

# FREQUENCY MIXERS

Plug-In

## LEVEL 17 10 kHz to 3 GHz



SBL/SIMA



SRA



TFM/TUF



TAK

+17 dBm LO, up to +10 dBm RF

MODEL NO.	FREQUENCY MHz		CONVERSION LOSS dB				LO-RF ISOLATION, dB						LO-IF ISOLATION, dB						CASE STYLE	CONNECTOR	PRICE \$
	LO/RF $f_L-f_U$	IF	Mid-Band $\bar{x}$	$\sigma$	Max.	Total Range Max.	L Typ.	M Typ.	U Typ.	L Min.	M Min.	U Min.	L Typ.	M Typ.	U Typ.	L Min.	M Min.	U Min.			
□ SBL-173H	5-1200	1-1200	5.70	.10	7.0	8.5	40	35	35	25	35	20	40	35	35	20	30	20	A06	u,f	17.95
SRA-1H	.5-500	DC-500	6.01	.08	7.5	8.5	55	45	45	30	35	25	45	35	40	30	30	20	A01	e	22.95
SRA-1WH	1-750	DC-750	5.85	.11	7.5	8.5	50	40	45	25	35	25	45	35	40	30	30	20	A01	f	26.95
SRA-2H	2-1000	DC-1000	6.34	.14	7.5	10.0	50	40	35	25	35	25	45	30	30	20	25	20	A01	f	40.95
SRA-3H	.05-200	DC-200	5.18	.05	7.0	7.5	50	45	40	30	35	25	45	35	40	30	30	20	A01	e	24.95
SRA-11H	10-3000	10-1000	6.83	.09	10.0	12.0	27	20	25	18	23	16	27	20	25	18	23	16	A01	m	48.95
SRA-17WH	20-700	5-340	7.7	.01	9.0	10.5	60	45	55	40	50	32	50	32	45	25	32	18	A01	f	24.95
SRA-173H**	5-1200	DC-1200	5.38	.05	7.0	8.5	40	35	35	25	35	20	40	35	35	20	30	20	A01	u,f	33.95
SIMA-5H	2-1500	DC-1000	6.94	.07	8.5	8.5	65	35	44	23	40	22	54	25	30	23	25	13	A06	m	34.95
□ TUF-18DH	100-1800	50-750	7.3	.15	8.5	9.0	41 (Typ.) 23 (Min.)			33 (Typ.) 20 (Min.)			B02			z	23.95				

+17 dBm LO, up to +14 dBm RF

TFM-1H	2-500	DC-500	6.14	.11	7.5	8.5	50	45	40	30	30	20	45	40	35	25	25	20	B02	z	27.95
TFM-2H	5-1000	DC-1000	6.12	.12	7.0	10.0	50	45	40	30	30	20	45	40	35	25	25	17	B02	z	38.95
TFM-3H	.1-250	DC-250	4.58	.11	7.0	8.5	50	45	40	30	28	23	45	40	35	25	26	20	B02	z	27.95
† TFM-4H	5-1200	DC-1200	5.24	.05	8.0	9.0	50	40	35	25	30	20	50	40	35	20	30	20	B13	z	41.20
□ TUF-1H	2-600	DC-600	5.90	.18	7.0	8.0	68	50	50	30	43	25	62	45	48	30	33	22	B02	z	10.20
□ TUF-2H	50-1000	DC-1000	6.20	.22	7.5	9.0	58	40	47	30	42	25	58	35	44	25	28	18	B02	z	11.20
□ TUF-3H	0.15-400	DC-400	5.00	.33	7.0	8.0	60	50	50	35	40	30	60	40	45	25	35	20	B02	z	12.45
□ TUF-5H	20-1500	DC-1000	7.50	.17	8.5	9.0	62	55	50	40	38	25	40	25	29	18	20	8	B02	z	15.45
□ TUF-11AH	1400-1900	40-500	7.30	.28	9.0	9.0	35 (Typ.)	25 (Min.)					30 (Typ.)	15 (Min.)					B02	z	23.95
□ TUF-860H	800-1050	DC-250	6.80	.31	8.3	8.3	38 (Typ.)	25 (Min.)					24 (Typ.)	18 (Min.)					B02	z	15.45
TAK-1H	2-500	DC-500	5.93	.08	7.5	8.5	50	40	40	30	30	25	45	35	35	25	25	20	A05	e	23.45
TAK-1WH	5-750	DC-750	5.71	.08	7.5	9.0	50	40	40	30	30	25	45	35	35	25	30	20	A05	f	27.95
TAK-3H	.05-300	DC-300	4.82	.09	7.0	8.5	55	45	40	30	30	25	50	40	35	25	25	20	A05	e	25.45
SRA-2500SH	5-2500	1-1000	5.8	.10	7.5	10.5	40	25	37	28	30	18	50	35	42	25	25	17	A06	f	37.95

L = low range [ $f_L$  to  $10f_L$ ]

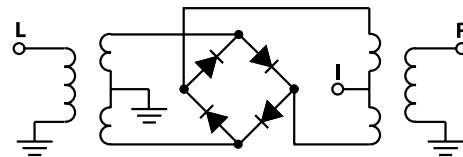
M = mid range [ $10f_L$  to  $f_U/2$ ]

U = upper range [ $f_U/2$  to  $f_U$ ]

m = mid band [ $2f_L$  to  $f_U/2$ ]

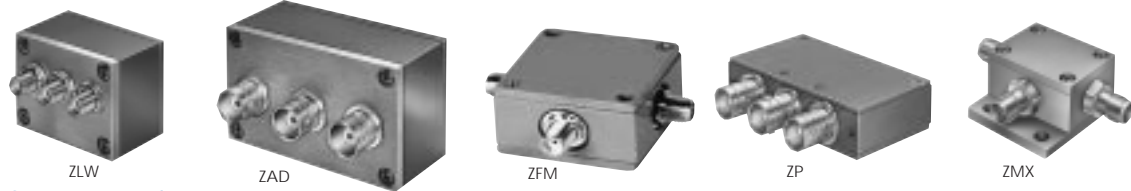
### NOTES:

- $\bar{x}$  Average of conversion loss at center of mid-band frequency ( $f_L+f_U/4$ )
- $\sigma$  Standard deviation
- Non-hermetic
- \*\* Below 1 MHz IF, conversion loss increases up to 6 dB higher as frequency decreases to DC.
- † Phase detection, positive polarity.
- A. General Quality Control Procedures, Environmental Specifications, Hi-Rel, and MIL description are given in General Information (Section 0).
- B. Connector types and case mounted options, case finishes are given in section 0, see "Case Styles & Outline Drawings".
- C. Prices and Specifications subject to change without notice.
  1. Absolute maximum power, voltage and current ratings:
    - 1a. RF power 200mW 1b. Peak IF current, 40mA
  2. Two-Tone 3rd order IM below IF, each tone at 0dBm (200 and 202 MHz), LO at +17dBm (180 MHz). All models 60dB typ., 55dB min., except 55 dB typ., 45 dBm min. for TFM-3H, TAK-3H, ZFM-3H, ZLW-3SH, ZAD-3SH.



# Coaxial

## LEVEL 17 50 kHz to 8 GHz



+17 dBm LO, up to +10 dBm RF

MODEL NO.	FREQUENCY MHz		CONVERSION LOSS dB				LO-RF ISOLATION, dB			LO-IF ISOLATION, dB			CASE STYLE	CONNECT ION	PRICE \$ Qty. (1-9)						
	LO/RF $f_L-f_U$	IF	Mid-Band			Total Range Max.	L Typ.	M Typ.	U Typ.	L Typ.	M Typ.	U Typ.									
			$\bar{x}$	$\sigma$	Max.																
ZLW-1H	.5-500	DC-500	6.13	.08	7.5	8.5	55	45	45	30	35	25	45	35	40	30	30	20	M21	ae	56.95
ZLW-2H	2-1000	DC-1000	6.34	.14	7.5	10.0	50	40	35	25	35	25	45	35	30	20	25	20	M21	ae	64.95
ZLW-11H	10-3000	10-1000	6.83	.09	10.0	12.0	27	20	25	18	23	16	27	20	25	18	23	16	M21	ae	99.95
ZAD-1H	.5-500	DC-500	6.16	.08	7.5	8.5	50	45	45	30	35	25	45	35	40	30	30	20	M22	ae	48.95
ZAD-3H	.05-200	DC-200	4.89	.09	7.0	7.5	55	45	45	30	35	25	45	35	40	30	30	20	M22	ae	50.95
ZAD-11H	10-3000	10-1000	6.83	.09	10.0	12.0	27	20	25	18	23	16	27	20	25	18	23	16	M22	ae	89.95

+17 dBm LO, up to +14 dBm RF

ZFM-1H	2-500	DC-500	6.14	.11	7.5	8.5	50	45	40	30	30	25	45	35	35	25	25	20	K18	ad	64.95
ZFM-2H	5-1000	DC-1000	6.12	.12	7.0	10.0	50	40	40	30	30	20	45	40	35	25	25	17	K18	ad	71.95
ZFM-3H	.05-300	DC-300	5.18	.11	7.0	8.5	55	45	40	30	30	25	50	40	35	25	25	20	K18	ad	64.95
ZFM-4H	5-1200	DC-1200	4.97	.11	8.0	9.0	50	40	35	25	30	20	50	40	35	20	30	20	K18	ad	73.95
ZP-1H	2-600	DC-600	5.90	.18	7.0	8.0	68	50	50	30	43	25	62	45	48	30	33	22	GG60	ag	45.95
ZP-2H	50-1000	DC-1000	6.20	.22	7.5	9.0	58	40	47	30	42	25	58	35	44	25	28	18	GG60	ag	45.95
ZP-3H	0.15-400	DC-400	5.00	.33	7.0	8.0	60	50	50	35	40	30	60	40	45	25	35	20	GG60	ag	45.95
ZP-5H	20-1500	DC-1000	7.50	.17	8.5	9.0	62	55	50	40	38	25	40	25	29	18	20	8	GG60	ag	49.95
ZP-11AH	1400-1900	40-500	7.30	.28	9.0	9.0	35 (Typ.)	25 (Min.)					30 (Typ.)	15 (Min.)					GG60	ag	49.95
ZMX-7GHR	3700-7000	DC-1000	5.3	.30	—	8.5	33 (Typ.)	20 (Min.)					34 (Typ.)	20 (Min.)					BU413	af	84.95
ZMX-8GH	3700-8000	DC-2000	5.8	.30	—	8.5	40 (Typ.)	20 (Min.)					18 (Typ.)	8 (Min.)					BU413	ad	89.95
ZLW-1SH	2-500	DC-500	5.93	.08	7.5	8.5	50	40	40	30	30	25	45	35	35	25	25	20	M21	ae	62.95
ZLW-1WSH	5-750	DC-750	5.83	.07	7.5	9.0	50	45	40	30	30	20	45	40	35	25	30	20	M21	ae	66.95
ZAD-1WSH	5-750	DC-750	5.64	.08	7.5	9.0	50	45	40	30	30	20	45	40	35	25	30	20	M22	ae	56.95

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 [ $2f_L$  to  $f_U/2$ ]

### pin and coaxial connections

see case style outline drawings

PORT	e	f	m	u	x	z	ad	ae	af	ag
LO	8	8	8	3,4 ^	2	4	1	1	2	L
RF	1	1	1	1	1	1	2	3	1	R
IF	3,4 ^	3,4 ^	3	8	3	2	3	2	3	X
GND EXT.	2,5,6,7	2,5,6,7	2,5,6,7	2,5,6,7	4,5,6	3	—	—	—	—
CASE GND	2	2,5,6,7	2,5,6,7	2,5,6,7	—	3	—	—	—	—
NOT USED	—	—	4	—	—	—	—	—	—	—

^ pins must be connected together externally

### NSN GUIDE

MCL NO.	NSN	MIL-M-28837/1*
SRA-1H	6625-00-594-0223	08
SRA-1WH	5895-00-576-0716	
SRA-2H	5895-01-063-1078	
SRA-3H	5895-01-117-4537	
SRA-11H	5895-01-192-0173	
ZAD-1WH	5895-01-045-4647	
ZAD-3H	5895-01-149-0771	
ZLW-1H	5985-01-080-7637	
ZLW-1HB	5962-01-045-7500	
ZLW-1HB(SMA)	5895-01-141-4646	

\* units are not OPL listed



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