AVANTEK

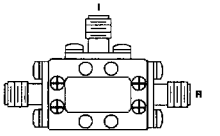
DBX–1824M/H
DBY–1824M/H
Duroid Mixer
2 to 18 GHz Triple Balanced

FEATURES

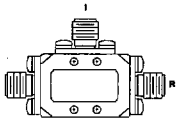
- Two Schottky Diode Quads
- .005 to 4 GHz IF Bandwidth
- 2.0 to 18.0 GHz RF and LO Bandwidth

APPLICATIONS

- 2 to 18 GHz Swept Frequency Applications with IF < 4 GHz
- EW Systems
- Wideband Heterodyned Receivers



DBX, p. 16–10



DBY, p. 16–11

DESCRIPTION

The DBX/DBY Series uses precisely matched Schottky-barrier diodes and a "quasi-planar" physical construction for excellent overall symmetry. Construction techniques result in high LO to RF isolation, extremely low single tone intermodulation distortion and very good amplitude and phase match characteristics.

ELECTRICAL SPECIFICATIONS (Measured in a 50-ohm system)

Symbol	Characteristic	Operating Frequencies GHz f_{LO}	F_{RF}	f_{IF}	Power Level LO Port dBm (typ)	Model Suffix	RF Port dBm	Specifications Typical T_C = 25°C	Guaranteed T_C = −55° to +100°C	Unit
BW	Operating Frequency Range	2.0–18.0	2.0–18.0	.005–4.0						GHz
CL, NF	SSB Conversion Loss and Noise Figure	2.0– 8.0	2.0– 8.0	0.005–1.5				6.0	8.0	dB
		2.0–18.0	2.0–18.0	0.005–1.5				6.5	8.5	max
		2.0–18.0	2.0–18.0	0.005–2.5				7.0	9.0	
		2.9–18.0	2.0–18.0	0.005–4.0				7.5	9.5	
ISOL	Isolation Port-to-Port L–R	2.0– 4.0	—	—				20	15	dB
	L–R	4.0–18.0	—	—				25	20	min
	R–L	—	2.0–18.0	—				25	—	
	R–I	—	2.0–18.0	—				25	—	
	L–I	2.0–18.0	—	—				30	20	
	I–R	—	—	0.005–8.0				25	—	
	I–L	—	—	0.005–8.0				25	—	
—	VSWR (50 ohm) (large signal) L	2.0–18.0	—	—				2.0:1		max
	(small signal) R	—	2.0– 4.0	—				2.5:1		
	(small signal) R	—	4.0–18.0	—				2.0:1		
	(large signal) R	—	2.0–18.0	—				2.0:1		
	(large signal) I	—	—	0.005–8.0				1.5:1		
	(small signal) I	—	—	0.005–8.0				1.5:1		
CC	Conversion Compression Point (1dB)	2.0–18.0	2.0–18.0	0.005–4.0	+10	M		+ 6		dBm
		2.0–18.0	2.0–18.0	0.005–4.0	+13	H		+ 8		typ
IP_3	Third-Order Two-Tone Intercept Point	2.0–18.0	2.0–18.0	0.005–4.0	≥+13	M	—	+15	—	dBm
		2.0–18.0	2.0–18.0	0.005–4.0	≥+17	H	—	+18	—	typ
—	LO Port Drive Level (typical)	2.0–18.0	2.0–18.0	0.005–4.0	+10–+17	M				dBm
		2.0–18.0	2.0–18.0	0.005–4.0	+13–+20	H				

NOTE: Specifications guaranteed at LO Power of +7 dBm for "L" model, +10 dBm for "M" model, and +17 dBm for "H" model.

MAXIMUM RATINGS

Peak Input Current @ 25°C	100 mA DC
Pin Temperature	260° C for 10 seconds
Operating Case Temperature	−55°C to +100°C
Storage Temperature	−65°C to +100°C
Continuous RF Input Power	400 mW @ +25°C
	200 mW @ +100°C

WEIGHT: (typical) DBX — 22 grams; DBY — 16 grams (with connectors)

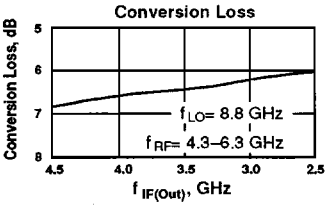
TYPICAL PERFORMANCE AT 25°C

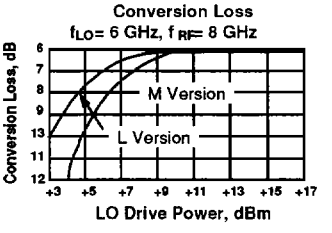
Typical Single Tone Intermodulation Harmonic Suppression at 25°C (dB below desired output)

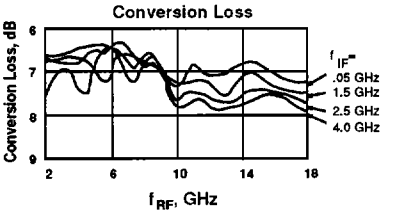
Harmonics of f_{RF}	Harmonics of f_{LO} 1	2	3	4	5	6
6	>70	>70	>70	>70	>70	>70
5	>70	>70	>70	>70	>70	>70
4	>70	>70	>70	>70	>70	>70
3	65	>70	60	>70	65	>70
2	55	55	55	55	55	60
1	0	35	18	40	35	45

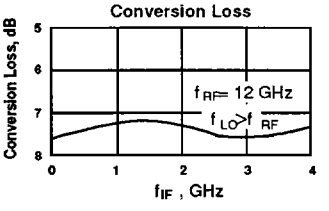
Typical Harmonic Intermodulation Suppression for mixer generated harmonics of the input signals. Suppression numbers are for a f_{RF} signal level at –10 dBm and f_{LO} signal level of:

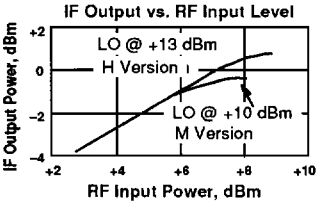
M Suffix ..... +10 dBm
H Suffix ..... +13 dBm

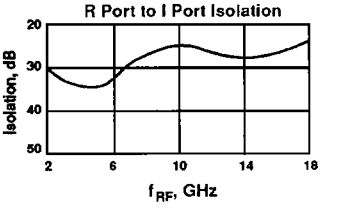


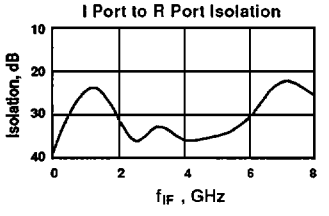


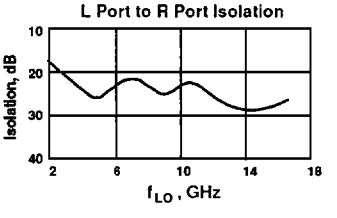


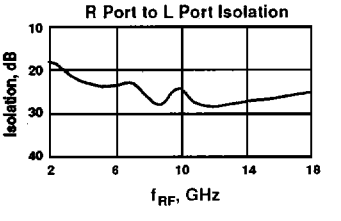


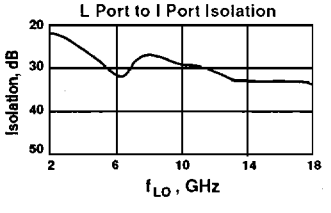


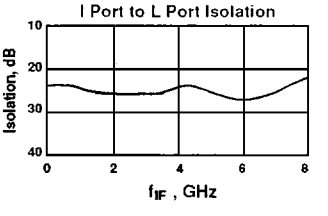


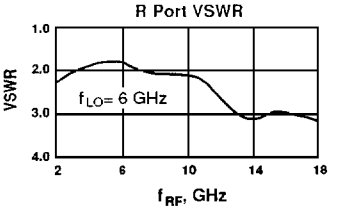






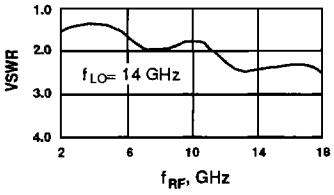




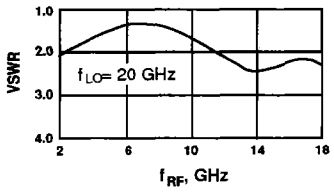


TYPICAL PERFORMANCE AT 25°C (continued)

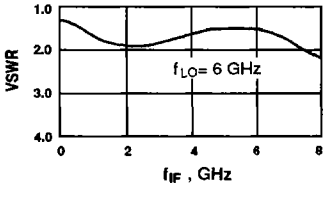
R Port VSWR



R Port VSWR



I Port VSWR



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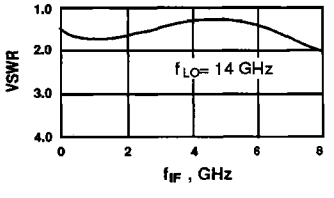
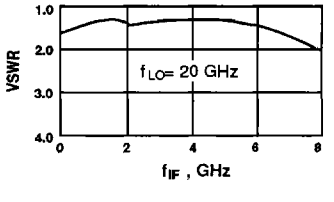
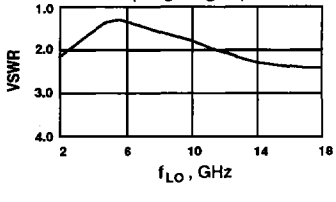


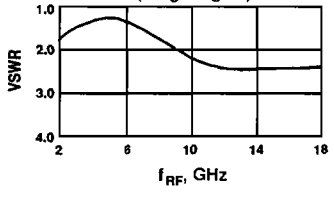
I Port VSWR



L Port VSWR
(Large Signal)



R Port VSWR
(Large Signal)



I Port VSWR
(Large Signal)