Engineering Development Model

Voltage Controlled Oscillator JTOS-ED5563/1

Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

CASE STYLE : BK377

ELECTRICAL SPECIFICATIONS 50Ω				
Parameter	**Min.**	**Typ.**	**Max.**	**Units**
Frequency	323		478	MHz
Tuning Voltage	0.5		10	V
Power Output		+9		dBm
Phase Noise				
at 1 kHz offset		-79		dBc/Hz
at 10 KHz offset		-100		dBc/Hz
at 100 KHz offset		-120		dBc/Hz
at 1000 kHz offset		-140		dBc/Hz
Pulling at 12 dBr PK-PK all phases		0.9		MHz
Pushing at Vcc=5V±0.25V		1.5		MHz/V
Tuning Sensitivity		12 - 22		MHz/V
Harmonic Suppression		-28		dBc
3 dB Modulation Bandwidth		450		kHz
Supply Voltage		12		V
Supply Current			25	mA

MAXIMUM RATINGS	
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Absolute Supply Voltage (Vcc)	+14V
Absolute Tuning Voltage (Vtune)	+12V

PIN CONNECTIONS	
RF OUT	10
VCC	14
V-TUNE	5
GROUND	1,3,4,6,7,8,9,10,11,12,14

Voltage Controlled Oscillator JTOS-ED5563/1

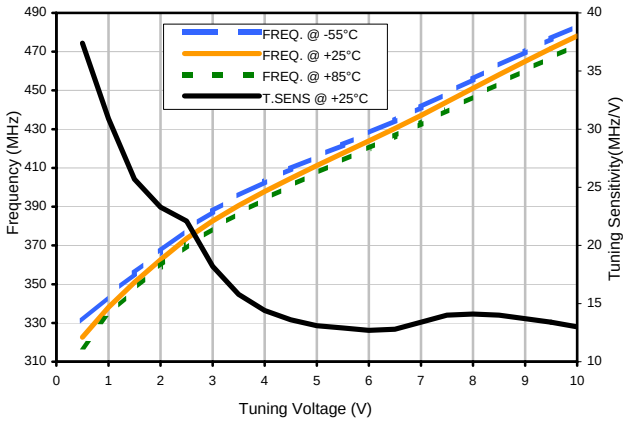
Typical Performance Data

V TUNE	TUNE SENS (MHz/V)	FREQUENCY (MHz)			POWER OUTPUT (dBm)			HARMONICS (dBc)			FREQ. PUSH (MHz/V)
		-55ºC	+25ºC	+85ºC	-55ºC	+25ºC	+85ºC	F2	F3	F4	
0.5	37.40	331.0	322.7	317.6	9.43	10.28	10.13	-19.4	-47.9	-56.1	1.55
1.0	30.90	343.9	338.1	334.1	9.90	10.56	10.02	-22.6	-50.6	-55.1	1.46
1.5	25.70	355.7	350.9	347.3	10.19	10.68	10.42	-25.8	-55.3	-55.0	
2.0	23.30	366.9	362.6	359.3	10.11	10.89	10.65	-27.5	-53.8	-52.3	1.56
2.5	22.10	378.3	373.6	369.9	10.46	10.87	10.60	-28.9	-52.6	-53.3	
3.0	18.20	387.6	382.7	378.8	10.51	11.12	10.82	-30.3	-52.7	-52.2	0.73
3.5	15.80	395.7	390.6	386.6	10.46	10.98	10.64	-31.5	-53.3	-51.6	
4.0	14.40	402.9	397.8	393.9	10.28	10.86	10.51	-32.9	-53.1	-53.2	0.48
4.5	13.60	409.6	404.6	400.8	9.90	10.72	10.31	-34.1	-51.8	-50.9	
5.0	13.10	415.8	411.2	407.4	9.62	10.30	9.91	-35.7	-52.2	-51.9	0.12
5.5	12.90	421.9	417.6	413.8	9.40	9.94	9.71	-36.8	-52.0	-53.3	
6.0	12.70	428.0	424.0	420.1	9.04	9.66	9.39	-38.2	-52.7	-53.0	0.02
6.5	12.80	434.5	430.4	426.4	8.69	9.26	9.06	-39.4	-52.1	-52.6	
7.0	13.40	441.4	437.1	433.0	8.22	8.87	8.81	-40.6	-52.7	-52.4	0.30
7.5	14.00	448.6	444.1	439.8	7.77	8.52	8.49	-41.4	-52.5	-49.9	
8.0	14.10	455.8	451.1	446.7	7.36	8.12	8.17	-42.2	-50.8	-48.2	0.31
8.5	14.00	462.9	458.1	453.7	6.88	7.77	7.84	-42.6	-51.6	-47.3	
9.0	13.70	469.9	465.0	460.4	6.49	7.33	7.51	-42.3	-51.8	-45.3	0.07
9.5	13.40	476.7	471.7	467.0	6.07	6.98	7.16	-42.4	-50.7	-44.9	
10.0	13.00	483.3	478.1	473.4	5.57	6.56	6.70	-43.1	-50.2	-44.2	0.06

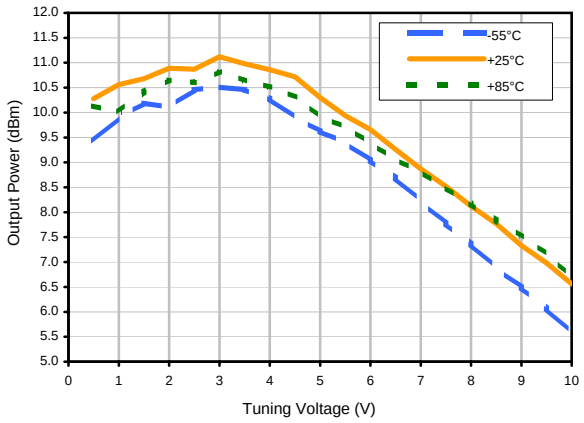
FREQ OFFSET (KHz)	PHASE NOISE (dBc/Hz)
1	-79
10	-100
100	-120
1000	-140

Typical Performance Data

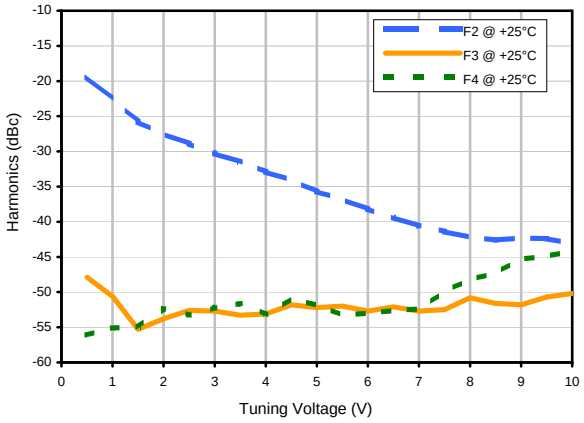
Frequency and Tuning Sensitivity



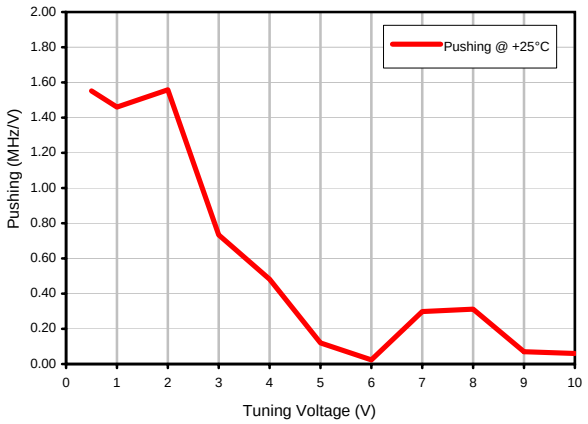
Power Output



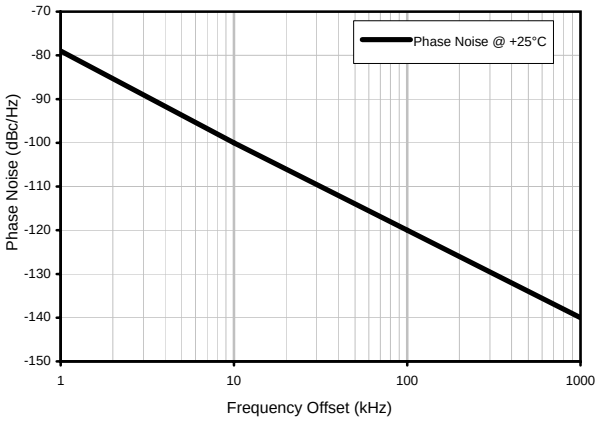
Harmonics Level



Frequency Pushing



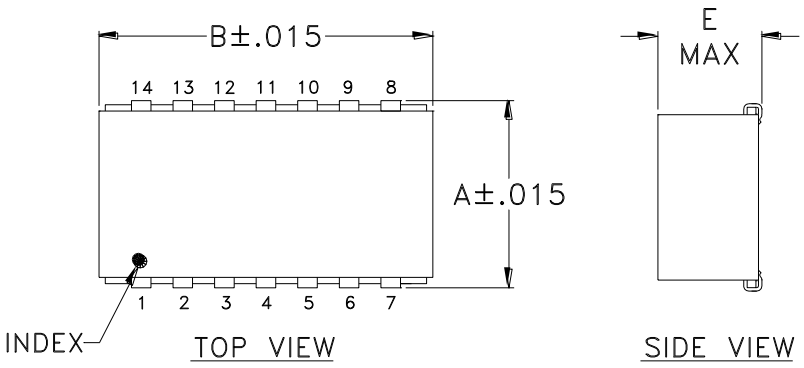
Phase Noise

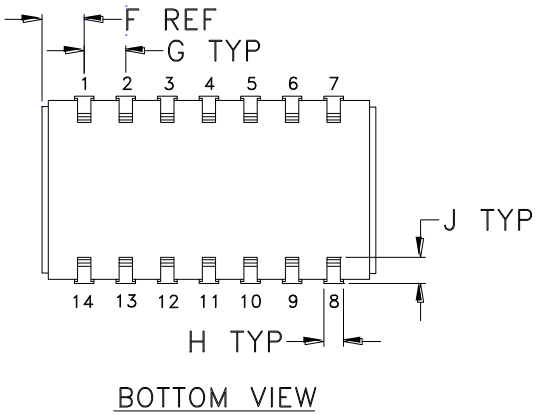


Case Style BK

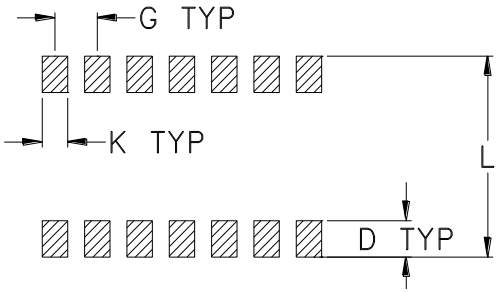
BK377

Outline Dimensions





PCB Land Pattern



Suggested Layout,
Tolerance to be within ±.002

CASE #	A	B	C	D	E	F	G	H	J	K	L	WT. GRAM
BK377	.505 (12.83)	.800 (20.32)	-- --	.100 (2.54)	.250 (6.35)	.100 (2.54)	.100 (2.54)	.047 (1.19)	.065 (1.65)	.065 (1.65)	.525 (13.34)	2.0 MAX.

Dimensions are in inches (mm). Tolerances: 2Pl. ± .01; 3Pl. ± .005

Notes:

1. Case material: Copper Nickel alloy.
2. Base material: Printed wiring laminate.
3. Termination finish:
   For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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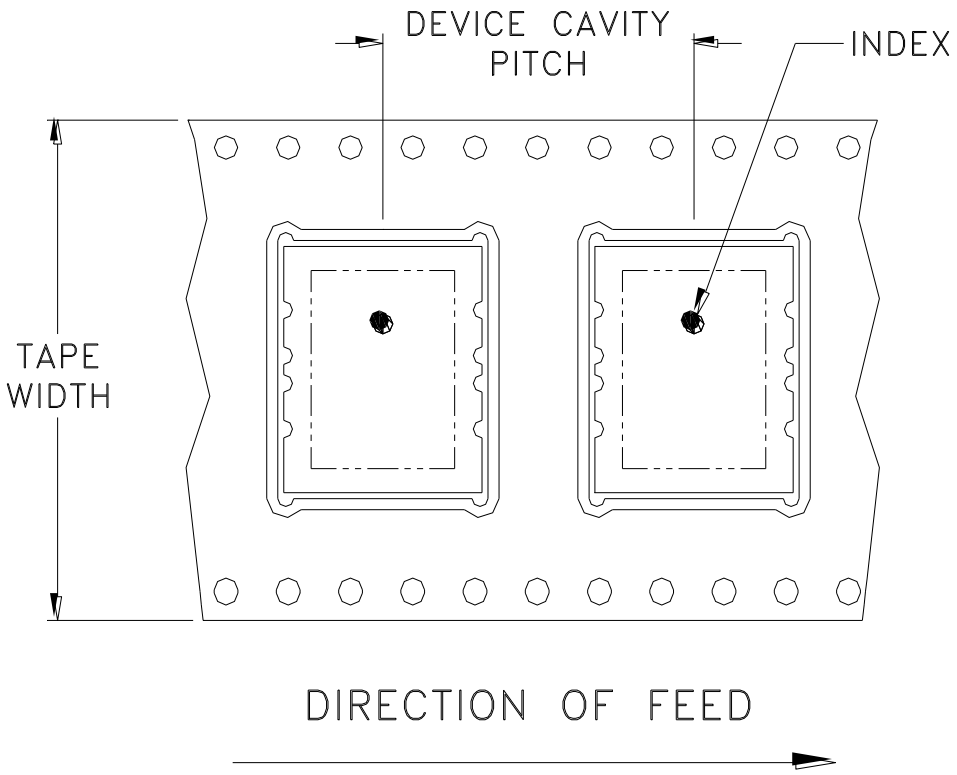
Tape & Reel Packaging TR-F107

DEVICE ORIENTATION IN T&R



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
32	20	7	Small quantity standards (see note)	10
				20
				50
				100
		13	Standard	200

Note: Please consult individual model data sheet to determine device per reel availability.

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf

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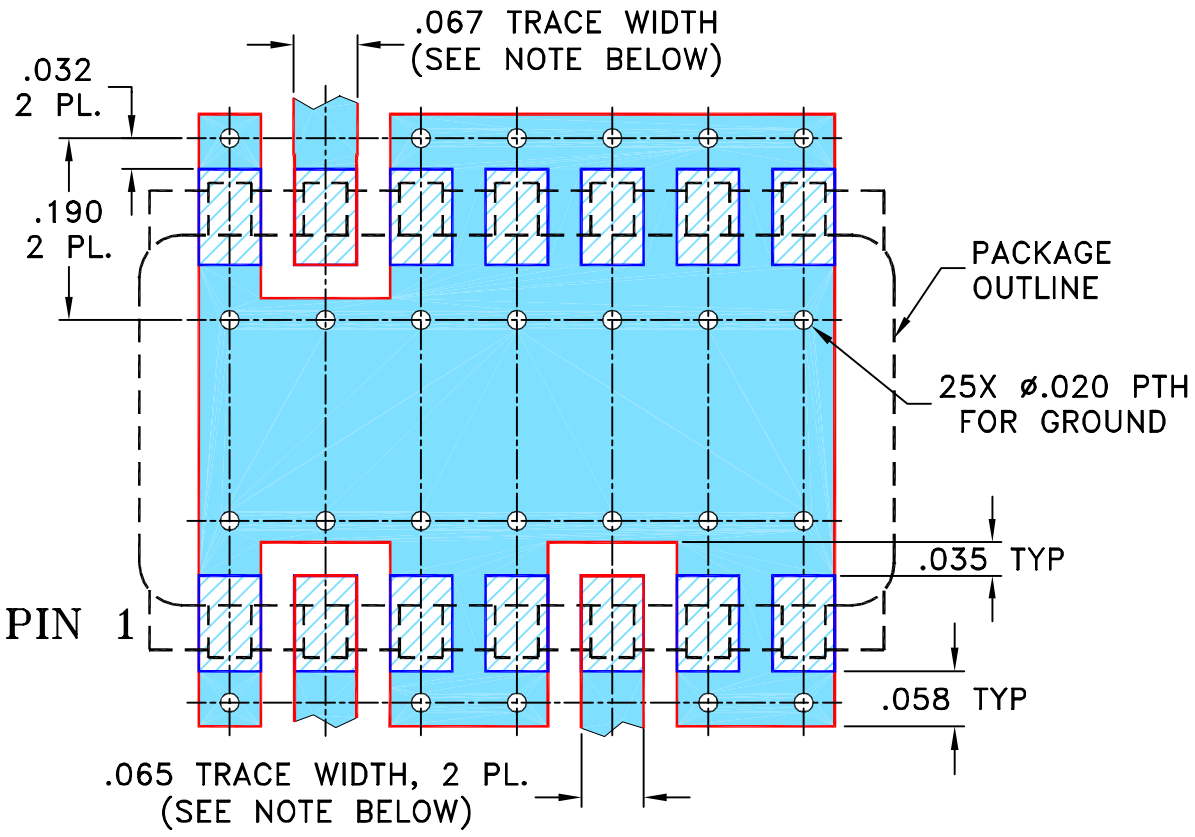
THIRD ANGLE PROJECTION

REVISIONS					
REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
B	M76077	UPDATED DRAWING	04/01	GF	MM
C	M82575	UPDATED DRAWING	08/08/02	IL	MM
D	M102713	UPDATED DIMENSIONS & NOTES	01/17/06	MMG	IL
E	M115059	CORRECTED NOTE 2	12/18/07	MMG	IL

SUGGESTED MOUNTING CONFIGURATION FOR BK377 CASE STYLE, "jc" PIN CONNECTION



NOTES:
1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

UNLESS OTHERWISE SPECIFIED		INITIALS	DATE
DIMENSIONS ARE IN INCHES	DRAWN	FB	05/20/00
TOLERANCES ON:	CHECKED	MM	05/24/00
2 PL DECIMALS ±	APPROVED	DB	05/24/00
3 PL DECIMALS ± .005			
ANGLES ±			
FRACTIONS ±			

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ASHEETA1.DWG REV:A DATE:01/12/95

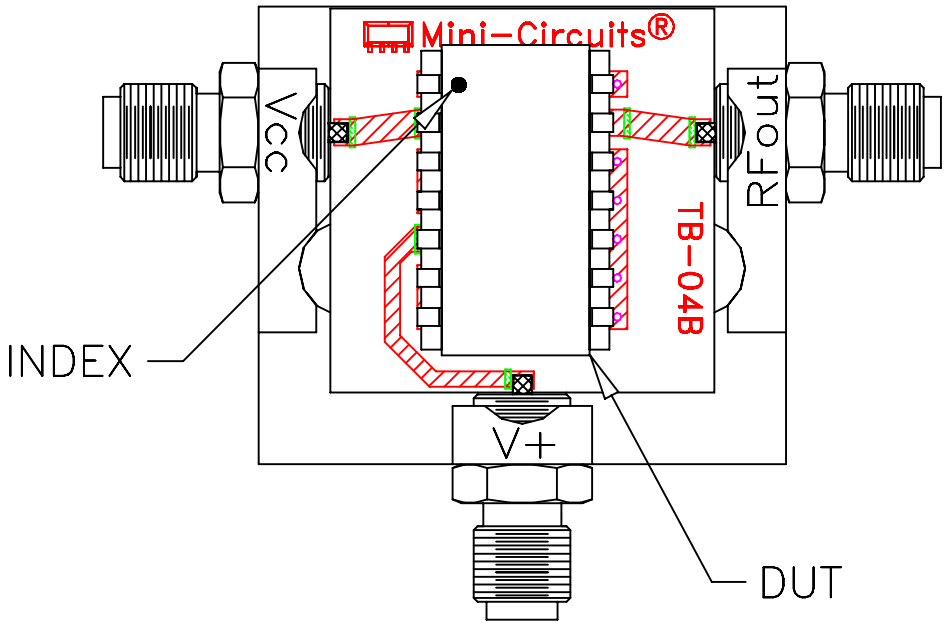
Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

PL, jc, BK377, JTOS, TB-04

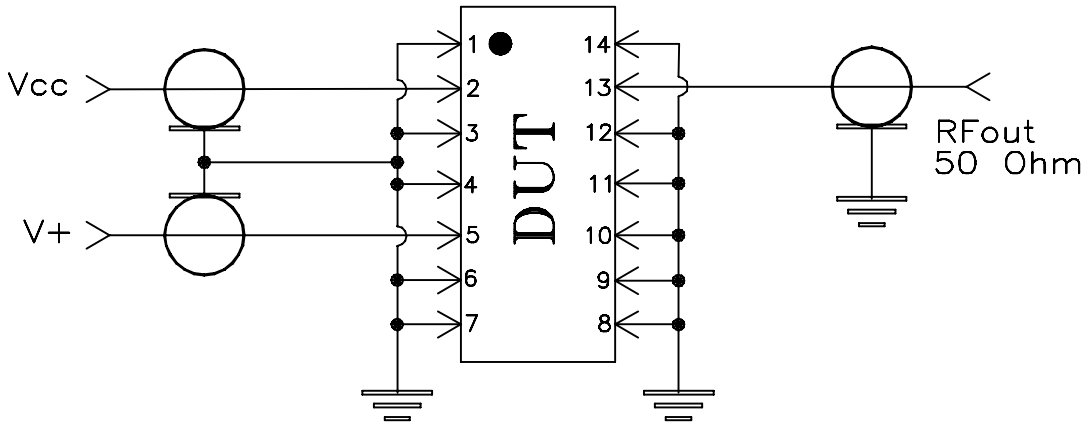
SIZE	CODE IDENT	DRAWING NO:	REV:
A	15542	98-PL-005	E

FILE:	SCALE:	SHEET:
98PL005	5:1	1 OF 1

Evaluation Board and Circuit



TB-04



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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Environmental Specifications ENV03

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 85°C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
HAST	130°C, 85% RH, 96 hours	JESD22-A110
Humidity	90 to 95% RH, 240 hours, 50°C	MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours
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, 20-2000 Hz, 4 times in each of three axes (total 12)	MIL-STD-883, Method 2007.3, Condition A
Mechanical Shock	50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes	MIL-STD-202, Method 213, 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

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