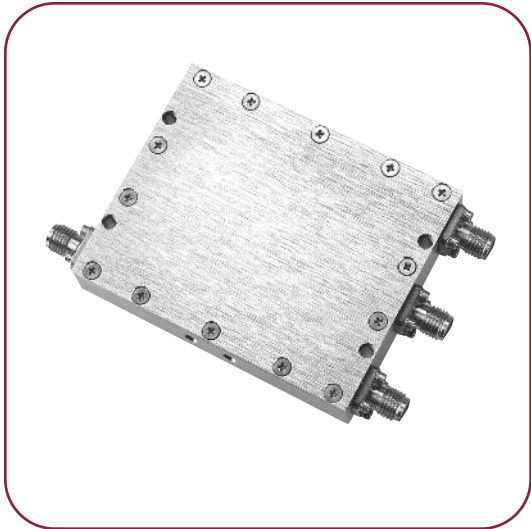


1 TO 2 GHz QPSK MODULATOR

MODEL: SDM0102LC1MDQ (Modulation Driven)

FEATURES

- RF output/carrier input 1 to 2 GHz
- Modulation bandwidth DC to 500 MHz (Q)
- Carrier linear input Up to +5 dBm
- Modulation input power +7 to +13 dBm
- Sideband suppression 25 dB
- Carrier isolation 35 dB
- Modulation options:
 QPSK digital SMT (TTL input)



All modulators and SSB upconverters require that at least one of the input frequency bands (carrier or modulation) has sufficient power to turn on the semiconductors. This model employs modulation drive. All modulators yield a frequency spectrum that utilizes both sidebands on either side of the output suppressed carrier. SSB upconverters, however, employ an internal IF 90° hybrid to yield only one RF sideband output. This is offset above or below the input LO by the IF frequency (test data is recorded for the upper sideband only). Schottky diode (standard) modulators have the greatest speed and bandwidths, but yield RF output powers of typically less than 0 dBm. PIN diode (optional) designs can only be driven at modulation rates of less than 30 MHz, but will yield output RF powers exceeding +5 dBm. This modulation driven unit is used when the RF input has a wide dynamic range, such as for military and commercial Doppler frequency or phase-shift generation.

ELECTRICAL SPECIFICATIONS

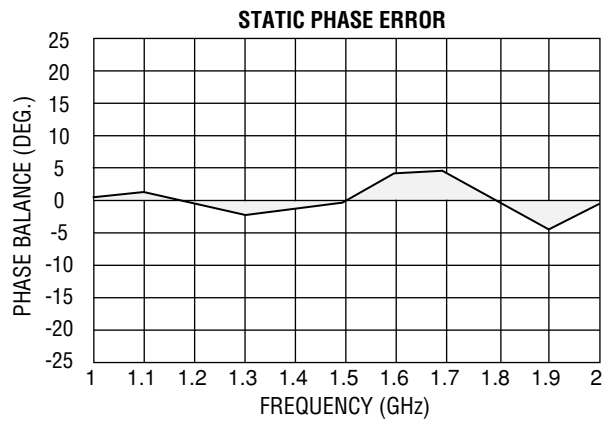
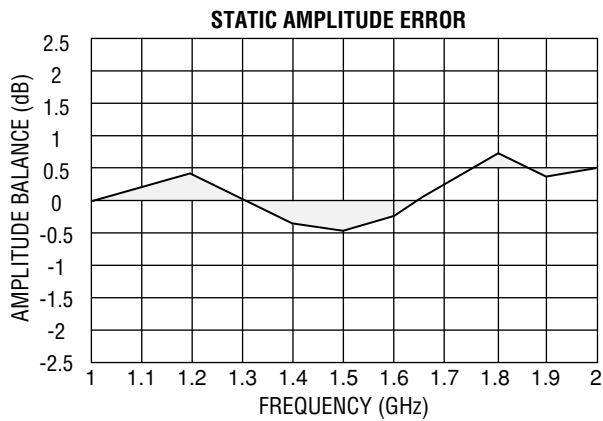
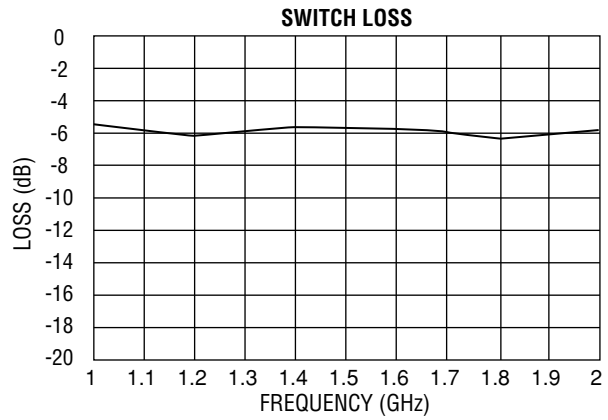
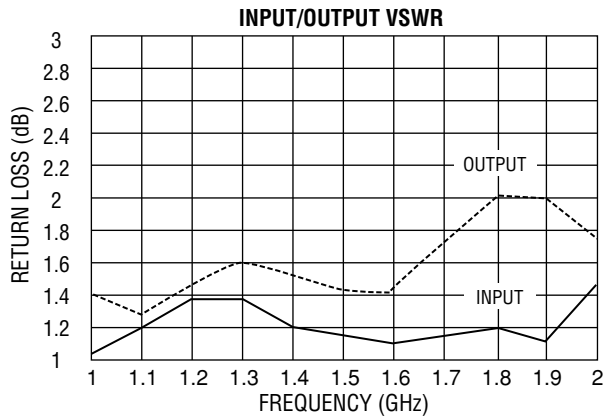
INPUT PARAMETERS	UNITS	MIN.	TYP.	MAX.
RF carrier	GHz	1		2
RF VSWR (RF = -10 dBm, IF modulation = +10 dBm)	Ratio		1.5:1	
RF power at 1 dB compression (IF = +10 dBm)	dBm		+5	
IF modulation frequency range (Note 3)	MHz	DC		500
IF modulation current	mA	+7	+10	+13
TRANSFER CHARACTERISTICS	UNITS	MIN.	TYP.	MAX.
Conversion loss (Note 1)	dB		6	7
Carrier isolation	dBc		35	
Sideband suppression (Note 2)				
Carrier – fundamental IF	dBc		25	
Carrier ±2 IF, 4 IF, etc.	dBc		45	
Carrier ±3 IF	dBc		10	
Quadrature phase accuracy, I/Q mode (see Graph Key)	Degrees		±5	±7
Quadrature amplitude accuracy	dB		±0.5	±0.75
OUTPUT PARAMETERS	UNITS	MIN.	TYP.	MAX.
RF frequency range	GHz	1		2
RF VSWR (RF = -10 dBm, IF modulation = +10 dBm)	Ratio		2.5:1	



SDM0102LC1MDQ MODULATION DRIVEN TYPICAL TEST DATA

RF Phase (Deg.)	Graph Key		
0	+90	-90	+180
I/Q	+/-	+/-	-/-

I/Q MODE (RF = 0 dBm, I/Q = ±10 mA)



MAXIMUM RATINGS

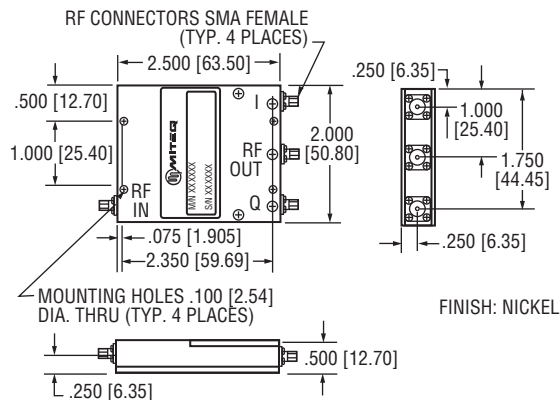
Specification temperature..... +25°C
 Operating temperature -54 to +85°C
 Storage temperature -65 to +125°C

GENERAL NOTES

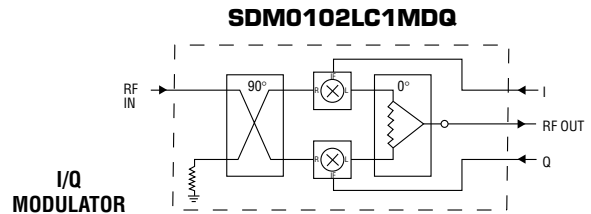
1. Conversion loss is relative to RF carrier input (0 dBm).
2. Relative to desired output sideband.
3. PIN diode for high level operation (RF = +20 dBm).

NOTE: Test data supplied at 25°C; insertion loss, phase and amplitude balance.

OUTLINE DRAWING



BLOCK DIAGRAM



NOTE: All dimensions shown in brackets [] are in millimeters.

