TELEDYNE MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 9/12

MTS6018 0.01 TO 6.0 GHz SMT0-8 TRIPLE-BALANCED MIXER

Typical Values	MTS6018
LO & RF	0.01 - 6.0 GHz
IF	0.001 - 3.0 GHz
Third Order I.P.	+18.0 dBm
Conversion Loss	7.0 dB
LO Drive (nominal)	+13.0 dBm
High Isolation (LO to RF)	30.0 dB
Surface Mount Package	

SPECIFICATIONS*

Parameter	Port	Frequency (GHz)	Typ. (dB)	Guaranteed -55 to +85 °C Max. (dB)
SSB Conversion Loss and SSB Noise Figure	f_R	0.01 to 3.0	7.0	9.0
	f_L	0.01 to 3.0	7.0	9.0
	f_I	0.005 to 1.0	7.0	8.5
	f_R	3.0 to 6.0	7.5	9.5
	f_L	3.0 to 6.0	7.5	9.5
	f_I	0.005 to 1.0	7.5	8.5
	f_I	0.005 to 3.0	8.0	9.5
			Typ. (dB)	**Min. (dB)**
Isolation				
f_L at R	f_L	0.01 to 2.0	30	22
f_L at I	f_L	0.01 to 2.0	35	28
f_R at I	f_R	0.01 to 2.0	40	30
f_L at R	f_L	2.0 to 6.0	25	18
f_L at I	f_L	2.0 to 6.0	30	20
f_R at I	f_R	2.0 to 6.0	30	20
Third Order Intercept		LO = +13 dBm LO = +16 dBm	+18 dBm +20 dBm	— —

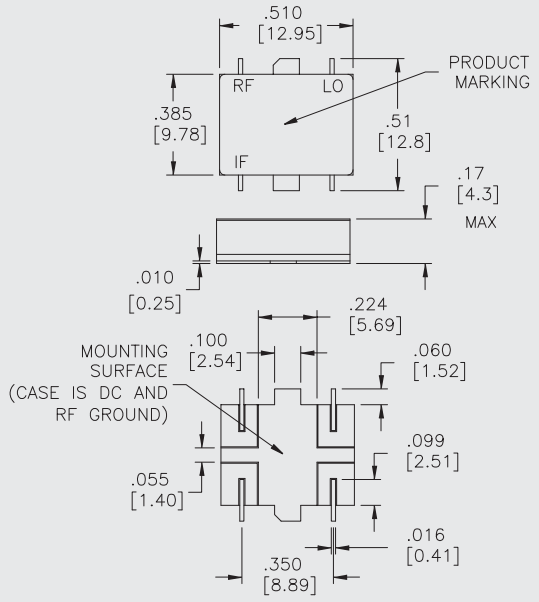
* Measured in a 50-ohm system with nominal LO drive of +13 dBm as a downconverter.

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-65 to +125 °C
Peak Input Power	+23 dBm @ 25 °C derate to +17 dBm @ 100 °C
Peak Input Current @ 25°C	50 mA DC

MTS6018

Surface Mount Package for Mixer



DIMENSIONS ARE IN INCHES [MILLIMETERS]

Harmonic Intermodulation Products
(single tone)

HARMONICS OF f_R (vertical) × HARMONICS OF f_L (horizontal)

	0	1	2	3	4	5
5	89.2	90.1	88.2	87.4	89.3	88.8
	89.1	88.1	87.7	87.5	88.2	88.1
4	84.4	84.9	86.5	87.3	78.9	89.5
	85.4	85.5	83.2	87.8	79.0	87.9
3	70.6	61.1	69.0	69.1	73.1	77.5
	67.5	57.9	68.2	69.9	72.4	72.4
2	53.0	45.8	50.4	45.5	61.2	78.4
	50.4	46.0	47.7	46.3	59.6	79.3
1	26.5	0.0	27.3	25.2	41.3	25.8
	28.3	0.0	28.5	25.2	41.8	27.7
0		3.8	-6.7	10.1	29.8	25.4
		8.1	-4.9	10.9	31.8	28.1

F_R = 2100 MHz @ -10 dBm
F_L @ +13 dBm
F_L = 4000 MHz
F_L @ +16 dBm

Harmonic Intermodulation Products
(single tone)

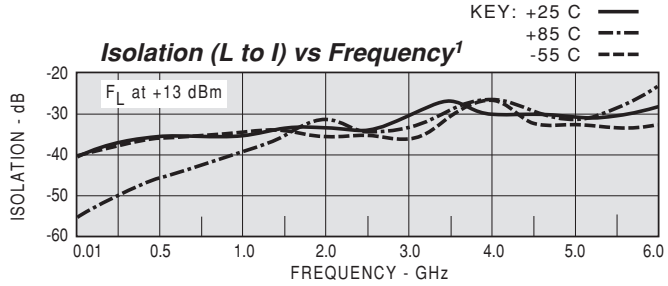
HARMONICS OF f_R (vertical) × HARMONICS OF f_L (horizontal)

	0	1	2	3	4	5
5	86.8	86.5	88.2	83.9	88.3	85.9
	87.0	86.6	88.4	83.7	91.0	87.7
4	86.3	87.9	78.1	77.8	76.4	77.4
	86.9	88.5	77.9	79.3	75.8	79.9
3	80.6	61.2	61.5	62.9	62.8	60.4
	81.2	61.2	61.7	59.8	63.6	60.2
2	40.6	44.6	40.2	47.4	40.4	58.3
	41.5	44.9	40.0	45.9	41.0	56.6
1	18.0	0.0	25.0	15.8	40.2	41.6
	18.9	0.0	30.3	17.4	37.2	45.7
0		3.9	-6.7	10.2	28.9	24.7
		8.3	-4.7	11.2	31.6	28.9

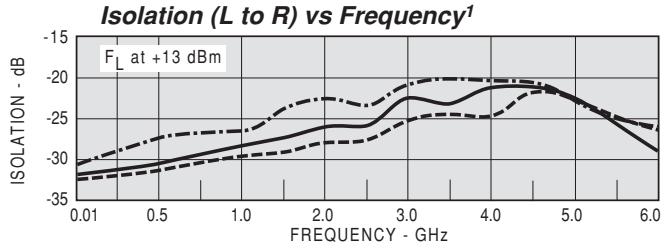
F_R = 3900 MHz @ -10 dBm
F_L @ +13 dBm
F_L = 4000 MHz
F_L @ +16 dBm

TYPICAL PERFORMANCE

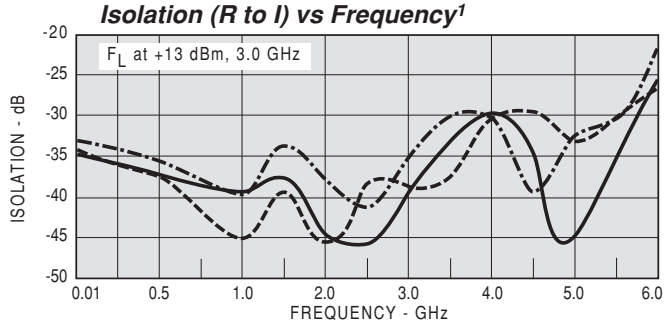
Isolation (L to I) vs Frequency[1]



Isolation (L to R) vs Frequency[1]

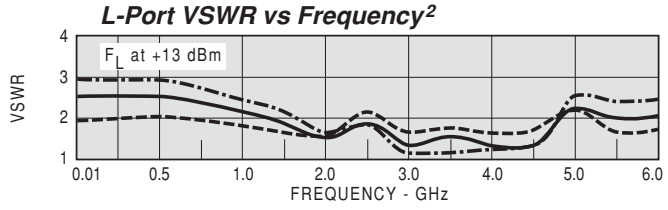


Isolation (R to I) vs Frequency[1]

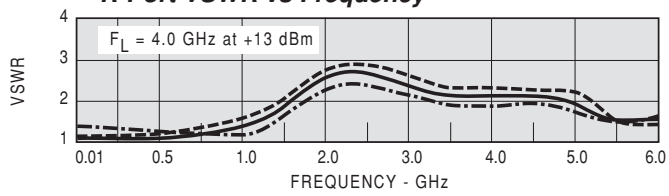


[1]Level of the f_L signal fed through to the R- and I-ports with respect to the level of the f_L signal at the L-port.

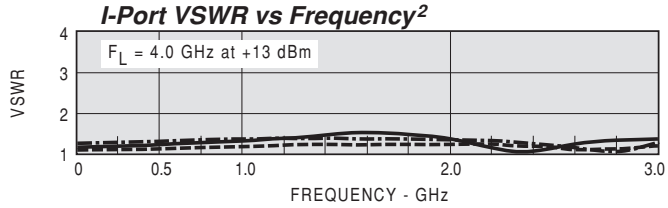
L-Port VSWR vs Frequency[2]



R-Port VSWR vs Frequency[2]

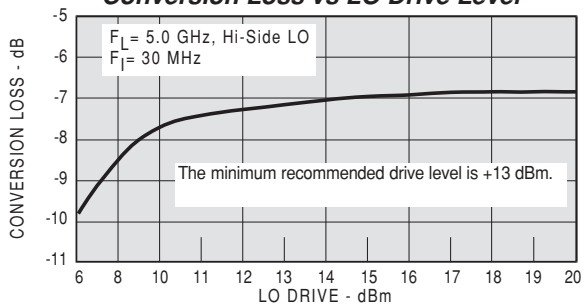


I-Port VSWR vs Frequency[2]

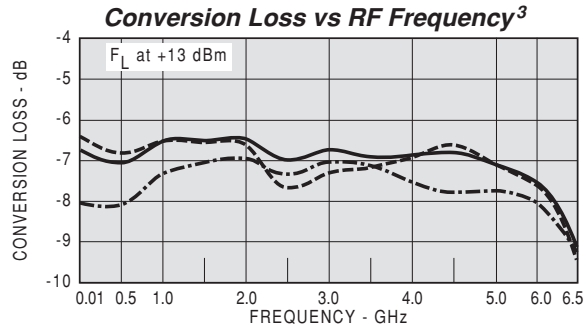


[2] VSWR of the I- and R-ports in a 50-ohm system. Some variation in the R-port VSWR will occur as a function of the L-port frequency as shown above.

Conversion Loss vs LO Drive Level[3]

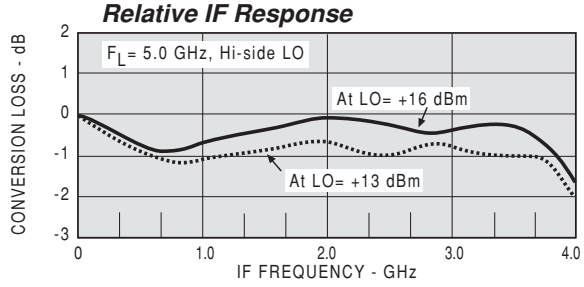


Conversion Loss vs RF Frequency[3]

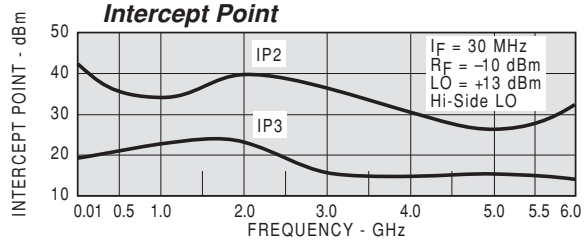


[3]Conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port (f_R) with f_I at 30 MHz.

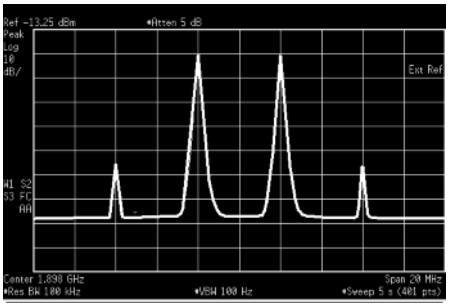
Relative IF Response



Intercept Point



IP3



F_R = 2100, 2104 MHz @ -10 dBm F_L = 4000 MHz @ +13 dBm
Vertical Scale: 10 dB/DIV