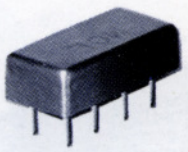
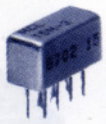
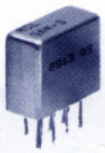
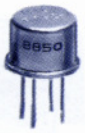
500 Hz to 3.5 GHz


TAK


TSM


SAM

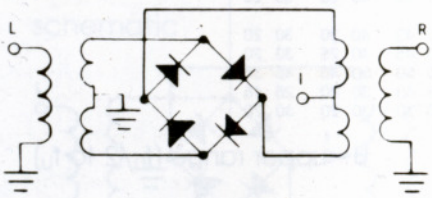


ROSE

	MODEL NO.	FREQUENCY MHz LO/RF f_L-f_U	IF	CONVERSION LOSS dB Mid-Band m $\bar{x}$	σ	Max.	Total Range Max.	LO-RF ISOLATION, dB L Typ.	Min.	M Typ.	Min.	U Typ.	Min.	LO-IF ISOLATION, dB L Typ.	Min.	M Typ.	Min.	U Typ.	Min.
TAK case A04	TAK-5	.01-250	DC-250	4.65	.02	7.0	8.5	60	50	50	35	40	35	55	45	45	30	35	25
	TAK-5R	.05-200	DC-200	4.70	.05	6.5	8.0	55	50	45	35	45	35	50	45	40	30	40	30
	TAK-6	.5-600	DC-600	5.58	.04	7.5	8.5	60	50	50	30	40	25	55	45	45	30	30	20
	TAK-6R	0.5-600	DC-600	5.40	.11	7.0	8.0	55	50	45	30	35	30	45	40	40	25	30	25
	TAK-7	2-1000	5-500	5.86	.08	7.5	8.5	45	30	35	20	30	20	45	30	35	20	30	20
TSM case A11	TSM-1	1-600	DC-600	5.71	.04	7.5	8.5	60	45	45	35	35	25	55	45	40	30	35	25
	TSM-2	1-1000	DC-1000	5.55	.08	7.5	10.0	55	45	40	20	35	18	50	40	40	20	25	18
	TSM-3	0.1-500	DC-500	4.75	.04	7.5	8.5	60	50	50	35	35	25	55	45	45	30	35	25
	†TSM-5	5-1500	DC-1000	6.16	.04	8.5	9.5	60	45	35	25	30	25	60	45	35	25	25	16
SAM case A03	SAM-1	1-600	DC-600	5.67	.05	7.0	8.5	55	45	45	30	35	20	50	40	40	25	30	20
	SAM-2	1-1000	DC-1000	5.68	.08	7.5	9.5	55	45	40	25	35	20	50	40	40	25	30	25
	SAM-3	0.1-500	DC-500	5.04	.07	7.0	8.5	60	50	50	35	35	30	50	40	45	30	30	20
	SAM-4	5-1250	0.5-1000	5.98	.18	8.5	8.5	55	40	35	25	30	20	50	40	35	25	30	20
	SAM-5	5-1500	0.5-1000	5.81	.08	7.5	8.5	55	40	35	25	30	20	50	40	35	25	30	20
ROSE case PP94	ROSE-1	1-600	DC-600	5.08	.03	6.5	7.5	40	30	35	25	30	20	55	40	40	20	25	18
				Typ.	Max.	Typ.	Max.												
IE case A06	• IE-500/ -0/-A/-75	5-500	DC-500	6.0	7.0	7.0	8.5	50	40	45	30	35	25	45	35	40	25	30	20
	IE-800F	10-800	DC-800	6.5	7.5	7.0	8.5	50	40	40	30	35	27	45	40	35	30	27	24

L=low range (f_L to 10 f_L) M=mid range (10 f_L to $f_U/2$) U=upper range ($f_U/2$ to f_U)
m=mid band (2 f_L to $f_U/2$)

schematic



pin connections see case style outline drawing

TAK				TSM	SAM			ROSE	IE		
-5 -6	-7	-5R	-6R	all models (△)	-1 -3	-4 -5	-2	-1	-500 -800F	(-500A)	-500-0 -500-75
8	8	8	1	8	8	8	8	1	8	(1)	8
1	3,4*	1	8	1	1	3,4*	1	3	1	(8)	1
3,4*	1	3,4*	5,6*	3,4*	3,4*	1	3,4*	2	3,4*	(3,7*)	3,4*
2,5,6,7	2,5,6,7	2,5,6,7	2,3,4,7	2,5,6,7	2,5,6,7	2,5,6,7	2,5,6,7	—	2,5,6,7	(2,4,5,6)	2,5,6,7
2	2,5,6,7	—	3,4,7	2	2	2,5,6,7	2,5,6,7	4	2,5,6,7	(2,4,6)	2

△TSM-5, CASE GROUND 2,7; TSM-2 CASE GROUND 2, 5, 6, 7.
* Pins must be connected together externally.

MIL-M-28837/1, NSN GUIDE

MCL NO.	NSN	MIL-M-28837/1*
GRA-1	5895-00-480-2849	
GRA-3	5895-01-169-1815	
GRA-8	5895-01-217-5627	
SAM-1	5895-01-117-2926	
SAM-2	5985-01-165-6621	
SAM-3	5895-01-062-9973	
SAM-5	5895-01-036-9507	
SBL-1	5895-01-126-4913	
SBL-1X	5895-01-179-8084	
SRA-1	5895-00-008-8272	03
SRA-1-1	5962-01-113-5431	
SRA-1-TX	5895-01-163-9247	
SRA-1-1-TX	5895-01-151-6753	
SRA-11-TX	5895-01-163-9248	
SRA-1W	5895-01-163-0433	09
SRA-3	5895-01-021-5914	
SRA-4	5826-01-155-6545	
SRA-6	5895-01-124-0117	
SRA-8	5985-01-081-0977	
SRA-11	5895-01-273-0883	
SBL-3	5895-01-326-6030	
TAK-5	5895-01-271-0842	
TAK-6	5895-01-231-2372	
TSM-1	5895-01-121-7958	

*units are not QPL-listed

In Stock...Immediate Delivery

CAPO now available! computer-automated performance data see model index

case styles

outline dimensions (inch / mm)

case no.	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt. grams.	NOTES*
A01	.770 19.56	.800 20.32	.385 9.78	.400 10.16	.370 9.40	.400 10.16	.200 5.08	.20 5.08	.14 3.56	.031 .79									5.2	A1, B3, E1
A03	.480 12.20	.500 12.70	.390 9.91	.405 10.29	.210 5.34	.230 5.85	.100 2.54	.20 5.08	.14 3.56	.020 .51									2.3	A1, B4, E1
A04	.770 19.56	.800 20.32	.200 5.08	.210 5.33	.370 9.40	.400 10.16	.200 5.08	.20 5.08	.14 3.56	.031 .79									3.7	A1, B3, E1
A05	.770 19.56	.800 20.32	.240 6.10	.250 6.35	.370 9.40	.400 10.16	.200 5.08	.20 5.08	.14 3.56	.031 .79									3.7	A1, B3, E1
A06	.770 19.56	.800 20.32	.285 7.24	.310 7.88	.370 9.40	.400 10.16	.200 5.08	.20 5.08	.14 3.56	.031 .79									5.2	A1, B3, E1
A11	480 12.20	.500 1.270	.240 6.10	.255 6.48	.210 5.34	.230 5.85	.100 2.54	.20 5.08	.14 3.56	.020 .51									1.9	A1, B4, E1
B02	.480 12.20	.500 12.70	.240 6.10	.255 6.48	.210 5.34	.230 5.85	.16 4.07	.100 2.54	.14 3.56	.20 5.08	.020 .51								1.9	A1, B4, E1
B13	.480 12.20	.500 12.70	.390 9.91	.405 10.29	.210 5.34	.230 5.85	.16 4.07	.100 2.54	.14 3.56	.20 5.08	.020 .51								2.3	A1, B4, E1
C07	.770 19.56	.810 20.58	.380 9.66	.410 10.42	.030 .77	.200 5.08	.20 5.08	.14 3.56											11.0	A1, E1
D08	1.000 25.40	1.025 26.04	.390 9.91	.430 10.93	.500 12.70	.525 13.34	.025 .64	.300 7.52	.200 5.08	.09 2.29	.13 3.31	.150 3.☆1	.20 5.08	.14 3.56					8.5	A1, E1
D09	1.000 25.40	1.025 26.04	.240 6.10	.280 7.12	.500 12.70	.525 13.34	.025 .64	.300 7.62	.200 5.08	.09 2.29	.13 3.31	.150 3.81	.20 5.08	.14 3.56					7.5	A1, E1
E10	1.580 40.13	1.620 41.15	.380 9.66	.410 10.42	.770 19.56	.810 20.58	.030 .77	.200 5.08	.10 2.54	.20 5.08	.14 3.56								23.0	A1, E1
F14	2.00 50.80	2.00 50.80	.75 19.05	1.00 25.40	.25 6.35	1.500 38.10	.125 3.18	.39 9.91	1.00 25.40	.50 12.70	1.00 25.40								170.0	A10 C1, D2
F53	2.00 50.80	2.00 50.80	.75 19.05	1.00 25.40	.13 3.31	1.750 44.45	.125 3.18	.39 9.91	1.00 25.40	.50 12.70	1.00 25.40								170.0	A10 C1, D2
G15	1.25 31.75	1.25 31.75	.75 19.05	.63 16.01	.38 9.66	.61 15.50	— —	.80 20.32	.80 20.32	.76 19.31	.125 3.18	1.688 42.88	2.18 55.38	.75 19.05	.07 1.78				85.0	A10 B1, D1
G144	1.25 31.75	1.25 31.75	— —	.63 16.01	.38 9.66	.61 15.50	— —	— —	— —	.76 19.31	.125 3.18	1.688 42.88	2.18 55.38	.75 19.05	.07 1.78				85.0	A10, B6 D6
H16	1.25 31.75	1.25 31.75	.75 19.05	.63 16.01	.38 9.66	1.000 25.40	.125 3.18	1.000 25.40	— —	— —	.125 3.18	1.688 42.88	2.18 55.38	.75 19.05	.07 1.78				70.00	A10, B1, D2, D3, D4
J17	1.25 31.75	1.25 31.75	.75 19.05	.63 16.01	.38 9.66	1.000 25.40	.125 3.18	1.000 25.40	— —	— —	.125 3.18	1.688 42.88	2.18 55.38	.75 19.05	.07 1.78				75.0	A10, B1, D2, D3
K18	1.25 31.75	1.25 31.75	.75 19.05	.63 16.01	.38 9.66	1.000 25.40	.125 3.18	1.000 25.40	— —	— —	.125 3.18	1.688 42.88	2.18 55.38	.75 19.05	.07 1.78				70.0	A10, B1 C1, D2, D3
L19	1.50 38.10	1.13 28.70	1.00 25.40	.50 12.70	.155 3.94	2.345 59.57	.138 3.51	.987 25.07	2.50 63.50	.10 2.54	.31 7.88	1.19 30.23	— —	.66 16.77	— —	— —	.150 3.81		37.0	A6, A11, B2 D6
L20	2.25 57.15	1.38 35.05	1.24 31.50	.50 12.70	.150 3.81	3.100 78.74	.138 3.51	1.238 31.45	3.25 82.55	.10 2.54	.40 10.16	1.86 47.25	— —	.64 16.26	— —	— —	.150 3.81		74.0	A6, A11, B2 D5
M21	1.50 38.10	1.13 28.70	1.00 25.40	.50 12.70	.155 3.94	2.345 59.57	.138 3.51	.987 25.07	2.50 63.50	.10 2.54	.31 7.88	.75 19.05	1.19 30.23	.66 16.76	— —	— —	1.50 3.81		40.0	A6, A11, B2 C1, D6
M22	2.25 57.15	1.38 35.05	1.24 31.50	.50 12.70	.150 3.81	3.100 78.74	.138 3.51	1.238 31.45	3.25 82.55	.10 2.54	.40 10.16	1.15 29.21	1.86 47.25	.64 16.26	— —	— —	.150 3.81		74.0	A6, A11, B2 C1, D5
M23	2.25 57.15	1.38 35.05	1.24 31.50	.50 12.70	.150 3.81	3.100 78.74	.138 3.51	1.238 31.45	3.25 82.55	.10 2.54	.63 16.00	1.06 26.93	1.63 41.40	.69 17.53	— —	— —	.150 3.81		70.0	A6, A11 B2, C1, D6

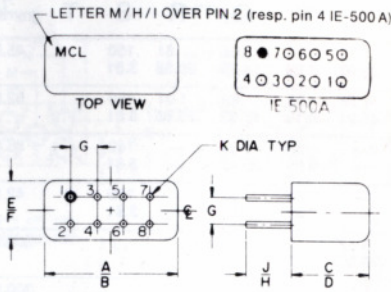
tolerance x ± .1 xx ± .03 xxx ± .015 inch

oz. = grams x .0353

*NOTES:

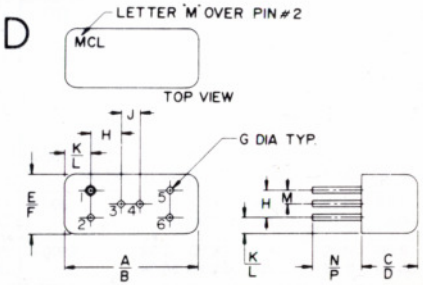
outline drawings

A



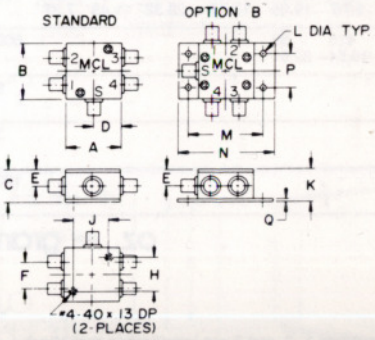
NOTE: Blue Bead Indicates pin 1, resp. pin 8 for IE-500A
Pin numbers do not appear on unit.
For reference only.

D



NOTE: Blue Bead indicates pin 1.
Pin numbers do not appear on unit.
For reference only.

G



most widely-used

Frequency Mixers, AQL = 0.1%

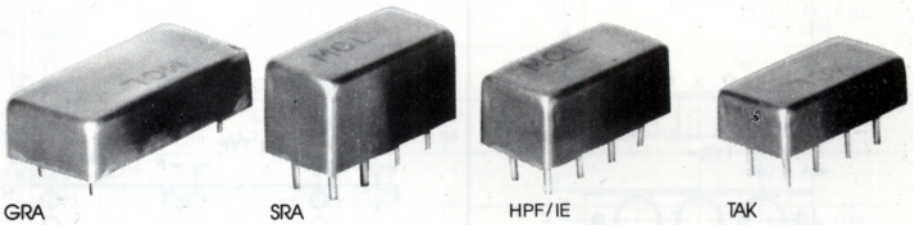
LEVEL 7 (+7 dBm LO, up to +1 dBm RF)

performance data

curves, tables, Model Index section 2

case style selection

outline drawings, section 1



GRA SRA HPF/IE TAK

	MODEL NO.	FREQUENCY MHz LO/RF f_L-f_U	IF	CONVERSION LOSS dB Mid-Band m Typ.	Mid-Band m Max.	Total Range Typ.	Total Range Max.	LO-RF ISOLATION, dB L Typ.	L Min.	M Typ.	M Min.	U Typ.	U Min.	LO-IF ISOLATION, dB L Typ.	L Min.	M Typ.	M Min.	U Typ.	U Min.
GRA case D09	GRA-1	.5-500	DC-500	5.5	7.0	6.5	8.5	50	45	45	30	35	25	45	35	40	25	30	20
	GRA-3	.025-200	DC-200	5.5	7.5	6.5	8.5	60	50	45	35	35	25	45	35	40	30	30	20
	GRA-6	.003-100	DC-100	5.5	7.5	6.5	8.5	60	50	45	30	35	25	60	45	40	25	30	20
	GRA-8	.0005-10	DC-10	6.5	7.5	7.0	8.5	60	50	50	40	45	35	60	50	50	40	45	35
■ HPF case A06	HPF-505	1-500	DC-500	5.5	7.0	6.5	8.0	60	45	45	35	40	25	45	35	40	25	30	20
	HPF-505X	10-1000	5-500	6.0	7.5	7.0	8.0	50	40	40	30	30	20	50	45	40	35	35	25
	HPF-505Z NEW	10-1000	DC-500	6.5	7.5	7.0	9.0	50	40	35	25	25	20	40	25	25	18	19	15
	HPF-115 NEW	0.1-400	DC-400	5.5	7.0	6.0	8.0	50	45	45	30	35	25	45	30	40	25	30	20
	HPF-305 NEW	.025-200	DC-200	5.5	7.5	6.0	8.5	55	50	45	30	35	25	45	35	40	30	30	20
case A06	● IE-500/ -0/-A/-75	5-500	DC-500	6.0	7.0	7.0	8.5	50	40	45	30	35	25	45	35	40	25	30	20
	IE-800F	10-800	DC-800	6.5	7.5	7.0	8.5	50	40	40	30	35	27	45	40	35	30	27	24
SRA case A01	●SRA-1	.5-500	DC-500	5.5	7.0	6.5	8.5	50	45	45	30	35	25	45	35	40	25	30	20
	SRA-1TX	.5-500	DC-500	5.5	7.0	6.5	8.5	50	45	45	30	35	25	45	35	40	25	30	20
	SRA-1W	1-750	DC-750	5.5	7.5	6.5	8.5	50	45	45	30	35	25	45	30	40	25	30	20
	SRA-1-1	.1-500	DC-500	5.5	7.5	6.5	8.5	50	45	45	30	35	25	45	30	40	25	30	20
	SRA-2	1-1000	.5-500	5.5	7.5	6.5	8.5	45	30	35	20	30	20	45	30	30	20	30	20
	SRA-2CM	5-1000	DC-1000	6.0	7.0	6.5	8.5	60	50	35	30	30	25	50	45	30	25	25	20
	SRA-3	.025-200	DC-200	5.5	7.5	6.5	8.5	60	50	45	35	35	25	45	35	40	30	30	20
	SRA-4	5-1250	.5-500	5.5	7.5	6.5	8.5	50	40	40	20	30	20	50	40	40	20	30	20
	SRA-5	5-1500	10-600	7.0	8.0	7.5	8.5	50	45	35	30	30	20	45	40	30	25	25	15
	SRA-6	.003-100	DC-100	5.5	7.5	6.5	8.5	60	50	45	30	35	25	60	45	40	25	30	20
	SRA-8	.0005-10	DC-10	6.5	7.5	7.0	8.5	60	50	50	40	45	35	60	50	50	40	45	35
case A06	SRA-11	5-2000	10-600	7.0	8.5	7.5	9.0	50	45	35	25	30	20	45	40	30	20	25	15
	SRA-12	800-1250	50-90	—	—	6.0	7.5	32	25	35	25	35	25	30	20	30	20	30	20
	SRA-2000	100-2000	DC-600	6.0	8.0	7.0	9.5	—	—	37	20	—	—	—	—	—	—	30	20
TAK case A04	TAK-5	.01-250	DC-250	5.5	7.0	6.5	8.5	60	50	50	35	40	35	55	45	45	30	35	25
	TAK-5R	.05-200	DC-200	5.5	6.5	6.5	8.0	55	50	45	35	45	35	50	45	40	30	40	30
	TAK-6	.5-600	DC-600	5.5	7.5	6.5	8.5	60	50	50	30	40	25	55	45	45	30	30	20
	TAK-6R	.5-600	DC-600	6.0	7.0	6.5	8.0	55	50	45	40	35	30	45	40	40	25	30	25
	TAK-7	2-1000	5-500	5.5	7.5	6.5	8.5	45	30	35	20	30	20	45	30	35	20	30	20

L = low range (f_L to 10 f_L) M = mid range (10f_L to f_U/2) U = upper range (f_U/2 to f_U)

m = mid band (2f_L to f_U/2)

● HTRB tested, 3 year guarantee

■ NON-HERMETIC

1. For quality control procedures, environmental specifications, and Hi-Rel, MIL and TX description see section 1.
2. Absolute Maximum Ratings; RF power 50 mW, peak IF current 40 mA, see section 1.
3. PAM-42 protected under patent 4,430,758.
4. Prices and specifications subject to change without notice.

pin connections

see case style outline drawing

Series	GRA	SRA					IE			HPF			TAK			
models	all	-1 -1TX -1-1 -3	-2 -4	-6 -8	-1W -2CM	-5 -11 -12 -2000	-500 -800F	(-500A)	-500-0 -500-75	-505X -115	-505 -115 -305	-505Z -6	-5 -6	-7	-5R	-6R
Lo	1	8	8	8	8	8	8	(1)	8	8	8	1	8	8	8	1
RF	6	1	3,4*	1	1	1	1	(8)	1	3,4*	1	8	1	3,4*	1	8
IF	4	3,4*	1	3,4*	3,4*	3	3,4*	(3,7*)	3,4*	1	3,4*	3	3,4*	1	3,4*	5,6*
GROUND	2,3, 4	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	(2,4, 5,6)	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,5, 6,7	2,3, 4,7	
CASE GND	-	2	2,5, 6,7	-	2,5, 6,7	2,5, 6,7	2,5, 6,7	(2,4, 6)	2	2,5, 6,7	-	2,5, 6,7	2	2,5, 6,7	-	3,4, 7

*pins must be connected together externally. ( ) please note different pin locations. See page 1 9 fig. A

most widely used, low cost

Frequency Mixers

LEVEL 7 (+7dBm LO, up to +1dBm RF)

Model

IE-500 (-0, -75, -A)

RF, IN: FREQ.185.1003 MHZ DRIVE -.02 DBM
LO. IN: FREQ.155.0097 MHZ DRIVE 7.01 DBM
IF MEASURED: FREQ.30.0909 MHZ AMP. -6.25 DBM

DASH ENTRIES WERE NOT MEASURED INTENTIONLY,+ENTRY DENOTES HARMONICS ABOVE IF

HARMONICS ATTENUATION

RF,CAL (DBM)	0	1	2	3	4	5	6	7	8	9	10
0	-	-	43	42	43	67	44	55	57	59	49	68
1	-	23	-	38	13	48	23	56	39	57	43	78
2	75	61	64	> 80	> 74	> 74	63	> 78	55	> 84	53	> 72
3	84	46	42	48	39	52	42	55	43	58	45	64
4	> 96	74	68	83	72	78	77	83	78	81	68	80
5	> 96	85	66	67	54	70	50	66	49	76	50	67
6	> 96	77	77	79	79	84	77	87	75	> 91	77	87
7	> 96	76	66	74	66	81	76	76	61	73	56	70
8	> 95	86	83	85	85	86	> 89	88	> 91	> 90	86	> 90
9	> 97	87	84	83	81	77	76	79	75	89	79	81
10	> 95	> 89	> 89	> 89	> 89	88	> 89	> 89	> 90	> 90	> 90	> 89

LO ORDER HARMONICS

RF, IN: FREQ.185.1002 MHZ DRIVE -10.02 DBM
LO. IN: FREQ.155.01 MHZ DRIVE 7.04 DBM
IF MEASURED: FREQ.30.0905 MHZ AMP. -16.13 DBM

DASH ENTRIES WERE NOT MEASURED INTENTIONLY,+ENTRY DENOTES HA.MONICS ABOVE IF

HARMONICS ATTENUATION

RF,CAL (DBM)	0	1	2	3	4	5	6	7	8	9	10
0	-	-	32	32	31	51	28	50	30	45	38	50
1	-	22	-	36	12	38	20	46	31	44	32	53
2	92	77	66	75	60	79	65	> 78	58	69	52	66
3	> 96	64	60	65	69	68	59	72	56	70	51	67
4	> 96	> 79	> 80	> 79	> 79	> 78	> 79	> 79	> 79	> 79	> 80	> 78
5	> 96	> 79	> 79	> 79	> 79	> 81	> 79	> 79	> 78	> 80	> 78	> 80
6	> 95	> 79	> 80	> 81	> 81	> 79	> 79	> 79	> 80	> 79	> 79	> 80
7	> 95	> 78	> 79	> 79	> 79	> 78	> 79	> 80	> 79	> 79	> 81	> 79
8	> 95	> 78	> 79	> 78	> 79	> 79	> 79	> 79	> 79	> 79	> 79	> 80
9	> 95	> 78	> 79	> 78	> 79	> 79	> 79	> 79	> 79	> 79	> 78	> 79
10	> 94	> 80	> 78	> 79	> 79	> 81	> 79	> 79	> 79	> 80	> 78	> 80

LO ORDER HARMONICS

C.LOSS VS LO DRIVE

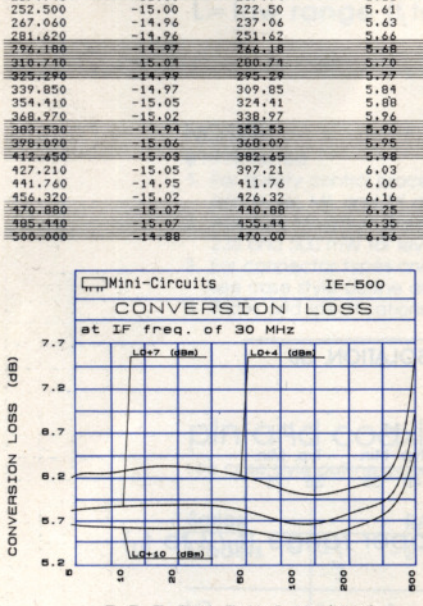
AT IF FREQ. OF 30 MHZ

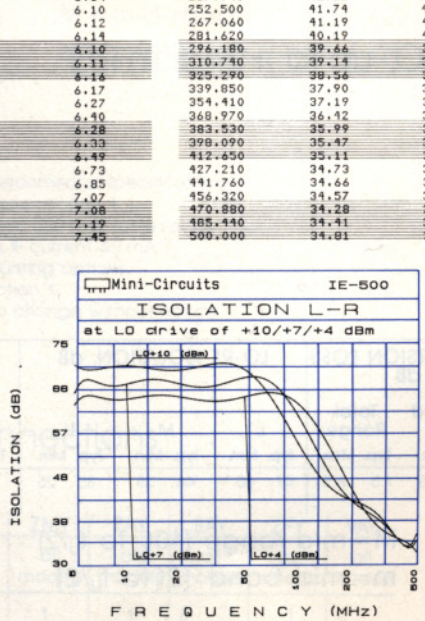
RF (MHZ)	RF REF (DBM)	LO (MHZ)	C.LOSS (DB) LO +10(DBM)	C.LOSS (DB) LO +7(DBM)	C.LOSS (DB) LO +4(DBM)
5.000	-14.91	35.00	5.65	5.82	6.21
10.000	-15.01	40.00	5.62	5.87	6.26
19.559	-14.96	49.56	5.62	5.87	6.33
20.000	-14.97	50.00	5.62	5.90	6.33
34.118	-14.92	64.12	5.63	5.88	6.27
48.676	-15.03	78.68	5.59	5.81	6.19
50.000	-15.02	80.00	5.62	5.81	6.19
63.235	-15.05	93.24	5.58	5.78	6.14
77.794	-15.04	47.79	5.54	5.74	6.12
92.353	-14.95	62.35	5.51	5.71	6.07
100.000	-14.93	70.00	5.52	5.69	6.05
106.910	-15.00	76.91	5.47	5.65	5.99
121.470	-14.99	91.47	5.51	5.66	5.99
136.030	-14.99	106.03	5.49	5.63	5.96
150.590	-15.02	120.59	5.52	5.66	5.96
165.150	-14.93	135.15	5.59	5.75	6.02
179.710	-15.00	149.71	5.58	5.72	6.01
194.260	-14.99	164.26	5.63	5.79	6.06
200.000	-15.07	170.00	5.64	5.83	6.12
208.820	-14.88	178.82	5.67	5.85	6.14
223.380	-14.92	193.38	5.69	5.89	6.18
237.940	-15.00	207.94	5.68	5.85	6.14
252.500	-15.00	222.50	5.61	5.81	6.10
267.060	-14.96	237.06	5.63	5.82	6.12
281.620	-14.96	251.62	5.66	5.84	6.14
296.180	-14.97	266.18	5.68	5.83	6.10
310.740	-15.04	280.74	5.70	5.84	6.11
325.290	-14.99	295.29	5.77	5.92	6.16
339.850	-14.97	309.85	5.84	5.94	6.17
354.410	-15.05	324.41	5.88	6.02	6.27
368.970	-15.02	338.97	5.96	6.11	6.40
383.530	-14.94	353.53	5.90	6.03	6.28
398.090	-15.06	368.09	5.95	6.05	6.33
412.650	-15.03	382.65	5.98	6.16	6.49
427.210	-15.05	397.21	6.03	6.29	6.73
441.760	-14.95	411.76	6.06	6.36	6.85
456.320	-15.02	426.32	6.16	6.53	7.07
470.880	-15.07	440.88	6.25	6.59	7.08
485.440	-15.07	455.44	6.35	6.68	7.19
500.000	-14.88	470.00	6.56	6.90	7.45

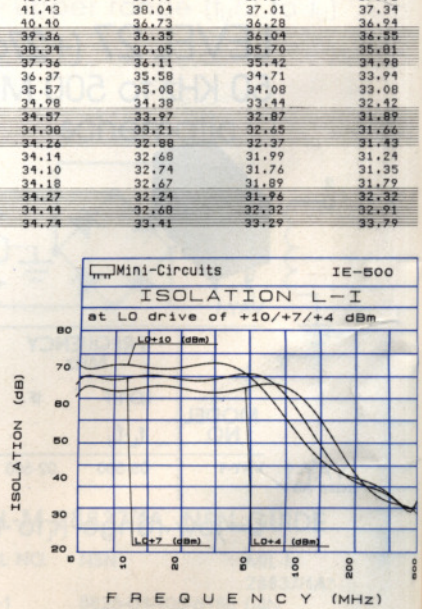
ISOLATION L-R & L-I

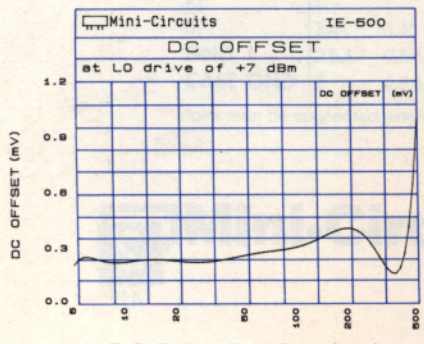
AT LO DRIVES +10/+7/+4 DBM

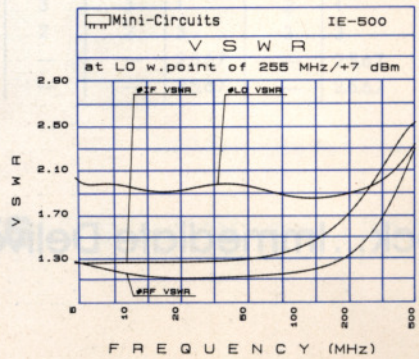
LO (MHZ)	L-R(DB) LO+10(DBM)	L-R(DB) LO+7(DBM)	L-R(DB) LO+4(DBM)	L-I(DB) LO+10(DBM)	L-I(DB) LO+7(DBM)	L-I(DB) LO+4(DBM)
5.000	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
10.000	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
19.559	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
20.000	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
34.118	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
48.676	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
50.000	> 70.00	> 67.00	> 64.00	> 70.00	> 67.00	> 64.00
63.235	> 70.00	> 67.00	> 64.00	65.31	> 67.00	> 64.00
77.794	59.33	> 67.00	> 64.00	56.07	> 67.00	> 64.00
92.353	54.74	> 67.00	> 64.00	51.12	61.26	> 64.00
100.000	52.98	60.52	> 64.00	49.64	56.10	> 64.00
106.910	52.12	57.38	> 64.00	48.86	53.44	> 64.00
121.470	50.22	53.41	> 64.00	46.93	49.02	> 64.00
136.030	48.71	50.31	56.66	45.34	46.78	52.64
150.590	47.28	48.46	52.23	43.96	44.71	47.45
165.150	46.31	47.26	49.96	42.87	43.43	45.73
179.710	45.39	45.88	47.15	42.08	42.32	43.68
194.260	44.06	44.26	45.36	41.08	40.55	41.74
200.000	43.42	43.82	44.90	40.33	40.18	41.35
208.820	42.87	43.33	44.30	39.67	39.76	40.85
223.380	42.55	42.71	43.47	39.62	39.33	39.86
237.940	42.16	42.19	42.78	39.41	38.87	38.82
252.500	41.74	41.62	42.19	38.90	37.87	37.92
267.060	41.19	41.07	41.43	38.04	37.01	37.34
281.620	40.19	40.23	40.40	36.73	36.28	36.94
296.180	39.66	39.45	39.36	36.35	36.04	36.55
310.740	39.14	38.61	38.34	36.05	35.70	35.81
325.290	38.56	37.84	37.36	36.11	35.42	34.98
339.850	37.90	37.03	36.37	35.58	34.71	33.94
354.410	37.19	36.37	35.57	35.08	34.08	33.08
368.970	36.42	35.70	34.98	34.38	33.44	32.42
383.530	35.99	35.15	34.57	33.97	32.87	31.89
398.090	35.47	34.90	34.38	33.21	32.65	31.66
412.650	35.11	34.64	34.26	32.88	32.37	31.43
427.210	34.73	34.30	34.14	32.68	31.99	31.24
441.760	34.66	34.12	34.10	32.74	31.76	31.35
456.320	34.57	34.10	34.18	32.67	31.89	31.79
470.880	34.28	33.99	34.27	32.24	31.96	32.32
485.440	34.41	34.08	34.44	32.68	32.32	32.91
500.000	34.81	34.49	34.74	33.41	33.29	33.79

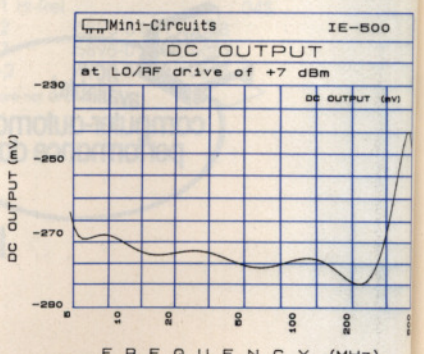












most widely used, low cost

Frequency Mixers

LEVEL 7 (+7dBm LO, up to +1dBm RF)

Model

IE 800 F

RF. IN: FREQ.185.1003 MHZ DRIVE -.02 DBM
LO. IN: FREQ.155.0097 MHZ DRIVE 7.01 DBM
IF MEASURED: FREQ.30.0909 MHZ AMP. -5.88 DBM

DASH ENTRIES WERE NOT MEASURED INTENTIONLY,+ENTRY DENOTES HARMONICS ABOVE IF

HARMONICS ATTENUATION

RF.CAL (DBM)	0	1	2	3	4	5	6	7	8	9	10
0	-	-	26	77	37	57	51	57	46	63	52	70
1	-	22	-	36	12	46	22	51	30	48	47	63
2	75	65	43	62	53	66	58	76	57	71	58	65
3	84	37	29	48	32	50	34	55	34	62	39	57
4	96	74	69	63	51	73	59	79	60	76	68	72
5	96	81	75	74	56	57	46	58	52	60	49	72
6	96	81	75	76	71	72	65	76	64	79	64	82
7	96	74	58	62	56	74	55	65	57	73	68	65
8	95	90	83	76	69	84	79	78	77	77	76	80
9	97	84	71	84	67	73	74	71	63	83	61	79
10	95	89	84	88	85	81	80	87	80	84	88	83

LO ORDER HARMONICS

RF. IN: FREQ.185.1003 MHZ DRIVE -10.02 DBM
LO. IN: FREQ.155.0097 MHZ DRIVE 7.02 DBM
IF MEASURED: FREQ.30.091 MHZ AMP. -15.35 DBM

DASH ENTRIES WERE NOT MEASURED INTENTIONLY,+ENTRY DENOTES HARMONICS ABOVE IF

HARMONICS ATTENUATION

RF.CAL (DBM)	0	1	2	3	4	5	6	7	8	9	10
0	-	-	19	44	25	40	33	42	32	41	30	60
1	-	21	-	32	11	37	18	43	21	36	30	46
2	93	79	55	69	54	70	53	78	53	71	57	65
3	95	61	56	63	60	66	66	70	57	63	58	65
4	96	81	75	80	78	80	78	80	76	81	75	80
5	96	81	78	81	81	80	80	81	73	80	71	81
6	96	81	81	81	80	81	80	81	82	80	81	81
7	96	80	81	82	80	82	80	81	81	81	81	80
8	95	81	80	80	82	82	80	81	80	81	80	81
9	94	81	81	81	81	81	80	81	81	81	80	81
10	94	81	80	81	80	81	80	80	80	81	82	80

LO ORDER HARMONICS

C.LOSS VS LO DRIVE

AT IF FREQ. OF 30 MHZ

RF (MHZ)	RF REF (DBM)	LO (MHZ)	C.LOSS (DB) LO +10(DBM)	C.LOSS (DB) LO +7(DBM)	C.LOSS (DB) LO +4(DBM)
10.000	-15.01	40.00	5.36	5.48	5.73
20.000	-15.00	50.00	5.30	5.48	5.76
33.235	-15.00	63.24	5.20	5.32	5.58
50.000	-14.95	80.00	5.10	5.19	5.41
56.471	-15.08	86.47	5.05	5.15	5.37
79.706	-15.07	49.71	4.93	5.02	5.21
100.000	-15.05	70.00	4.90	4.96	5.16
102.940	-15.00	72.94	4.91	4.98	5.15
126.180	-14.99	96.18	4.93	4.98	5.15
149.410	-15.04	119.41	4.90	4.99	5.13
172.650	-14.88	142.65	4.95	5.05	5.19
195.880	-15.03	165.88	4.97	5.06	5.20
200.000	-15.10	170.00	5.01	5.10	5.25
219.120	-14.99	189.12	4.98	5.10	5.24
242.350	-15.08	212.35	4.98	5.08	5.23
265.590	-15.00	235.59	4.93	5.03	5.18
288.820	-15.02	258.82	4.93	5.04	5.18
312.060	-14.95	282.06	4.97	5.10	5.25
335.290	-15.00	305.29	5.03	5.12	5.27
358.530	-15.04	328.53	5.21	5.27	5.44
381.760	-15.00	351.76	5.14	5.25	5.42
405.000	-14.97	375.00	5.31	5.38	5.51
428.240	-15.00	398.24	5.44	5.58	5.73
451.470	-15.11	421.47	5.34	5.51	5.76
474.710	-15.09	444.71	5.25	5.41	5.69
497.940	-14.93	467.94	5.19	5.33	5.69
500.000	-15.00	470.00	5.21	5.37	5.72
521.180	-15.07	491.18	5.38	5.57	5.94
544.410	-14.90	514.41	5.60	5.84	6.38
567.650	-15.08	537.65	5.54	6.04	6.73
590.880	-14.97	560.88	5.74	6.47	7.19
614.120	-15.02	584.12	6.20	6.96	7.65
637.350	-14.99	607.35	6.41	7.06	7.79
660.590	-15.09	630.59	6.47	7.18	7.94
683.820	-14.97	653.82	6.64	7.45	8.15
707.060	-14.97	677.06	6.62	7.46	8.19
730.290	-15.00	700.29	6.31	7.22	8.17
753.530	-15.04	723.53	6.22	6.75	7.82
776.760	-14.96	746.76	6.41	6.75	7.44
800.000	-15.05	770.00	6.88	7.07	7.55

ISOLATION L-R & L-I

AT LO DRIVES +10/+7/+4 DBM

LO (MHZ)	L-R(DB) LO+10(DBM)	L-R(DB) LO+7(DBM)	L-R(DB) LO+4(DBM)	L-I(DB) LO+10(DBM)	L-I(DB) LO+7(DBM)	L-I(DB) LO+4(DBM)
10.000	59.82	60.90	60.09	58.44	58.40	58.91
20.000	55.12	55.66	55.78	53.45	54.42	54.68
33.235	50.64	51.57	52.47	49.48	50.43	51.43
50.000	47.48	48.17	49.30	46.46	47.28	48.28
56.471	46.43	47.17	48.00	45.46	46.38	47.36
79.706	43.68	44.47	45.20	42.79	43.80	44.76
100.000	41.79	42.63	43.46	40.93	41.97	43.09
102.940	41.61	42.43	43.25	40.70	41.74	42.87
126.180	40.10	40.86	41.71	39.12	40.07	41.22
149.410	38.84	39.51	40.33	37.69	38.57	39.68
172.650	37.85	38.56	39.39	36.47	37.36	38.36
195.880	36.74	37.63	38.53	34.97	36.08	37.24
200.000	36.72	37.58	38.39	35.03	36.09	37.15
219.120	36.24	36.78	37.39	34.62	35.27	36.04
242.350	35.01	35.73	36.72	32.99	33.46	34.41
265.590	35.43	36.17	36.99	32.86	33.57	34.31
288.820	34.90	35.65	36.37	32.63	32.87	33.21
312.060	34.25	34.57	35.12	31.98	31.49	31.67
335.290	33.10	33.66	34.55	30.38	30.57	31.56
358.530	33.01	33.89	34.54	30.17	30.88	31.67
381.760	33.94	34.67	34.79	30.49	31.12	31.53
405.000	33.52	34.16	33.67	31.36	31.47	31.02
428.240	33.64	33.37	32.52	30.80	29.89	28.87
451.470	32.50	32.07	31.38	29.29	28.31	27.12
474.710	32.10	31.48	30.92	27.85	26.82	25.84
497.940	31.82	31.21	31.02	26.63	25.69	25.25
500.000	31.80	31.23	31.08	26.61	25.62	25.25
521.180	31.79	31.36	32.04	25.53	24.92	25.59
544.410	31.90	32.27	33.47	24.62	25.16	26.52
567.650	32.63	33.60	34.47	24.76	26.02	27.31
590.880	33.35	34.59	34.74	25.84	27.52	28.41
614.120	34.01	34.78	34.24	27.83	29.16	29.33
637.350	34.34	34.71	34.16	27.81	27.79	27.55
660.590	34.93	35.21	34.79	26.62	26.68	26.62
683.820	35.56	35.47	35.16	26.55	26.36	26.24
707.060	36.45	35.69	35.37	27.57	26.48	26.04
730.290	38.32	36.72	36.14	29.36	27.33	26.24
753.530	40.25	38.37	37.52	30.54	28.35	26.81
776.760	42.67	40.54	39.79	31.56	29.59	27.85
800.000	45.21	43.13	43.07	31.98	30.47	28.93