Coaxial

Frequency Mixer

ZMX-10G+

Level 7 (LO Power +7 dBm) 3700 to 10000 MHz

CASE STYLE: BU413

Connectors	Model	Price	Qty.
SMA	ZMX-10G+	$81.95 ea.	(1-9)

+ RoHS compliant in accordance with EU Directive (2002/95/EC)

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

Maximum Ratings

Operating Temperature	-55°C to 100°C
Storage Temperature	-55°C to 100°C
RF Power	50mW
IF Current	40mA

Permanent damage may occur if any of these limits are exceeded.

Coaxial Connections

LO	1
RF	2
IF	3

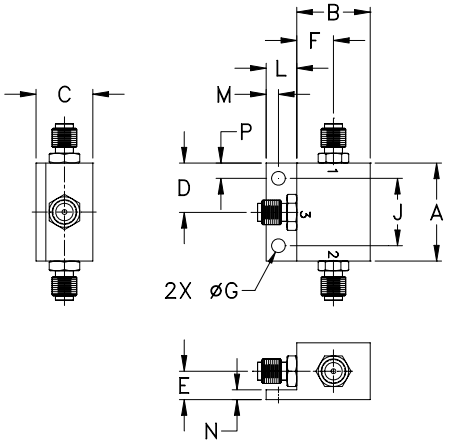
Features

- wide frequency range, 3700 to 10000 MHz
- low conversion loss, 5.0 dB typ.
- high L-R isolation, 30 dB typ.

Applications

- SATCOM
- instrumentation
- defense & federal communications
- SHF

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H
1.00	.75	.58	.50	.29	.38	.140	--
25.40	19.05	14.73	12.70	7.37	9.65	3.56	--

J	K	L	M	N	P	wt
.687	--	.32	.13	.10	.16	grams
17.45	--	8.13	3.30	2.54	4.06	25.0

Electrical Specifications

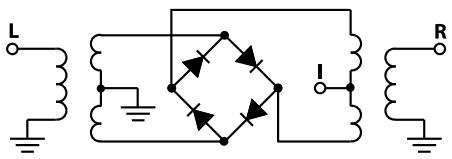
FREQUENCY (MHz)		CONVERSION LOSS (dB)			LO-RF ISOLATION (dB)		LO-IF ISOLATION (dB)	
LO/RF f_L-f_U	IF	$\overline{X}$	σ	Total Range Max.	Typ.	Min.	Typ.	Min.
3700-10000	DC-2000	5.0	0.10	8.5	30	20*	17	8

1 dB COMP.: +1 dBm typ.
* 15 dB min. 8.5 to 10 GHz

Typical Performance Data

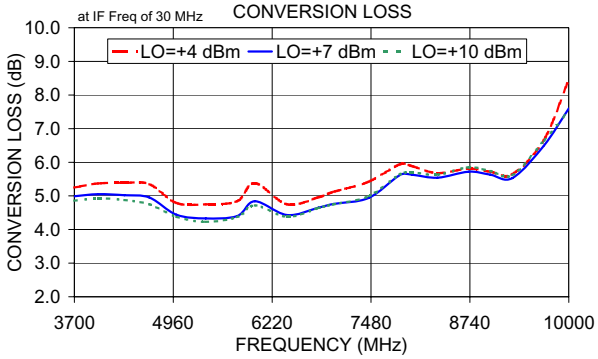
Frequency (MHz)		Conversion Loss (dB)	Isolation L-R (dB)	Isolation L-I (dB)	VSWR RF Port (:1)	VSWR LO Port (:1)
RF	LO	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm	LO +7dBm
3700.00	3730.00	4.99	34.57	12.28	2.40	2.93
4000.00	4030.00	5.05	33.76	12.98	2.46	2.46
4337.97	4367.97	5.02	44.41	13.90	2.44	2.41
4656.96	4686.96	4.95	36.62	14.49	2.49	2.51
5000.00	4970.00	4.44	38.22	15.80	2.54	2.28
5374.68	5344.68	4.33	39.47	16.96	2.52	2.24
5773.42	5743.42	4.40	38.75	17.25	2.48	3.01
6000.00	5970.00	4.84	35.07	17.16	2.47	3.36
6411.39	6381.39	4.43	33.08	16.34	2.51	1.98
6810.13	6780.13	4.65	31.52	16.66	2.42	3.09
7000.00	6970.00	4.76	31.02	17.09	2.26	2.73
7448.10	7418.10	4.94	26.55	17.02	1.77	1.14
7846.84	7816.84	5.62	24.43	17.82	1.41	1.83
8000.00	7970.00	5.63	24.81	19.24	1.46	2.20
8325.32	8295.32	5.54	25.45	23.21	1.74	2.61
8724.05	8694.05	5.72	24.75	26.18	2.32	2.04
9000.00	8970.00	5.63	24.10	27.42	2.90	2.73
9282.28	9252.28	5.53	22.97	27.93	3.61	3.95
9681.01	9651.01	6.49	20.82	28.97	4.53	3.36
10000.00	9970.00	7.60	19.42	31.29	5.06	3.46

Electrical Schematic

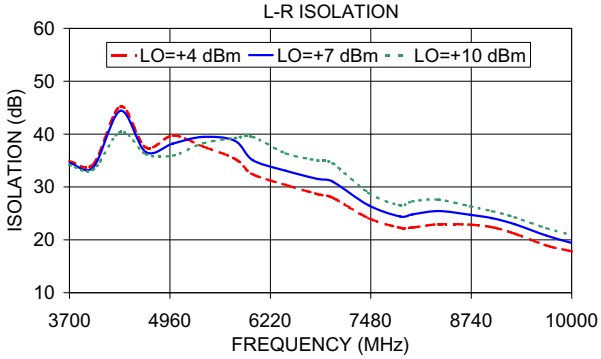


REV. B
M113397
ZMX-10G+
ED-3937/1
DJ/TD/CP/AM
081106

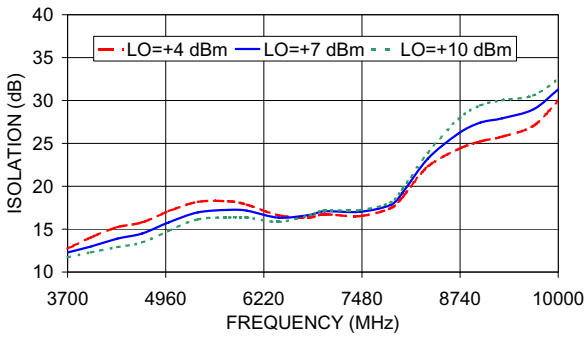
ZMX-10G+
CONVERSION LOSS
at IF Freq of 30 MHz



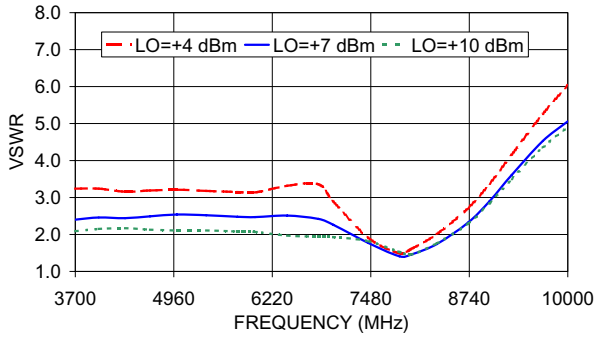
ZMX-10G+
L-R ISOLATION



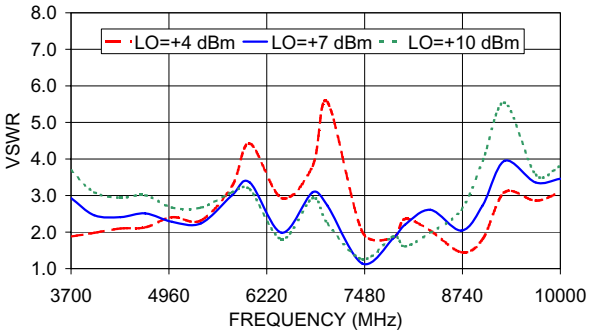
ZMX-10G+
L-I ISOLATION



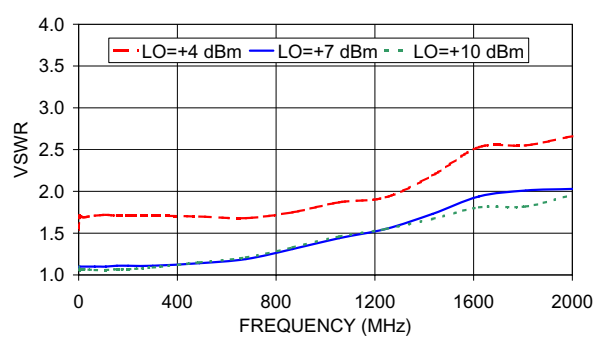
ZMX-10G+
RF VSWR



ZMX-10G+
LO VSWR



ZMX-10G+
IF VSWR



Frequency Mixer ZMX-10G+

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	9.17	7.98	7.54
1725.1	1755.1	7.40	6.65	6.33
1950.1	1980.1	6.70	6.13	5.83
2175.1	2205.1	5.83	5.44	5.29
2400.1	2430.1	5.46	5.20	5.03
2625.1	2655.1	5.14	4.95	4.85
2850.1	2880.1	4.92	4.80	4.75
3075.1	3105.1	4.92	4.80	4.75
3300.1	3330.1	4.98	4.77	4.68
3525.1	3555.1	5.08	4.85	4.76
3750.1	3780.1	5.34	5.11	4.99
3975.1	4005.1	5.56	5.33	5.18
4200.1	4230.1	5.60	5.38	5.27
4425.1	4455.1	5.75	5.54	5.45
4650.1	4680.1	5.81	5.65	5.58
4875.1	4905.1	5.63	5.51	5.51
5100.1	5130.1	5.43	5.33	5.41
5325.1	5355.1	7.86	7.17	6.69
5550.1	5580.1	8.14	7.56	7.19
5775.1	5805.1	7.55	7.13	6.94
6000.1	6030.1	7.34	6.95	6.83
6247.6	6277.6	7.19	6.87	6.79
6472.6	6502.6	7.13	6.82	6.76
6720.1	6750.1	7.22	6.88	6.83
6945.1	6975.1	7.39	6.97	6.87
7192.6	7222.6	7.22	6.89	6.76
7417.6	7447.6	7.72	7.32	7.14
7665.1	7695.1	7.22	6.97	6.86
7890.1	7920.1	7.24	7.03	6.94
8137.6	8167.6	7.05	6.88	6.83
8362.6	8392.6	6.82	6.69	6.65
8610.1	8640.1	6.52	6.37	6.32
8835.1	8865.1	6.19	6.04	6.00
9082.6	9112.6	6.08	5.89	5.85
9307.6	9337.6	6.14	5.91	5.89
9555.1	9585.1	6.42	6.21	6.20
9780.1	9810.1	6.89	6.61	6.69
10027.6	10057.6	8.23	7.68	7.93
10252.6	10282.6	9.95	8.71	8.96
10500.1	10530.1	14.34	11.51	10.28

RF (IN) (MHz)	LO (MHz)	IP3 INPUT (dBm)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	10.84	10.70	8.42
1725.1	1755.1	6.95	5.97	4.57
1950.1	1980.1	7.35	7.16	6.60
2175.1	2205.1	8.48	8.21	6.50
2400.1	2430.1	9.15	10.02	9.20
2625.1	2655.1	9.73	9.52	8.49
2850.1	2880.1	10.77	11.07	10.23
3075.1	3105.1	8.85	10.07	10.17
3300.1	3330.1	9.87	11.29	12.21
3525.1	3555.1	10.59	10.63	11.05
3750.1	3780.1	9.65	10.27	10.51
3975.1	4005.1	10.12	11.56	11.39
4200.1	4230.1	9.61	12.09	12.96
4425.1	4455.1	9.29	12.17	14.59
4650.1	4680.1	10.28	12.21	15.95
4875.1	4905.1	12.53	12.16	14.41
5100.1	5130.1	7.82	10.79	14.04
5325.1	5355.1	7.20	10.07	14.72
5550.1	5580.1	12.04	12.85	13.32
5775.1	5805.1	11.48	11.61	12.81
6000.1	6030.1	12.84	11.65	11.66
6247.6	6277.6	14.80	13.11	11.65
6472.6	6502.6	15.28	15.61	12.17
6720.1	6750.1	15.59	17.19	14.40
6945.1	6975.1	17.23	18.70	18.84
7192.6	7222.6	19.80	20.29	18.73
7417.6	7447.6	14.64	16.18	15.78
7665.1	7695.1	12.66	13.13	13.13
7890.1	7920.1	12.47	12.95	12.89
8137.6	8167.6	11.84	12.19	11.96
8362.6	8392.6	10.18	10.57	10.82
8610.1	8640.1	9.08	9.78	10.01
8835.1	8865.1	7.93	8.89	9.23
9082.6	9112.6	5.81	7.47	8.19
9307.6	9337.6	4.23	6.49	7.69
9555.1	9585.1	4.28	6.92	8.56
9780.1	9810.1	4.78	6.22	8.19
10027.6	10057.6	7.67	7.06	7.91
10252.6	10282.6	4.67	6.14	10.98
10500.1	10530.1	1.05	5.16	11.26

RF (IN) (MHz)	LO (MHz)	COMPRESSION @RF IN=+1dBm (dB)		
		@LO (dBm)		
		+4	+7	+10
1500.1	1530.1	1.81	1.55	1.38
1725.1	1755.1	2.10	1.98	1.91
1950.1	1980.1	2.01	1.94	1.93
2175.1	2205.1	2.29	2.11	2.07
2400.1	2430.1	2.27	2.03	1.90
2625.1	2655.1	2.15	1.84	1.63
2850.1	2880.1	1.81	1.52	1.33
3075.1	3105.1	1.40	1.24	1.13
3300.1	3330.1	1.15	0.98	0.88
3525.1	3555.1	1.03	0.86	0.76
3750.1	3780.1	0.82	0.65	0.57
3975.1	4005.1	0.72	0.55	0.44
4200.1	4230.1	0.76	0.50	0.40
4425.1	4455.1	0.66	0.39	0.32
4650.1	4680.1	0.62	0.32	0.21
4875.1	4905.1	0.81	0.42	0.22
5100.1	5130.1	1.48	1.00	0.61
5325.1	5355.1	1.30	1.12	0.80
5550.1	5580.1	0.47	0.38	0.33
5775.1	5805.1	0.43	0.34	0.32
6000.1	6030.1	0.49	0.37	0.32
6247.6	6277.6	0.43	0.34	0.28
6472.6	6502.6	0.45	0.36	0.30
6720.1	6750.1	0.41	0.33	0.28
6945.1	6975.1	0.34	0.26	0.23
7192.6	7222.6	0.44	0.36	0.35
7417.6	7447.6	0.34	0.33	0.39
7665.1	7695.1	0.56	0.58	0.65
7890.1	7920.1	0.55	0.56	0.63
8137.6	8167.6	0.69	0.70	0.70
8362.6	8392.6	0.78	0.76	0.80
8610.1	8640.1	0.87	0.84	0.87
8835.1	8865.1	1.12	1.04	1.04
9082.6	9112.6	1.32	1.10	1.10
9307.6	9337.6	1.57	1.24	1.20
9555.1	9585.1	1.52	1.13	1.12
9780.1	9810.1	1.99	1.25	1.22
10027.6	10057.6	1.78	1.27	1.11
10252.6	10282.6	1.82	1.53	0.86
10500.1	10530.1	0.22	0.84	0.71

Typical Performance Data

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=6850MHz (dB) @LO (dBm) +7
2549.9	4300.1	11.40
2412.1	4437.9	9.60
2274.3	4575.7	8.50
2136.4	4713.6	8.18
1998.6	4851.4	8.15
1860.8	4989.2	8.15
1723.0	5127.0	7.96
1585.1	5264.9	7.90
1447.3	5402.7	7.87
1309.5	5540.5	7.80
1171.7	5678.3	7.62
1033.8	5816.2	7.04
896.0	5954.0	6.90
758.2	6091.8	6.88
640.1	6209.9	7.00
502.2	6347.8	6.98
384.1	6465.9	6.95
246.3	6603.7	6.91
128.1	6721.9	6.87
10.0	6860.0	7.29
131.9	6981.9	6.90
274.0	7124.0	6.98
395.9	7245.9	7.15
538.0	7388.0	7.42
659.9	7509.9	7.67
802.0	7652.0	7.93
923.9	7773.9	8.06
1066.0	7916.0	8.19
1187.9	8037.9	8.41
1330.0	8180.0	8.65
1451.9	8301.9	8.89
1594.1	8444.1	8.93
1715.9	8565.9	8.94
1858.1	8708.1	9.01
1979.9	8829.9	8.84
2122.1	8972.1	8.48
2243.9	9093.9	8.43
2386.1	9236.1	8.74
2507.9	9357.9	9.33
2650.1	9500.1	10.75

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=3690MHz (dB) @LO (dBm) +7
10.1	3700.1	5.31
90.1	3780.1	5.12
170.1	3860.1	5.15
250.1	3940.1	5.21
330.1	4020.1	5.29
410.1	4100.1	5.36
490.1	4180.1	5.52
570.1	4260.1	5.59
650.1	4340.1	5.63
710.1	4400.1	5.77
790.1	4480.1	5.81
850.1	4540.1	5.78
930.1	4620.1	5.73
990.1	4680.1	5.39
1070.1	4760.1	4.95
1130.1	4820.1	5.16
1210.1	4900.1	5.30
1270.1	4960.1	5.42
1350.1	5040.1	5.60
1410.1	5100.1	5.49
1490.1	5180.1	5.66
1550.1	5240.1	5.70
1630.1	5320.1	5.70
1690.1	5380.1	5.72
1770.1	5460.1	5.83
1830.1	5520.1	5.71
1910.1	5600.1	5.82
1970.1	5660.1	5.97
2050.1	5740.1	6.09
2110.1	5800.1	6.25
2190.1	5880.1	6.48
2250.1	5940.1	6.76
2330.1	6020.1	7.05
2390.1	6080.1	7.35
2470.1	6160.1	7.72
2530.1	6220.1	8.33
2610.1	6300.1	8.83
2670.1	6360.1	9.27
2750.1	6440.1	9.58
2810.1	6500.1	10.03

IF (OUT) (MHz)	LO (MHz)	CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10010.09MHz (dB) @LO (dBm) +7
2610.0	7400.1	10.36
2550.0	7460.1	10.11
2490.0	7520.1	9.92
2430.0	7580.1	9.72
2370.0	7640.1	9.47
2310.0	7700.1	9.30
2250.0	7760.1	9.19
2190.0	7820.1	8.97
2130.0	7880.1	8.86
2070.0	7940.1	8.76
2010.0	8000.1	8.50
1950.0	8060.1	8.40
1890.0	8120.1	8.28
1830.0	8180.1	8.04
1750.0	8260.1	8.05
1690.0	8320.1	7.95
1610.0	8400.1	7.86
1550.0	8460.1	7.94
1470.0	8540.1	7.86
1410.0	8600.1	7.80
1330.0	8680.1	7.76
1270.0	8740.1	7.75
1190.0	8820.1	7.61
1130.0	8880.1	7.83
1050.0	8960.1	7.64
990.0	9020.1	7.67
910.0	9100.1	7.68
850.0	9160.1	7.64
770.0	9240.1	7.68
710.0	9300.1	7.60
630.0	9380.1	7.64
570.0	9440.1	7.64
490.0	9520.1	7.61
430.0	9580.1	7.65
350.0	9660.1	7.61
290.0	9720.1	7.67
210.0	9800.1	7.60
150.0	9860.1	7.69
70.0	9940.1	7.59
10.0	10000.1	7.88

Typical Performance Data

LO (MHz)	LO-RF ISOLATION (dB) @LO (dBm)			LO-IF ISOLATION (dB) @LO (dBm)		
	+4	+7	+10	+4	+7	+10
1530.1	30.39	37.43	44.32	9.28	11.58	13.76
1755.1	36.25	41.90	44.22	9.44	11.85	14.38
1980.1	33.86	36.28	37.40	9.38	11.49	13.50
2205.1	31.35	31.91	32.48	8.90	10.18	11.18
2430.1	33.16	32.04	31.56	7.88	8.68	8.93
2655.1	41.79	38.82	36.85	7.48	7.87	8.08
2880.1	36.78	38.32	39.47	8.31	8.46	8.19
3105.1	35.28	35.31	35.01	9.28	9.09	8.44
3330.1	36.36	35.00	34.02	10.33	9.35	8.83
3555.1	37.23	36.17	34.98	11.06	9.89	9.25
3780.1	37.75	36.27	35.08	11.69	10.36	9.71
4005.1	37.23	36.15	34.74	12.01	11.09	10.18
4230.1	37.21	36.13	34.47	12.72	11.72	10.68
4455.1	36.97	35.60	33.98	13.23	11.91	11.28
4680.1	34.93	35.44	34.47	13.66	12.61	11.98
4905.1	34.03	35.18	35.00	14.15	13.21	12.68
5130.1	34.76	36.09	36.14	14.59	13.80	13.31
5355.1	33.72	35.67	37.57	14.90	14.50	13.95
5580.1	32.53	34.44	36.35	15.57	14.96	14.57
5805.1	32.49	34.50	36.49	15.86	15.41	15.15
6030.1	32.58	35.08	37.75	16.20	15.90	15.70
6277.6	33.12	36.02	39.49	16.56	16.66	16.23
6502.6	33.41	36.46	40.39	17.08	17.20	16.99
6750.1	33.77	36.76	39.57	17.47	17.90	17.72
6975.1	34.73	38.43	40.84	18.02	18.38	18.70
7222.6	35.93	37.63	36.93	18.50	19.38	19.71
7447.6	35.69	34.84	33.43	19.12	19.99	20.86
7695.1	36.03	34.00	32.23	19.72	20.86	21.97
7920.1	38.11	35.12	33.13	20.56	21.76	22.98
8167.6	42.03	39.32	36.89	21.84	23.22	24.54
8392.6	40.50	48.30	47.81	23.46	25.03	26.56
8640.1	34.17	37.53	41.03	25.44	27.15	28.80
8865.1	30.89	33.21	35.25	27.54	29.28	30.70
9112.6	28.25	30.13	31.87	29.77	30.91	31.79
9337.6	26.14	27.91	29.58	32.30	32.42	32.46
9585.1	24.72	25.91	27.17	36.30	35.15	34.05
9810.1	23.40	23.89	24.69	41.56	38.88	36.33
10057.6	22.97	21.93	22.19	48.36	44.82	40.06
10282.6	21.98	20.44	20.59	44.73	40.16	38.24
10530.1	19.58	19.93	21.52	31.05	31.61	31.96

RF (IN) (MHz)	LO (MHz)	RF-IF ISOLATION (dB) @LO (dBm)		
		+4	+7	+10
1500.1	1530.1	13.05	12.67	12.05
1725.1	1755.1	14.19	14.03	13.74
1950.1	1980.1	16.52	16.31	16.64
2175.1	2205.1	19.79	19.08	18.53
2400.1	2430.1	21.42	21.64	21.49
2625.1	2655.1	18.63	18.96	19.61
2850.1	2880.1	18.00	17.99	18.22
3075.1	3105.1	19.50	19.25	19.16
3300.1	3330.1	21.18	21.03	20.93
3525.1	3555.1	22.26	22.46	22.48
3750.1	3780.1	22.88	23.36	23.47
3975.1	4005.1	24.03	24.27	24.59
4200.1	4230.1	25.17	25.71	26.05
4425.1	4455.1	26.67	27.03	27.31
4650.1	4680.1	28.27	28.63	28.95
4875.1	4905.1	29.64	30.10	30.44
5100.1	5130.1	29.87	29.86	29.95
5325.1	5355.1	29.70	29.61	29.49
5550.1	5580.1	32.52	32.36	32.14
5775.1	5805.1	34.08	34.19	34.14
6000.1	6030.1	35.19	34.99	35.08
6247.6	6277.6	35.83	35.44	35.16
6472.6	6502.6	35.97	35.58	35.12
6720.1	6750.1	35.24	35.18	34.68
6945.1	6975.1	34.35	34.06	33.72
7192.6	7222.6	33.08	32.95	32.68
7417.6	7447.6	31.54	31.48	31.22
7665.1	7695.1	29.32	29.23	29.11
7890.1	7920.1	27.55	27.53	27.49
8137.6	8167.6	26.52	26.46	26.36
8362.6	8392.6	26.33	26.24	26.28
8610.1	8640.1	27.38	27.19	27.00
8835.1	8865.1	28.62	28.38	28.18
9082.6	9112.6	30.02	29.46	29.04
9307.6	9337.6	30.78	29.64	29.04
9555.1	9585.1	30.93	29.16	27.94
9780.1	9810.1	31.01	28.72	26.99
10027.6	10057.6	29.34	27.66	25.40
10252.6	10282.6	26.82	26.48	25.07
10500.1	10530.1	24.46	26.98	27.43

Typical Performance Data

RF (IN) (MHz)	LO (MHz)	RF VSWR (:1) @LO (dBm)		
		+4	+7	+10
1500.1	1530.1	5.87	5.03	4.62
1725.1	1755.1	3.82	3.28	3.03
1950.1	1980.1	3.13	2.61	2.26
2175.1	2205.1	2.80	2.40	1.98
2400.1	2430.1	2.24	2.06	1.89
2625.1	2655.1	1.87	1.76	1.71
2850.1	2880.1	1.77	1.67	1.63
3075.1	3105.1	1.67	1.55	1.50
3300.1	3330.1	1.79	1.63	1.57
3525.1	3555.1	2.04	1.85	1.74
3750.1	3780.1	2.24	2.07	1.95
3975.1	4005.1	2.31	2.17	2.06
4200.1	4230.1	2.48	2.32	2.23
4425.1	4455.1	2.57	2.35	2.26
4650.1	4680.1	2.52	2.30	2.20
4875.1	4905.1	2.53	2.20	2.06
5100.1	5130.1	2.42	1.93	1.66
5325.1	5355.1	4.50	4.07	3.67
5550.1	5580.1	4.69	4.33	4.02
5775.1	5805.1	4.62	4.21	3.96
6000.1	6030.1	4.77	4.21	3.84
6247.6	6277.6	4.51	3.94	3.45
6472.6	6502.6	4.40	3.81	3.29
6720.1	6750.1	3.92	3.44	2.97
6945.1	6975.1	3.83	3.35	3.00
7192.6	7222.6	3.99	3.60	3.26
7417.6	7447.6	4.05	3.67	3.41
7665.1	7695.1	3.34	3.10	2.92
7890.1	7920.1	2.73	2.57	2.43
8137.6	8167.6	2.54	2.39	2.27
8362.6	8392.6	2.24	2.12	2.03
8610.1	8640.1	1.97	1.83	1.74
8835.1	8865.1	1.72	1.57	1.48
9082.6	9112.6	1.42	1.30	1.24
9307.6	9337.6	1.17	1.12	1.17
9555.1	9585.1	1.26	1.37	1.47
9780.1	9810.1	1.55	1.64	1.74
10027.6	10057.6	2.26	2.25	2.27
10252.6	10282.6	3.36	3.00	2.93
10500.1	10530.1	3.53	3.58	3.91

LO (MHz)	LO VSWR (:1) @LO (dBm)		
	+4	+7	+10
1530.1	6.26	4.91	4.96
1755.1	3.69	3.56	4.10
1980.1	2.60	2.86	3.51
2205.1	2.03	2.39	3.00
2430.1	1.77	2.18	2.75
2655.1	1.62	2.09	2.68
2880.1	1.49	2.01	2.66
3105.1	1.45	2.00	2.60
3330.1	1.52	2.07	2.67
3555.1	1.64	2.17	2.83
3780.1	1.80	2.33	2.96
4005.1	1.92	2.36	2.95
4230.1	2.01	2.39	2.93
4455.1	2.19	2.48	3.01
4680.1	2.35	2.56	3.04
4905.1	2.53	2.64	3.05
5130.1	2.74	2.73	3.06
5355.1	2.94	2.81	3.12
5580.1	3.07	2.78	3.00
5805.1	3.25	2.74	2.82
6030.1	3.30	2.68	2.63
6277.6	3.18	2.52	2.44
6502.6	3.10	2.34	2.22
6750.1	2.98	2.07	1.87
6975.1	2.74	1.77	1.56
7222.6	2.26	1.43	1.23
7447.6	1.91	1.18	1.23
7695.1	1.46	1.16	1.53
7920.1	1.23	1.42	1.91
8167.6	1.28	1.79	2.40
8392.6	1.59	2.22	2.93
8640.1	2.04	2.70	3.50
8865.1	2.70	3.41	4.34
9112.6	3.58	4.15	5.07
9337.6	4.80	5.09	5.93
9585.1	6.71	6.53	7.20
9810.1	9.18	7.97	8.16
10057.6	10.96	8.99	8.72
10282.6	12.18	9.63	9.08
10530.1	11.93	11.03	10.69

IF (OUT) (MHz)	IF VSWR @LO=10000MHz (:1) @LO (dBm)		
	+4	+7	+10
10.0	2.65	2.11	1.78
90.3	2.75	2.17	1.81
170.5	2.69	2.12	1.80
250.8	2.60	2.08	1.78
331.1	2.63	2.14	1.86
411.3	2.74	2.28	2.01
491.6	2.85	2.44	2.17
571.9	2.91	2.53	2.29
652.1	2.89	2.54	2.31
732.4	2.82	2.50	2.32
812.7	2.82	2.53	2.36
893.0	2.88	2.63	2.49
973.2	2.96	2.73	2.61
1053.5	2.95	2.75	2.64
1133.8	2.95	2.75	2.63
1214.0	3.14	2.86	2.71
1294.3	3.17	2.86	2.71
1374.6	3.04	2.75	2.61
1454.8	2.95	2.65	2.52
1535.1	3.09	2.75	2.58
1615.4	3.21	2.76	2.55
1695.6	3.00	2.55	2.36
1775.9	2.91	2.41	2.21
1856.2	2.91	2.36	2.12
1936.4	2.96	2.29	1.98
2016.7	2.80	2.07	1.75
2097.0	2.54	1.82	1.52
2157.2	2.55	1.81	1.48
2237.4	2.36	1.64	1.35
2297.7	2.16	1.52	1.32
2377.9	1.98	1.47	1.44
2438.1	1.81	1.47	1.57
2518.4	1.70	1.67	1.96
2578.6	1.60	1.83	2.23
2658.9	1.62	2.15	2.72
2719.1	1.85	2.60	3.31
2799.3	2.26	3.25	4.06
2859.5	2.43	3.45	4.29
2939.8	3.14	4.39	5.38
3000.0	3.90	5.20	6.15

Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+10	37	15	---	---	---	---	---	---	---
1	-	28	+0	44	35	53	---	---	---	---	---	---
2	86	>69	62	56	63	>69	66	---	---	---	---	---
3	>90	>69	>69	>69	65	>69	>69	>69	---	---	---	---
4	---	---	>69	>69	>69	>69	>69	>69	>69	---	---	---
5	---	---	---	>69	>69	>69	>69	>69	>69	>69	---	---
6	---	---	---	---	>69	>69	>69	>69	>69	>69	>69	---
7	---	---	---	---	---	>69	>69	>69	>69	>69	>69	>69
8	---	---	---	---	---	---	>69	>69	>69	>69	>69	>69
9	---	---	---	---	---	---	---	>69	>69	>69	>69	>69
10	---	---	---	---	---	---	---	---	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 6850 MHz; -14.00 dBm.
LO IN: 6880 MHz; +7.00 dBm
IF OUT: 30 MHz; -20.97 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+0	46	26	---	---	---	---	---	---	---
1	-	27	+0	44	35	55	---	---	---	---	---	---
2	66	66	52	45	55	73	57	---	---	---	---	---
3	>90	71	64	70	45	70	72	78	---	---	---	---
4	---	---	>79	>79	>79	>79	>79	>79	>79	---	---	---
5	---	---	---	>79	>79	>79	72	>79	>79	>79	---	---
6	---	---	---	---	>79	>79	>79	>79	>79	>79	>79	---
7	---	---	---	---	---	>79	>79	>79	>79	>79	>79	>79
8	---	---	---	---	---	---	>79	>79	>79	>79	>79	>79
9	---	---	---	---	---	---	---	>79	>79	>79	>79	>79
10	---	---	---	---	---	---	---	---	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

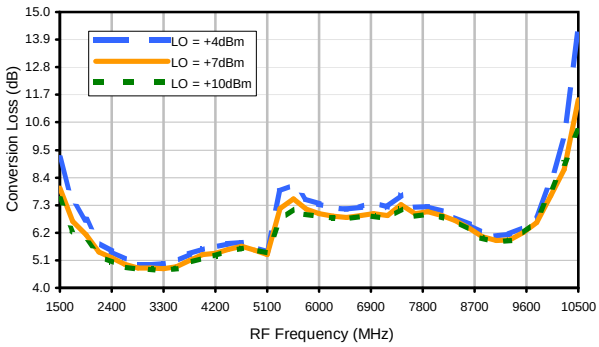
LO HARMONICS ORDER

Test conditions: RF IN: 6850 MHz; -4.00 dBm.
LO IN: 6880 MHz; +7.00 dBm
IF OUT: 30 MHz; -11.05 dBm

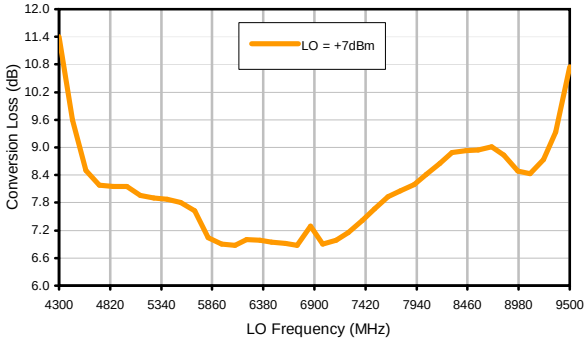
Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Typical Performance Curves

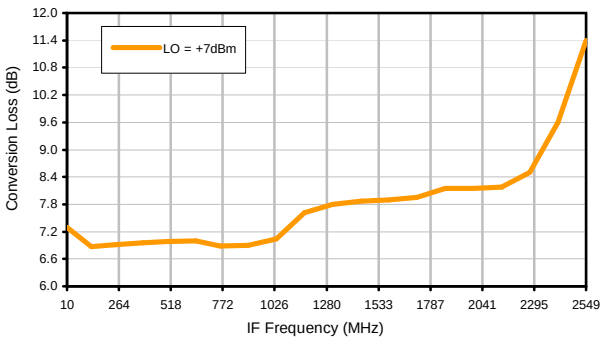
Conversion Loss @ IF=30MHz



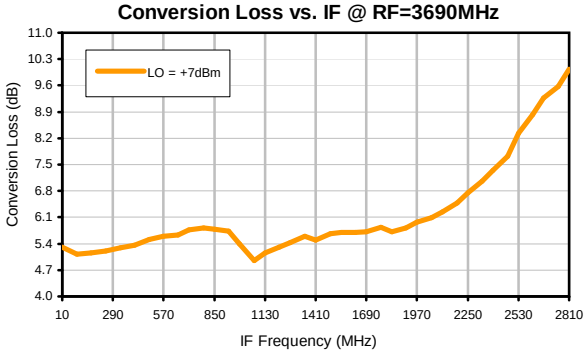
Conversion Loss vs. LO @ RF=6850MHz



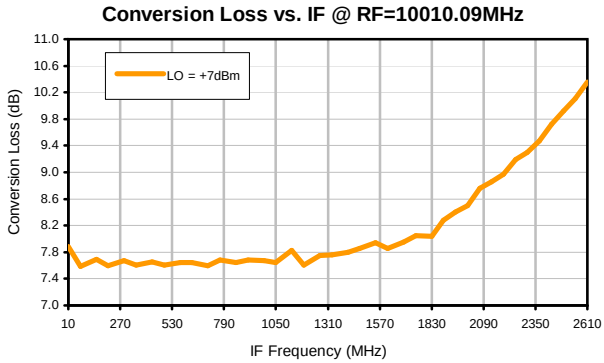
Conversion Loss vs. IF @ RF=6850MHz



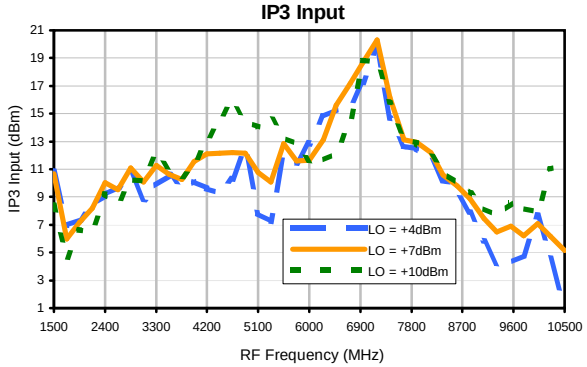
Conversion Loss vs. IF @ RF=3690MHz



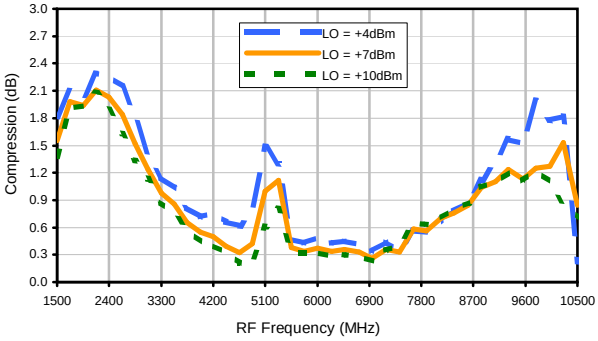
Conversion Loss vs. IF @ RF=10010.09MHz



IP3 Input

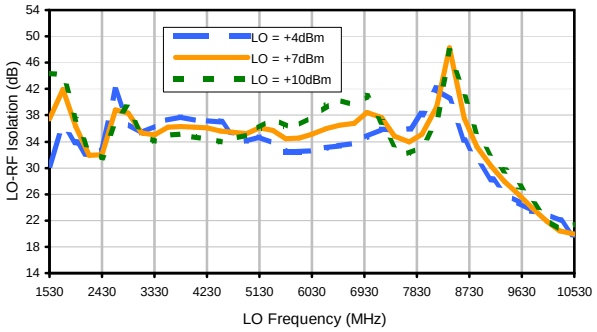


Compression @ RF IN=+1dBm

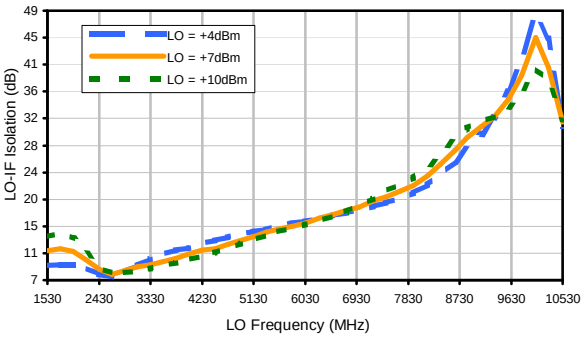


Typical Performance Curves

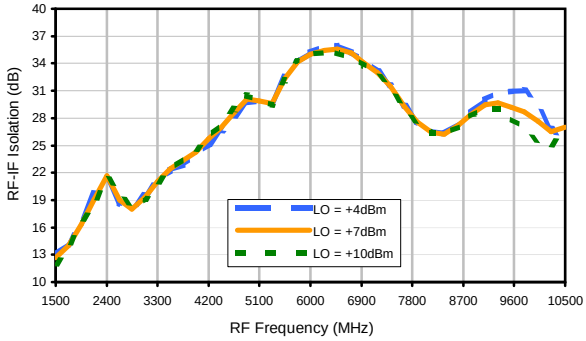
LO-RF Isolation



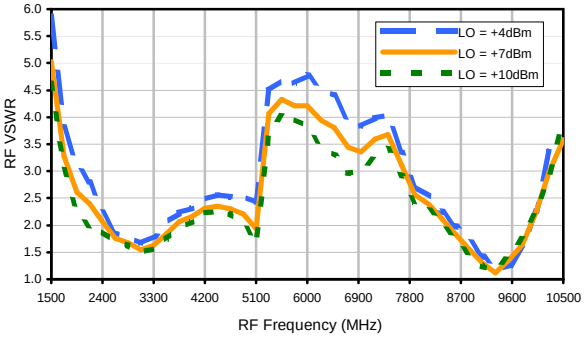
LO-IF Isolation



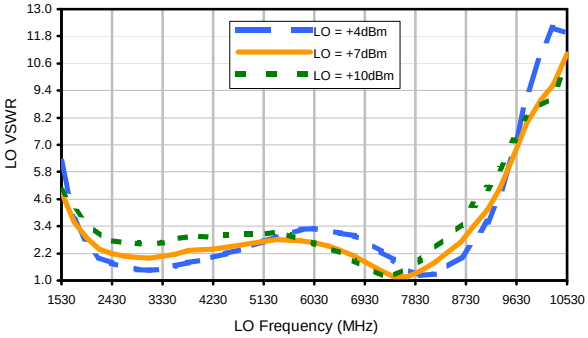
RF-IF Isolation



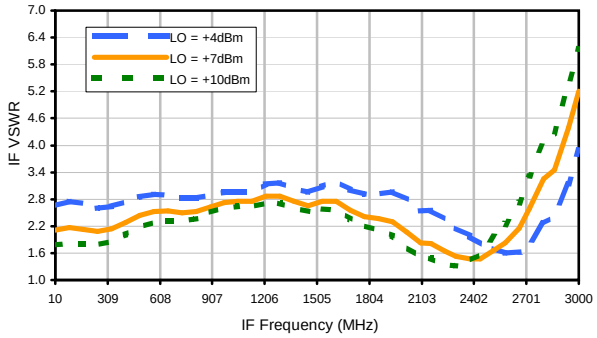
RF VSWR



LO VSWR



IF VSWR



Harmonics Tables

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+10	37	15	---	---	---	---	---	---	---
1	-	28	+0	44	35	53	---	---	---	---	---	---
2	86	>69	62	56	63	>69	66	---	---	---	---	---
3	>90	>69	>69	>69	65	>69	>69	>69	---	---	---	---
4	---	---	>69	>69	>69	>69	>69	>69	>69	---	---	---
5	---	---	---	>69	>69	>69	>69	>69	>69	>69	---	---
6	---	---	---	---	>69	>69	>69	>69	>69	>69	>69	---
7	---	---	---	---	---	>69	>69	>69	>69	>69	>69	>69
8	---	---	---	---	---	---	>69	>69	>69	>69	>69	>69
9	---	---	---	---	---	---	---	>69	>69	>69	>69	>69
10	---	---	---	---	---	---	---	---	>69	>69	>69	>69
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

Test conditions: RF IN: 6850 MHz; -14.00 dBm.
LO IN: 6880 MHz; +7.00 dBm
IF OUT: 30 MHz; -20.97 dBm

RF HARMONICS ORDER	(-dBm)	(-dBc)										
0	-	-	+0	46	26	---	---	---	---	---	---	---
1	-	27	+0	44	35	55	---	---	---	---	---	---
2	66	66	52	45	55	73	57	---	---	---	---	---
3	>90	71	64	70	45	70	72	78	---	---	---	---
4	---	---	>79	>79	>79	>79	>79	>79	>79	---	---	---
5	---	---	---	>79	>79	>79	72	>79	>79	>79	---	---
6	---	---	---	---	>79	>79	>79	>79	>79	>79	>79	---
7	---	---	---	---	---	>79	>79	>79	>79	>79	>79	>79
8	---	---	---	---	---	---	>79	>79	>79	>79	>79	>79
9	---	---	---	---	---	---	---	>79	>79	>79	>79	>79
10	---	---	---	---	---	---	---	---	>79	>79	>79	>79
	RF CAL	0	1	2	3	4	5	6	7	8	9	10

LO HARMONICS ORDER

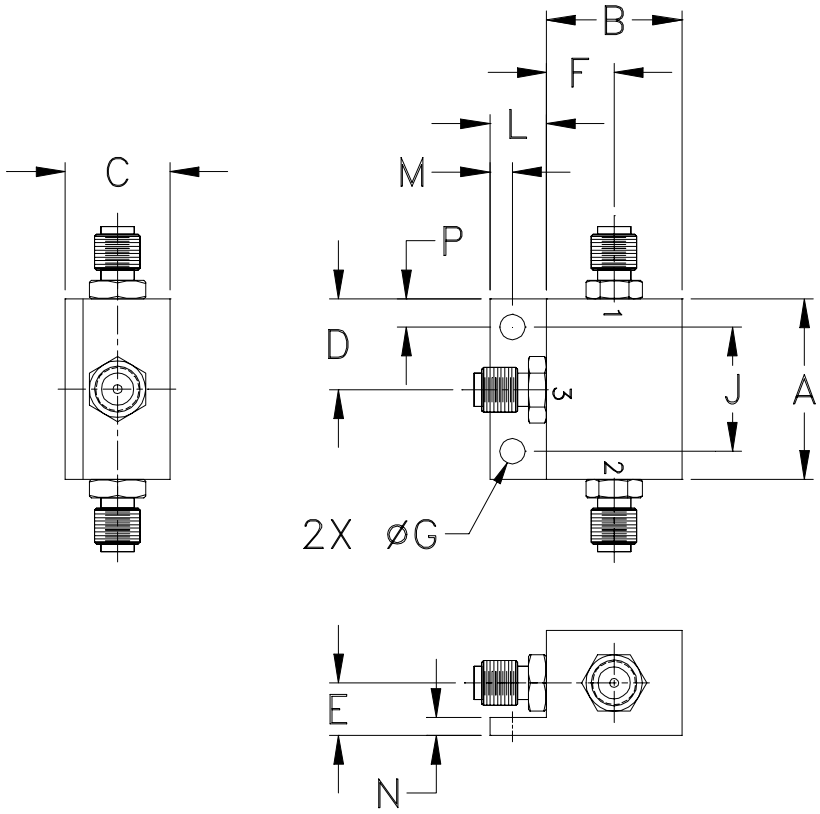
Test conditions: RF IN: 6850 MHz; -4.00 dBm.
LO IN: 6880 MHz; +7.00 dBm
IF OUT: 30 MHz; -11.05 dBm

Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.
2. + entry denotes harmonics are in (dBc) above IF OUTPUT.
3. RF Cal represent the Harmonics level of the RF input signal to the mixer.

Case Style BU

BU413

Outline Dimensions



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
BU413	1.00 (25.40)	.75 (19.05)	.58 (14.73)	.50 (12.70)	.29 (7.37)	.38 (9.65)	.140 (3.56)	-- --	.687 (17.45)	-- --	.32 (8.13)	.13 (3.30)	.10 (2.54)

CASE#	P	WT. GRAMS
BU413	.16 (4.06)	25

Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.

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Environmental Specifications ENV28

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-55° to 100°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Barometric Pressure	100,000 Feet	MIL-STD-202, Method 105, Condition D
Humidity	90% RH, 65°C Units may require bake-out after humidity to restore full performance.	MIL-STD-202, Method 103
Thermal Shock	-65° to 125°C, 5 cycles	MIL-STD-202, Method 107, Condition B
Vibration (High Frequency)	20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36)	MIL-STD-202, Method 204, Condition D
Mechanical Shock	100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)	MIL-STD-202, Method 213, Condition I