⅛"
Mtg. Cen.: 2" x 1¾"
Studs: 4 8-32
Knockout: 1½" x 1⅜"

AJ CASE
Height: 2⅜"
Width: 1⅝"
Depth: 1⅝"
Mtg. Cen: 1¾" x 1⅜"
Studs: 4 6-32

AH CASE
Height: 1¾"
Width: 1⅝"
Depth: 1⅝"
Mtg. Cen.: 1¼"
Studs: 2 6-32

DM-20 CASE
Height: 1⅞"
Diameter: 1¼"
Flange L: 1 3/32"
Flange D: 0.975"
Mtg. Cen.: 1⅛" x 1½"
2 Slots: .166" x .120"
Knockouts: .875"

DM-30 CASE
Height: 2 3/32"
Diameter: 1 3/4"
Flange L: 1 3/32"
Flange D: 0.975"
Mtg. Cen.: 1⅛" to 1½"
2 Slots: .166" x .120"
Knockouts: .875"

DM-40 CASE
Height: 2 1/32"
Diameter: 9/16"
Pig Tails:

Catalog No.	Ind. H (±2%)	Ω/H Max.	Max. Norm DC*	Max. Norm AC**	Self Res. Freq. ±25%	Case	"Q" Max.	@ Freq.
QGC-1	100						40	250
QGC-2	75						48	280
QGC-3	50						51	300
QGC-4	25	20	85	0.58	$F_O = 22/\sqrt{L_H}$	DC-2A	53	320
QGC-5	10						58	350
QGC-6	5						59	400
QGC-7	1						60	400
QGC-8	75						32	600
QGC-9	50						37	600
QGC-10	25						39	700
QGC-11	10	55	60	0.5	$F_O = 7.2/\sqrt{L_H}$	AJ	43	700
QGC-12	5						46	700
QGC-13	1						53	800
QGC-14	50						29.5	500
QGC-15	25						31.5	500
QGC-16	10	70	40	0.25	$F_O = 35/\sqrt{L_H}$	AH	32	600
QGC-17	5						33	600
QGC-18	1						36	700
QGC-19	10						23	700
QGC-20	7.5						23	730
QGC-21	5	110	15	0.15	$F_O = 34/\sqrt{L_H}$	DM-20	24	730
QGC-22	2.5						24	750
QGC-23	1						25	750
QGC-24	.5						25	750
QGC-25	5						23	1500
QGC-26	2.5						23	1550
QGC-27	1						24	1600
QGC-28	.75	250	13	0.11	$F_O = 35/\sqrt{L_H}$	DM-30	24	1650
QGC-29	.5						24	1700
QGC-30	.2						25	1750
QGC-31	.1						25	1800
QGC-32	2						15	1500
QGC-33	1.5						15	1500
QGC-34	1						15	1800
QGC-35	.75						15	1800
QGC-36	.5						16	2000
QGC-37	.25	500	10	0.04	$F_O = 45/\sqrt{L_H}$	DM-40	16	2000
QGC-38	.1						16	2000
QGC-39	.075						17	2200
QGC-40	.05						17	2200
QGC-41	.025						17	2500
QGC-42	.01						17	2500

*Max. Norm. D.C. = I D.C. (MA) $\sqrt{L_H}$ } at which the inductance
**Max. Norm. A.C. = V/F ~ $\sqrt{L_H}$ } will decrease by 20%.

STANDARD MILITARY TRANSFORMERS

The group comprises audio and power units designed to meet MIL-T-27 A specifications.
The functional characteristics of these transformers were established by the Armed Service Standardization Program. These units are supplied in standard MIL cases.

CASE DIMENSIONS

AJ CASE
Height: 2⅜"
Width: 1⅝"
Depth: 1⅝"
Mtg. Cen.: 1¾"x1⅜"
Studs: 4 6-32
Cut Out: 1⅛" D

HA CASE
Height: 4¼"
Width: 3⅛"
Depth: 2⅝"
Mtg. Cen.: 2 19/64"x1 55/64"
Studs: 4 8-32

LB CASE
Height: 4½"
Width: 4⅝"
Depth: 3 11/16"
Mtg. Cen.: 3¾"x2 1/16"
Studs: 4 10-32

JB CASE
Height: 3⅞"
Width: 3 9/16"
Depth: 3 1/16"
Mtg. Cen.: 2⅝"x2⅛"
Studs: 4 8-32

MB CASE
Height: 4 15/16"
Width: 4 1/16"
Depth: 4"
Mtg. Cen.: 3 11/16"x3"
Studs: 4 ¼-20

KB CASE
Height: 4 5/16"
Width: 3 15/16"
Depth: 3⅜"
Mtg. Cen.: 3"x2 7/16"
Studs: 4 10-32

NB CASE
Height: 5½"
Width: 5 1/16"
Depth: 4 5/16"
Mtg. Cen.: 4 1/16"x3 5/16"
Studs: 4 ¼-20

Transformers meeting MIL-T-27A specifications Grade 1 through 6 with temperature characteristics of Class S, T, or U can be supplied on special order.
Encapsulated units using either Epoxy-Resins or Fosterite can be supplied for Grade 2 and 5.
Class U components can be supplied molded in special high temperature Freed resin.

STANDARD MILITARY AUDIO TRANSFORMERS

Frequency Response 300-10,000 C.P.S. ±2 DB

Catalog No.	Application	Type Designation	Impedance Level in Ohms Primary	Secondary	Ratio	Max. Power Level DBM	Pri. D.C. Per Side in Ma	Max. D.C. unbalance	Case
MGA 1	Transformer; interstage, single or P.P. plates to single or P.P. grid	TF4RX15AJ	10,000 C.T.	90,000 split and C.T.	1:3 overall	+15	10	10	AJ
MGA 2	Transformer; matching 600 ohm line to voice coil.	TF4RX16AJ	600 split	4, 8, 16	6.12:1 overall	+33	0	0	AJ
MGA 3	Transformer; input, 600 ohm line to single or P.P. grids.	TF4RX10AJ	600 split	135,000 C.T.	1:15	+15	0	0	AJ
MGA 4	Transformer; matching, 600 ohm line to 600 ohm line.	TF4RX16AJ	600 split	600 split	1:1	+15	0	0	AJ
MGA 5	Transformer; output, single plate 7,600 ohm, 4,800 ohm to 600 ohm line.	TF4RX13AJ	7,600 tap @ 4,800	600 split	3.56:1	+33	40	40	AJ
MGA 6	Transformer; output, single plate 7,600 ohm, 4,800 ohm to voice coil.	TF4RX13AJ	7,600 tap @ 4,800	4, 8, 16	21.8:1	+33	40	40	AJ
MGA 7	Transformer; output, single or P.P. plates to 600 ohm line.	TF4RX13AJ	15,000 C.T.	600 split	5:1	+33	10	10	AJ
MGA 8	Transformer; output, P.P. plates to 600 ohm line.	TF4RX13AJ	24,000 C.T.	600 split	6.32:1	+30	10	1	AJ
MGA 9	Transformer; output, P.P. plates to 600 ohm line.	TF4RX13AJ	60,000 C.T.	600 split	10:1	+27	10	1	AJ

STANDARD MILITARY POWER TRANSFORMERS

Primary 105/115/125V 60~

SINGLE PHASE 400 CPS, AND THREE PHASE 60 AND 400 CPS TRANSFORMERS CAN BE SUPPLIED ON SPECIAL ORDER.

Catalog No.	MIL-T-27 Type Designation	Hi Volt	D.C. Volts	D.C. Amps	Fil. No. 1	Fil. No. 2	Case
MGP 1	TF4RX03HA001	200/100/0/100/200	185	.070	5/6. 3V @ 2A	6. 3V @ 3A	HA
MGP 2	TF4RX03JB002	650 C.T.	260	.070	5/6. 3V @ 2A	6. 3V @ 4A	JB
MGP 3	TF4RX03KB006	650 C.T.	245	.150	6. 3V @ 5A	5V @ 3A	KB
MGP 4	TF4RX03LB003	800 C.T.	318	.175	5V @ 3A	6. 3V @ 8A	LB
MGP 5	TF4RX03MB004	900 C.T.	345	.250	5V @ 3A	6. 3V @ 8A	MB
MGP 6	TF4RX02KB001	700 C.T.	255	.250			KB
MGP 7	TF4RX02LB002	1100 C.T.	419	.250			LB
MGP 8	TF4RX02NB003	1600 C.T.	640	.250			NB

FREED TRANSFORMER CO., INC.

STANDARD MILITARY TRANSFORMERS

EB CASE
Height: 2 7/16"
Width: 1 15/16"
Depth: 1 13/16"
Mtg. Cen.: 1 3/8" x 1 1/4"
Studs: 4 6-32

FB CASE
Height: 2 1/2"
Width: 2 5/16"
Depth: 2 1/16"
Mtg. Cen.: 1 11/16" x 1 7/16"
Studs: 4 6-32

GB CASE
Height: 2 13/16"
Width: 2 1/4"
Depth: 2 3/8"
Mtg. Cen.: 2 1/8" x 1 3/4"
Studs: 4 6-32

HB CASE
Height: 3 3/16"
Width: 3 1/16"
Depth: 2 5/8"
Mtg. Cen.: 2 19/64" x 1 55/64"
Studs: 4 8-32

STANDARD MILITARY FILAMENT TRANSFORMERS

Primary 105/115/125V 60~

SINGLE PHASE 400 CPS, AND THREE PHASE 60 AND 400 CPS TRANSFORMERS CAN BE SUPPLIED ON SPECIAL ORDER.

Catalog No.	MIL-T-27 Type Designation	Secondary Volts	Secondary Current Amps	Secondary Test Volts RMS	Case
MGF 1	TF4RX01EB002	2.5	3.0	2,500	EB
MGF 2	TF4RX01GB003	2.5	10.0	2,500	GB
MGF 3	TF4RX01FB004	5.0	3.0	2,500	FB
MGF 4	TF4RX01HB005	5.0	10.0	2,500	HB
MGF 5	TF4RX01FB006	6.3	2.0	2,500	FB
MGF 6	TF4RX01GB007	6.3	5.0	2,500	GB
MGF 7	TF4RX01JB008	6.3	10.0	2,500	JB
MGF 8	TF4RX01KB009	6.3	20.0	2,500	KB
MGF 9	TF4RX01JB012	2.5	10.0	10,000	JB
MGF 10	TF4RX01KB013	5.0	10.0	10,000	KB

*Standard Military Filament and Power Transformers are also available in Grade 4.

HERMETICALLY SEALED PULSE TRANSFORMERS

Hermetically sealed Pulse Transformers for use in blocking oscillator, low level interstage coupling, and modulator output circuits. These components meet MIL-T-27 A specifications. The pulse transformers are designed for maximum power, efficiency, and optimum pulse performance. Balanced coil structures permit series or parallel connection of windings for turn ratios other than unity. Pulse characteristics, voltages and impedance levels will depend upon the interconnections made.

PULSE TRANSFORMERS

Catalog No.	MIL Type	Blocking Osc.	Interstage Coupling	Low Power Output	Pulse Voltage Kilovolts	Pulse Duration Microseconds	Duty Date	No. of Windings	Test Voltage KV., RMS	Characteristic Impedance Ohms	Case No.
MPT-1	TF4RX35YY	✓	✓		0.25/0.25/0.25	0.2-1.0	.004	3	0.7	250	DM-20
MPT-2	TF4RX35YY	✓	✓		0.25/0.25	0.2-1.0	.004	2	0.7	250	DM-20
MPT-3	TF4RX35YY	✓	✓		0.5/0.5/0.5	0.2-1.5	.002	3	1.0	250	DM-18
MPT-4	TF4RX35YY	✓	✓		0.5/0.5	0.2-1.5	.002	2	1.0	250	DM-18
MPT-5	TF4RX35YY	✓	✓		0.5/0.5/0.5	0.5-2.0	.002	3	1.0	500	DM-20
MPT-6	TF4RX35YY	✓	✓		0.5/0.5	0.5-2.0	.002	2	1.0	500	DM-20
MPT-7	TF4RX35YY	✓	✓	✓	0.7/0.7/0.7	0.5-1.5	.002	3	1.5	200	DM-18
MPT-8	TF4RX35YY	✓	✓	✓	0.7/0.7	0.5-1.5	.002	2	1.5	200	DM-18
MPT-9	TF4RX35YY	✓	✓	✓	1.0/1.0/1.0	0.7-3.5	.002	3	2.0	200	DM-18
MPT-10	TF4RX35YY	✓	✓	✓	1.0/1.0	0.7-3.5	.002	2	2.0	200	DM-18
MPT-11	TF4RX35YY	✓	✓	✓	1.0/1.0/1.0	1.0-5.0	.002	3	2.0	500	DM-01
MPT-12	TF4RX35YY	✓	✓	✓	0.15/0.15/0.3/0.3	0.2-1.0	.004	4	0.7	700	DM-8

CASE DIMENSIONS

DM-8 CASE
Height: 1 1/2"
Width: 1 3/32"
Flange D.: 1 1/4"

DM-01 CASE
Height: 2"
Width: 1 1/2"
Depth: 1 1/2"
Mtg. Cen.: 1 1/16" x 1 1/16"
Studs: 4 6-32
Knockout: 1 1/4 dia.

DM-20 CASE
Height: 1 1/16
Diameter: 1 1/16"
Flange L: 1 1/32"
Flange D: 0.975"
Mtg. Cen.: 1 1/8" x 1 7/32"
2 Holes: .147 wide
Knockout: .875

DM-18 CASE
Height: 1"
Width: 2 1/4"
Depth: 1 1/8"
Mtg. Cen.: 3/4"
Studs: 2 6-32

MM-1
Length: 3/4"
Diameter: 1/2"

MM-2
Length: 23/32"
Width: 23/32"
Height: 1/2"

MM-3
Length: 1 1/4"
Width: 1 1/4"
Height: 1/2"
Mtg. Cen.: 1 1/2"
Mtg. Flange: 1 11/16"

MM-4
Length: 1 13/16"
Depth: 1 1/4"
Height: 1/2"
Mtg. Cen.: 2 1/8"
Mtg. Flange: 2 1/2"

MOLDED DIMENSIONS

MMO-1
Diameter: 11/16"
Thickness: 29/64"

MMO-2
Diameter: 13/16"
Thickness: 19/32"

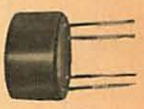
ULTRA MINIATURE PULSE TRANSFORMERS

- Meet all requirements of MIL-T-27 A.
- Negligible weight.
- Exceedingly small size.
- Encapsulated or hermetically sealed.

MM-1

MM-2

MM-3
MM-4



MMO-1
MMO-2

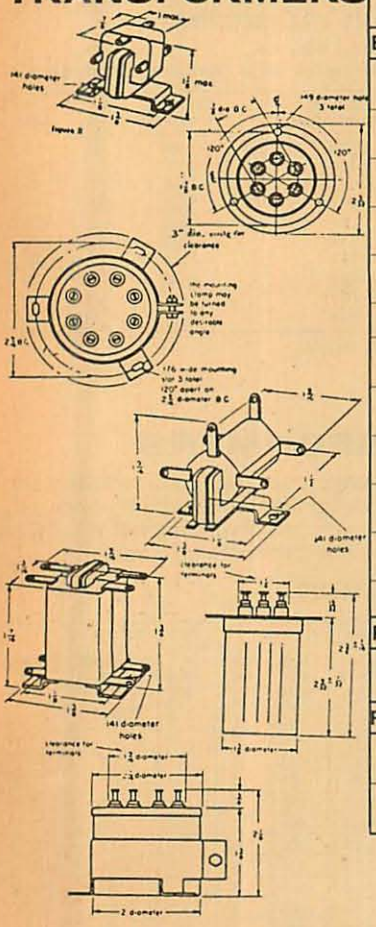
Catalog No.	MIL Type	Application	Pulse Volts	Pulse Width usec	Rise time usec	Inductance Prin. uhy	Inductance Leakage uhy	PPS. Mcs	Turns Ratio	Zo ohms	Case Des.
EPT-1	TF4RX31YY	Impedance matching & Interstage coupling	20	.07	.03	125	12	2	1:1	200	MM-1
EPT-2	TF4RX31YY		20	.07	.03	150	15	2	2:1	200	MM-1
EPT-3	TF4RX31YY		20	.07	.03	160	15	2	3:1	100	MM-1
EPT-4	TF4RX31YY		20	.07	.03	200	20	2	4:1	100	MM-1
EPT-5	TF4RX31YY		17	.10	.04	200	6	2	4:1	100	MM-1
EPT-6	TF4RX31YY		15	.10	.04	200	5	2	5:1	100	MM-1
EPT-7	TF4RX31YY		25	.50	.05	1,200	20	1	7:1:1		MM-1
EPT-8	TF4RX31YY		10	10	.04	12,000	70	.01	5:1		MM-2
EPT-9	TF4RX31YY		10	5	.04	7,500	22	.01	3:1	100	MM-2
EPT-11	TF4RX35YY	Blocking oscillator	100	.25	.02	200	2	.012	1:1		MM-1
EPT-12	TF4RX35YY		50	.33	.07	240	2	.002	1:1		MM-1
EPT-13	TF4RX35YY		40	.5	.07	6,000	15		2:1		MM-2
EPT-14	TF4RX35YY		15	6	.1	16,000	15	.0004	1:1.4		MM-2
EPT-15	TF4RX36YY	Memory core & Current driver	5	1.5	.25	4,000	300		5:5:1PP	10	MM-4
EPT-16	TF4RX36YY		2.5	2.4	.2	2,800	200		3.3:3.3:1PP	6	MM-4
EPT-17	TF4RX32YY	Current driver	21	1.4	.22	18,000	800	.250	6:1	200	MM-3
EPT-18	TF4RX32YY	Current transformer	10	6	.2	90,000	200	.05	11:1	75	MM-3
EPT-19	TF4RX36YY	Pulse inversion	22	1.7	.25	55,000	300	.05	6:1.1	400	MM-3

When ordering encapsulated units add "M" to the catalog number.

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

PULSE TRANSFORMERS



Freed No.	Radiation Laboratory No.	Westinghouse No.	Dimension Figure	GUIDANCE VALUES: Pulse Voltage (KV)	Pulse Duration (Microseconds)	Maximum Duty Ratio	Load Impedance (Ohms)	Test Voltage (60 Cycle RMS)
BLOCKING OSCILLATOR, REGENERATIVE DRIVER OR COUPLING TRANSFORMERS								
MPT-13C MPT-13M MPT-13H	132AW2 132AW2F 132AW2P	1P1 7P1 4P101	1 1 4	1.0/1.0/1.0	0.3 to 1.5	0.002	250	1000
MPT-14C MPT-14M MPT-14H	132BW2 132BW2F 132BW2P	1P2 7P2 4P102	1 1 5	0.5/0.5/0.5/0.15	0.3 to 1.5	0.002	200	1000
MPT-15C MPT-15M MPT-15H	132DW2 132DW2F 132DW2P	1P3 7P3 4P103	1 1 4	0.5/0.5/0.5	0.1 to 0.5	0.002	300	1000
MPT-16C MPT-16M MPT-16H	134BW2 134BW2F 134BW2P	1P4 7P4 4P104	3 3 5	2.5/2.5; 2.5/1.25 1.5/1.5; 1.5/0.75	1 to 2.5 1 to 5	0.002 0.002	1500 1500	1500
MPT-17C MPT-17M MPT-17H	134CW2 134CW2F 134CW2P	1P5 7P5 4P105	1 1 4	2.0/2.0/1.0 1.5/1.5/0.75	1 to 2.5 1 to 5	0.002 0.002	1200 1200	1000
MPT-18C MPT-18M	134EW2 134EW2F	1P6 7P6	2 2	2.0/2.0/1.0 1.5/1.4/0.75	0.3 to 1 0.3 to 1.5	0.002 0.002	800 800	750
MPT-19C MPT-19M MPT-19H	145CW2 145CW2F 145CW2P	1P7 7P7 4P107	1 1 4	0.5/0.5/0.5	1.0 to 5	0.002	500	1000
MPT-20C MPT-20M MPT-20H	145EW2 145EW2F 145EW2P	1P8 7P8 4P108	1 1 4	1.0/1.0/1.0	1.0 to 5	0.002	800	1000
MPT-21C MPT-21M MPT-21H	166AW2 166AW2F 166AW2P	1P9 7P9 4P109	1 1 4	1.0/0.67/0.67	1.0 to 5	0.002	800	1000
MPT-22C MPT-22M MPT-22H	176AW2 176AW2F 176AW2P	1P10 7P10 4P110	1 1 4	2.0/1.0/1.0 1.5/0.75/0.75	1 to 2.5	0.002 0.002	1000 1000	1000
MPT-23C MPT-23M MPT-23H	187AW2 187AW2F 187AW2P	1P11 7P11 4P111	1 1 4	1.0/0.5/0.5	0.5 to 2	0.002	400	1000
MPT-24C MPT-24M	224AW2 224AW2F	1P12 7P12	2 2	1.0/1.0/1.0/0.3	0.1 to 0.5	0.002	1000	750
PULSE TRIGGERING OR CURRENT TRANSFORMERS								
MPT-25C MPT-25M MPT-25H	139DW2 139DW2F 139DW2P	1P13 7P13 4P113	1 1 4		0.25 to 5	0.002		1000
PULSE OUTPUT TRANSFORMERS								
MPT-26C MPT-26M MPT-26H	148CW2 148CW2F 148CW2P	1P14 7P14 4P114	3 3 5	0.2/2.0 0.4/2.0 0.4/2.0	0.6 to 3 0.25 to 1.25 0.5 to 2.5	0.002 0.002 0.002	1600 1000 2000	1500
MPT-27C MPT-27M MPT-27H	148DW2 148DW2F 148DW2P	1P15 7P15 4P115	3 3 5	0.29/2.0 0.57/2.0 0.57/2.0	0.5 to 2.5 0.2 to 1.0 0.4 to 2.0	0.002 0.002 0.002	1200 800 1500	1500

C Indicates—varnish impregnated commercial construction.
M Indicates—encapsulated or molded construction to MIL-T-27A Grade 5 Class R.
H Indicates—hermetically sealed to MIL-T-27A Grade 4 Class R.

HERMETICALLY SEALED FILTER REACTORS

Case	Height	Depth	Width	Mtg. Centers	Studs
AJ	2 3/8	1 3/8	1 5/8	1 3/16 x 1 3/16	4 6-32
EB	2 7/16	1 13/16	1 15/16	1 3/16 x 1 1/4	4 6-32
FA	3 1/8	2 1/16	2 5/16	1 11/16 x 1 7/16	4 6-32
GA	3 13/16	2 3/8	2 1/4	2 1/16 x 1 3/4	4 6-32
HB	3 3/16	3 1/16	2 5/8	2 13/16 x 1 15/16	4 8-32
JA	3 3/16	3 1/16	4 7/8	2 5/8 x 2 1/8	4 8-32
JB	3 7/8	3 1/16	3 5/16	2 5/8 x 2 1/8	4 8-32
KB	4 3/16	3 3/8	3 15/16	3 x2 7/16	4 10-32
LA	5 7/16	3 11/16	4 5/16	3 5/16 x 2 11/16	4 10-32
LB	4 1/2	3 11/16	4 5/16	3 5/16 x 2 11/16	4 10-32
MB	4 15/16	4	4 11/16	3 11/16 x 3	4 1/4-20

MC-10 CASE
Height: 1 5/16"
Width: 1 1/4"
Depth: 1 5/16"
Mtg. Cen.: 3/16" x 7/8"
Mtg.: 2 4-40 threaded inserts

MEET MIL-T-27A SPECIFICATIONS

Catalog No.	MIL Type	Inductance Henry	Rat. Current DC Ma.	DC Res. Ohms	Test Volt Kilovolts	Case No.
MGC 1	TF4RX04AJ	100	10	3,500	1.	AJ
MGC 2	TF4RX04AJ	4	50	230	1.	AJ
MGC 3	TF4RX04EB	10	50	325	1.	EB
MGC 4	TF4RX04FA	20	50	475	1.5	FA
MGC 5	TF4RX04FA	30	50	650	1.5	FA
MGC 6	TF4RX04AJ	3	75	175	1.	AJ
MGC 7	TF4RX04EB	6	75	235	1.5	EB
MGC 8	TF4RX04FA	12	75	265	1.5	FA
MGC 9	TF4RX04EB	3.5	100	145	1.	EB
MGC 10	TF4RX04FA	8	100	180	1.5	FA
MGC 11	TF4RX04GA	12	100	190	2.	GA
MGC 12	TF4RX04EB	2	150	92	1.5	EB
MGC 13	TF4RX04FA	4	150	115	1.5	FA
MGC 14	TF4RX04GA	8	150	125	2.	GA
MGC 15	TF4RX04JB	11	150	120	2.5	JB
MGC 16	TF4RX04FA	2.5	200	70	1.5	FA
MGC 17	TF4RX04GA	4	200	80	2.	GA
MGC 18	TF4RX04HB	7	200	135	2.	HB
MGC 19	TF4RX04JA	10	200	125	2.5	JA
MGC 20	TF4RX04GA	2.5	300	50	2.	GA
MGC 21*	TF4RX04HB	4	300	62	2.5	HB
MGC 22	TF4RX04JB	6	300	85	2.5	JB
MGC 23*	TF4RX04KB	8	300	65	2.5	KB
MGC 24	TF4RX04LA	10	300	100	2.5	LA
MGC 25*	TF4RX04HB	2	400	37	2.5	HB
MGC 26	TF4RX04KB	6	400	60	2.5	KB
MGC 27*	TF4RX04JA	2	500	35	2.5	JA
MGC 28	TF4RX04KB	4	500	45	2.5	KB
MGC 29*	TF4RX04MB	7	500	50	2.5	MB
MGC 30*	TF4RX04LB	2	700	20	2.5	LB
MGC 31*	TF4RX04MB	1.75	1,000	12.5	2.5	MB

*Not stocked, available on short delivery.
Above units available in Grade 4.

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

HERMETICALLY SEALED, MIL-T-27A, GRADE 5, CLASS S FILTER REACTORS

These reactors have a split winding for series or parallel connections.

When using two sections in parallel, double the Idc. Both inductance and resistance are divided by 4.

Catalog No.	Min. Inductance @ Idc (Series Connection)				Max. Rdc	Test Voltage	Case No.
MGC-32	3.2 H @ 0dc	2.1 H @ 25 MA	1.70 H @ 35 MA	1.4 H @ 45 MA	220 Ohms	1000 V	MC-10
MGC-33	1.3 H @ 0dc	1.1 H @ 50 MA	0.8 H @ 70 MA	0.5 H @ 90 MA	100 Ohms	1000 V	MC-10
MGC-34	400 MH @ 0dc	300 MH @ 100 MA	240 MH @ 130 MA	190 MH @ 160 MA	35 Ohms	1000 V	MC-10
MGC-35	105 MH @ 0dc	100 MH @ 200 MA	80 MH @ 250 MA	50 MH @ 300 MA	10 Ohms	1000 V	MC-10
MGC-36	25 MH @ 0dc	23.5 MH @ 400 MA	15 MH @ 500 MA	11 MH @ 600 MA	2 Ohms	1000 V	MC-10
MGC-37	5.7 MC @ 0dc	4.5 MH @ 0.8 A	3.9 MH @ 1 A	3 MH @ 1.2 A	0.5 Ohms	1000 V	MC-10

TOROIDAL INDUCTORS

Using the latest developments in the field of magnetic materials and new impregnation and molding techniques the Freed Transformer Co. makes available to the industry the most extensive line of toroidal inductors.

Freed toroids are available in three types of constructions. Open units coated with a special high temperature extremely low loss compound, hermetically sealed in metal cases or molded in special **Freed Epoxy Resin.** Both hermetically sealed and molded units meet the latest military specification MIL-T-27A(graded 1 or 4 and 2 or 5 respectively.)Freed toroidal inductors are supplied with either molypermalloy or carbonyl iron powder cores

1. Temperature Stabilization:

The molypermalloy and carbonyl iron powder cores have a temperature coefficient of inductance. Depending on the degree of temperature stabilization the cores have different temperature coefficients. The degree of stabilization is denoted by a two-letter code.

SF Non-stabilized cores, ±2½% inductance variations from —55°C to +85°C.
SN Non-stabilized cores, +2% inductance variations from —55°C to +85°C.
SE Temperature stabilized cores, +0.1% to —0.4% inductance variations from —1.5°C to +54°C.
SB Temperature stabilized cores, ±0.1% inductance variations from +13°C to +35°C.
SD Temperature stabilized cores, ±0.1% inductance variations from —1.5°C to +54°C.
SW Temperature stabilized cores, ±0.25% inductance variations from —54°C to +85°C.
SM Temperature stabilized cores, ±.25% —65°C to +125°C.
SP Temperature stable carbonyl iron cores, ±0.3% inductance variations from —55°C to +85°C.

The temperature (stabilization) coefficient of an inductor will depend upon the nominal inductance value, operating frequency and A.C. voltage across the coil. Under some unfavorable working conditions the temperature coefficient of inductance corresponding to a given stability characteristic may be exceeded.

Toroids with special requirements such as tapped toroids, toroidal transformers, molded and cased units with dimensions other than standard sizes and high temperature toroids can be supplied on request. Our engineering and laboratory facilities are available for consultation, research and development.

CASED, UNCASED AND MOLDED UNITS

TOROIDAL INDUCTORS

Type	Ω/H	Max. Norm. Idc	Max. Norm. Iac	Max. Norm. Vac
TI- 1	70	55	73.5	0.46
TI- 1A	68	75	90.5	0.57
TI- 2	160	90	135	0.85
TI- 3	600	100	67	0.42
TI- 3A	310	150	240	1.5
TI- 4	110	55	67	0.42
TI- 5	260	28	35	0.22
TI- 6	230	75	125	0.80
TI- 7	480	40	53	0.33
TI- 8	1,500	50	80	0.5
TI- 9	150	200	240	1.5
TI-10	430	125	270	1.7
TI-11	30	120	190	1.2
TI-12	45	100	160	1
TI-13	55	140	175	1.1
TI-14	580	150	—	—
TI-15	900	100	—	—
TI-16	600	16	21	0.13
TI-17	1,200	20	29	0.18
TI-18	2,600	30	40	0.25

Type	Ω/H	Max. Norm. Idc	Max. Norm. Iac	Max. Norm. Vac
TI-19	4,500	25	29	0.18
TI-20	2,750	100	*	*
TI-21	1,200	350	*	*
TI-22	5,600	210	*	*
TI-23	7,000	250	*	*
TI-24	330	15	18	0.11
TI-25	200	20	24	0.15
TI-26	150	25	32	0.20
TI-27	76.5	50	62	0.39
TI-28	48.5	50	64	0.40
TI-29	33.5	70	88	0.55
TI-30	28	100	135	0.84
TI-31	19.5	100	136	0.85
TI-32	48.5	6	14.5	0.09
TI-33	2,150	8	13	0.08
TI-34	1,700	8	9.5	0.06
TI-35	4,100	10	18	0.11
TI-36	3,950	10	11	0.07
TI-37	23.5	10	32	0.20
TI-38	100	4	9.5	0.06

*TI-20 through TI-23 have a very low voltage coefficient and inductance will change very little with voltage. Because of high frequency application, the maximum voltage is limited rather by breakdown than by saturation.

UNCASED		
Type	O.D.	Hi.
OS-1	5/8"	5/16"
OS-2	7/8"	3/8"
OS-3	1"	3/8"
OS-4	1"	5/16"
OS-5	1 5/16"	5/8"
OS-6	1 5/8"	7/8"
OS-7	1 13/16"	5/8"
OS-8	1 7/8"	11/16"
OS-9	2 1/4"	1 1/8"
OS-10	2 3/8"	1 1/4"
OS-11	2 5/8"	1 3/8"
OS-12	13/16"	3/4"
OS-13	3/4"	1/4"
OS-14	7/16"	7/32"

CASE							
Type	Hi.	Dia.	Length	Width	Mtg.	Mtg. Cen.	Cutout
DT-1	1 7/32"		1 1/16"	1/2"	2 4-40 inserts	3/4"	5/16" x 1/2"
DT-2	1 3/4"		1 7/16"	1 3/16"	2 6-32 studs	7/8" x 3 5/32"	3/8" x 1 1/16"
DT-3	2"		1 23/32"	7/8"	2 6-32 studs	1 1/4" x 3/8"	3/8" x 3/4"
DT-4	3 1/8"		2 3/4"	1 3/16"	4 8-32 studs	2 1/16" x 1 1/16"	3/4" x 3/8"
DT-5	1 3/16"	1 13/16"			2 6-32 inserts	1 1/8"	3/8" x 1"
DT-6	5/8"	1/2"			Pig Tails		
DM-2	1"	1 1/16"			2 4-40 inserts	5/8"	3/8" x 7/8"
DM-11	1 1/2"	1 3/8"			2 6-32 inserts	7/8"	3/8" x 7/8"
DST-1	25/32"		3/4"	11/32"	1/4" long pins	To fit 1/2" crystal socket	

MOLD			
Type	O.D.	Hi.	Clearance Hole Mounting
MR-1	7/8"	13/32"	Pig Tails
MR-2	1 1/16"	1/2"	No. 4
MR-3	1 3/16"	1/2"	No. 6
MR-3A	1 3/16"	11/16"	No. 6
MR-4	1 1/2"	3/4"	No. 8
MR-5	1 7/8"	1"	No. 8
MR-6	2 1/8"	7/8"	No. 8
MR-7	2 3/8"	1 5/16"	No. 10
MR-8	2 1/2"	1 3/8"	No. 10
MR-9	2 3/8"	1 7/16"	No. 10
MR-10	2 7/8"	1 3/8"	No. 10
MR-11	7/16"	1/4"	Pig Tails
MS-1	25/32"x25/32"	13/32"	Pig Tails

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

LOW FREQUENCY TOROIDAL INDUCTORS

Freq. Range	100 ~ to 10 KC			200 ~ to 12 KC								Freq. Range
TYPE	TI-38	TI-32	TI-37	TI-24	TI-25	TI-26	TI-27	TI-28	TI-29	TI-30	TI-31	TYPE
Temp. Stability	SF	SF	SF	SN	SN	SN	SN	SN	SN	SN	SN	Temp. Stability
Size / Uncased Case Mold	OS1 DST1 MR1, MS1	OS3 DT1, DM2 MR3	OS5 DT2, DM11 MR4	OS1 DST1 MR1, MS1	OS12 DT1 MR2	OS3 DT1, DM2 MR3	OS5 DT2, DM11 MR4	OS8 DT3, DT5 MR6	OS9 DT4 MR7	OS9 DT4 MR8	OS11 DT4 MR10	Size / Uncased Case Mold
Nominal Inductance	CATALOG NUMBER											Nominal Inductance
1 MH				F2400	F2450	F2500	F2550	F2600	F2650	F2700	F2750	1 MH
2 MH				F2401	F2451	F2501	F2551	F2601	F2651	F2701	F2751	2 MH
3 MH				F2402	F2452	F2502	F2552	F2602	F2652	F2702	F2752	3 MH
5 MH	F3550			F2403	F2453	F2503	F2553	F2603	F2653	F2703	F2753	5 MH
7.5 MH	F3551			F2404	F2454	F2504	F2554	F2604	F2654	F2704	F2754	7.5 MH
10 MH	F3552			F2405	F2455	F2505	F2555	F2605	F2655	F2705	F2755	10 MH
15 MH	F3553			F2406	F2456	F2506	F2556	F2606	F2656	F2706	F2756	15 MH
20 MH	F3554			F2407	F2457	F2507	F2557	F2607	F2657	F2707	F2757	20 MH
30 MH	F3555			F2408	F2458	F2508	F2558	F2608	F2658	F2708	F2758	30 MH
50 MH	F3556	F2800	F4000	F2409	F2459	F2509	F2559	F2609	F2659	F2709	F2759	50 MH
75 MH	F3557	F2801	F4001	F2410	F2460	F2510	F2560	F2610	F2660	F2710	F2760	75 MH
100 MH	F3558	F2802	F4002	F2411	F2461	F2511	F2561	F2611	F2661	F2711	F2761	100 MH
150 MH	F3559	F2803	F4003	F2412	F2462	F2512	F2562	F2612	F2662	F2712	F2762	150 MH
200 MH	F3560	F2804	F4004	F2413	F2463	F2513	F2563	F2613	F2663	F2713	F2763	200 MH
300 MH	F3561	F2805	F4005	F2414	F2464	F2514	F2564	F2614	F2664	F2714	F2764	300 MH
400 MH	F3562	F2806	F4006	F2415	F2465	F2515	F2565	F2615	F2665	F2715	F2765	400 MH
500 MH	F3563	F2807	F4007	F2416	F2466	F2516	F2566	F2616	F2666	F2716	F2766	500 MH
750 MH	F3564	F2808	F4008	F2417	F2467	F2517	F2567	F2617	F2667	F2717	F2767	750 MH
1 H	F3565	F2809	F4009	F2418	F2468	F2518	F2568	F2618	F2668	F2718	F2768	1 H
1.25 H	F3566	F2810	F4010	F2419	F2469	F2519	F2569	F2619	F2669	F2719	F2769	1.25 H
1.5 H	F3567	F2811	F4011	F2420	F2470	F2520	F2570	F2620	F2670	F2720	F2770	1.5 H
1.75 H	F3568	F2812	F4012	F2421	F2471	F2521	F2571	F2621	F2671	F2721	F2771	1.75 H
2 H	F3569	F2813	F4013	F2422	F2472	F2522	F2572	F2622	F2672	F2722	F2772	2 H
2.25 H	F3570	F2814	F4014		F2473	F2523	F2573	F2623	F2673	F2723	F2773	2.25 H
2.5 H	F3571	F2815	F4015		F2474	F2524	F2574	F2624	F2674	F2724	F2774	2.5 H
3 H	F3572	F2816	F4016		F2575	F2525	F2575	F2625	F2675	F2725	F2775	3 H
3.5 H	F3573	F2817	F4017		F2476	F2526	F2576	F2626	F2676	F2726	F2776	3.5 H
4 H	F3574	F2818	F4018		F2477	F2527	F2577	F2627	F2677	F2727	F2777	4 H
4.5 H	F3575	F2819	F4019		F2478	F2528	F2578	F2628	F2678	F2728	F2778	4.5 H
5 H	F3576	F2820	F4020		F2479	F2529	R2579	F2629	F2679	F2729	F2779	5 H
7.5 H	F3577	F2821	F4021		F2480	F2530	F2580	F2630	F2680	F2730	F2780	7.5 H
10 H	F3578	F2822	F4022		F2481	F2531	F2581	F2631	F2681	F2731	F2781	10 H
15 H		F2823	F4023			F2532	F2582	F2632	F2682	F2732	F2782	15 H
20 H		F2824	F4024			F2533	F2583	F2633	F2683	F2733	F2783	20 H
25 H			F4025									25 H
30 H									F2684	F2734	F2784	30 H
40 H									F2685	F2735	F2785	40 H
50 H									F2686	F2736	F2786	50 H
75 H											F2787	75 H
100 H											F2788	100 H

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

LOW FREQUENCY TOROIDAL INDUCTORS

Freq. Range	1 KC to 15 KC									Freq. Range
TYPE	TI-33	TI-34	TI-16	TI-5	TI-4	TI-1	TI-1A	TI-12	TI-11	TYPE
Temp. Stability	SN	SN	SN	SN, SE SD	SN, SD, SW	SN	SN, SD SW	SN, SD, SW	SN, SD, SW	Temp. Stability
Size / Uncased Case Mold	OS13 DT6 MR11	OS14 DT6 MR11	OS1 DST1 MR1, MS1	OS3 DT1, DM2, MR3	OS5 DT2, DM11, MR4	OS8 DT3, DT5, MR6	OS9 DT4 MR7	OS9 DT4 MR8	OS11 DT4 MR10	Size / Uncased Case Mold
Nominal Inductance	Catalog Number									Nominal Inductance
.25 MH	F2850	F2900								.25 MH
.5 MH	F2851	F2901								.5 MH
.75 MH	F2852	F2902								.75 MH
1 MH	F2853	F2903	F2050				F1500	F1655	F1747	1 MH
1.5 MH	F2854	F2904								1.5 MH
2 MH	F2855	F2905					F1501	F1656	F1748	2 MH
2.5 MH	F2856	F2906								2.5 MH
3 MH	F2857	F2907	F2051				F1502	F1657	F1749	3 MH
4 MH	F2858	F2908					F1503	F1658	F1750	4 MH
5 MH	F2859	F2909	F2052	F1700	F850	F800	F1504	F1659	F1751	5 MH
7.5 MH	F2860	F2910					F1505	F1660		7.5 MH
10 MH	F2861	F2911	F2053	F1701	F851	F801	F1506	F1661	F1752	10 MH
12.5 MH	F2862	F2912								12.5 MH
15 MH	F2863	F2913	F2054	F1702	F852	F802	F1507	F1662	F1753	15 MH
17.5 MH	F2864	F2914								17.5 MH
20 MH	F2865	F2915								20 MH
25 MH	F2866	F2916								25 MH
30 MH	F2867	F2917	F2055	F1703	F853	F803	F1508	F1663	F1754	30 MH
50 MH		F2918	F2056	F1704	F854	F804	F1509	F1664	F1755	50 MH
75 MH		F2919	F2057	F1705	F855	F805	F1510	F1665	F1756	75 MH
100 MH		F2920	F2058	F1706	F856	F806	F1511	F1666	F1757	100 MH
150 MH			F2059	F1707	F857	F807	F1512	F1667	F1758	150 MH
200 MH			F2060	F1708	F858	F808	F1513	F1668	F1759	200 MH
300 MH			F2061	F1709	F859		F1514	F1669	F1760	300 MH
400 MH			F2062	F1710	F860		F1515	F1670	F1761	400 MH
500 MH			F2063	F1711	F861	F809	F1516	F1671	F1762	500 MH
600 MH				F1712	F862		F1517	F1672		600 MH
700 MH				F1713	F863					700 MH
750 MH			F2064			F810	F1518	F1673	F1763	750 MH
800 MH				F1714	F864					800 MH
900 MH				F1715	F865					900 MH
1.0 HY			F2065	F1716	F866	F811	F1519	F1674	F1764	1.0 HY
1.25 HY			F2066	F1717	F867	F812				1.25 HY
1.5 HY			F2067	F1718	F868	F813	F1520	F1675	F1765	1.5 HY
1.75 HY			F2068	F1719	F869	F814				1.75 HY
2 HY			F2069	F1720	F870	F815	F1521	F1676	F1766	2 HY
2.25 HY					F871	F816				2.25 HY
2.5 HY					F872	F817	F1522	F1677	F1767	2.5 HY
2.75 HY					F873	F818				2.75 HY
3 HY					F874	F819	F1523	F1678	F1768	3 HY
3.5 HY					F875	F820	F1524	F1679	F1769	3.5 HY
4 HY					F876	F821	F1525	F1680	F1770	4 HY
4.5 HY					F877	F822	F1526	F1681	F1771	4.5 HY
5 HY					F878	F823	F1527	F1682	F1772	5 HY
6 HY						F824	F1528	F1683		6 HY
7 HY						F825	F1529	F1684		7 HY
7.5 HY									F1773	7.5 HY
8 HY						F826	F1530	F1685		8 HY
9 HY						F827	F1531	F1686		9 HY
10 HY						F828	F1532	F1687	F1774	10 HY
12 HY							F1533	F1688		12 HY
15 HY						F829	F1534	F1689	F1775	15 HY
17 HY							F1535	F1690		17 HY
20 HY						F830	F1536	F1691	F1776	20 HY
25 HY							F1537	F1692	F1777	25 HY
30 HY							F1538	F1693	F1778	30 HY
40 HY									F1779	40 HY
50 HY									F1780	50 HY

MEDIUM FREQUENCY TOROIDAL INDUCTORS

Freq. Range	10 KC to 50 KC							30 KC to 75 KC				Freq. Range
TYPE	TI-35	TI-36	TI-17	TI-7	TI-6	TI-2	TI-13	TI-18	TI-8	TI-10	TI-9	TYPE
Temp. Stability	SN	SN	SN	SN	SN, SD SW	SD	SN	SN	SN, SD	SB	SB	Temp. Stability
Size / Uncased Case Mold	OS13 DT6 MR11	OS14 DT6 MR11	OS1 DST1 MR1, MS1	OS3 DT1, DM2 MR3	OS5 DT2, DM11 MR4	OS6 DT3, DT5 MR5	OS9 DT4 MR8	OS1 DST1 MR1, MS1	OS3 DT1, DM2 MR3	OS7 DT3, DT5 MR5	OS10 DT4 MR9	Size / Uncased Case Mold
Nominal Inductance	Catalog Number											Nominal Inductance
.1 MH			F2100					F2140	F1821			.1 MH
.2 MH			F2101					F2141	F1822			.2 MH
.25 MH	F2950	F3000										.25 MH
.3 MH			F2102					F2142	F1823			.3 MH
.4 MH			F2103					F2143	F1824			.4 MH
.5 MH	F2951	F3001	F2104	F1781				F2144	F1825			.5 MH
.75 MH	F2952	F3002										.75 MH
1 MH	F2953	F3003	F2105	F1782	F1726	F1800	F1629	F2145	F1826	F1579	F1554	1 MH
1.5 MH	F2954	F3004										1.5 MH
2 MH	F2955	F3005	F2106	F1783	F1727	F1801	F1630	F2146	F1827	F1580	F1555	2 MH
2.5 MH	F2956	F3006										2.5 MH
3 MH	F2957	F3007	F2107	F1784	F1728	F1802	F1631	F2147	F1828	F1581	F1556	3 MH
4 MH	F2958	F3008	F2108		F1729	F1803	F1632	F2148	F1829	F1582	F1557	4 MH
5 MH	F2959	F3009	F2109	F1785	F1730	F1804	F1633	F2149	F1830	F1583	F1558	5 MH
7.5 MH	F2960	F3010	F2110	F1786	F1731		F1634	F2150	F1831	F1584	F1559	7.5 MH
10 MH	F2961	F3011	F2111	F1787	F1732	F1805	F1635	F2151	F1832	F1585	F1560	10 MH
12.5 MH	F2962	F3012										12.5 MH
15 MH	F2963	F3013	F2112	F1788	F1733	F1806	F1636	F2152	F1833	F1586	F1561	15 MH
17.5 MH		F3014										17.5 MH
20 MH		F3015	F2113	F1789	F1734			F2153	F1834			20 MH
25 MH		F3016		F1790					F1835			25 MH
30 MH		F3017	F2114	F1791	F1735	F1807	F1637	F2154	F1836	F1587	F1562	30 MH
40 MH				F1792					F1837			40 MH
50 MH			F2115	F1793	F1736	F1808	F1638	F2155	F1838	F1588	F1563	50 MH
75 MH			F2116	F1794	F1737	F1809	F1639	F2156	F1839	F1589	F1564	75 MH
100 MH			F2117	F1795	F1738	F1810	F1640	F2157	F1840	F1590	F1565	100 MH
150 MH				F1796	F1739	F1811	F1641			F1591	F1566	150 MH
200 MH				F1797	F1740	F1812	F1642			F1592	F1567	200 MH
250 MH					F1741							250 MH
300 MH					F1742	F1813	F1643				F1568	300 MH
400 MH						F1814	F1644				F1569	400 MH
500 MH					F1743	F1815	F1645				F1570	500 MH

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

HIGH FREQUENCY TOROIDAL INDUCTORS

Freq. Range	10 KC to 100 KC		50 KC to 200 KC			20 KC to 2 MC	50 KC to 5 MC		100 KC to 10 MC	Freq. Range
TYPE	TI-15	TI-14	TI-19	TI-3	TI-3A	TI-20	TI-22	TI-23	TI-21	TYPE
Temp. Stability	SN	SN	SN	SD	SB	SP	SP	SP	SP	Temp. Stability
Size / Uncased Case Mold	OS3 DT1, DM2 MR3	OS5 DT2, DM11 MR4	OS1 DST 1 MR1, MS1	OS6 DT3, DT5 MR5	OS10 DT4 MR8	OS4 DT2 MR3A	OS2 DT1 MR2	OS2 DT1 MR2	OS1 DT1 MR1, MS1	Size / Uncased Case Mold
Nominal Inductance	Catalog Number									Nominal Inductance
.010 MH							F2270	F2301	F2240	.010 MH
.015 MH							F2271	F2302	F2241	.015 MH
.020 MH							F2272	F2303	F2242	.020 MH
.030MH							F2273	F2304	F2243	.030MH
.040 MH							F2274	F2305	F2244	.040 MH
.050 MH						F2201	F2275	F2306	F2245	.050 MH
.075 MH							F2276	F2307	F2246	.075 MH
.100 MH	F1870		F2180	F1846		F2202	F2277	F2308	F2247	.100 MH
.125 MH									F2248	.125 MH
.150 MH							F2278	F2309	F2249	.150 MH
.200 MH	F1871		F2181	F1847		F2203	F2279	F2310		.200 MH
.300 MH	F1872		F2182	F1848		F2204	F2280	F2311		.300 MH
.400 MH	F1873		F2183	F1849			F2281	F2312		.400 MH
.500 MH	F1874		F2184	F1850		F2205	F2282	F2313		.500 MH
.600 MH			F2185				F2283			.600 MH
.700 MH			F2186				F2284			.700 MH
.750 MH						F2206				.750 MH
.800 MH			F2187							.800 MH
.900 MH			F2188							.900 MH
1 MH	F1875	F1920	F2189	F1851		F2207				1 MH
1.5 MH						F2208				1.5 MH
2 MH	F1876	F1921	F2190	F1852		F2209				2 MH
2.5 MH						F2210				2.5 MH
3 MH	F1877	F1922	F2191	F1853		F2211				3 MH
3.5 MH						F2212				3.5 MH
4 MH	F1878	F1923	F2192	F1854		F2213				4 MH
4.5 MH						F2214				4.5 MH
5 MH	F1879	F1924	F2193	F1855		F2215				5 MH
7.5 MH	F1880	F1925		F1845						7.5 MH
10 MH	F1881	F1926		F1844	F1856					10 MH
15 MH	F1882	F1927			F1857					15 MH
20 MH	F1883	F1928			F1858					20 MH
25 MH	F1884									25 MH
30 MH	F1885	F1929			F1659					30 MH
40 MH	F1886				F1860					40 MH
50 MH	F1887	F1930			F1861					50 MH
75 MH	F1888	F1931			F1862					75 MH
100 MH	F1889	F1932			F1863					100 MH
150 MH		F1933								150 MH
200 MH		F1934								200 MH
250 MH		F1935								250 MH
300 MH		F1936								300 MH

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

MAGNETIC AMPLIFIERS AND SATURABLE TRANSFORMERS

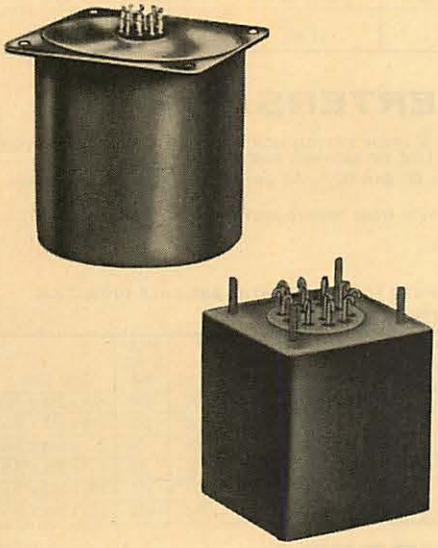
The ever increasing demand for reliability, ruggedness, miniaturization and high performance has made the magnetic amplifier an indispensable component of many military and industrial automatic control and servo systems. Recent advances in materials and techniques permit an even greater utilization of the well-known inherent advantages of magnetic amplifiers such as direct operation from line voltage, no warm-up time, long-life components, ease of signal mixing and hermetic sealing.

Freed Transformer Co. manufactures an extensive line of magnetic amplifiers, ranging from saturable transformers to half-wave type, fast-response servo amplifiers. Choice of catalog amplifiers assures standardization, lowest possible cost and rapid delivery.

All standard units are designed for continuous operation and will operate in an ambient temperature range of —55°C to +75°C.

In addition to standard items, Freed Transformer Co. has extensive facilities for the design and production of special amplifiers, saturable reactors and magnetic components.

ALL ITEMS LISTED ARE AVAILABLE FROM STOCK.



FAST RESPONSE MAGNETIC AMPLIFIERS

The MAF Type of fast response magnetic amplifier combines high power gain, ruggedness, and reliability with a maximum 2 cycle response. All MAF units are phase-reversible.

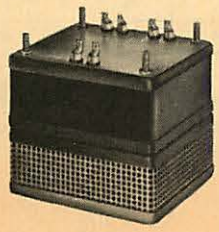
Freed No.	MAF-4*	MAF-5*	MAF-6	MAF-7
Power Supply	115V 400 cps	115V 400 cps	115V 400 cps	115V 400 cps
Maximum Output Wattage	10	15	10	15
Output Voltage	57.5V RMS	57.5V RMS	57.5V RMS	57.5V RMS
Typical Load	Kearfott R110-2 Kearfott R111-2	Kearfott R112-2	Kearfott R110-2 Kearfott R111-2	Kearfott R111-2 Kearfott R112-2
Input Signal Required for Full Output	8V AC	8V AC	R110-2 10K 1K 1.2V .4V R111-2 10K 1K 1.6V .6V	R111-2 10K 1K 1.2V .6V R112-2 10K 1K 2.5V 1.0V
Control Winding Resistance	60 Ohms CT 150 Ohms CT	60 Ohms CT 150 Ohms CT	AC or DC 10,000 Ohms Min. 1,000 Ohms Min.	AC or DC 10,000 Ohms Min. 1,000 Ohms Min.
Physical Dimensions	2 3/16" O.D. x 2 3/4" H	2 1/2" O.D. x 2 1/2" H	4 3/4" x 4 1/4" x 2 7/8" H	4 3/4" x 4 1/4" x 2 7/8" H
Weight	13 oz.	18 oz.	4 1/2 lbs.	4 1/2 lbs.

*Designed for use with MAT-1 Transistor Preamplifier.

PUSH-PULL MAGNETIC AMPLIFIERS

The map line of push-pull magnetic amplifiers features high gain, polarity-sensitive amplification and a phase-reversible output.

Freed No.	MAP-1	MAP-2	MAP-3	MAP-301
Power Supply	115V A.C. 60 Cycles (To MAPT-1)	115V A.C. 60 Cycles (To MAPT-2)	115V A.C. 60 Cycles (To MAPT-3)	115V A.C. 60 Cycles (To MAPT-301)
Maximum Output Wattage	2.8 Watts	15 Watts	50 Watts	50 Watts
Voltage	140V	150V	120V	140V
Typical Load	Kollsman 951-0160	Diehl FPE 25-11	Diehl FPF 49-9	Diehl FPF 49-9
Input Signal Required for Full Output	1.2 ma.	1 ma.	2 ma.	4.5 ma.
Resp. Time	ON OFF 15 cycles 60	ON OFF 5 cycles 38	ON OFF 3 cycles 15	ON OFF 5 cycles 20
Control Winding Resistance	620 ohms each	1230 ohms each	250 ohms each	1700 ohms each
Physical Dimensions	3 3/8"x3 1/2"x5 7/8"H M.A. 2 5/8"x2 1/4"x3"H T.	3 7/8"x4 3/8"x7"H M.A. 2 5/16"x2 3/4"x3 3/4"H T.	5 1/8"x6 7/8"x8"H M.A. 3 5/16"x3 7/8"x4 1/4"H T.	5 1/8"x5"x8"H M.A. 3 5/8"x4 1/4"x3 3/8"H T.
Weight	6 lbs. M.A. 3 lbs. T.	11 lbs. M.A. 3 1/2 lbs. T.	26 1/2 lbs. M.A. 8 lbs. T.	20 lbs. M A. 8 lbs. T.

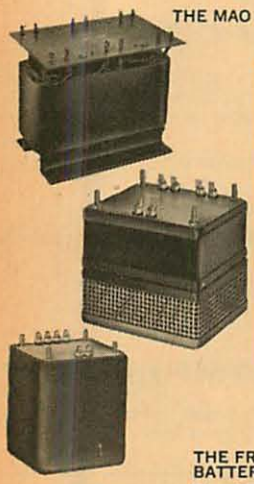


Freed No.	MAP-4	MAP-7	MAP-8	MAP-11
Power Supply	115V A.C. 60 Cycles (To MAPT-4)	115V A.C. 400 Cycles	115V A.C. 400 Cycles (To MAPT-8)	115V A.C. 400 Cycles
Maximum Output Wattage	175 Watts	15 Watts	50 Watts	10 Watts
Voltage	130V	125V	115V	115V
Typical Load	Diehl FPF 85-18-1	Kearfott R112-2A	Bendix CK-3000-1-A	Kearfott R111-2A
Input Signal Required for Full Output	8 ma.	.5 ma.	1.8 ma.	.9 ma.
Resp. Time	ON OFF 17 cycles 66	ON OFF 5 cycles 15	ON OFF 45 cycles 60	ON OFF 4 cycles 75
Control Winding Resistance	3000 ohms each	4,400 ohms each	320 ohms each	3300 ohms each
Physical Dimensions	7 1/2"x5"x7 7/8"H M.A. 4"x4 3/4"x5 5/8"H T.	3 1/4"x3 3/8"x7"H	3 3/8"x3 7/8"x7 7/8"H M.A. 2 13/16"x2 3/4"x3 3/4"H T.	4 1/8"x3 1/2"x5 1/4"H
Weight	35 lbs. M.A. 12 lbs. T.	7 lbs.	7 1/2 lbs. M.A. 4 lbs. T.	5 lbs.

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

SINGLE ENDED MAGNETIC AMPLIFIERS



THE MAO LINE OF SINGLE-ENDED MAGNETIC AMPLIFIERS PROVIDES A SINGLE STAGE OF DC CONTROLLED AMPLIFICATION, UTILIZING POSITIVE FEEDBACK TO OBTAIN MUCH HIGHER GAIN THAN THAT OF A SATURABLE REACTOR.

Freed No.	MAO-1	MAO-2	MAO-3	MAO-4	MAO-5
Power Supply	115V A.C. 60 Cycles	115V A.C. 60 Cycles	115V A.C. 60 Cycles	115V A.C. 60 Cycles	115V A.C. to the MAO-T-5 Transformer 60 Cycles
Maximum Output Wattage	4 watts	20 watts	100 watts	400 watts	575 watts
Voltage	120V	120V	100V	100V	135V
Typical Load	4000 ohms	700 ohms	100 ohms	25 ohms	25 ohms
Input Signal Req. for Full Output	3 ma.	1.8 ma.	9 ma.	9 ma.	6 ma.
Control Winding Resistance	300 ohms each	700 ohms each	5600 ohms each	4500 ohms each	4,500 ohms
Physical Dimensions	3¾″x4″x3⅓″ H	4¼″x3⅝″x6⅜″ H	3¼″x5½″x4 13/16″H	5″x7½″x6″ H	5″x7½″x6″ H Trans. 3⅞″x3¾″x3¾″ H
Weight	4 lbs.	7 lbs.	8½ lbs.	21 lbs.	21 lbs. Trans. 7¼ lbs.

TRANSISTOR CONVERTERS

THE FREED LINE OF DC TO AC AND DC TO DC TRANSISTOR CONVERTERS PROVIDE A HIGH EFFICIENCY VOLTAGE CONVERSION FROM BATTERY SOURCES TO AN AC LINE VOLTAGE OR HIGH DC VOLTAGE WITHOUT THE USE OF MOVING PARTS.

Freed Transformer Co. maintains a stock line of reliable, highly efficient static DC to DC and DC to AC converters. DC to DC converters in hermetically sealed cans. RF filters included inside case.

The MAC Line of Static DC to AC Converters provide a highly efficient voltage conversion from battery sources to AC voltage without the use of moving parts.

The output voltage and/or frequency is directly proportional to source voltage variation.

Special regulators can be supplied to compensate for this variation.

- **RUGGED, QUIET, MAINTENANCE FREE, LONG LIFE OPERATION.**
- **HIGH POWER TO WEIGHT RATIO, ARC-FREE OPERATION.**

DC TO DC CONVERTERS

All TDC units are Hermetically Sealed, Oil Filled. Mtg. base plate must be mounted on a sink of sufficient area to maintain a base temperature of 70°C. Maximum output regulation 5% from half load to full load. Ripple frequency 4 to 5 KC; Ripple content 0.1%.

UNREGULATED TDC STOCK UNITS

Type No.	NOM. V in	V out	MAX 1 out MA	Case Size	Type No.	NOM. V in	V out	MAX 1 out MA	Case Size
TDC 6-15-03	6v	150	50	2 x 2¼ x 3⅛	TDC 28-30-15	28v	300	150	2⅝ x 2¼ x 3½
TDC 12-30-15	12v	300	150	2⅝ x 2¼ x 3½	TDC 28-25-12	28v	250	120	2⅝ x 2¼ x 3½
TDC 12-25-12	12v	250	120	2⅝ x 2¼ x 3½	TDC 28-30-05	28v	300	50	2 x 2¼ x 3⅛
TDC 12-30-05	12v	300	50	2 x 2¼ x 3½	TDC 28-20-05	28v	200	50	2 x 2¼ x 3⅛
TDC 12-20-05	12v	200	50	2 x 2¼ x 3⅛	TDC 48-20-15	48v	200	150	2⅝ x 2¼ x 3½
					TDC 48-30-15	48v	300	150	2⅝ x 2¼ x 3½

DC TO AC TRANSISTOR CONVERTERS

Input Voltage—12 VDC Output Frequency—60 CPS.—Square Wave

OPEN CASE

SEALED CASE

Freed No.	Output Voltage	Power	Type of Case	Dimensions
MAC 12-3-60	115 VRMS	30 VA	Cased	7¼″ x 3⅛″ x 4¾″
MAC-12-10-1	115 VRMS	100 VA	Cased	7¼″ x 4″ x 5″
MAC 12-10-2	115 VRMS	100 VA	Herm. Sealed	7¼″ x 4⅛″ x 4 13/16″
MAC 12-20-1	115 VRMS	180 VA	Cased	6″ x 4⅛″ x 6″
MAC 12-20-2	115 VRMS	180 VA	Herm. Sealed	6″ x 4⅛″ x 6″
MAC 12-30-1	115 VRMS	250 VA	Cased	5⅞″ x 6⅛″ x 7 1/16″
MAC 12-30-2	115 VRMS	250 VA	Herm. Sealed	5⅞″ x 6⅛″ x 7 1/16″

- Output Waveform — Square Wave
- Output Frequency — 60 cps (Adjustment Control)
- Frequency Stability ±3%
- Hermetically Sealed
- Maximum Ambient Temperature 50°C
- Temperautre of Base Mounting Plate must not exceed 70°C.
- Output Voltage Variation — Varies Directly with Input Voltage

	Nominal Input V.D.C.	Output @ 115V VA	Case Size
TAC 6-50	6	50	4⅛ x 3½ x 4½ H
TAC-12-50	12	50	4⅛ x 3½ x 4½ H
TAC-12-90	12	90	4⅛ x 3½ x 4⅞ H
TAC-12-175	12	175	5 x 4⅛ x 6 H
TAC-28-50	28	50	4⅛ x 3½ x 4½ H
TAC-28-100	28	100	4⅛ x 3½ x 4⅞ H
TAC-28-175	28	175	5 x 4⅛ x 6 H
TAC-28-250	28	250	5½ x 5 x 6¾ H

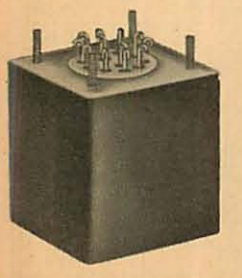
400 CYCLE TRANSISTOR CONVERTERS

Frequency Regulation ±2%

Type No.	Nom. Input V.D.C.	Output VA	Case Size
TAC-12-50-4	12	50	3 x 3⅛ x 3¾
TAC-12-100-4	12	100	4⅛ x 3½ x 4½
TAC-28-50-4	28	50	3 x 3⅛ x 3⅜
TAC-28-150-4	28	150	4⅛ x 3½ x 4½

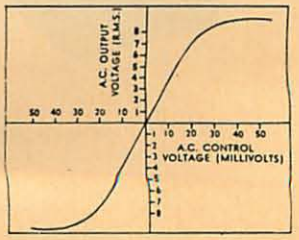
MINIATURIZED SILICON TRANSISTOR PREAMPLIFIER

THE MAT TYPE OF TRANSISTOR PREAMPLIFIER COMBINES LOW POWER CONSUMPTION, HIGH POWER GAIN AND SMALL SIZE AND WEIGHT.



Freed No.	MAT-1-1
Power Supply	115V 400~
Voltage Gain	400
Maximum Output Voltage	10V (RL = 1.5K)
Typical Load	Freed MAF-4 and MAF-5 Magnetic Amplifiers
Input Signal Required for Full Output	50MV
Input Impedance	>10,000 OHMS
Physical Dimensions	1¾″ x 1⅞″ x 2⅝″ H
Weight	10 oz.

TRANSFER CHARACTERISTIC CURVE

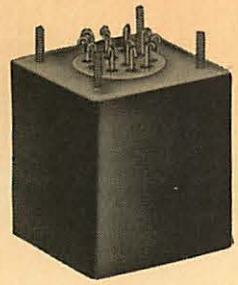


FREED TRANSFORMER CO., INC.

FREED SATURABLE TRANSFORMERS

DC CONTROLLED

The MAS line of saturable transformers, commonly controlled by dual-triodes or transistors, emphasizes low cost, small size, extreme reliability (no rectifiers) and phase-reversible output.



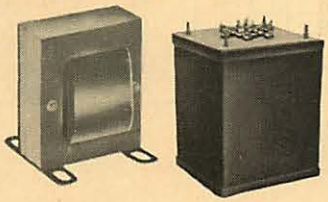
Freed No.	MAS-1	MAS-101	MAS-2	MAS-3	MAS-4	MAS-5	MAS-6	MAS-7	MAS-9
Power Supply	115V A.C. 60 Cycles	115V A.C. 60 Cycles	115V A.C. 400 Cycles	115V A.C. 60 Cycles	115V A.C. 60 Cycles	115V A.C. 400 Cycles	115V A.C. 400 Cycles	115V A.C. 400 Cycles	115V A.C. 60 Cycles
Maximum Output	15 watts	15 watts	6 watts	30 watts	60 watts	2.7 watts	30 watts	40 watts	125 watts
Wattage Voltage	130V	120V	120V	120V	120V	26V	120V	115V	115V
Typical Load	Diehl FPE 25-11	Diehl FPE 25-11	Kearfott R-110	Diehl FPE 49-7	250 ohms	Kearfott R-118	Diehl FPE 49-13-1	Bendix CK-3000-1A	110 Ω
Input Signal Required for Full Output	6 ma.	9 ma.	3 ma	8 ma.	20 ma.	4 ma.	4 ma.	6 ma.	15 ma. D-C
Resp. Time	ON OFF 2 cycles 5	ON OFF 3 cycles 6	ON OFF 3 cycles 6	ON OFF 3 cycles 30	ON OFF 5 cycles 35	ON OFF 10 cycles 35	ON OFF 12 cycles 9	ON OFF 12 cycles 9	ON OFF 5 cycles 35
Control Winding Resistance	14 K ohms each	3200 ohms each	2000 ohms each	6800 ohms each	2000 ohms each	1500 ohms each	4000 ohms each	4000 ohms each	500 ohms each
Physical Dimensions	3½"x4¼" x5½" H	3½"x4¼" x5½" H	1¾"x2⅜" 2⅜" H	4¾"x5⅞" x5½" H	7"x5¼" x7" H	2¼"x2⅛" x2¼" H	3¾"x3¼" x4" H	3⅛"x3¼" x4" H	9"x6¾"x8"
Weight	9 lbs.	9.75 lbs.	2 lbs.	18.5 lbs.	29 lbs.	1.25 lbs.	6 lbs.	6 lbs.	65 lb.

CONSTANT VOLTAGE TRANSFORMERS

The MCV line of constant voltage transformers provides accurate regulation against line and/or load variations, without the use of tubes or moving parts.

- MILITARY SPECIFICATIONS
- NO TUBES
- COMMERCIAL
- NO MOVING PARTS
- ACCURATE REGULATIONS
- FAST RESPONSE
- FULLY AUTOMATIC

Rated output within ±2% of nominal value. Regulation automatically maintained within ±1%. Regulation from 25% to full load ±2%.



COMMERCIAL MILITARY

Reg. Output in R.M.S. Volts	Input Range in R.M.S. Volts	Output in V.A. P.F-1	CATALOG NUMBERS			
			60 Cycles		400 Cycles	
			Comm.	Military*	Comm.*	Military*
115	95-130	5	MCV65LC	MCV65LM	MCV45LC	MCV45LM
115	95-130	25	MCV625LC	MCV625LM	MCV425LC	MCV425LM
115	95-130	75	MCV675LC	MCV675LM	MCV475LC	MCV475LM
115	95-130	125	MCV6125LC	MCV6125LM	MCV4125LC	MCV4125LM
115	95-130	175	MCV6175LC	MCV6175LM	MCV4175LC	MCV4175LM
115	95-130	250	MCV6250LC	MCV6250LM	MCV4250LC	MCV4250LM
115	95-130	375	MCV6375LC	MCV6375LM	MCV4375LC	MCV4375LM
115	95-130	500	MCV6500LC	MCV6500LM	MCV4500LC	MCV4500LM
115	95-130	750	MCV6750LC	MCV6750LM	MCV4750LC	MCV4750LM
115	95-130	1000	MCV61000LC	MCV61000LM	MCV41000LC	MCV41000LM
26	95-130	5	MCV654FC	MCV654FM	MCV454FC	MCV454FM
26	95-130	25	MCV6254FC	MCV6254FM	MCV4254FC	MCV4254FM
26	95-130	75	MCV6754FC	MCV6754FM	MCV4754FC	MCV4754FM
26	95-130	125	MCV61254FC	MCV61254FM	MCV41254FC	MCV41254FM
6.4	95-130	5	MCV65FC	MCV65FM	MCV45FC	MCV45FM
6.4	95-130	25	MCV625FC	MCV625FM	MCV425FC	MCV425FM
6.4	95-130	75	MCV675FC	MCV675FM	MCV475FC	MCV475FM
6.4	95-130	125	MCV6125FC	MCV6125FM	MCV4125FC	MCV4125FM

*Condensers are not provided with units. Where condensers are provided they are external to units.

TELEMETERING COMPONENTS

A complete line of Band Pass Filters, Low Pass Filters and Discriminators is available for multi-channel telemetering applications. These components cover the frequency range from 400 cps to 70,000 cps. The filters feature **exceptional phase linearity,** excellent selectivity characteristics and plug-in construction. The Discriminators, either fixed or slug tuned, have exceptional linearity, high amplification, and utmost stability.

TELEMETERING BAND PASS FILTERS

Hermetically sealed to MIL-T-27A and MIL-F-18327

These filters cover the frequencies from 400 c.p.s. to 70KC. Narrow frequency B.P.F. have a band width of ±9¾% of center frequency and 45 DB (minimum) points at ±7½% of center frequency of higher or lower adjacent channels. Wide frequency B.P.F. have a band width of ±19½% of center frequency and 50 D.B. points at ±15% of center frequencies of higher or lower second adjacent channels.

FA-5 CASE

Height: 4½"
Width: 3½"
Depth: 2⅛"
Mtg. Cen.: 2⁹⁄₁₆"x1⁹⁄₁₆"
Studs: 5 8-32x½"
Octal Header

FA-10 CASE

Height: 4½"
Width: 3½"
Depth: 2⅛"
Mtg. Cen.: 1¹¹⁄₁₆"x1⁹⁄₁₆"
Studs: 4 8-32x½"
Knockout: 1½" dia.

FA-15 CASE

Height: 4½"
Width: 2⅞"
Depth: 2⅛"
Mtg. Cen.: 1¹¹⁄₁₆"x1⁹⁄₁₆"
Studs: 4 8-32x½"
Knockout: 1½" dia.

CASE SIZES

DF-01
¾ x ¾ x 1¾
MTN-2.3 Thru MTW-70

DF-02
1 x 1 x 1⅜
MTN-4 Thru MTN 1.7

Characteristic Impedance 500 Ω			
Catalog No.	Center Frequency c.p.s.	3 DB Band Width % of C.F.	Case No.
FBP-10	400	± 9¾	FA-10
FBP-11	560	± 9¾	FA-10
FBP-12	730	± 9¾	FA-10
FBP-13	960	± 9¾	FA-10
FBP-14	1,300	± 9¾	FA-10
FBP-15	1,700	± 9¾	FA-10
FBP-16	2,300	± 9¾	FA-10
FBP-17	3,000	± 9¾	FA-15
FBP-18	3,900	± 9¾	FA-15
FBP-19	5,400	± 9¾	FA-15
FBP-20	7,350	± 9¾	FA-15
FBP-21	10,500	± 9¾	FA-15
FBP-22	12,300	± 9¾	FA-15
FBP-23	14,500	± 9¾	FA-15
FBP-24	22,000	± 9¾	FA-15
FBP-25	22,000	±19½	FA-15
FBP-26	30,000	± 9¾	FA-15
FBP-27	30,000	±19½	FA-15
FBP-28	40,000	± 9¾	FA-15
FBP-29	40,000	±19½	FA-15
FBP-30	52,500	± 9¾	FA-15
FBP-31	52,500	±19½	FA-15
FBP-32	70,000	± 9¾	FA-15
FBP-33	70,000	±19½	FA-15

Characteristic Impedance 2,500 Ω			
Catalog No.	Center Frequency c.p.s.	3 DB Band Width % of C.F.	Case No.
FBP-34	400	± 9¾	FA-5
FBP-35	560	± 9¾	FA-5
FBP-36	730	± 9¾	FA-5
FBP-37	960	± 9¾	FA-5
FBP-38	1,300	± 9¾	FA-5
FBP-39	1,700	± 9¾	FA-5
FBP-40	2,300	± 9¾	FA-5
FBP-41	3,000	± 9¾	FA-5
FBP-42	3,900	± 9¾	FA-5
FBP-43	5,400	± 9¾	FA-5
FBP-44	7,350	± 9¾	FA-5
FBP-45	10,500	± 9¾	FA-5
FBP-46	12,300	± 9¾	FA-5
FBP-47	14,500	± 9¾	FA-5
FBP-48	22,000	± 9¾	FA-5
FBP-49	22,000	±19½	FA-5
FBP-50	30,000	± 9¾	FA-5
FBP-51	30,000	±19½	FA-5
FBP-52	40,000	± 9¾	FA-5
FBP-53	40,000	±19½	FA-5
FBP-54	52,500	± 9¾	FA-5
FBP-55	52,500	±19½	FA-5
FBP-56	70,000	± 9¾	FA-5
FBP-57	70,000	±19½	FA-5

SUBMINIATURE TELEMETERING BAND PASS FILTERS

Manufactured to Specification MIL-F-18327A—Type FR-4RX22YY
RBD Standard Frequency Channels

Input and Output Impedance 10K ohms							
Type No.	Center Frequency Fo- in KC	Band Width <3DB	Stop Band Attenuation	Type No.	Center Frequency Fo- in KC	Band Width <3DB	Stop Band Attenuation
MTN-.4	.4	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-14.5	14.5	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-.56	.56	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-22	22	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-.73	.73	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-30	30	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-.96	.96	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-40	40	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-1.3	1.3	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-52.5	52.5	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-1.7	1.7	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTN-70	70	±7½%	≧ 38 DB @ 1.75 + .58 Fo
MTN-2.3	2.3	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTW-22	22	±15%	≧ 40 DB @ 2.5 + .4 Fo
MTN-3.0	3.0	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTW-30	30	±15%	≧ 40 DB @ 2.5 + .4 Fo
MTN-3.9	3.9	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTW-40	40	±15%	≧ 40 DB @ 2.5 + .4 Fo
MTN-5.4	5.4	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTW-52.5	52.5	±15%	≧ 40 DB @ 2.5 + .4 Fo
MTN-7.35	7.35	±7½%	≧ 38 DB @ 1.76 + .58 Fo	MTW-70	70	±15%	≧ 40 DB @ 2.5 + .4 Fo
MTN-10.5	10.5	±7½%	≧ 38 DB @ 1.76 + .58 Fo				

See Freed Price Pages 1478 — 1480

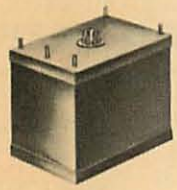
FREED TRANSFORMER CO., INC.

CASE DIMENSIONS

FA-1 CASE
Height: 4½"
Width: 1½"
Depth: 1½"
Mtg. Cen.: 31/32" sq.
4 Inserts: 6-32
Knockout: 1"

FA-185 CASE
Height: 4½"
Width: 1⅞"
Depth: 1⅝"
Mtg. Cen.: 1 15/64"x1 1/16"
4 Inserts: 6-32
Knockout: 1½"

FA-190 CASE
Height: 4½"
Width: 2¼"
Depth: 1⅝"
Mtg. Cen.: 1 1/32"x1 1/16"
4 Inserts: 6-32
Knockout: 1½"



FA-410 CASE
Height: 4½"
Width: 6"
Depth: 4"
Mtg. Cen.: 5¼"x3¼"
5 Studs: 10-32
Octal Header

DISCRIMINATOR INPUT LOW PASS FILTER

HERMETICALLY SEALED TO MIL-T-27A AND MIL-F-18327 SPECIFICATIONS

Catalog No.	Fo Center Freq. in c.p.s.	Characteristic Impedance Ohms	Case No.
LPI-10	400	30,000	FA-1
LPI-11	560	30,000	FA-1
LPI-12	730	30,000	FA-1
LPI-13	960	30,000	FA-1
LPI-14	1,300	30,000	FA-1
LPI-15	1,700	30,000	FA-1
LPI-16	2,300	30,000	FA-1
LPI-17	3,000	30,000	FA-1
LPI-18	3,900	30,000	FA-1

Band Pass Attenuation: 0.05 DB ±9¾% of Center Frequency
30 DB at second harmonic of Pass Band Frequencies
50 DB at third harmonic of Pass Band Frequencies
40 DB above third harmonic of Pass Band Frequencies

Catalog No.	Fo Center Freq. in c.p.s.	Characteristic Impedance Ohms	Case No.
LPI-19	5,400	30,000	FA-1
LPI-20	7,350	30,000	FA-1
LPI-21	10,500	30,000	FA-1
LPI-22	12,300	30,000	FA-1
LPI-23	14,500	30,000	FA-1
LPI-24	22,000	5,100	FA-1
LPI-25	30,000	5,100	FA-1
LPI-26	40,000	5,100	FA-1
LPI-27	52,500	5,100	FA-1
LPI-28	70,000	5,100	FA-1

Band Pass Attenuation: 0.05 DB ±15% of Center Frequency
30 DB at second harmonic of Pass Band Frequencies
50 DB at third harmonic of Pass Band Frequencies
40 DB above third harmonic of Pass Band Frequencies

DISCRIMINATOR OUTPUT LOW PASS FILTER

HERMETICALLY SEALED TO MIL-T-27A AND MIL-F-18327 SPECIFICATIONS

Catalog No.	Fo c.p.s.	Characteristic Impedance Ohms	Case No.
LPO-10	6	330	FA-410
LPO-11	8	330	FA-410
LPO-12	11	330	FA-410
LPO-13	14	330	FA-410
LPO-14	20	330	FA-410
LPO-15	25	330	FA-410
LPO-16	35	330	FA-410
LPO-17	45	330	FA-410
LPO-18	60	330	FA-410
LPO-19	81	330	FA-410
LPO-20	110	330	FA-410
LPO-21	160	330	FA-410
LPO-22	185	330	FA-410

Catalog No.	Fo c.p.s.	Characteristic Impedance Ohms	Case No.
LPO-23	220	330	FA-410
LPO-24	330	330	FA-410
LPO-25	450	330	FA-410
LPO-26	600	330	FA-410
LPO-27	660	330	FA-410
LPO-28	790	330	FA-410
LPO-29	900	330	FA-410
LPO-30	1,050	330	FA-410
LPO-31	1,200	330	FA-410
LPO-32	1,600	330	FA-410
LPO-33	2,100	330	FA-410
LPO-34	7,200	330	FA-410
LPO-35	10,000	330	FA-410

Attenuation: <0.2 DB up to 0.5 times Fo
<0.7 DB from 0.5 to 1. times Fo
>20 DB at 2 Fo to 2.5 Fo
>30 DB from 2.5 times Fo to 100 Kc

FIXED DISCRIMINATORS

HERMETICALLY SEALED TO MIL-T-27A AND MIL-F-18327 SPECIFICATIONS

Catalog No.	Center Frequency (cps)	% Deviation of Fo	Linearity	D.C. Output Volts	Case No.
DST-10	400	±8½	±0.5%	32.5	FA-185
DST-11	560	±8½	±0.5%	32.5	FA-185
DST-12	730	±8½	±0.5%	32.5	FA-185
DST-13	960	±8½	±0.5%	32.5	FA-185
DST-14	1,300	±8½	±0.5%	32.5	FA-185
DST-15	1,700	±8½	±0.5%	32.5	FA-185
DST-16	2,300	±8½	±0.5%	32.5	FA-185

SLUG TUNED DISCRIMINATORS

Catalog No.	Center Frequency (Kc.)	% Deviation of Fo	Linearity	D.C. Output Volts	Case No.
DST-17	3.0	±8½	±0.5%	32.5	FA-190
DST-18	3.9	±8½	±0.5%	32.5	FA-190
DST-19	5.4	±8½	±0.5%	32.5	FA-190
DST-20	7.35	±8½	±0.5%	32.5	FA-190
DST-21	10.5	±8½	±0.5%	32.5	FA-190
DST-22	12.3	±8½	±0.5%	32.5	FA-190
DST-23	14.5	±8½	±0.5%	32.5	FA-190
DST-24	22.0	±8½	±0.5%	32.5	FA-190
DST-25	30.0	±8½	±0.5%	32.5	FA-190

Catalog No.	Center Frequency (Kc)	% Deviation of Fo	Linearity	D.C. Output Volts	Case No.
DST-26	40.0	±8½	±0.5%	32.5	FA-190
DST-27	52.5	±8½	±0.5%	32.5	FA-190
DST-28	70.0	±8½	±0.5%	32.5	FA-190
DST-29	22.0	±15	±1.0%	26.0	FA-190
DST-30	30.0	±15	±1.0%	26.0	FA-190
DST-31	40.0	±15	±1.0%	26.0	FA-190
DST-32	52.5	±15	±1.0%	26.0	FA-190
DST-33	70.0	±15	±1.0%	26.0	FA-190

FREED FILTERS

To MIL-T-27A and MIL-F-18327

Freed Standard Filters are **Hermetically Sealed Miniature and Sub-Miniature** high performance components designed for both production and laboratory applications in the Communications and Electronic industry. In order to achieve attenuation requirements not obtainable with one single filter, one can combine several standard filters of different transmission characteristics. Wide Band Pass characteristics are obtainable by combining low and high Pass Units. The astatic construction of inductive components together with special shielding reduces the hum pick-up of the standard filters.

The standard filters are available in Low Pass, High Pass and Band Pass Filters.

Low Pass Filters: The attenuation characteristics of Low Pass Filters are 6db or less at cut-off frequency, 35db or more at 1.5 cut-off frequency and 40db or more at 2 cut-off frequency.

ILP Interstage Low Pass Filter. Characteristic Impedance 10,000 ohms, in and out.

LLP Line Low Pass Filter. Characteristic Impedance 500 to 600 Ω, in and out.

High Pass Filters: The attenuation characteristics of High Pass Filters are 6db or less at cut-off frequency, 35db and 40db or more at 0.67 and 0.5 cut-off frequency.

IHP Interstage High Pass Filter. Characteristic Impedance 10,000 ohms, in and out.

LHP Line High Pass Filter. Characteristic Impedance 500 to 600 Ω, in and out.

Band Pass Filters: The attenuation characteristics of Band Pass Filters are 2db or less at plus or minus 3% of center frequency 40db or more at 0.5 and 2 center frequency.

IBP Interstage Band Pass Filter. Nominal input impedance—10,000 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 2:1. (Output voltage to source voltage.)

LBP Line Band Pass Filter. Nominal input impedance 500 to 600 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 9:1. (Output voltage to source voltage.)

FREED TRANSFORMER CO., INC.

FREED FILTERS
TO MIL-T-27A AND MIL-F-18327

DF-1 CASE

Height: 2½"
Width: 1 11/16"
Depth: 1 3/16"
Mtg. Cen.: 1¼"x¾"
Studs: 4 6-32x3/8"
Knockout: ⅞" dia.

Catalog No.	Cut-off Frequency c.p.s.
ILP- 100	100
ILP- 200	200
ILP- 300	300
ILP- 500	500
ILP- 750	750
ILP- 1,000	1,000
ILP- 1,500	1,500
ILP- 2,000	2,000
ILP- 2,500	2,500
ILP- 3,000	3,000
ILP- 5,000	5,000
ILP- 7,000	7,000
ILP- 10,000	10,000
ILP- 15,000	15,000
ILP- 20,000	20,000
ILP- 23,000	23,000
ILP- 25,000	25,000
ILP- 32,000	32,000
ILP-130,000	130,000
ILP-150,000	150,000

Special filters in all six types are available for any frequency from 100 to 20,000 cycles

Catalog No.	Cut-off Frequency c.p.s.
LLP- 500	500
LLP- 1,000	1,000
LLP- 1,500	1,500
LLP- 1,600	1,600
LLP- 2,000	2,000
LLP- 2,500	2,500
LLP- 3,000	3,000
LLP-16,000	16,000
LLP-20,000	20,000
LLP-70,000	70,000
LLP-80,000	80,000
IHP- 200	200
IHP- 250	250
IHP- 300	300
IHP- 400	400
IHP- 500	500
IHP- 1,000	1,000
IHP- 2,000	2,000
IHP- 3,000	3,000
IHP-10,000	10,000
IHP-15,000	15,000
LHP- 200	200
LHP- 300	300
LHP- 400	400
LHP- 500	500
LHP- 800	800
LHP- 1,000	1,000
LHP- 2,000	2,000
LHP- 6,000	6,000
LHP-10,000	10,000

Catalog No.	Cut-off Frequency c.p.s.
IBP- 100	100
IBP- 200	200
IBP- 250	250
IBP- 400	400
IBP- 500	500
IBP- 700	700
IBP- 800	800
IBP- 900	900
IBP- 1,000	1,000
IBP- 1,500	1,500
IBP- 2,000	2,000
IBP- 3,000	3,000
IBP- 5,000	5,000
IBP- 7,200	7,200
IBP-10,000	10,000
IBP-12,000	12,000
IBP-15,000	15,000
IBP-30,000	30,000
IBP-57,600	57,600
LBP- 100	100
LBP- 300	300
LBP- 400	400
LBP- 600	600
LBP- 800	800
LBP- 1,000	1,000
LBP- 1,500	1,500
LBP- 2,000	2,000
LBP- 3,000	3,000
LBP- 7,200	7,200
LBP-10,000	10,000
LBP-14,400	14,400
LBP-20,000	20,000
LBP-28,800	28,800

HERMETICALLY SEALED SUB-MINIATURE FILTERS

Low Pass Filters: The attenuation characteristics of Low Pass Filters are 6db or less at cut-off frequency, 30db or more at 1.5 cut-off frequency and 40db or more at 2 cut-off frequency.

ILM Interstage Low Pass Filter. Characteristic impedance 10,000 ohms, in and out.

LLM Line Low Pass Filter. Characteristic Impedance 500 to 600 ohms, in and out.

High Pass Filters: The attenuation characteristics of High Pass Filters are 6db or less at cut-off frequency, 30db and 40db or more at 0.67 and 0.5 cut-off frequency.

IHM Interstage High Pass Filter. Characteristic Impedance 10,000 ohms, in and out.

LHM Line High Pass Filter. Characteristic Impedance 500 to 600 ohms, in and out.

Band Pass Filters: The attenuation characteristics of Band Pass Filters are 2db or less at plus or minus 3% of center frequency 35db or more at 0.5 and 2 center frequency.

IBM Interstage Band Pass Filter. Nominal input impedance—10,000 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 2:1. (Output voltage to source voltage.)

LBM Line Band Pass Filter. Nominal input impedance 500 to 600 ohms. Nominal output impedance 5 megohms or grid of vacuum tube. Effective voltage step-up 5:1. (Output voltage to source voltage.)

Special filters in all six types are available for any frequency from 200 to 20,000 cycles.

Catalog No.	Cut-off Freq. c.p.s.	Case No.
IBM- 400	400	DF-02
IBM- 500	500	DF-02
IBM- 700	700	DF-02
IBM- 800	800	DF-02
IBM- 900	900	DF-02
IBM- 1,000	1,000	DF-02
IBM- 1,500	1,500	DF-02
IBM- 2,000	2,000	DF-01
IBM- 3,000	3,000	DF-01
IBM- 5,000	5,000	DF-01
IBM- 7,200	7,200	DF-01
IBM-10,000	10,000	DF-01
IBM-12,000	12,000	DF-01
IBM-15,000	15,000	DF-01
IBM-30,000	30,000	DF-01
IBM-57,600	57,600	DF-01
IHM- 300	300	DF-01
IHM- 400	400	DF-01
IHM- 500	500	DF-01
IHM- 1,000	1,000	DF-01
IHM- 2,000	2,000	DF-01
IHM- 3,000	3,000	DF-01
IHM-10,000	10,000	DF-01
IHM-15,000	15,000	DF-01

Catalog No.	Cut-off Freq. c.p.s.	Case No.
ILM- 300	300	DF-01
ILM- 500	500	DF-01
ILM- 750	750	DF-01
ILM- 1,000	1,000	DF-01
ILM- 1,500	1,500	DF-01
ILM- 2,000	2,000	DF-01
ILM- 2,500	2,500	DF-01
ILM- 3,000	3,000	DF-01
ILM- 5,000	5,000	DF-01
ILM- 7,000	7,000	DF-01
ILM- 10,000	10,000	DF-01
ILM- 15,000	15,000	DF-01
ILM- 20,000	20,000	DF-01
ILM- 23,000	23,000	DF-01
ILM- 25,000	25,000	DF-01
ILM- 32,000	32,000	DF-01
ILM-130,000	130,000	DF-01
ILM-150,000	150,000	DF-01
LHM- 300	300	DF-03
LHM- 400	400	DF-03
LHM- 500	500	DF-03
LHM- 800	800	DF-03
LHM- 1,000	1,000	DF-02
LHM- 2,000	2,000	DF-02
LHM- 6,000	6,000	DF-02
LHM-10,000	10,000	DF-02

Catalog No.	Cut-off Freq. c.p.s.	Case No.
LBM- 300	300	DF-02
LBM- 400	400	DF-02
LBM- 600	600	DF-02
LBM- 800	800	DF-02
LBM- 1,000	1,000	DF-01
LBM- 1,500	1,500	DF-01
LBM- 2,000	2,000	DF-01
LBM- 3,000	3,000	DF-01
LBM- 7,200	7,200	DF-01
LBM-10,000	10,000	DF-01
LBM-14,400	14,400	DF-01
LBM-20,000	20,000	DF-01
LBM-28,800	28,800	DF-01
LLM- 500	500	DF-03
LLM- 1,000	1,000	DF-03
LLM- 1,500	1,500	DF-02
LLM- 1,600	1,600	DF-02
LLM- 2,000	2,000	DF-02
LLM- 2,500	2,500	DF-02
LLM- 3,000	3,000	DF-02
LLM-16,000	16,000	DF-02
LLM-20,000	20,000	DF-02
LLM-70,000	70,000	DF-02
LLM-80,000	80,000	DF-02

SERIES 1950 NULL "T" FILTERS

The Freed Series 1950 Null T networks consist of two resistance capacitance networks, whose outputs completely cancel each other at the balance frequency. They may be used as rejection networks particularly at low frequencies where LC filters become excessively large and unstable.

Standard models are available for 30, 60 and 120 cycles in a wide range of impedances. Each network will give a minimum of 50 db attenuation at the null frequency.

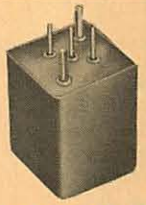
The null frequency is adjusted to a tolerance of ±2%.

All Null T Filters are hermetically sealed.

Prices on request.

Catalog No.	Frequency
NTF- 30	30 cps
NTF- 60	60 cps
NTF-120	120 cps

CASE DIMENSIONS



DF CASE STYLE

DF-01
Height: 1 3/16"
Width: ¾"
Depth.: ¾"
Mtg. Cen.: 5/16" Diag.
Studs: 2 ÷ 4-40

DF-02
Height: 1 3/16"
Width: 1"
Depth.: 1"
Mtg. Cen.: ¾" Diag.
Studs: 2 ÷ 4-40

DF-03
Height: 1¾"
Width: 1"
Depth.: 1"
Mtg. Cen.: ¾"
Studs: 2 ÷ 4-40

See Freed Price Pages 1478 — 1480

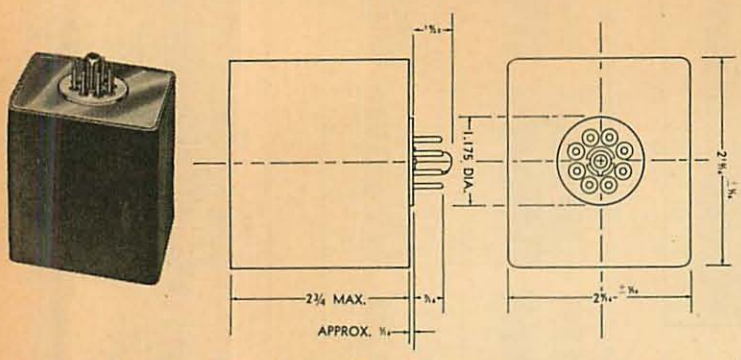
FREED TRANSFORMER CO., INC.

TELEGRAPH TONE CHANNEL FILTERS

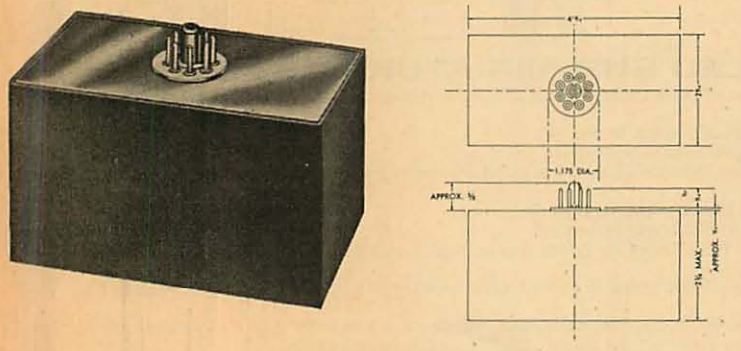
HERMETICALLY SEALED TO MIL-T-27A AND MIL-F-18327 SPECIFICATIONS

Freed Band Pass Filters are extensively used in multiplex frequency shift transmitting and receiving. Stock filters cover all narrow and wide band channels. All units are built with a standard octal socket.

FBT Transmitting Filters are built for a 600 ohm in and out characteristic impedance. Filter configuration allows paralleling of channel outputs. 10db adjacent channel crossover attenuation.



FBR Receiving Filters are designed for a characteristic impedance of 600 ohms in and out. Filter configuration permits paralleling of channel inputs. 20db adjacent channel crossover attenuation.



RECEIVING FILTERS

Catalog No. Case FA-950	Center Frequency (c.p.s.) Insertion Loss 6db	Pass Band (c.p.s.) Attenuation 2db	Stop Band (c.p.s.) Attenuation 33db
FBR-10	425	±42.5	±130
FBR-11	595	±42.5	±130
FBR-12	765	±42.5	±130
FBR-13	935	±42.5	±130
FBR-14	1,105	±42.5	±130
FBR-15	1,275	±42.5	±130
FBR-16	1,445	±42.5	±130
FBR-17	1,615	±42.5	±130
FBR-18	1,785	±42.5	±130
FBR-19	1,955	±42.5	±130
FBR-20	2,125	±42.5	±130
FBR-21	2,295	±42.5	±130
FBR-22	2,465	±42.5	±130
FBR-23	2,635	±42.5	±130
FBR-24	2,805	±42.5	±130
FBR-25	2,975	±42.5	±130
FBR-26	1,955	±85	±260
FBR-27	2,380	±85	±260
FBR-28	2,805	±85	±260
FBR-29	3,230	±85	±260

TRANSMITTING FILTERS

Catalog No. Case FA-955	Center Frequency (c.p.s.) Insertion Loss 5db	Pass Band (c.p.s.) Attenuation 2db	Stop Band (c.p.s.) Attenuation 20db
FBT-10	425	±42.5	±130
FBT-11	595	±42.5	±130
FBT-12	765	±42.5	±130
FBT-13	935	±42.5	±130
FBT-14	1,105	±42.5	±130
FBT-15	1,275	±42.5	±130
FBT-16	1,445	±42.5	±130
FBT-17	1,615	±42.5	±130
FBT-18	1,785	±42.5	±130
FBT-19	1,955	±42.5	±130
FBT-20	2,125	±42.5	±130
FBT-21	2,295	±42.5	±130
FBT-22	2,465	±42.5	±130
FBT-23	2,635	±42.5	±130
FBT-24	2,805	±42.5	±130
FBT-25	2,975	±42.5	±130
FBT-26	1,955	±85	±260
FBT-27	2,380	±85	±260
FBT-28	2,805	±85	±260
FBT-29	3,230	±85	±260

ULTRASONICS

CASE DIMENSIONS

DC-4B CASE
Height: 4¾″
Width: 3⅛″
Length: 3″
Mounting: 4 8-32 Studs
Mtg. Cen.: 2½″x2½″
Cutout: (2) 1⅜″x⅜″

DC-6B CASE
Height: 6″
Width: 5″
Length: 4⅛″
Mounting: 4 10-32 Studs
Mtg. Cen.: 3¾″x3″
Cutout: 3″ Dia.

MA-2 CASE
Height: 4″
Width: 4⅝″
Length: 3⅛″
Mounting: 4 10-32 Studs
Mtg. Cen.: 2½″x3¾″
Cutout: (2) 2¾″x¾″

OL-112-1 CASE
Height: 6″
Width: 5⅞″
Length: 4¾″
Mounting: 4 ¼-20 Studs
Mtg. Cen.: 4¾″x3⅝″
Cutout: 3″ dia.

EA CASE
Height: 2¹¹⁄₁₆
Width: 1⅞″
Length: 1¾″
Mounting: 4 6-32 Studs
Mtg. Cen.: 1⅜″x1¼″
Cutout: 1¾″

DM-03 CASE
Height: 2½″
Width: 1½″
Length: 1½″
Mounting: 4 6-32 Studs
Mtg. Cen.: 1⅛″x1⅛″
Cutout: 1¼″ Dia.

New developments and applications of ultrasonics for industrial cleaning, soldering, welding, and mixing have created a demand for generators and components specifically designed for ultrasonic applications.

Using the latest developments in the field of special magnetic materials the FREED ultrasonic transformers are designed for greatest efficiency and maximum reliability. They feature small size excellent performance and long life under continuous duty operation.

Transformers with an extended frequency range (frequencies up to 2 MC) can be supplied upon request.

ULTRASONIC DRIVER AND INPUT TRANSFORMERS
Frequency Response: ±1 DB 10 KC to 60 KC.

Catalog No.	Application	Primary Impedance Ohms	Ratio	Maximum Power Watts	Maximum Primary D.C. per Side Ma.	Case Size
ULI-20	Transducer to PP 811A	1, 2, 4	1:17.3	5		DM-03
ULD-20	PP 6CM6 to PP 811A	10,000	4.4:1	5	50	DM-03
ULD-50	PP 5881 to PP 8000	7,200	1.7:1	25	90	EA

ULTRASONIC OUTPUT TRANSFORMERS
Frequency response: ±1 DB 20 KC to 60 KC.

Catalog No.	Application	Impedance in Ohms Primary	Impedance in Ohms Secondary	Maximum Power Watts	Maximum Primary D.C. per Side Ma.	Case Size
ULO-10	PP 6083 to transducer	7,600	1/4	100	120	DC-4B
ULO-11	Same	7,600	2/8	100	120	DC-4B
ULO-12	Same	7,600	4/16	100	120	DC-4B
ULO-13	Same	7,600	7.5/30	100	120	DC-4B
ULO-30	PP 811A to transducer	12,400	1/4	300	170	DC-4B
ULO-31	Same	12,400	2/8	300	170	DC-4B
ULO-32	Same	12,400	4/16	300	170	DC-4B
ULO-33	Same	12,400	7.5/30	300	170	DC-4B
ULO-34	Same	12,400	25	300	170	DC-4B
ULO-35	Same	12,400	125/500	300	170	DC-4B
ULO-36	Same	12,400	250/1000	300	170	DC-4B
ULO-37	Same	12,400	75/300	300	170	DC-4B
ULO-52	PP 8000 to transducer	10,800	4/16	500	230	MA-2
ULO-53	Same	10,800	7.5/30	500	230	MA-2
ULO-54	Same	10,800	25/100	500	230	MA-2
ULO-55	Same	10,800	125/500	500	320	MA-2
ULO-56	Same	10,800	250/1000	500	230	MA-2
ULO-101	PP. Par. 8000 to transducer	5,400	25/100	1000	430	DC-6B
ULO-104	Same	5,400	75/300	1000	430	DC-6B
ULO-110	PP 4-250A to transducer	10,900	18.8/75/300	800	250	OL-112-1

FREED TRANSFORMER CO., INC.

COMMERCIAL GRADE COMPONENTS

These components are designed to meet the demand for low-cost replacement parts for commercial electronic equipment.

The best commercially available materials have been utilized in the design of these units, to insure reliability and excellent performance characteristics. Vacuum impregnation with a non-hygroscopic varnish to prevent penetration of humidity are employed to give these units long life and trouble-free performance.

230-115 V, 50-60 C.P.S. Stepdown Transformers rated from 25 V A up to 5,000 V A Rating and line booster transformers are included in this series.

All units, with only a few exceptions, are uncased or of shell-type construction.

Isolation transformers and Stepdown transformers are equipped with line cord and receptacle.

CASE DIMENSIONS

Case No.	Height	Width	Depth	Mtg. Centers	Mtg. Studs
HS300	2⅝	3	2½	2½x2	(4) 3/16x3/8
HS303	2⅞	3	2½	2½x2	(4) 3/16x3/8
HS306	3¼	3	2½	2½x2	(4) 3/16x3/8
HS307	3⅜	3	2½	2½x2	(4) 3/16x3/8
HS503	3½	3¾	3⅛	3⅛x2½	(4) 3/16x3/8
HS505	3¾	3¾	3⅛	3⅛x2½	(4) 3/16x3/8
HS603	3¾	4½	3¾	3¾x3	(4) 3/16x3/8
HS605	4	4½	3¾	3¾x3	(4) 3/16x3/8
HS606	4⅛	4½	3¾	3¾x3	(4) 3/16x3/8
HS610	4⅜	4½	3¾	3¾x3	(4) 3/16x3/8
HS612	4⅞	4½	3¾	3¾x3	(4) 3/16x3/8
HS708	5⅛	5¼	4⅜	4⅜x3½	(4) 9/32x21/32
HS709	6	5¼	4⅜	4⅜x3½	(4) 9/32x21/32

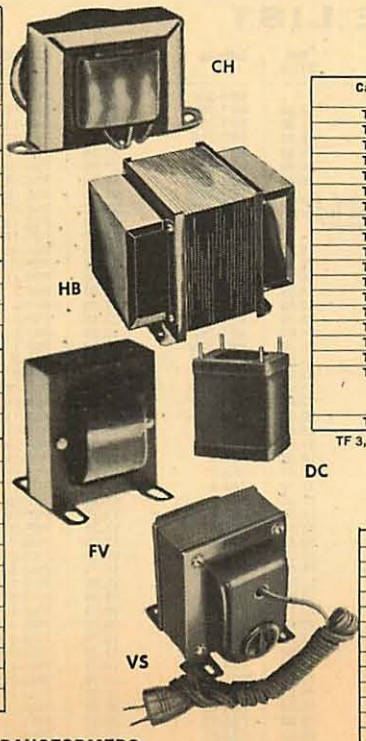
Case No.	Height	Width	Depth	Mtg. Centers	Mtg. Holes
VS300	3⅝	2⅝	2¾	2x1 11/16	(4) 3/16x3/8
VS303	3⅝	2⅝	3	2x1 15/16	(4) 3/16x3/8
VS304	3 29/32	4¼	3¼	2½x3	(4) 3/16x3/8
VS306	3⅝	2⅝	3⅜	2x2½	(4) 3/16x3/8
VS307	3⅝	2⅝	3½	2x2⅞	(4) 3/16x3/8
VS503	3 29/32	3¼	3⅜	2½x2 5/16	(4) 3/16x3/8
VS505	3 29/32	3¼	3⅞	2½x2⅝	(4) 3/16x3/8
VS506	3 29/32	3¼	4¼	2¼x3	3/16x3/8
VS508	3⅝	2⅝	3½	2x2½	(4) 3/16x9/16
VS603	4 21/32	3⅞	3⅞	3x2 11/16	(4) 3/16x3/8
VS605	4 21/32	3⅞	4⅛	3x2 15/16	(4) 3/16x3/8
VS606	4 21/32	3⅞	4¼	3x3½	(4) 3/16x3/8
VS610	4 21/32	3⅞	4¾	3x3⅜	(4) 3/16x3/8
VS612	4 21/32	3⅞	5	3x3 15/16	(4) 3/16x3/8
VS708	5 7/16	4 9/16	5¾	3½x4	(4) 9/32x21/32
VS709	5 7/16	4 9/16	5⅞	3½x4 1/16	(4) 9/32x21/32

POWER TRANSFORMERS

All primaries designed for 115-volt, 50-60 cycle operation.

Catalog No.	Py Va	Hi Volt	Choke Input D.C.V.	Choke Input D.C.Ma.	Cond. Input D.C.V.	Cond. Input D.C.Ma.	Bias Tap	Rectifier	Fil. No.1	Fil. No. 2	Fil. No. 3	Case No.
RGP 1	45	500V CT			270	40		6X4,5Y3	5/6.3V @ 2A	6.3V @ 2A		VS300
RGP 2	45	500V CT			270	40		6X4,5Y3	5/6.3V @ 2A	6.3V @ 2A		HS300
RGP 3	57	600V CT			330	50		6X4,5Y3	5/6.3V @ 2A	6.3V @ 2.5A		VS303
RGP 4	57	600V CT			330	50		6X4,5Y3	5/6.3V @ 2A	6.3V @ 2.5A		HS303
RGP 5	64	650V CT			370	50		6X4,5Y3	5/6.3V @ 2A	6.3V @ 3A		VS303
RGP 6	64	650V CT			370	50		6X4,5Y3	5/6.3V @ 2A	6.3V @ 3A		HS303
RGP 7	73	600V CT			320	70		6X4,5Y3	5/6.3V @ 2A	6.3V @ 3A		VS306
RGP 8	73	600V CT			320	70		6X4,5Y3	5/6.3V @ 2A	6.3V @ 3A		HS306
RGP 9	110	650V CT	225	140	330	100		5Y3,5U4	5V @ 3A	6.3V @ 5A		VS503
RGP 10	110	650V CT	225	140	330	100		5Y3,5U4	5V @ 3A	6.3V @ 5A		HS503
RGP 11	76	700V CT	260	100	385	70		5Y3	5V @ 2A	6.3V @ 2.5A		VS307
RGP 12	76	700V CT	260	100	385	70		5Y3	5V @ 2A	6.3V @ 2.5A		HS307
RGP 13	108	700V CT	250	125	370	90		5Y3,5U4	5V @ 3A	6.3V @ 5A		VS503
RGP 14	108	700V CT	250	125	370	90		5Y3,5U4	5V @ 3A	6.3V @ 5A		HS503
RGP 15	127	700V CT	260	170	350	120		5U4	5V @ 3A	6.3V @ 5A		VS505
RGP 16	127	700V CT	260	170	350	120		5U4	5V @ 3A	6.3V @ 5A		HS505
RGP 17	146	700V CT	260	210	350	150		5U4	5V @ 3A	6.3V @ 5A	6.3V @ 1A	VS603
RGP 18	146	700V CT	260	210	350	150		5U4	5V @ 3A	6.3V @ 5A	6.3V @ 1A	HS603
RGP 19	207	800V CT	295	280	400	200		5U4,2-5Y3	5V @ 4A	6.3V @ 6A		VS606
RGP 20	207	800V CT	295	280	400	200		5U4,2-5Y3	5V @ 4A	6.3V @ 6A		HS606
RGP 21	225	800V CT	295	280	400	200	80	5U4,2-5Y3	5V @ 4A	6.3V @ 6A	5/6.3V @ 2A	VS606
RGP 22	225	800V CT	295	280	400	200	80	5U4,2-5Y3	5V @ 4A	6.3V @ 6A	5/6.3V @ 2A	HS606
RGP 23	268	840V CT	330	350	450	250	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	VS612
RGP 24	268	840V CT	330	350	450	250	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	HS612
RGP 25	320	900V CT	340	420	490	300	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	VS708
RGP 26	320	900V CT	340	420	490	300	80	2-5U4	5V @ 6A	6.3V @ 6A	5/6.3V @ 2A	HS708
RGP 27	127	900V CT	360	150				5U4	5V @ 3A	6.3V @ 5A		VS603
RGP 28	127	900V CT	360	150				5U4	5V @ 3A	6.3V @ 5A		HS603
RGP 29	150	900V CT	350	200				5U4	5V @ 3A	6.3V @ 5A		VS605
RGP 30	150	900V CT	350	200				5U4	5V @ 3A	6.3V @ 5A		HS605
RGP 31	203	1100V CT	400	250				5R4GY	5V @ 3A	6.3V @ 5A		VS610
RGP 32	203	1100V CT	400	250				5R4GY	5V @ 3A	6.3V @ 5A		HS610
RGP 33	248	1100V CT	420	300				2-5R4GY	5V @ 4A	6.3V @ 7A		VS612
RGP 34	248	1100V CT	420	300				2-5R4GY	5V @ 4A	6.3V @ 7A		HS612
RGP 35	310	1280V CT	480	350				2-5R4GY	5V @ 4A	6.3V @ 7A		VS709
RGP 36	310	1280V CT	480	350				2-5R4GY	5V @ 4A	6.3V @ 7A		HS709

Case No.	Height	Width	Depth	Mtg. Centers	Mtg. Studs
DC2B	3½	2⅝	2¼	2x1¾	(4) 8-32
DC4A	3¾	3⅛	3	2½x2½	(4) 8-32
DC5C	4⅞	4⅛	3½	3¼x2⅝	(4) 10-32
DC6A	4⅞	5	4⅛	3¾x3	(4) 10-32
CH50	1 11/16	2 13/16	1¾	2⅜	(2) 3/16
CH60	2	3¼	1¾	2 13/16	(2) 3/16
CH62	2	3¼	2⅛	2 13/16	(2) 3/16
CH70	2⅜	3 11/16	2¼	3⅛	(2) 3/16
CH80	2⅜	4	2⅝	3 9/16	(2) 3/16
FV10	3 1/16	2½	2⅜	2x2	(4) 13/64x21/64
FV12	3 1/16	2½	2 11/16	2x2½	(4) 13/64x21/64
FV22	3⅞	2 13/16	2⅞	2¼x2¼	(4) 3/16x3/8
FV30	4 1/32	3⅛	3	2½x2¼	(4) 13/64x21/64
HB718	6¼	6½	8½	4¾x4½	(4) 9/32x21/32
HB728	6¼	6½	9¾	4¾x5¾	(4) 9/32x21/32
HB828	6⅜	7⅝	9⅞	5⅝x5¾	(4) 9/32x21/32
HB920	6⅜	7⅞	10¼	6½x7 5/16	(4) 9/32x21/32
VS300	3 5/32	2⅝	3	2x2	(4) 3/16x3/8
VS401	3⅝	2 13/16	3¼	2¼x1 13/16	(4) 3/16x3/8
VS501	3 29/32	3¼	3⅜	2½x2 1/16	(4) 3/16x3/8
VS503	3 29/32	3¼	3⅝	2½x2 5/16	(4) 3/16x3/8
VS601	4 21/32	3⅞	3⅜	3x2 7/16	(4) 3/16x3/8
VS604	4 21/32	3⅞	4	3x2 7/8	(4) 3/16x3/8
VS611	4 21/32	3⅞	4⅞	3x3 1/16	(4) 3/16x3/8
VS612	4 21/32	3⅞	5	3x3 15/16	(4) 3/16x3/8
VS700	5 7/16	3⅞	5	3½x3¼	(4) 3/16x3/8
VS706	5 7/16	4 9/16	5½	3½x3¾	(4) 3/16x3/8
VS714	5 7/16	4 9/16	6½	3½x4¾	(4) 3/16x3/8
VS718	5 7/16	4 9/16	7	3½x5¼	(4) 9/32x21/32
VS728	5 7/16	4 9/16	8¼	3½x6½	(4) 3/16x3/8



FILAMENT TRANSFORMERS

All primaries are for 115V, 50/60 c.p.s.

Catalog No.	Secondary Voltage	Secondary Current Amps	Secondary Test Voltage RMS	Case Size
TF 1	2.5 (C.T.)	7.5	1500	CH60
TF 2	2.5 (C.T.)	10	1500	CH70
TF 3	2.5 (C.T.)	5	7500	DC2B
TF 4	2.5 (C.T.)	10	7500	DC4A
TF 5	5.0 (C.T.)	4	1500	CH60
TF 6	5.0 (C.T.)	6	1500	CH70
TF 7	5.0 (C.T.)	10	1500	CH80
TF 8	5.0 (C.T.)	10	1500	FV10
TF 9	5.0 (C.T.)	20	2500	FV30
TF 10	5.0 (C.T.)	20	10,000	DC6A
TF 11	6.3 (C.T.)	1.35	1500	CH50
TF 12	6.3 (C.T.)	3	1500	CH60
TF 13	6.3 (C.T.)	5	1500	CH70
TF 14	6.3 (C.T.)	7	1500	FV12
TF 15	6.3 (C.T.)	10	1500	FV22
TF 16	10 (C.T.)	5	2500	CH80
TF 17	10 (C.T.)	5	2500	FV10
TF 18	10 (C.T.) or 11 (C.T.) (tapped primary)	12 or 11	7500	DC-5C
TF 19	12.6 (C.T.)	2	1500	CH62

TF 3, 4, 10 & 18 supplied with terminals. All others with leads.

AUTO TRANSFORMERS

To be used as step-down transformer. Equipped with standard receptacle and line cord.

Catalog No.	Transformation	VA Rating	Weight (lbs.)	Case Size
SDT 1*	230/115 V. 50/60 c.p.s.	25	1	CH-60
SDT 2*	230/115 V. 50/60 c.p.s.	50	1¼	CH-62
SDT 3	230/115 V. 50/60 c.p.s.	50	2½	VS-300
SDT 4	230/115 V. 50/60 c.p.s.	100	3	VS-401
SDT 5	230/115 V. 50/60 c.p.s.	200	5	VS-501
SDT 6	230/115 V. 50/60 c.p.s.	300	6½	VS-601
SDT 7	230/115 V. 50/60 c.p.s.	400	8	VS-604
SDT 8	230/115 V. 50/60 c.p.s.	500	11	VS-611
SDT 9	230/115 V. 50/60 c.p.s.	750	15	VS-706
SDT 10	230/115 V. 50/60 c.p.s.	1000	23	VS-718
SDT 11	230/115 V. 50/60 c.p.s.	1500	29½	VS-728
SDT 12*	230/115 V. 50/60 c.p.s.	2000	37	HB-718
SDT 13*	230/115 V. 50/60 c.p.s.	2500	47	HB-728
SDT 14*	230/115 V. 50/60 c.p.s.	3000	58	HB-828
SDT 15*	230/115 V. 50/60 c.p.s.	5000	72	HB-920

*Supplied with leads without line cord and receptacle.

ISOLATION TRANSFORMERS

Electrostatic shield between primary and secondary. Equipped with standard receptacle and line cord.

Catalog Number	Primary Voltage 50/60 c.p.s.	Secondary Voltage	VA Rating	Case Size
IT 1	115	115	50	VS-401
IT 2	115	115	100	VS-503
IT 3	115	115	300	VS-700
IT 4	115	115	500	VS-714
IT 5*	220/440	110/220	250	VS-612
IT 6*	220/440	110/220	500	VS-714

*Supplied with leads without line cords and receptacle.

LINE BOOSTER TRANSFORMERS

Operates from 90 to 110 volts input to provide 10% step-up.

Catalog Number	Primary Voltage	Secondary Voltage	VA Rating	Case Size
LB-1	90-110	1.1 x input	350	VS-300
LB-2	90-110	1.1 x input	2000	VS-611

See Freed Price Pages 1478 — 1480

FREED TRANSFORMER CO., INC.

COMMERCIAL GRADE COMPONENTS

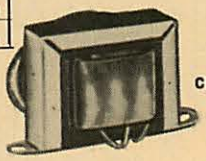
AUDIO TRANSFORMERS

Catalog No.	Application	Impedance Level Ohms Primary	Impedance Level Ohms Secondary	Max. Power Level DBM or Power in Watts	Ratio	Max. Pri. D.C. per Side Ma.	D.C. Unbalance Ma.	Freq. Response C.P.S.	Case No.
RGA 1	Input; multiple line or double button mike to single or push-pull grids.	500 CT 200 CT	100,000 CT	+20	1:14.1	50	5	±2DB 200-5000	CH-40
RGA 2	Input; single button mike to single or push-pull grids.	100	100,000 CT	+20	1:31.6	50		±2DB 200-5000	CH-40
RGA 3	Input; voice coil to grid. Intercom	3.2	100,000	+20	1:179			±2DB 200-5000	CH-40
RGA 4	Mixing and matching line to line	600 CT 500 CT 200 CT 150/125/50	600 CT 500 CT 200 CT 150/125/50	+20	1:1			±2DB 100-5000	CH-40
RGA 5	Interstage; single triode plate to single or P.P. grids.	10,000	90,000 CT	+30	1:3	10		±2DB 200-5000	CH-40
RGA 6	Output; single plate to line or mixer.	10,000	600 CT 500 CT 200 CT 150/125/50	+30	4.8:1	10		±2DB 200-5000	CH-40
RGA 7	Output; Push-pull plate to line or mixer.	20,000 CT	600 CT 500 CT 200 CT 150/125/50	+30	6.32:1	10	1	±2DB 200-5000	CH-40
RGA 8	Output; plate to V.C. 6AL6, 6L6, 6Y6, 25B6, 25C6, 35A5, 35B5, 35C5, 50B5, 50C5, 50C6, 50L6, 117N7.	2500	3.2	5W		70		±3DB 200-10000	CH-40
RGA 9	Output; plate to V.C. 6V6, 6AQ5, 6AS5, 7C5.	5000	3.2	5W		50		±3DB 200-10000	CH-40
RGA 10	Output; plate to V.C. 6AR5, 6K6, 6V6, 7B5, 14A5, 3S4, 3U4, 3Q4, 3Q5, 3C5, 3A4.	10,000 or 7500	3.2	5W		30		±3DB 200-10000	CH-40
RGA 11	Output; P.P. plates to V.C. P.P. 6V6, PP6K6.	12,000 CT or 8000 CT	3.2	15W		50	5	±2DB 200-8000	CH-60
RGA-12	Output: TP to V.C. 6V6, 6AQ5, 7C5, C1AB.	10,000 CT	3.2	10W	5.6:1	40	4	±3DB 200-10000	CH-60

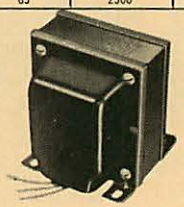
COMMERCIAL GRADE CHOKES

Catalog No.	Inductance in Henries	Rated Current D.C. Ma.	D.C. Resistance	Dielectric Test Voltage	Case Number
RGC 17	40	15	2000	1000	CH-40
RGC 1	4	40	200	1000	CH-40
RGC 2	9	40	400	1000	CH-40
RGC 3	6	50	400	1000	CH-40
RGC 18	20	50	425	1500	CH-60
RGC 4	10	55	400	1500	CH-50
RGC 19	3	75	200	1500	CH-40
RGC 5	10	75	250	1500	CH-60
RGC 6	10	75	250	1500	VS-100
RGC 7	6	100	150	1500	CH-60
RGC 8	6	100	150	1500	VS-100
RGC 9	3.5	150	100	1500	CH-60
RGC 10	3.5	150	100	1500	VS-100
RGC 20	12	160	180	2500	VS-306
RGC 11	2	200	60	1500	CH-60
RGC 12	2	200	60	1500	VS-100
RGC 13	3.7	200	65	1500	CH-80
RGC 21	7	200	100	2500	VS-303
RGC 14	3.7	200	65	1500	VS-300
RGC 15	2.8	300	65	1500	CH-80
RGC 16	2.8	300	65	1500	VS-300
RGC 22	5	300	65	2500	VS-308

CASE DIMENSIONS



CH CASE



VS CASE

CH-40 CASE
Height: 1 7/16"
Width: 2 3/8"
Depth: 1 3/16"
Mtg. Cen.: 2"

CH-50 CASE
Height: 1 11/16"
Width: 2 13/16"
Depth: 1 3/4"
Mtg. Cen.: 2 3/8"

CH-60 CASE
Height: 2"
Width: 3 1/4"
Depth: 1 3/4"
Mtg. Cen.: 2 13/16"

CH-80 CASE
Height: 2 5/8"
Width: 4"
Depth: 2 5/8"
Mtg. Cen.: 3 5/16"

VS-100 CASE
Height: 2 11/32"
Width: 1 7/8"
Depth: 2 1/4"
Mtg. Cen.: 1 1/2"x1 1/16"

VS-300 CASE
Height: 3 11/32"
Width: 2 5/8"
Depth: 2 1/4"
Mtg. Cen.: 2"x1 11/16"

VS-303 CASE
Height: 3 11/32"
Width: 2 5/8"
Depth: 3"
Mtg. Cen.: 2x1 15/16"
Mtg. Hole: (4) 3/16x3/8"

VS-306 CASE
Height: 3 11/32"
Width: 2 5/8"
Depth: 3 3/8"
Mtg. Cen.: 2x2 5/16"
Mtg. Hole: (4) 3/16x3/8"

VS-308 CASE
Height: 3 33/64"
Width: 2 27/32"
Depth: 3 3/4"
Mtg. Cen.: 2"x2 5/16"

PRICE LIST

Catalog No.	Net Price
EPT-1	7.50
EPT-2	7.50
EPT-3	7.50
EPT-4	7.50
EPT-5	7.50
EPT-6	7.50
EPT-7	7.50
EPT-8	9.50
EPT-9	9.50
EPT-11	7.50
EPT-12	7.50
EPT-13	9.50
EPT-14	9.50
EPT-15	12.50
EPT-16	12.50
EPT-17	11.50
EPT-18	11.50
EPT-19	11.50
Note—Molded Units $1.00 additional.	
IT-1	7.25
IT-2	10.55
IT-3	26.40
IT-4	31.95
IT-5	28.40
IT-6	34.95
KA-10	16.50
KP-11	9.05
KC-10	4.30
KC-11	1.45
LB-1	6.60
LB-2	19.20
MAC-5-2-F1	42.50
MAC-5-1-F2	42.50
MAC-5-3F2	42.50
MAC-5-4-F	42.50
MAC-12-3-60	29.95
MAC-12-10-1	36.50
MAC-12-10-2	44.20
MAC-12-20-1	46.50
MAC-12-20-2	57.00
MAC-12-30-1	63.70
MAC-12-30-2	77.50
MAF-4	78.00
MAF-5	80.00
MAF-6	180.00
MAF-7	180.00
MAO-1	70.00
MAO-2	102.00
MAO-3	110.00
MAO-4	155.00
MAO-5	175.00
MAP-1	90.00
MAP-2	150.00
MAP-3	225.00
MAP-301	175.00
MAP-4	280.00
MAP-7	105.00
MAP-8	133.00
MAP-11	95.00

Catalog No.	Net Price
MAS-1	55.00
MAS-2	37.00
MAS-3	65.00
MAS-4	73.00
MAS-5	33.00
MAS-6	50.00
MAS-7	60.00
MAS-8	24.00
MAS-9	87.50
MAS-101	62.50
MAT-1-1	148.50
MCV-4-5LC	14.00
MCV-4-25LC	20.00
MCV-4-75LC	30.00
MCV-4-125LC	38.00
MCV-4-175LC	45.00
MCV-4-250LC	54.00
MCV-4-375LC	69.00
MCV-4-500LC	85.00
MCV-4-750LC	115.00
MCV-4-1000LC	143.00
MCV-4-5-4FC	14.00
MCV-4-25-4FC	20.00
MCV-4-75-4FC	30.00
MCV-4-125-4FC	38.00
MCV-4-5FC	15.00
MCV-4-25FC	21.00
MCV-4-75FC	31.00
MCV-4-125FC	39.00
MCV-4-5LM	22.00
MCV-4-25LM	28.00
MCV-4-75LM	39.00
MCV-4-125LM	48.00
MCV-4-175LM	55.00
MCV-4-250LM	66.00
MCV-4-375LM	81.00
MCV-4-500LM	100.00
MCV-4-750LM	131.00
MCV-4-1000LM	160.00
MCV-4-5-4FM	22.00
MCV-4-25-4FM	28.00
MCV-4-75-4FM	39.00
MCV-4-125-4FM	48.00
MCV-4-5FM	23.00
MCV-4-25FM	29.00
MCV-4-75FM	40.00
MCV-4-125FM	49.00
MCV-6-5LC	11.00
MCV-6-25LC	17.00
MCV-6-75LC	27.00
MCV-6-125LC	34.00
MCV-6-175LC	41.00
MCV-6-250LC	50.00
MCV-6-375LC	64.00
MCV-6-500LC	76.00
MCV-6-750LC	104.00
MCV-6-1000LC	128.00
MCV-6-54FC	11.00
MCV-6-25-4FC	17.00
MCV-6-75-4FC	27.00
MCV-6-125-4FC	34.00

Catalog No.	Net Price
MCV-6-5FC	12.00
MCV-6-25FC	18.00
MCV-6-75FC	28.00
MCV-6-125FC	35.00
MCV-6-5LM	20.00
MCV-6-25LM	26.00
MCV-6-75LM	37.00
MCV-6-125LM	45.00
MCV-6-175LM	53.00
MCV-6-250LM	62.00
MCV-6-375LM	76.00
MCV-6-500LM	90.00
MCV-6-750LM	123.00
MCV-6-1000LM	150.00
MCV-6-54FM	20.00
MCV-6-25-4FM	26.00
MCV-6-75-4FM	37.00
MCV-6-125-4FM	45.00
MCV-6-5FM	21.00
MCV-6-25FM	27.00
MCV-6-75FM	38.00
MCV-6-125FM	46.00
MGA-1	10.15
MGA-2	10.15
MGA-3	10.65
MGA-4	10.65
MGA-5	9.90
MGA-6	9.90
MGA-7	9.90
MGA-8	10.15
MGA-9	10.15
MGC-1	7.50
MGC-2	6.15
MGC-3	6.50
MGC-4	7.25
MGC-5	7.50
MGC-6	6.15
MGC-7	6.50
MGC-8	7.00
MGC-9	6.50
MGC-10	7.00
MGC-11	8.75
MGC-12	6.50
MGC-13	7.00
MGC-14	8.75
MGC-15	9.50
MGC-16	7.00
MGC-17	8.75
MGC-18	10.00
MGC-19	12.50
MGC-20	8.75
MGC-21	*
MGC-22	9.50
MGC-23	*
MGC-24	18.00
MGC-25	*
MGC-26	16.00
MGC-27	*
MGC-28	16.00
MGC-29	*
MGC-30	*

Catalog No.	Net Price
MGC-31	*
MGC-32	6.80
MGC-33	6.80
MGC-34	6.80
MGC-35	6.80
MGC-36	6.80
MGC-37	6.80
*Not stocked, available on short delivery. Prices on request.	
MGF-1	9.30
MGF-2	12.90
MGF-3	10.50
MGF-4	14.25
MGF-5	10.50
MGF-6	12.00
MGF-7	14.85
MGF-8	20.70
MGF-9	16.50
MGF-10	21.00
MGP-1	18.60
MGP-2	17.40
MGP-3	20.40
MGP-4	24.00
MGP-5	27.60
MGP-6	18.60
MGP-7	23.40
MGP-8	32.70
MPT-1	17.50
MPT-2	15.00
MPT-3	22.50
MPT-4	20.00
MPT-5	17.50
MPT-6	15.00
MPT-7	17.50
MPT-8	15.00
MPT-9	22.50
MPT-10	20.00
MPT-11	17.50
MPT-12	27.50
MPT-13C	11.60
MPT-13M	15.40
MPT-13H	19.20
MPT-14C	16.90
MPT-14M	20.90
MPT-14H	26.30
MPT-15C	15.60
MPT-15M	19.50
MPT-15H	26.50
MPT-16C	18.90
MPT-16M	22.90
MPT-16H	28.10
MPT-17C	19.50
MPT-17M	22.60
MPT-17H	26.60
MPT-18C	12.80
MPT-18M	16.60
MPT-19C	19.50
MPT-19M	22.60
MPT-19H	22.60

Catalog No.	Net Price
MPT-20C	14.80
MPT-20M	18.60
MPT-20H	24.00
MPT-21C	20.80
MPT-21M	23.50
MPT-21H	24.00
MPT-22C	19.50
MPT-22M	22.60
MPT-22H	26.60
MPT-23C	20.80
MPT-23M	23.50
MPT-23H	26.60
MPT-24C	13.70
MPT-24M	16.80
MPT-25C	14.00
MPT-25M	18.10
MPT-25H	23.10
MPT-26C	20.80
MPT-26M	22.00
MPT-26H	30.00
MPT-27C	20.30
MPT-27M	22.00
MPT-27H	30.00
PGA-1	15.00
PGA-2	15.00
PGA-3	15.00
PGA-4	12.75
PGA-5	13.50
PGA-6	16.50
PGA-7	11.25
PGA-8	11.25
PGA-9	11.25
PGA-10	12.00
PGA-11	12.75
PGA-12	12.75
PGA-13	15.00
PGA-14	15.00
PGA-15	18.75
PGA-16	18.75
PGA-17	18.75
PGA-18	17.25
PGA-19	18.75
PGA-20	18.75
PGA-21	18.75
PGA-22	20.55
PGA-23	20.55
PGA-24	18.75
PGA-25	33.00
PGA-26	18.75
PGA-27	18.75
PGA-28	18.75
PGA-29	18.75
PGA-30	33.00
PGC-1	5.25
PGC-2	5.25
PGC-3	5.25
PGC-4	5.85
PGC-5	5.85
PGC-6	5.85
PGC-7	6.36
PGC-8	7.20

Catalog No.	Net Price
PGC-9	7.20
PGC-10	7.50
PGC-11	10.20
PGC-12	10.20
PGC-13	11.55
PGC-14	7.25
PGC-15	7.85
PGC-16	7.60
PGC-17	7.20
PGC-18	10.20
PGC-19	10.20
PGC-20	11.55
PGP-1	13.50
PGP-2	15.00
PGP-3	8.01
PGP-4	8.40
PGP-5	8.40
PGP-6	9.00
PGP-7	10.50
PGP-8	9.00
PGP-9	10.50
PGP-10	10.95
PGP-11	13.85
PGP-12	16.50
PGP-13	18.15
PGP-14	21.80
PGP-15	25.35
PGP-16	12.60
PGP-17	13.50
PGP-18	18.15
PGP-19	21.80
PGP-20	27.00
PMA-1	9.90
PMA-2	8.10
PMA-3	11.40
PMA-4	8.10
PMA-5	8.10
PMA-6	9.90
PMA-7	9.90
PMA-8	9.90
PMA-9	9.90
PMA-10	9.30
PMA-11	7.20
PMA-12	9.90
PMA-13	9.00
PMA-14	10.10
PMA-15	9.90
PQC-1	7.50
PQC-2	7.50
PQC-3	7.50
PQC-4	7.50
PQC-5	7.50
PQC-6	7.50
PQC-7	7.50
PQC-8	7.50
PQC-9	7.50
QGA-1	18.60
QGA-2	23.10
QGA-3	16.50
QGA-4	23.10
QGA-5	21.00

Catalog No.	Net Price
QGA-6	24.30
QGA-7	16.50
QGA-8	23.10
QGA-9	23.10
QGA-10	26.40
QGA-11	19.80
QGA-12	19.80
QGA-13	16.50
QGA-14	17.10
QGA-15	21.00
QGA-16	17.10
QGA-17	17.10
QGA-18	18.30
QGA-19	17.10
QGA-20	21.90
QGA-21	19.80
QGA-22	33.00
QGA-23	23.10
QGA-24	23.10
QGA-25	23.10
QGA-26	23.10
QGA-27	23.10
QGA-28	23.10
QGA-29	23.10
QGA-30	23.10
QGA-31	29.70
QGA-32	29.70
QGA-33	29.70
QGA-34	29.70
QGA-35	32.70
QGA-36	32.70
QGA-37	19.80
QGA-38	32.70
QGA-39	23.10
QGA-40	23.10
QGA-41	32.70
QGA-42	32.70
QGC-1	22.50
QGC-2	22.50
QGC-3	22.50
QGC-4	22.50
QGC-5	22.50
QGC-6	22.50
QGC-7	22.50
QGC-8	15.00
QGC-9	15.00
QGC-10	15.00
QGC-11	15.00
QGC-12	15.00
QGC-13	15.00
QGC-14	13.50
QGC-15	13.50
QGC-16	13.50
QGC-17	13.50
QGC-18	13.50
QGC-19	11.50
QGC-20	11.50
QGC-21	11.50
QGC-22	11.50
QGC-23	11.50
QGC-24	11.50

See Freed Price Pages 1479 and 1480

FREED TRANSFORMER CO., INC.

PRICE LIST

Catalog No.	Net Price
QGC-25	10.50
QGC-26	10.50
QGC-27	10.50
QGC-28	10.50
QGC-29	10.50
QGC-30	10.50
QGC-31	10.50
QGC-32	10.50
QGC-33	10.50
QGC-34	10.50
QGC-35	10.50
QGC-36	10.50
QGC-37	10.50
QGC-38	10.80
QGC-39	10.50
QGC-40	10.50
QGC-41	10.50
QGC-42	10.50
RGA-1	3.60
RGA-2	2.90
RGA-3	2.90
RGA-4	3.60
RGA-5	2.90
RGA-6	3.45
RGA-7	3.60
RGA-8	1.65
RGA-9	1.65
RGA-10	1.98
RGA-11	2.90
RGA-12	3.60
RGC-1	1.47
RGC-2	1.47
RGC-3	1.47
RGC-4	1.65
RGC-5	1.98
RGC-6	2.97
RGC-7	1.98
RGC-8	2.97
RGC-9	1.98
RGC-10	2.97
RGC-11	1.98
RGC-12	2.97
RGC-13	3.15
RGC-14	4.50
RGC-15	3.15
RGC-16	4.50
RGC-17	1.80
RGC-18	2.25
RGC-19	1.47
RGC-20	5.10
RGC-21	5.10
RGC-22	72.60
RGP-1	5.76
RGP-2	5.76
RGP-3	6.12
RGP-4	6.12
RGP-5	6.12
RGP-6	6.12
RGP-7	6.75
RGP-8	6.75
RGP-9	8.25
RGP-10	8.25
RGP-11	6.75
RGP-12	6.75
RGP-13	8.25
RGP-14	8.25
RGP-15	8.70
RGP-16	8.70
RGP-17	10.20
RGP-18	10.20
RGP-19	10.80
RGP-20	10.80
RGP-21	14.04
RGP-22	14.04
RGP-23	18.96
RGP-24	18.96
RGP-25	22.80
RGP-26	22.80
RGP-27	8.40
RGP-28	8.40
RGP-29	10.20
RGP-30	10.20
RGP-31	15.15
RGP-32	15.15
RGP-33	18.96
RGP-34	18.96
RGP-35	22.80
RGP-36	22.80
SDT-1	2.25
SDT-2	2.64
SDT-3	4.50
SDT-4	6.12
SDT-5	6.93
SDT-6	8.82
SDT-7	11.04
SDT-8	12.03
SDT-9	16.05
SDT-10	22.56
SDT-11	33.00
SDT-12	39.60
SDT-13	53.61
SDT-14	84.00
SDT-15	112.50
TAC 6-50	55.75
TAC-12-50	65.55
TAC-12-90	73.00
TAC-12-175	88.50
TAC-28-50	73.50
TAC-28-100	81.50
TAC-28-175	95.50
TAC-28-250	105.50
TAC-12-50-4	65.50
TAC-12-100-4	73.00
TAC-28-50-4	73.50
TAC-28-150-4	81.50
TDC-6-15-05	39.50
TDC-12-30-15	51.70
TDC-12-25-12	50.55
TDC-12-30-05	42.50
TDC-12-20-05	39.50
TDC-28-30-15	56.45
TDC-28-25-12	54.80
TDC-28-30-05	45.30
TDC-28-20-05	42.90
TDC-48-20-15	72.50
TDC-48-30-15	75.00
TF-1	2.97
TF-2	3.96
TF-3	9.90
TF-4	12.15
TF-5	2.97
TF-6	3.96
TF-7	4.35
TF-8	4.62
TF-9	7.59
TF-10	15.84
TF-11	1.98
TF-12	2.97
TF-13	3.96
TF-14	4.80
TF-15	5.85
TF-16	4.35
TF-17	4.62
TF-18	15.84
TF-19	3.30
TMA-1	7.50
TMA-2	9.60
TMA-3	7.80
TMA-4	9.90
TMA-5	9.90
TMA-6	9.90
TMA-7	8.10
TMA-8	9.60
TMA-9	7.80
TMA-10	7.50
TMA-11	7.80
TMA-12	9.90
TMA-13	7.50
TMA-14	9.90
TMA-15	3.90
TMO-16	3.90
TMO-17	3.30
TMO-18	3.90
TMA-19	7.50
TNA-1	6.30
TNA-2	6.30
TNA-3	6.70
TNA-4	6.10
TNA-5	6.10
TNA-6	6.70
TNA-7	6.30
TNA-8	6.30
TNA-9	7.30
TNA-10	6.80
TNA-11	6.80
TNA-12	7.30
TNA-13	7.30
TNA-14	7.30
TNA-15	7.50
TNA-16	6.70
TNA-17	6.70
TNA-18	6.70
TNA-19	7.20
TNA-20	6.70
TNA-21	6.10
TNA-22	6.60
TNA-23	6.30
TNA-25	6.30
TNA-26	5.90
TNA-27	7.20
TNA-28	5.80
TNA-29	5.80
TNA-30	6.00
TNA-31	5.80
TNA-32	5.80
TNA-33	6.00
TNA-34	6.30
TNA-35	6.30
TNA-36	5.90
TNA-37	5.90
TNA-38	6.30
TNA-39	6.80
TNA-40	6.30
TNA-41	6.50
TPA-1	7.60
TPA-2	7.60
TPA-3	7.60
TPA-4	8.05
TPA-5	7.60
TPA-6	7.60
TPA-7	7.60
TPA-8	8.05
TPA-9	7.60
TPA-10	7.60
TPA-11	8.05
TPA-12	7.60
TPA-13	7.60
TPA-14	8.05
TPA-15	8.30
TPA-16	8.30
TPA-17	7.80
TPA-18	8.50
TPA-19	7.50
TPA-20	8.30
TPA-21	7.80
TPA-22	8.30
TPA-23	8.30
TPA-24	8.30
TPA-25	8.30
TPA-26	8.30
TPA-27	8.30
TPA-28	8.80
TPA-29	8.80
TPA-30	7.30
TPA-31	7.30
TPA-32	7.30
TPA-33	7.30
TPA-34	7.30
TPA-35	7.30
TPA-36	7.30
TPA-37	7.95
TPA-38	7.30
TPA-39	7.30
TPA-40	7.30
TSA-1	6.50
TSA-2	6.50
TSA-3	7.00
TSA-4	6.30
TSA-5	6.30
TSA-6	7.00
TSA-7	6.50
TSA-8	6.50
TSA-9	7.50
TSA-10	7.00
TSA-11	7.00
TSA-12	7.50
TSA-13	7.50
TSA-14	7.50
TSA-15	8.00
TSA-16	7.00
TSA-17	7.00
TSA-18	7.00
TSA-19	7.50
TSA-20	7.00
TSA-21	6.50
TSA-22	6.75
TSA-23	6.50
TSA-25	6.50
TSA-26	6.00
TSA-27	7.50
TSA-28	6.00
TSA-29	6.00
TSA-30	6.30
TSA-31	6.00
TSA-32	6.00
TSA-33	6.30
TSA-34	6.50
TSA-35	6.50
TSA-36	6.00
TSA-37	6.00
TSA-38	6.50
TSA-39	7.00
TSA-40	6.50
TTA-1	8.10
TTA-2	6.60
TTA-3	8.60
TTA-4	9.10
TTA-5	8.60
TTA-6	6.60
TTA-7	8.75
TTA-8	8.60
TTA-9	8.90
TTA-10	8.45
TTA-11	8.45
TTA-12	8.50
TTA-13	8.10
TTA-14	9.10
TTA-15	8.10
TTA-16	8.60
TTA-17	8.10
TTA-18	8.10
TTA-19	8.10
TTA-20	8.10
TTA-21	8.10
TTA-22	8.10
TTA-23	8.45
TTA-24	8.45
TTA-25	8.45
TTA-26	8.90
TTA-27	8.10
TTA-28	8.45
TTA-29	8.45
TTA-30	8.45
TTA-31	8.90
TTA-32	8.45
TTA-33	8.90
TTA-34	8.45
TTA-35	8.60
TTA-36	8.60
TTA-37	8.50
TTA-38	9.10
TTA-39	8.35
TTA-40	8.60
TUA-1	6.00
TUA-2	6.00
TUA-3	6.00
TUA-4	6.00
TUA-5	6.00
TUA-6	6.00
TUA-7	6.30
TUA-8	6.30
TUA-9	6.30
TUA-10	6.60
TUA-11	6.30
TUA-12	6.50
TUA-13	5.40
TUA-14	6.30
TUA-15	6.60
TUA-16	5.70
TUA-17	5.70
TUA-18	6.60
TUA-19	5.70
TUA-20	5.70
TUA-21	5.75
TUA-22	5.75
TUA-23	6.00
TUA-24	6.10
TUA-25	6.00
TUA-26	6.00
TUA-27	5.40
TUA-28	6.00
TUA-29	6.00
TUA-30	6.60
TUA-31	7.50
TUA-32	6.60
TUA-33	6.90
TUA-34	6.90
TUA-35	6.90
TUA-36	6.90
TUA-37	6.90
TUA-38	6.90
ULD-20	10.00
ULD-50	15.65
ULI-20	10.00
ULO-10	25.00
ULO-11	25.00
ULO-12	25.00
ULO-13	25.00
ULO-30	32.50
ULO-31	32.50
ULO-32	32.50
ULO-33	32.50
ULO-34	32.50
ULO-35	32.50
ULO-36	32.50
ULO-37	32.50
ULO-52	75.00
ULO-53	75.00
ULO-54	75.00
ULO-55	75.00
ULO-56	75.00
ULO-101	145.00
ULO-104	145.00
ULO-110	145.00
VHI-1	9.50
VHI-2	9.50
VHI-3	9.50
VHI-4	9.50
VHI-5	9.50
VHI-6	9.50
VHI-7	9.50
VHI-8	9.50
VHI-9	9.50
VHI-10	9.50
VHI-11	9.50
VHI-12	9.50
VHI-13	9.50
VHI-14	9.50
VHI-15	9.50
VHI-16	9.50
VHI-17	9.50
VHI-18	9.50
VHI-19	9.50
VHI-20	9.50
VHI-21	9.50
VHI-22	9.50

Filters & Discriminators

MTN .4 TO 7.35	35.00
MTN 10.5 to MTW 70	38.00
IBM*	25.00
	35.00
IBP*	25.00
	35.00
IHM*	25.00
	35.00
IHP*	25.00
	35.00
ILM*	25.00
	35.00
ILP*	25.00
	35.00
LBM*	25.00
	35.00
LBP*	25.00
	35.00
LHM*	25.00
	35.00
LHP*	25.00
	35.00
LLM*	25.00
	35.00
LLP*	25.00
	35.00

*Stock Frequencies are $25.00 Net.

Special Frequencies are $35.00 Net

DSF-10	39.50
DSF-11	39.50
DSF-12	39.50
DSF-13	39.50
DSF-14	39.50
DSF-15	39.50
DSF-16	39.50
DSF-17	39.50
DSF-18	39.50
DSF-19	39.50
DSF-20	39.50
DSF-21	39.50
DSF-22	39.50
DSF-23	39.50
DSF-24	39.50
DSF-25	39.50
DSF-26	39.50
DSF-27	39.50
DSF-28	39.50
DSF-29	39.50
DST-10	50.00
DST-11	50.00
DST-12	50.00
DST-13	50.00
DST-14	50.00
DST-15	50.00
DST-16	60.00
DST-17	50.00
DST-18	50.00
DST-19	50.00
DST-20	50.00
DST-21	50.00
DST-22	50.00
DST-23	50.00
DST-24	60.00
DST-25	60.00
DST-26	60.00
DST-27	50.00
DST-28	60.00
DST-29	60.00
DST-30	60.00
DST-31	60.00
DST-32	60.00
DST-33	60.00
FBP-10	86.00
FBP-11	86.00
FBP-12	86.00
FBP-13	86.00
FBP-14	70.80
FBP-15	70.80
FBP-16	70.80
FBP-17	70.80
FBP-18	70.80
FBP-19	70.80
FBP-20	70.80
FBP-21	70.80
FBP-22	70.80
FBP-23	70.80
FBP-24	86.00
FBP-25	70.80
FBP-26	86.00
FBP-27	86.00
FBP-28	86.00
FBP-29	86.00
FBP-30	86.00
FBP-31	86.00
FBP-32	86.00
FBP-33	86.00
FBP-34	73.00
FBP-35	73.00
FBP-36	73.00
FBP-37	73.00
FBP-38	73.00
FBP-39	80.00
FBP-40	88.00
FBP-41	88.00
FBP-42	88.00
FBP-43	88.00
FBP-44	88.00
FBP-45	88.00
FBP-46	88.00
FBP-47	88.00
FBP-48	88.00
FBP-49	88.00
FBP-50	88.00
FBP-51	88.00
FBP-52	88.00
FBP-53	88.00
FBP-54	88.00
FBP-55	88.00
FBP-56	88.00
FBP-57	88.00
FBR-10	89.50
FBR-11	89.50
FBR-12	89.50
FBR-13	89.50
FBR-14	89.50
FBR-15	89.50
FBR-16	89.50
FBR-17	89.50
FBR-18	89.50
FBR-19	89.50
FBR-20	89.50
FBR-21	89.50
FBR-22	89.50
FBR-23	89.50
FBR-24	89.50
FBR-25	89.50
FBR-26	89.50
FBR-27	89.50
FBR-28	89.50
FBR-29	89.50
FBT-10	42.50
FBT-11	42.50
FBT-12	42.50
FBT-13	42.50
FBT-14	42.50
FBT-15	42.50
FBT-16	42.50
FBT-17	42.50
FBT-18	42.50
FBT-19	42.50
FBT-20	42.50
FBT-21	42.50
FBT-22	42.50
FBT-23	42.50
FBT-24	42.50
FBT-25	42.50
FBT-26	42.50
FBT-27	42.50
FBT-28	42.50
FBT-29	42.50
LPI-10	43.25
LPI-11	43.25
LPI-12	43.25
LPI-13	43.25
LPI-14	43.25
LPI-15	43.25
LPI-16	43.25
LPI-17	43.25
LPI-18	43.25
LPI-19	43.25
LPI-20	43.25
LPI-21	43.25
LPI-22	43.25
LPI-23	43.25
LPI-24	43.25
LPI-25	43.25
LPI-26	43.25
LPI-27	43.25
LPI-28	43.25
LPO-10	93.30
LPO-11	85.50
LPO-12	81.30
LPO-13	85.00
LPO-14	72.00
LPO-15	68.85
LPO-16	64.50
LPO-17	62.50
LPO-18	61.60
LPO-19	62.80
LPO-20	61.15
LPO-21	55.60
LPO-22	55.60
LPO-23	48.20
LPO-24	47.10
LPO-25	47.10
LPO-26	47.10
LPO-27	48.20
LPO-28	47.10
LPO-29	47.10
LPO-30	47.10
LPO-31	48.20
LPO-32	47.10
LPO-33	47.10
LPO-34	47.10
LPO-35	47.10
NTF-30	25.00
NTF-60	25.00
NTF-120	25.00

Toroidal Inductors

Prices shown are Net for Hermetically Sealed. Deduct $1.50 from Net for Uncased units. Add $1.00 to Net for Encapsulated units.

Type TI-1

F-800	6.65
F-801	6.65
F-802	6.65
F-803	7.10
F-804	6.60
F-805	6.60
F-806	8.50
F-807	8.50
F-808	8.50
F-809	9.50
F-810	9.50
F-811	10.50
F-812	10.50
F-813	10.50
F-814	10.50
F-815	10.50
F-816	11.00
F-817	11.50
F-818	12.00
F-819	12.35
F-820	12.65
F-821	12.75
F-822	13.00
F-823	13.30
F-824	13.75
F-825	14.25
F-826	14.50
F-827	14.80
F-828	15.20
F-829	16.15
F-830	17.10

Type TI-4 and 4s

F-850	7.90
F-851	7.90
F-852	7.90
F-853	7.90
F-854	7.90
F-855	7.90
F-856	8.25
F-857	8.60
F-858	8.80
F-859	8.95
F-860	9.05
F-861	9.20
F-862	9.35
F-863	9.50
F-864	9.80
F-865	10.35
F-866	10.65
F-867	10.65
F-868	10.65
F-869	11.15
F-870	11.15
F-871	11.15
F-872	11.50
F-873	11.50
F-874	12.00
F-875	12.45
F-876	12.90
F-877	13.40
F-878	13.90

Type TI-IA and As

F-1500	7.50
F-1501	7.50
F-1502	7.50
F-1503	7.50
F-1504	7.50
F-1505	7.50
F-1506	7.50
F-1507	7.75
F-1508	7.75
F-1509	7.75
F-1510	7.75
F-1511	7.75
F-1512	7.75
F-1513	7.90
F-1514	7.90
F-1515	7.90
F-1516	8.10
F-1517	8.10
F-1518	8.10
F-1519	8.35
F-1520	8.35
F-1521	8.55
F-1522	8.55
F-1523	8.75
F-1524	8.75
F-1525	9.05
F-1526	9.05
F-1527	9.25
F-1528	9.75
F-1529	10.10
F-1530	10.10
F-1531	10.35
F-1532	10.75
F-1533	11.25
F-1534	11.75
F-1535	11.75
F-1536	12.75
F-1537	13.10
F-1538	13.60

Type TI-9s

F-1554	16.60
F-1555	16.80
F-1556	17.00
F-1557	17.30
F-1558	17.40
F-1559	17.50
F-1560	17.60
F-1561	17.80
F-1562	18.05
F-1563	18.30
F-1564	18.50
F-1565	18.50
F-1566	19.00
F-1567	19.50
F-1568	19.95
F-1569	20.40
F-1570	21.40

Type TI-10s

F-1579	14.15
F-1580	14.15
F-1581	14.35
F-1582	14.45
F-1583	14.50
F-1584	14.60
F-1585	14.70
F-1586	14.80
F-1587	14.90
F-1588	15.00
F-1589	15.10
F-1590	15.30
F-1591	15.40
F-1592	15.60

Type TI-13

F-1629	16.60
F-1630	16.80
F-1631	17.00
F-1632	17.30
F-1633	17.40
F-1634	17.50
F-1635	17.60
F-1636	17.80
F-1637	18.05
F-1638	18.30
F-1639	18.50
F-1640	18.50
F-1641	19.00
F-1642	19.50
F-1643	19.95
F-1644	20.40
F-1645	21.40

Type TI-12 and 12s

F-1655	13.60
F-1656	13.60
F-1657	13.60
F-1658	14.05
F-1659	14.05
F-1660	14.05
F-1661	14.65
F-1662	14.65
F-1663	15.10
F-1664	15.10
F-1665	13.75
F-1666	13.75
F-1667	14.15
F-1668	14.15
F-1669	14.65
F-1670	14.65
F-1671	14.65
F-1672	15.10
F-1673	15.60
F-1674	16.05
F-1675	16.05
F-1676	16.50
F-1677	16.50
F-1678	17.00
F-1679	17.00
F-1680	17.50
F-1681	17.50
F-1682	17.50
F-1683	17.95
F-1684	17.95
F-1685	17.95
F-1686	18.45
F-1687	18.90
F-1688	19.50
F-1689	19.95
F-1690	20.40
F-1691	20.90
F-1692	21.40
F-1693	21.85

FREED TRANSFORMER CO., INC.

PRICE LIST

Catalog No.	Net Price
Type TI-5	
F-1700	5.70
F-1701	5.70
F-1702	5.70
F-1703	6.20
F-1704	6.65
F-1705	6.90
F-1706	7.10
F-1707	7.35
F-1708	7.60
F-1709	7.85
F-1710	8.05
F-1711	8.30
F-1712	9.00
F-1713	9.60
F-1714	9.80
F-1715	10.25
F-1716	10.60
F-1717	10.95
F-1718	11.20
F-1719	11.50
F-1720	11.90
Type TI-5s	
F-1700s	7.90
F-1701s	7.90
F-1702s	7.90
F-1703s	7.90
F-1704s	7.90
F-1705s	8.15
F-1706s	8.25
F-1707s	8.50
F-1708s	8.80
F-1709s	8.95
F-1710s	9.05
F-1711s	9.20
F-1712s	9.30
F-1713s	9.60
F-1714s	9.80
F-1715s	10.25
F-1716s	10.65
F-1717s	10.85
F-1718s	11.20
F-1719s	11.50
F-1720s	11.90
Type TI-6 and 6s	
F-1726	8.15
F-1727	8.15
F-1728	8.15
F-1729	8.15
F-1730	8.15
F-1731	8.15
F-1732	8.45
F-1733	8.45
F-1734	8.55
F-1735	8.55
F-1736	8.55
F-1737	9.00
F-1738	10.00
F-1739	10.00
F-1740	10.00
F-1741	10.00
F-1742	10.45
F-1743	11.90
Type TI-11s	
F-1747	14.20
F-1748	14.20
F-1749	14.20
F-1750	14.20
F-1751	14.20
F-1752	15.20
F-1753	15.20
F-1754	15.20
F-1755	15.20
F-1756	15.20
F-1757	14.20
F-1758	14.20
F-1759	14.65
F-1760	14.65
F-1761	15.20
F-1762	15.85
F-1763	16.15
F-1764	16.65
F-1765	17.10
F-1766	17.60
F-1767	17.80
F-1768	18.05
F-1769	18.45
F-1770	18.45
F-1771	18.45
F-1772	19.00
F-1773	19.50
F-1774	19.95
F-1775	20.40
F-1776	20.90
F-1777	21.85
F-1778	22.80
F-1779	23.75
F-1780	24.70
Type TI-7	
F-1781	7.90
F-1782	7.90
F-1783	7.90
F-1784	7.90
F-1785	7.90
F-1786	7.90
F-1787	8.05
F-1788	8.05
F-1789	8.25
F-1790	8.25
F-1791	8.45
F-1792	8.65
F-1793	8.65
F-1794	8.65
F-1795	9.00
F-1796	9.45
F-1797	10.00
Type TI-2s	
F-1800	14.20
F-1801	14.20
F-1802	14.20
F-1803	14.20
F-1804	14.20
F-1805	14.65
F-1806	14.65
F-1807	14.65
F-1808	14.65
F-1809	14.65
F-1810	14.65
F-1811	14.90
F-1812	14.90
F-1813	14.90
F-1814	14.90
F-1815	14.90
Type TI-8 and 8s	
F-1821	8.65
F-1822	8.65
F-1823	8.65
F-1824	8.65
F-1825	8.65
F-1826	8.65
F-1827	8.65
F-1828	8.65
F-1829	8.65
F-1830	8.65
F-1831	8.65
F-1832	8.75
F-1833	8.85
F-1834	9.00
F-1835	9.00
F-1836	9.00
F-1837	9.10
F-1838	9.40
F-1839	9.50
F-1840	9.90
Type TI-3s	
F-1844	14.25
F-1845	14.25
F-1846	14.25
F-1847	14.25
F-1848	14.25
F-1849	14.25
F-1850	14.25
F-1851	14.25
F-1852	14.25
F-1853	14.25
F-1854	14.25
F-1855	14.25
Type TI-3As	
F-1856	20.00
F-1857	20.50
F-1858	20.50
F-1859	22.30
F-1860	22.80
F-1861	22.80
F-1862	23.30
F-1863	23.30
Type TI-15	
F-1870	7.25
F-1871	7.25
F-1872	7.25
F-1873	7.25
F-1874	7.25
F-1875	7.25
F-1876	7.25
F-1877	7.25
F-1878	7.25
F-1879	7.25
F-1880	7.25
F-1881	7.45
F-1882	7.45
F-1883	7.65
F-1884	7.65
F-1885	7.85
F-1886	8.05
F-1887	8.05
F-1888	8.05
F-1889	8.45
Type TI-14	
F-1920	7.40
F-1921	7.40
F-1922	7.40
F-1923	7.40
F-1924	7.40
F-1925	7.40
F-1926	7.85
F-1927	7.85
F-1928	7.95
F-1929	7.95
F-1930	7.95
F-1931	8.40
F-1932	8.75
F-1933	8.75
F-1934	9.00
F-1935	9.25
F-1936	9.75
Type TI-16	
F-2050	6.05
F-2051	6.05
F-2052	6.05
F-2053	5.85
F-2054	5.85
F-2055	6.30
F-2056	6.80
F-2057	7.05
F-2058	7.25
F-2059	7.35
F-2060	7.70
F-2061	8.00
F-2062	8.20
F-2063	8.45
F-2064	9.75
F-2065	10.80
F-2066	11.00
F-2067	11.40
F-2068	11.65
F-2069	12.00
Type TI-17	
F-2100	7.90
F-2101	7.90
F-2102	7.90
F-2103	7.90
F-2104	7.90
F-2105	7.90
F-2106	7.90
F-2107	7.90
F-2108	7.90
F-2109	7.90
F-2110	7.90
F-2111	8.05
F-2112	8.05
F-2113	8.25
F-2114	8.25
F-2115	8.65
F-2116	8.65
F-2117	9.05
Type TI-18	
F-2140	8.65
F-2141	8.65
F-2142	8.65
F-2143	8.65
F-2144	8.65
F-2145	8.65
F-2146	8.65
F-2147	8.65
F-2148	8.65
F-2149	8.65
F-2150	8.65
F-2151	8.75
F-2152	8.85
F-2153	9.00
F-2154	9.00
F-2155	9.20
F-2156	9.50
F-2157	9.70
Type TI-19	
F-2180	7.90
F-2181	7.90
F-2182	7.90
F-2183	7.90
F-2184	7.90
F-2185	7.90
F-2186	7.90
F-2187	7.90
F-2188	7.90
F-2189	7.90
F-2190	7.90
F-2191	7.90
F-2192	7.90
F-2193	7.90
Type TI-20s	
F-2201	6.40
F-2202	6.40
F-2203	6.95
F-2204	6.95
F-2205	6.95
F-2206	7.15
F-2207	7.45
F-2208	8.10
F-2209	8.10
F-2210	8.10
F-2211	8.10
F-2212	8.10
F-2213	8.10
F-2214	8.10
F-2215	8.10
Type TI-21s	
F-2240	6.00
F-2241	6.00
F-2242	6.00
F-2243	6.00
F-2244	6.00
F-2245	6.00
F-2246	6.40
F-2247	6.40
F-2248	6.40
F-2249	6.40
Type TI-22s	
F-2270	6.00
F-2271	6.00
F-2272	6.00
F-2273	6.00
F-2274	6.00
F-2275	6.00
F-2276	6.40
F-2277	6.40
F-2278	6.40
F-2279	6.40
F-2280	7.15
F-2281	7.15
F-2282	7.15
F-2283	7.15
F-2284	7.15
Type TI-23s	
F-2301	6.25
F-2302	6.25
F-2303	6.25
F-2304	6.25
F-2305	6.25
F-2306	6.25
F-2307	6.75
F-2308	6.75
F-2309	6.75
F-2310	6.75
F-2311	7.50
F-2312	7.50
F-2313	7.50
Type TI-24	
F-2400	5.90
F-2401	5.90
F-2402	5.90
F-2403	5.90
F-2404	6.05
F-2405	6.05
F-2406	6.05
F-2407	6.05
F-2408	6.30
F-2409	6.30
F-2410	6.80
F-2411	7.05
F-2412	7.25
F-2413	7.35
F-2414	7.70
F-2415	8.00
F-2416	8.20
F-2417	8.45
F-2418	9.75
F-2419	10.50
F-2420	10.80
F-2421	11.00
F-2422	11.40
Type TI-25	
F-2450	7.90
F-2451	7.90
F-2452	7.90
F-2453	7.90
F-2454	7.70
F-2455	7.70
F-2456	7.50
F-2457	7.50
F-2458	7.30
F-2459	7.30
F-2460	7.20
F-2461	7.10
F-2462	7.10
F-2463	7.05
F-2464	7.00
F-2465	7.00
F-2466	7.05
F-2467	7.10
F-2468	7.20
F-2469	7.20
F-2470	7.40
F-2471	7.40
F-2472	7.60
F-2473	7.80
F-2474	8.00
F-2475	8.40
F-2476	8.80
F-2477	9.50
F-2478	9.80
F-2479	9.95
F-2480	10.20
F-2481	10.50
Type TI-26	
F-2500	5.70
F-2501	5.70
F-2502	5.70
F-2503	5.70
F-2504	5.70
F-2505	5.70
F-2506	5.70
F-2507	5.70
F-2508	6.05
F-2509	6.20
F-2510	6.60
F-2511	6.80
F-2512	7.10
F-2513	7.35
F-2514	7.60
F-2515	7.80
F-2516	8.05
F-2517	8.30
F-2518	8.50
F-2519	8.70
F-2520	8.90
F-2521	9.20
F-2522	9.50
F-2523	9.90
F-2524	10.30
F-2525	10.80
F-2526	11.05
F-2527	11.30
F-2528	11.50
F-2529	11.90
F-2530	12.20
F-2531	12.60
F-2532	13.05
F-2533	13.80
Type TI-27	
F-2550	7.90
F-2551	7.90
F-2552	7.90
F-2553	7.90
F-2554	7.90
F-2555	8.10
F-2556	8.10
F-2557	8.20
F-2558	8.40
F-2559	8.20
F-2560	8.30
F-2561	8.50
F-2562	8.60
F-2563	8.80
F-2564	8.95
F-2565	9.10
F-2566	9.30
F-2567	9.50
F-2568	9.90
F-2569	10.50
F-2570	10.70
F-2571	10.90
F-2572	11.40
F-2573	11.60
F-2574	12.10
F-2575	12.40
F-2576	12.90
F-2577	13.40
F-2578	13.70
F-2579	13.90
F-2580	14.20
F-2581	14.20
F-2582	14.50
F-2583	14.50
Type TI-28	
F-2600	6.75
F-2601	6.85
F-2602	6.90
F-2603	6.95
F-2604	7.05
F-2605	7.10
F-2606	7.30
F-2607	7.40
F-2608	7.60
F-2609	7.80
F-2610	7.20
F-2611	7.60
F-2612	8.40
F-2613	8.50
F-2614	8.70
F-2615	9.20
F-2616	9.40
F-2617	9.55
F-2618	9.70
F-2619	9.90
F-2620	10.05
F-2621	10.10
F-2622	10.20
F-2623	10.30
F-2624	10.50
F-2625	10.80
F-2626	11.80
F-2627	12.20
F-2628	12.35
F-2629	12.65
F-2630	13.30
F-2631	14.65
F-2632	15.20
F-2633	16.15
Type TI-29	
F-2650	8.05
F-2651	8.10
F-2652	8.20
F-2653	8.20
F-2654	8.20
F-2655	8.20
F-2656	8.20
F-2657	8.30
F-2658	8.10
F-2659	8.10
F-2660	7.90
F-2661	7.60
F-2662	7.70
F-2663	7.75
F-2664	7.80
F-2665	7.90
F-2666	7.90
F-2667	8.00
F-2668	8.00
F-2669	8.10
F-2670	8.15
F-2671	8.20
F-2672	8.25
F-2673	8.30
F-2674	8.35
F-2675	8.40
F-2676	8.50
F-2677	8.60
F-2678	8.75
F-2679	8.75
F-2680	9.25
F-2681	10.10
F-2682	10.75
F-2683	11.75
F-2684	12.75
F-2685	13.60
F-2686	13.80
Type TI-30	
F-2700	12.05
F-2701	12.30
F-2702	12.50
F-2703	12.80
F-2704	12.95
F-2705	13.20
F-2706	13.50
F-2707	13.70
F-2708	13.90
F-2709	14.20
F-2710	14.50
F-2711	13.60
F-2712	13.75
F-2713	14.10
F-2714	14.20
F-2715	14.30
F-2716	14.50
F-2717	14.70
F-2718	15.10
F-2719	15.20
F-2720	15.30
F-2721	15.50
F-2722	15.70
F-2723	15.80
F-2724	15.95
F-2725	16.05
F-2726	16.20
F-2727	16.50
F-2728	16.70
F-2729	17.00
F-2730	17.50
F-2731	17.95
F-2732	18.90
F-2733	19.45
F-2734	20.40
F-2735	21.85
F-2736	22.50
Type TI-31	
F-2750	14.40
F-2751	14.80
F-2752	14.90
F-2753	14.90
F-2754	14.90
F-2755	14.90
F-2756	14.90
F-2757	14.90
F-2758	15.05
F-2759	15.10
F-2760	15.20
F-2761	15.20
F-2762	14.50
F-2763	14.80
F-2764	15.10
F-2765	15.50
F-2766	15.80
F-2767	16.05
F-2768	16.10
F-2769	16.20
F-2770	16.40
F-2771	16.60
F-2772	16.80
F-2773	17.00
F-2774	17.10
F-2775	17.40
F-2776	17.60
F-2777	17.90
F-2778	18.05
F-2779	18.45
F-2780	19.00
F-2781	19.50
F-2782	19.95
F-2783	20.90
F-2784	21.80
F-2785	22.80
F-2786	23.80
F-2787	24.70
F-2788	27.50
Type TI-32	
F-2800	7.40
F-2801	7.60
F-2802	7.80
F-2803	8.40
F-2804	8.60
F-2805	8.70
F-2806	8.80
F-2807	8.90
F-2808	9.60
F-2809	9.80
F-2810	10.20
F-2811	10.40
F-2812	10.60
F-2813	10.80
F-2814	11.05
F-2815	11.20
F-2816	11.40
F-2817	11.65
F-2818	12.10
F-2819	12.20
F-2820	12.30
F-2821	12.50
F-2822	12.70
F-2823	13.05
F-2824	13.30
Type TI-33	
F-2850	5.90
F-2851	6.00
F-2852	6.10
F-2853	6.30
F-2854	6.40
F-2855	6.70
F-2856	6.90
F-2857	7.10
F-2858	7.30
F-2859	7.40
F-2860	7.60
F-2861	7.70
F-2862	7.80
F-2863	8.10
F-2864	8.20
F-2865	8.30
F-2866	8.50
F-2867	8.60
Type TI-34	
F-2900	5.60
F-2901	5.60
F-2902	5.60
F-2903	5.60
F-2904	5.60
F-2905	5.80
F-2906	5.80
F-2907	6.00
F-2908	6.00
F-2909	6.00
F-2910	6.30
F-2911	6.60
F-2912	6.60
F-2913	7.30
F-2914	8.30
F-2915	8.30
F-2916	8.40
F-2917	8.60
F-2918	8.80
F-2919	8.80
F-2920	8.90
Type TI-35	
F-2950	6.60
F-2951	6.90
F-2952	7.20
F-2953	7.40
F-2954	7.60
F-2955	7.80
F-2956	8.00
F-2957	8.10
F-2958	8.30
F-2959	8.50
F-2960	8.70
F-2961	8.90
F-2962	9.05
F-2963	9.20
Type TI-36	
F-3000	5.90
F-3001	5.90
F-3002	5.90
F-3003	6.00
F-3004	6.00
F-3005	6.15
F-3006	6.30
F-3007	6.30
F-3008	6.60
F-3009	6.60
F-3010	6.80
F-3011	7.20
F-3012	7.40
F-3013	7.70
F-3014	8.20
F-3015	8.50
F-3016	8.80
F-3017	8.90
Type TI-38	
F-3550	7.50
F-3551	7.50
F-3552	7.50
F-3553	7.45
F-3554	7.40
F-3555	7.35
F-3556	7.30
F-3557	7.25
F-3558	7.75
F-3559	8.00
F-3560	8.25
F-3561	8.50
F-3562	8.65
F-3563	8.85
F-3564	9.00
F-3565	9.10
F-3566	9.30
F-3567	9.60
F-3568	9.80
F-3569	10.20
F-3570	10.60
F-3571	10.90
F-3572	11.15
F-3573	11.50
F-3574	11.90
F-3575	12.30
F-3576	12.70
F-3577	13.10
F-3578	13.50
Type TI-37	
F-4000	9.30
F-4001	9.30
F-4002	9.30
F-4003	9.30
F-4004	9.10
F-4005	9.10
F-4006	9.05
F-4007	9.00
F-4008	8.80
F-4009	8.70
F-4010	8.60
F-4011	8.80
F-4012	8.90
F-4013	9.20
F-4014	9.30
F-4015	9.50
F-4016	9.70
F-4017	9.90
F-4018	10.30
F-4019	10.60
F-4020	11.10
F-4021	11.70
F-4022	12.50
F-4023	13.10
F-4024	13.50
F-4025	13.90