

Plug-In Frequency Mixer

Level 7 (LO Power +7 dBm) 1 to 600 MHz

ASK-1-X65+ ASK-1-X65



CASE STYLE: X65

Maximum Ratings

Operating Temperature	-40°C to 85°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.	

Pin Connections

LO	1
RF	4
IF	5
GROUND	2,3,6

Features

- low conversion loss, 5.58 dB typ.
- good L-R isolation, 35 dB typ.

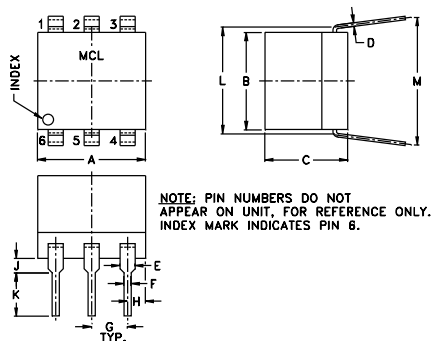
Applications

- HF/VHF/UHF
- FM radio
- federal & defense communications

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.30	.27	.23	.010	.042	.020	.100
7.62	6.86	5.84	0.25	1.07	0.51	2.54
H	J	K	L	M	wt	
.05	.04	.11	.300	.35	grams	
1.27	1.02	2.79	7.62	8.89	0.50	

Electrical Specifications

FREQUENCY (MHz)		CONVERSION LOSS (dB)				LO-RF ISOLATION (dB)						LO-IF ISOLATION (dB)						IP3 at center band (dBm)
LO/RF f_L - f_U	IF	Mid-Band m			Total Range Max.	L		M		U		L		M		U		
		$\overline{X}$	σ	Max.		Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.			
																	Typ.	
1-600	DC-600	5.58	.06	7.0	8.5	50	30	35	25	30	20	45	35	30	20	25	15	14

1 dB COMPR.: +1 dBm typ.

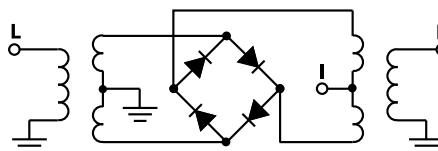
L = low range [f_L to 10 f_L]
m= mid band [$2f_L$ to $f_U/2$]

M = mid range [$10 f_L$ to $f_U/2$]
U = upper range [$f_U/2$ to f_U]

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
1.00	31.00	5.34	41.73	40.78	1.15	3.01
5.00	35.00	5.14	43.83	48.03	1.12	2.92
10.00	40.00	5.10	44.31	49.23	1.10	2.87
20.00	50.00	5.10	43.27	47.31	1.09	2.86
50.00	80.00	5.07	41.89	43.53	1.08	2.67
100.00	70.00	4.98	41.22	41.32	1.08	2.75
124.93	94.93	5.07	40.40	38.91	1.06	2.68
166.24	136.24	5.14	40.04	37.11	1.04	2.68
207.55	177.55	5.19	39.72	36.06	1.03	2.64
228.21	198.21	5.11	39.43	34.77	1.01	2.61
269.52	239.52	5.17	39.11	33.40	1.03	2.72
310.83	280.83	5.34	38.68	32.44	1.06	2.70
352.14	322.14	5.31	36.90	31.98	1.10	2.84
372.79	342.79	5.36	34.94	31.09	1.15	3.08
414.10	384.10	5.33	33.57	31.83	1.20	3.20
455.41	425.41	5.57	32.53	31.14	1.26	3.16
496.72	466.72	5.67	30.97	29.46	1.31	3.29
538.03	508.03	5.75	30.78	28.57	1.34	3.28
558.69	528.69	5.72	29.47	27.11	1.40	3.48
600.00	570.00	5.82	28.98	25.59	1.47	3.57

Electrical Schematic



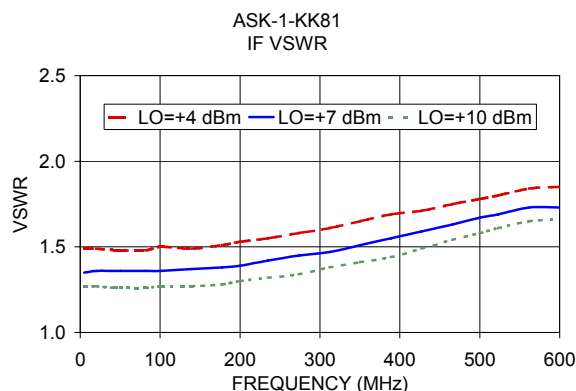
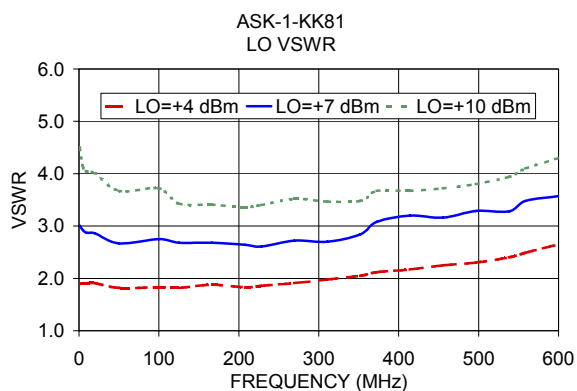
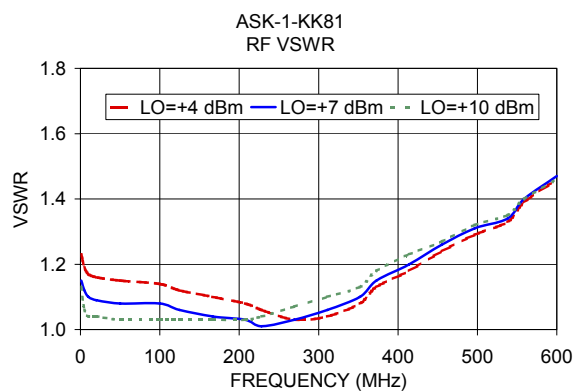
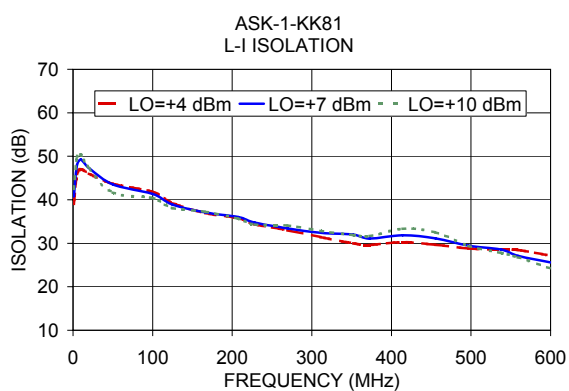
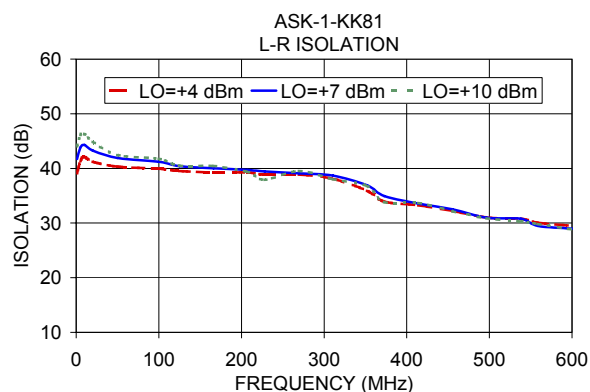
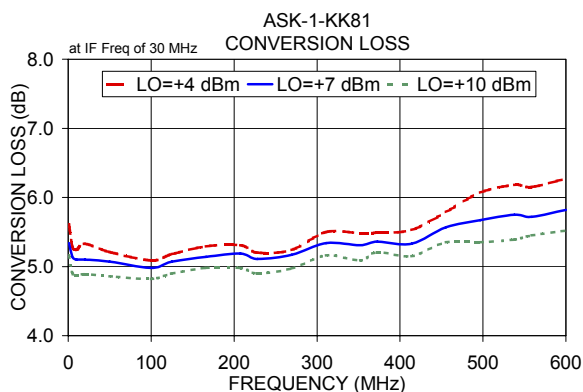
Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
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Performance Charts

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Frequency Mixer

ASK-1-X65+

Typical Performance Data

RF (MHz)	LO (MHz)	CONVERSION LOSS (dB)			LO (MHz)	LO-RF ISOLATION (dB)			LO-IF ISOLATION (dB)		
		@LO (dBm)				@LO (dBm)			@LO (dBm)		
		+4	+7	+10		+4	+7	+10	+4	+7	+10
1.0	31.0	5.61	5.34	5.16	1.0	39.10	41.73	44.04	39.04	40.78	42.48
5.0	35.0	5.28	5.14	4.90	5.0	41.35	43.83	46.14	45.93	48.03	49.94
10.0	40.0	5.24	5.10	4.87	10.0	42.10	44.31	46.27	47.06	49.23	50.33
20.0	50.0	5.33	5.10	4.89	20.0	41.21	43.27	44.87	46.03	47.31	47.18
50.0	80.0	5.21	5.07	4.86	50.0	40.33	41.89	42.46	43.68	43.53	41.68
100.0	70.0	5.09	4.98	4.82	100.0	39.93	41.22	41.75	41.82	41.32	40.36
124.9	94.9	5.18	5.07	4.90	124.9	39.54	40.40	40.49	39.25	38.91	38.11
166.2	136.2	5.29	5.14	4.98	166.2	39.26	40.04	40.44	36.95	37.11	37.23
207.6	177.6	5.31	5.19	4.98	207.6	39.26	39.72	39.36	35.80	36.06	35.67
228.2	198.2	5.20	5.11	4.90	228.2	38.88	39.43	37.92	34.36	34.77	34.32
269.5	239.5	5.24	5.17	4.97	269.5	38.87	39.11	39.52	32.97	33.40	34.08
310.8	280.8	5.50	5.34	5.16	310.8	38.11	38.68	38.01	31.41	32.44	32.86
352.1	322.1	5.48	5.31	5.09	352.1	35.92	36.90	36.78	29.97	31.98	31.89
372.8	342.8	5.49	5.36	5.21	372.8	33.94	34.94	33.83	29.59	31.09	31.65
414.1	384.1	5.53	5.33	5.15	414.1	33.25	33.57	33.66	30.29	31.83	33.34
455.4	425.4	5.79	5.57	5.35	455.4	32.21	32.53	32.17	29.66	31.14	32.51
496.7	466.7	6.07	5.67	5.35	496.7	31.01	30.97	30.86	28.78	29.46	29.39
538.0	508.0	6.18	5.75	5.39	538.0	30.80	30.78	30.29	28.51	28.57	27.79
558.7	528.7	6.15	5.72	5.45	558.7	30.06	29.47	29.81	28.45	27.11	26.81
600.0	570.0	6.27	5.82	5.52	600.0	29.46	28.98	28.82	27.11	25.59	24.20

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Frequency Mixer

ASK-1-X65+

Typical Performance Data

RF/LO (MHz)	RF VSWR (:1)			LO VSWR (:1)			IF (MHz)	IF VSWR (:1)			LO/RF (MHz)	max. DC output (mV)	DC Offset (mV)
	@LO (dBm)			@LO (dBm)				@LO (dBm)			@LO (dBm)		
	+4	+7	+10	+4	+7	+10		+4	+7	+10	+7		
5.0	1.23	1.15	1.13	1.89	3.01	4.50	5.0	1.49	1.35	1.27	1.0	-228.0	4.07
20.0	1.19	1.12	1.06	1.91	2.92	4.12	20.0	1.49	1.36	1.27	5.0	-228.8	2.52
43.4	1.17	1.10	1.04	1.91	2.87	4.04	43.4	1.48	1.36	1.26	20.0	-227.1	2.57
50.0	1.16	1.09	1.04	1.91	2.86	4.01	50.0	1.48	1.36	1.26	39.6	-225.4	2.80
81.8	1.15	1.08	1.03	1.82	2.67	3.67	81.8	1.48	1.36	1.26	78.3	-227.0	2.99
101.0	1.14	1.08	1.03	1.83	2.75	3.72	101.0	1.50	1.36	1.27	100.0	-226.1	2.96
139.4	1.12	1.06	1.03	1.82	2.68	3.43	139.4	1.49	1.37	1.27	136.3	-227.7	2.86
177.8	1.10	1.04	1.03	1.88	2.68	3.41	177.8	1.51	1.38	1.28	174.9	-225.4	2.47
200.0	1.08	1.03	1.03	1.83	2.64	3.36	200.0	1.53	1.39	1.30	200.0	-228.1	2.24
235.3	1.06	1.01	1.04	1.86	2.61	3.40	235.3	1.55	1.42	1.32	232.9	-226.7	1.73
273.7	1.03	1.03	1.07	1.91	2.72	3.52	273.7	1.58	1.45	1.34	271.5	-218.9	1.15
312.1	1.04	1.06	1.10	1.98	2.70	3.47	312.1	1.61	1.47	1.38	310.2	-210.9	0.58
350.5	1.08	1.10	1.13	2.05	2.84	3.48	350.5	1.65	1.51	1.41	348.8	-207.5	0.21
388.9	1.13	1.15	1.18	2.12	3.08	3.67	388.9	1.69	1.55	1.44	387.5	-206.2	-0.11
427.3	1.18	1.20	1.23	2.17	3.20	3.67	427.3	1.71	1.59	1.49	426.1	-212.5	-1.04
465.7	1.24	1.26	1.27	2.25	3.16	3.72	465.7	1.75	1.63	1.54	464.8	-213.7	-1.82
500.0	1.29	1.31	1.32	2.30	3.29	3.80	500.0	1.78	1.67	1.58	500.0	-201.7	-1.83
523.2	1.33	1.34	1.35	2.40	3.28	3.94	523.2	1.80	1.69	1.61	522.7	-197.7	2.55
561.6	1.39	1.40	1.40	2.49	3.48	4.10	561.6	1.84	1.73	1.65	561.4	-189.5	-2.83
600.0	1.46	1.47	1.46	2.65	3.57	4.30	600.0	1.85	1.73	1.66	600.0	-187.3	-3.58

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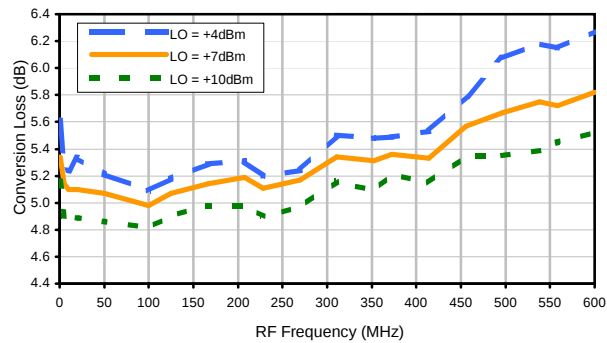


Frequency Mixer

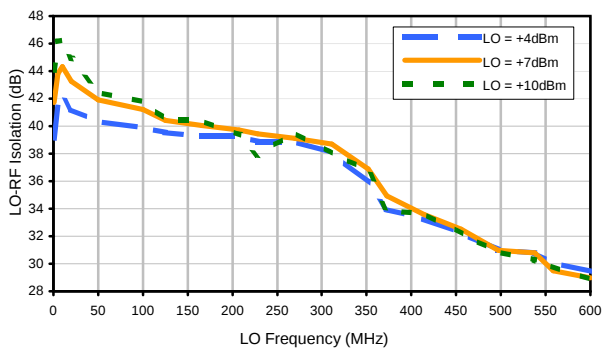
Typical Performance Curves

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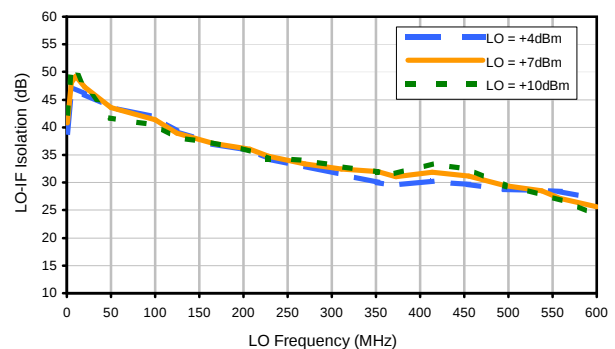
Conversion Loss



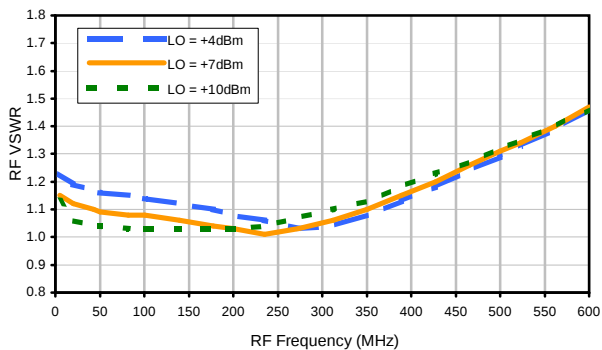
LO-RF Isolation



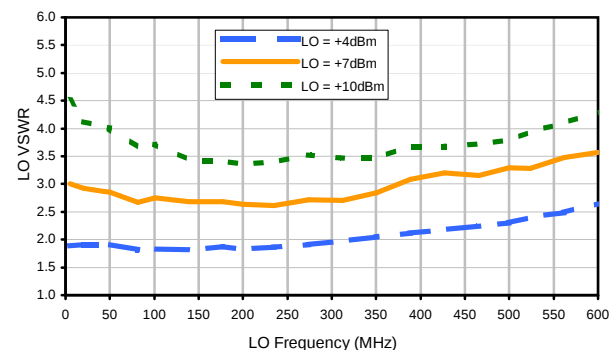
LO-IF Isolation



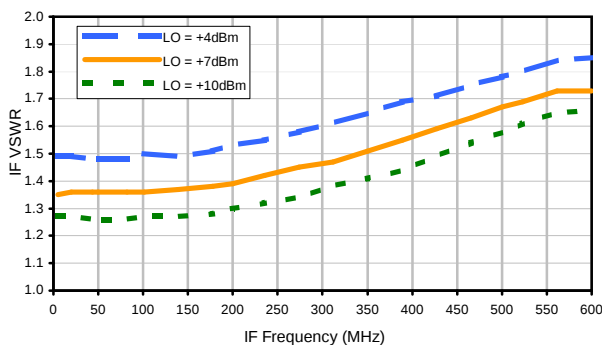
RF VSWR



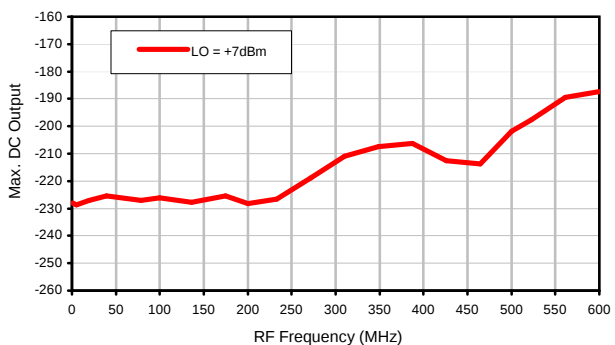
LO VSWR



IF VSWR



Max. DC Output



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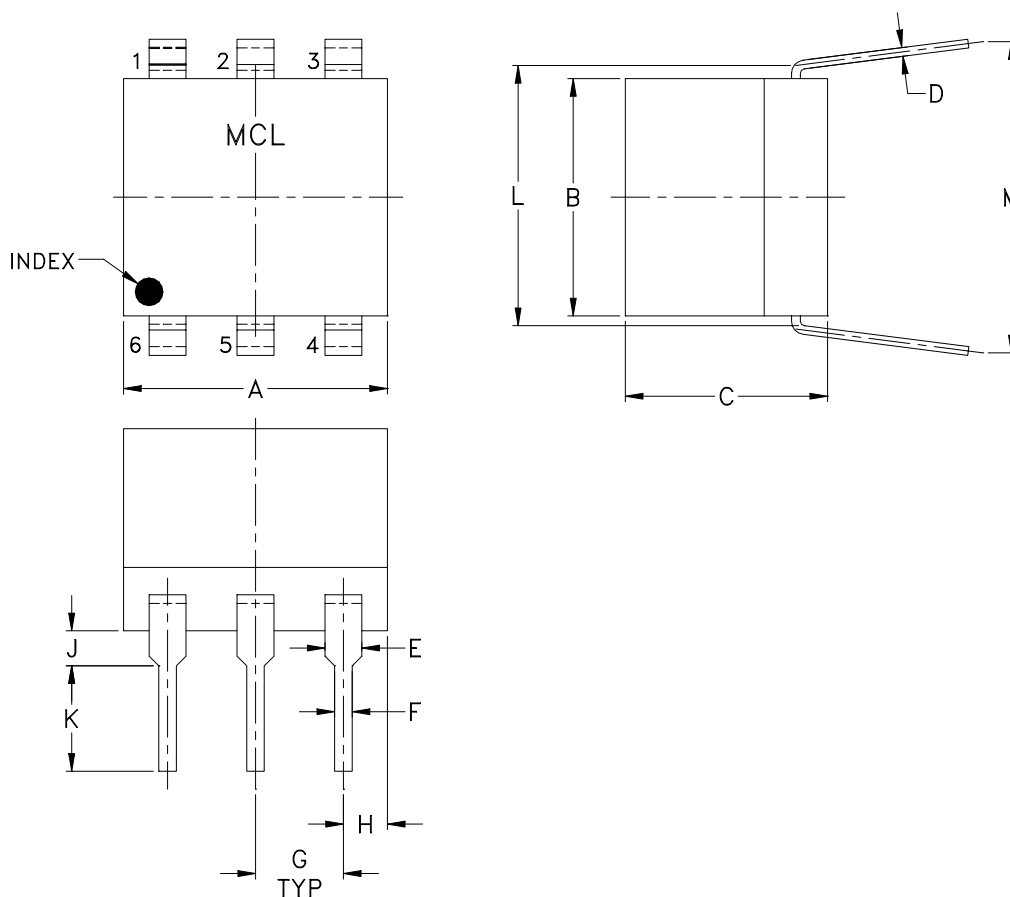
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Outline Dimensions

X65



CASE #	A	B	C	D	E	F	G	H	J	K	L	M	WT. GRAM
X65	.30 (7.62)	.27 (6.86)	.23 (5.84)	.010 (0.25)	.042 (1.07)	.020 (0.51)	.100 (2.54)	.05 (1.27)	.04 (1.02)	.11 (2.79)	.300 (7.62)	.35 (8.89)	.50

Dimensions are in inches (mm)

Notes:

- Case material: Plastic.
Termination finish: For RoHS Case Styles: Tin Plate over Nickel Plate.
For RoHS-5 Case Styles: Tin-Lead Plate.



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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	-40° to 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Thermal Shock	-55° to 100°C, 100 cycles	MIL-STD-202, Method 107, Condition A-3, except +100°C
Solder Reflow Heat	Sn-Pb Eutectic Process: 225°C peak Pb-Free Process, 245°C peak	J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1
Solderability	10X Magnification	J-STD-002, Para 4.2.5, Test S, 95% Coverage
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	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, Condition A
Lead Integrity	2 Pound Pull, perpendicular to edge of unit	MIL-STD-202, Method 211, Condition A
Marking Resistance to Solvents	Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C; distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C	MIL-STD-202, Method 215