MIXER, IMAGELESS
1-18 GHz

MODEL TT

GENERAL INFORMATION:

KDI/Triangle mixers are frequency converting devices that provide state of the art performance in different sizes and package styles.

KDI/Triangle offers a full line of imageless mixers covering frequency ranges from 1 GHz to 18 GHz in different RF, LO and IF frequencies. Wide band devices such as 6-18 GHz with IF frequencies extended up to 2 GHz are available. Narrow band converters with optimized conversion loss, isolation, and VSWR are also offered, covering satellite bands, for example.

GENERAL SPECIFICATIONS:

Frequency Coverage:	1.0 to 18.0 GHz
Storage Temperature:	−65°C to +95°C
Operating Temperature:	−54°C to +85°C
RF Input Power:	200 mW @ 25°C
(Non-Destruct)	100 mW @ 85°C
Environment:	MIL-E-5400, MIL-STD-202, MIL-E-16400
Connectors:	SMA female
1 dB Compression:	+5 dBm typ.
3rd ORDER IIP:	+15 dBm typ.

ELECTRICAL PERFORMANCE

Model No.	LO/RF Freq. GHz (Note 1,2)	IF Freq., GHz (Note 1,2,4)	Conversion Loss, dB (Notes 3,5)		Isolation, dB						Image Rejection dB Typ-Min (Note 7)		VSWR Typ - Max (Note 6)						Mechanical Outline
					LO - RF		LO - IF		RF - IF				RF		LO		IF		
			Typ	Max	Typ	Min	Typ	Min	Typ	Min			Typ	Max	Typ	Max	Typ	Max	
TT-12	1 - 2	0 - 0.32	6	7	20	18	25	20	25	20	22	15	1.5	2.0	1.5	2.0	1.5	2.0	B1
TT-24	2 - 4	0 - 1	6	7	20	17	25	20	25	20	22	15	1.5	2.0	1.5	2.0	1.5	2.0	B2
TT-48	4 - 8	0 - 2	7	8	20	16	30	25	30	25	22	15	1.5	2.0	1.5	2.0	1.5	2.0	B3
TT-68	6 - 18	0 - 2	7.5	10	18	13	30	25	30	25	17	11	1.9	2.8	1.9	2.8	1.9	2.0	A
TT-86	8 - 16	0 - 2	7	9	20	16	30	25	30	25	20	13	1.8	2.5	1.8	2.5	1.5	2.0	A
TT-88	8 - 18	0 - 2	8	10	19	14	30	25	30	25	18	12	1.9	2.7	1.9	2.7	1.5	2.0	A
TT-98	9 - 18	0 - 2	8	10	20	15	30	25	30	25	20	13	1.8	2.5	1.8	2.5	1.5	2.0	A

- Two-tone intermodulation products are typically 65 dB down from the desired output signal with two input signals at −20 dBm.
- Unless otherwise specified at the time the order is placed, unit will be supplied with IF2 Terminated ($F_{RF}>F_{LO}$)

NOTES:

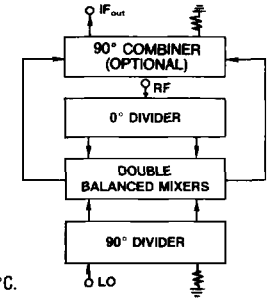
1. Other frequencies are available.
2. When ordering specify the RF, LO and IF (or RF_{in}, RF_{out}, and IF) frequencies of operation, if different from standard model, so that performance can be optimized. A special part number will be assigned.
3. Conversion loss data is for LO power of +7 dBm. Mixers are available with LO power of 0 dBm. Conversion loss will degrade by 1 dB. Units are also available to operate with LO power up to +16 dBm. Conversion loss will degrade by 0.5 dB at +16 dBm.
4. IF band is divided into octave subbands:

Band	Coverage (GHz)
A	0.02 - 0.04
B	0.04 - 0.08
C	0.08 - 0.16
D	0.16 - 0.32
E	0.32 - 0.64
F	0.50 - 1.00
G	1.00 - 2.00

When ordering specify IF Band by adding suffix (i.e. For Band A: TT-12A).

5. Conversion loss flatness over octave IF frequency range is ±0.7 dB measured with local oscillator power of +7 dBm.
6. If required, the VSWR can be improved over narrow bands.
7. Image rejection is measured at IF center frequency with local oscillator power of +7 dBm. IF = 30 MHz.
8. For $F_{RF}>F_{LO}$; $F_{IF1} = F_{RF}-F_{LO}$ and IF2 should be terminated. See next page.
9. For $F_{RF}<F_{LO}$; $F_{IF2} = F_{LO}-F_{RF}$ and IF1 should be terminated. See next page.
10. Different types of connectors are available.
11. Hermetically sealed units are available.
12. The noise figure and conversion loss will improve by approximately 0.5 dB at −54°C and degrade by 1 dB maximum at +85°C.

SCHEMATIC DIAGRAM



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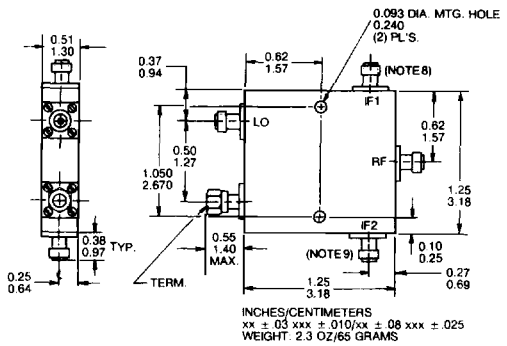
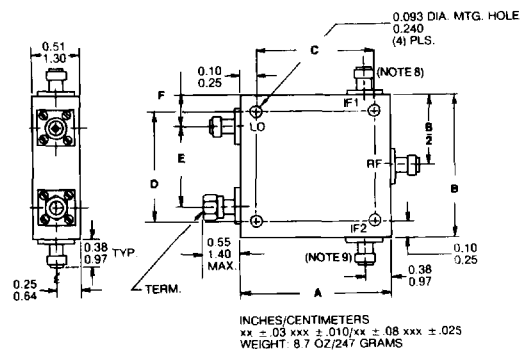
OUTLINE DRAWINGS



OUTLINE A



OUTLINE B

OUTLINE B MECHANICAL DIMENSIONS

	A	B	C	D	E	F	
B1	2.50	2.50	2.30	2.30	0.85	0.82	inches
	6.35	6.35	5.842	5.842	2.16	2.08	cm
B2	2.25	2.00	2.05	1.80	1.30	0.35	inches
	5.72	5.08	5.207	4.57	3.30	0.88	cm
B3	1.58	1.50	1.38	1.30	0.78	0.36	inches
	4.01	3.81	3.51	3.30	1.98	0.91	cm