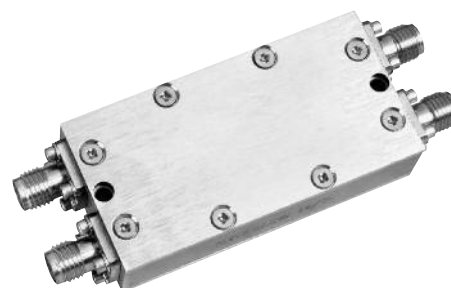


12 TO 18 GHz SINGLE-SIDEBAND UPCONVERTER

MODEL: SSM1218(*)C2MD(**)

FEATURES

- RF output/carrier input 12 to 18 GHz
- IF bandwidth DC to 500 MHz (Q)
- Linear RF input Up to +5 dBm
- IF input power +10 to +13 dBm
- Sideband suppression 25 dB
- Carrier rejection 30 dB
- Modulation options:
 - Single sideband A, B and C
(internal hybrid)
 - Multioctave IFs Q (separate inputs)



All modulators and SSB upconverters require that at least one of the input frequency bands (carrier or IF) has sufficient power to turn on the semiconductors. This model employs IF drive. SSB upconverters 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) upconverters 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 IF 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	12		18
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)	GHz	DC		500
IF modulation power range (50 ohm input)	dBm	+10		+13
TRANSFER CHARACTERISTICS	UNITS	MIN.	TYP.	MAX.
Conversion loss (Note 1)	dB		10	13
Carrier suppression	dBc	20	25	
Sideband suppression (Note 2)				
Carrier – fundamental IF	dBc	18	23	
Carrier ±2 IF, 4 IF, etc.	dBc		35	
Carrier ±3 IF	dBc		10	
Truth table	SSM1218(*)C2MDQ	PORT	RF < LO	RF > LO
		I	0	-90
		Q	-90	0
OUTPUT PARAMETERS	UNITS	MIN.	TYP.	MAX.
RF frequency range	GHz	12		18
RF VSWR (RF = -10 dBm, IF modulation = +10 dBm)	Ratio		2.5:1	

SSM1218LC2MDC TYPICAL IF DRIVEN OUTPUT SPECTRUM TABLE

SSB UPCONVERTER (RF = 0 dBm, IF = +10 dBm total, IF = 100 MHz)

Frequency (GHz)	$f_0 + \text{IF}$ (I.L., dB) Note 1	$f_0 - \text{IF}$ (dBc)	f_0 (dBc)	$f_0 - 2 \text{ IF}$ (dBc)	$f_0 + 2 \text{ IF}$ (dBc)	$f_0 - 3 \text{ IF}$ (dBc)	$f_0 + 3 \text{ IF}$ (dBc)
12	-8.8	-20.8	-28.3	-37.2	-33.3	-10.9	-20.3
12.5	-9.2	-20.1	-28.7	-38.5	-33.4	-10.4	-20.1
13	-9.4	-23.3	-28.6	-37.1	-35.5	-9.9	-22.1
13.5	-8.6	-27.1	-27.7	-36.4	-38	-12	-25.1
14	-9.3	-27.5	-28.1	-36.9	-36.5	-9.6	-25.4
14.5	-8.5	-30.2	-24.2	-38.9	-36.6	-11.2	-25.6
15	-8.3	-28.3	-29.1	-45.1	-35.7	-12.1	-26.8
15.5	-8.7	-36.4	-29.9	-43.5	-39.3	-13	-27.8
16	-8.8	-44	-29.7	-41.1	-44.8	-11.5	-29.2
16.5	-8.9	-31.5	-37.6	-37.4	-42.3	-10.3	-28.7
17	-9.2	-29.3	-36	-36.9	-38.2	-10.1	-26.2
17.5	-9	-29.8	-35.7	-36.9	-33.5	-10.4	-29.5
18	-9.7	-33.5	-29.9	-40.2	-32.8	-10.8	-27.4

MAXIMUM RATINGS

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

GENERAL NOTES

1. Insertion loss relative to 0 dBm RF input. All other outputs, including f_0 , are relative to the desired upper ($f_0 + f_m$) output.
2. Standard SSB units with IF hybrids are aligned for upper sideband operation. For lower sideband or selectable sideband, contact MITEQ.

*3.

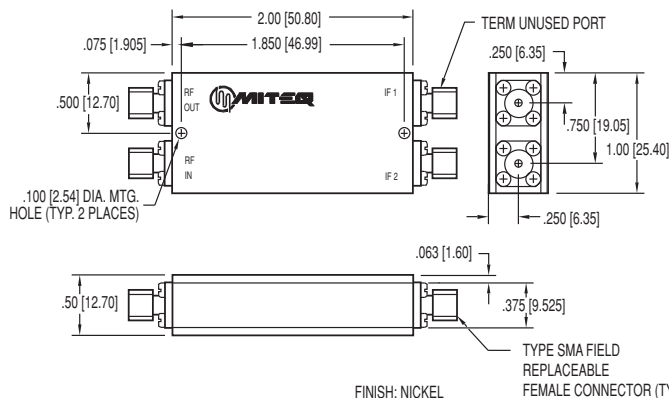
Model Number Option Table				
(*) Add Letter	LO Power Range (dBm)	P1 dB (dBm)	(**) Add Letter	IF Frequency (MHz)
L	10-13	+6	A	20-40
M	13-16	+10	B	40-80
H	17-20	+15	C	100-200
			Q	DC-500(I/Q)

4. Add 1 dB to Max. conversion loss for "M" and "H" power level options.

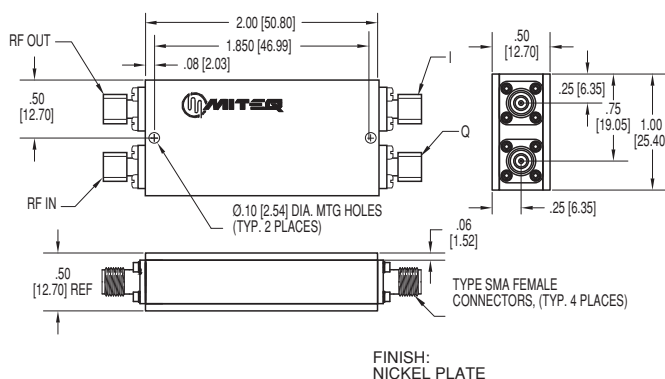
NOTE: Test data supplied at 25°C; per spectrum table.

OUTLINE DRAWINGS

SSM1218(*)C2MDA, B OR C



SSM1218(*)C2MDQ



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

