

Surface Mount

# High Isolation Switch

RSW-2-25PA+

50Ω DC to 2500 MHz

## The Big Deal

- Footprint Compatible with RSW-2-25P+<sup>a</sup>
- High Isolation, 50 dB typ. at 1 GHz
- Fast Switching, 3 ns typ. Rise/fall Time



CASE STYLE: CL620-1

## Product Overview

The RSW-2-25PA+ is a 50Ω high isolation, reflective SPDT RF switch designed for wireless applications, covering a broad frequency range from DC to 2500 MHz. This model is footprint compatible with Mini-Circuits' model number RSW-2-25P+ which is at End of Life. It provides very fast switching time of 14 ns and operates on a single positive supply voltage.

## Key Features

Feature	Advantages
High isolation; 50 dB typ. at 1 GHz 33 dB typ. At 2.5 GHz	With one switch, high isolation can be achieved, saving component count.
Fast switching 3 ns. rise/fall Time 14 ns switching Time	Most competitive switches have slow switching time of the order of $\mu$ s. The RSW-2-25PA+ is ideally suited for applications requiring fast switching time of the order of ns.
Positive voltage operation	Eliminates need for negative voltage which is generally required for fast switching, simplifying circuit layout.
Footprint compatible with RSW-2-25P+	Both RSW-2-25P+ & RSW-2-25PA+ use the same suggested foot print. RSW-2-25P+ is at end of Life. RSW-2-25PA+ can be used in its place without PCB re-design at the customer end.

Notes:

a. Suitability for model replacement within a particular system must be determined by and is solely the responsibility of the customer based on, among other things, electrical performance criteria, stimulus conditions, application, compatibility with other components and environmental conditions and stresses.

Surface Mount

# High Isolation Switch

50Ω DC-2500 MHz

SPDT Reflective, Single Supply Voltage, +5V

## Product Features

- Wide bandwidth, DC to 2500 MHz
- High Isolation, 50 dB typ. at 1 GHz
- Fast switching, 3ns rise/fall time
- Dual positive control
- Aqueous washable

## Typical Applications

- Automated switching networks
- Transmitters and Receivers

## RSW-2-25PA+



Generic photo used for illustration purposes only

CASE STYLE: CL620-1

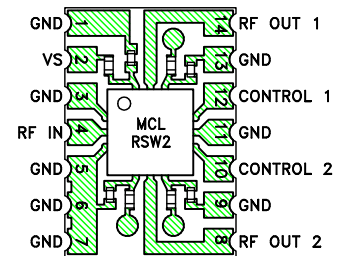
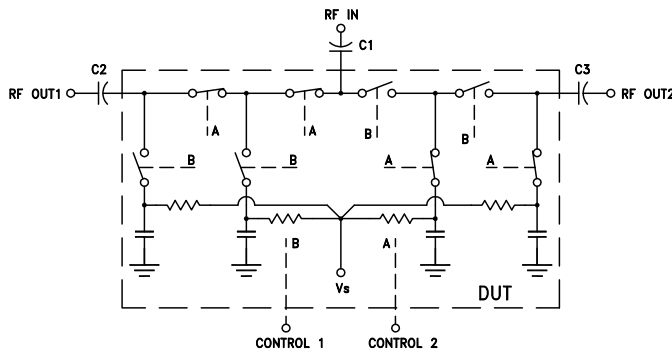
**+RoHS Compliant**

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

## General Description

The RSW-2-25PA+ is a 50Ω high isolation, reflective SPDT RF switch designed for wireless applications, covering a broad frequency range from DC to 2500 MHz is footprint compatible with Mini-Circuits' model RSW-2-25P+.

## Simplified Schematic and Pad Description



Function	Pad Number	Description (Reference to Fig. 2)
RF IN	4	RF Common / Sum Port, Pad 4 connected to RF IN via C1
RF OUT 1	14	RF Out #1 / IN Port #1, Pad 14 connected to RF OUT1 via C2
RF OUT 2	8	RF Out #1 / IN Port #2, Pad 8 connected to RF OUT2 via C3
VS	2	DC Positive Supply Voltage
Control 1	12	Control Port #1
Control 2	10	Control Port #2
GND	1,3,5,6,7,9,11,13	RF Ground

**RF Electrical Specifications<sup>1,2</sup>, DC - 2500 MHz, Vs=+5V, T<sub>AMB</sub>=25°C**

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range (Note 2)		DC		2500	MHz
Insertion Loss	DC to 100		0.5	0.9	dB
	100 to 1000		0.7	1.1	
	1000 to 2000		0.9	1.5	
	2000 to 2500		1.2	1.8	
IN-OUT Isolation	DC to 100	55	80		dB
	100 to 1000	44	54		
	1000 to 2000	34	43		
	2000 to 2500	26	33		
Return Loss, all ports (ON STATE)			17.6		dB
Return Loss @ RF OUT PORTS (OFF STATE)				5.0	dB
Input IP3	10		33		dBm
	100		38		
	500		39		
	1000		38		
	2500		41		
Input 1dB Compression <sup>(3)</sup>	10		13		dBm
	100		18		
	500		29		
	1000		29		
	2500		28		

Notes:

- 1. Tested on Mini-Circuits Test Board TB-23A+ (See Characterization Circuit, Fig 1)
- 2. All RF ports must be DC blocked

**DC Electrical Specifications**

Parameter	Min.	Typ.	Max.	Units
Vs, Supply Voltage	5		7	V
Supply Current (Vs= 5V)		30		µA
Control Voltage Low	0		0.2	V
Control Voltage High	Vs-0.2		Vs	V
Control Current		30		µA

**Switching Specifications at Vs=5V**

Parameter	Min.	Typ.	Max.	Units
Rise/Fall Time (10 to 90% or 90 to 10% RF)		3		nSec
Switching Time (50% CTRL to 90/10% RF)		14		nSec
Video Leakage <sup>3</sup>		44		mV <sub>p,p</sub>

3. Video leakage or break through is defined as leakage of switching signal to RF output ports.

**Absolute Maximum Ratings<sup>4</sup>**

Parameter	Ratings
Operating Temperature	-55°C to 85°C
Storage Temperature	-55°C to 100°C
Vs, Supply Voltage	+8V
Control Voltage	+8V
RF input power <sup>5</sup>	1W (>10 MHz)

- 4. Permanent damage may occur if any of these limits are exceeded.
- 5. Above 25°C, derate linearly to zero at 150°C.

**Truth Table** (State of control voltage selects the desired switch state)

State of Control Voltage		Switch State - RF IN to	
Control 1	Control 2	RF OUT 1	RF OUT 2
Low	High	ON	OFF
High	Low	OFF	ON

ON- low insertion loss state  
OFF- Isolation State

Characterization Test Circuit

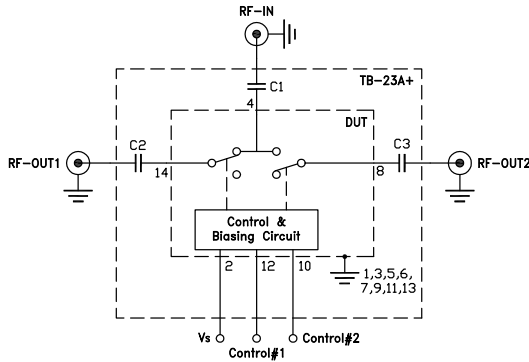


Figure 1 Block Diagram Of Test Circuit Used For Characterization. (DUT soldered on Mini-Circuit's TB-23A+)

Test Equipment:

For Insertion loss, Isolation, Return loss:

Agilent's N5230A Network Analyzer , E3631A power supply.

For Switching Time and Video Feed through

Agilent's AG54832B HP81110A pulse generator, HPE3631A Network Analyzer , E3631A power supply. Agilent's N90A Spectrum Analyzer , E8257D Generator U200A

For Compression:

Agilent's N5230A Network Analyzer.

Conditions:

Control= 0 and Vs

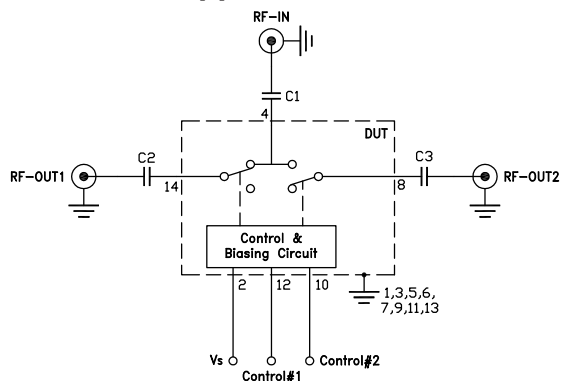
For Insertion loss, isolation and return loss: Vs= +5/7V. Pin=0 dBm

For P1dB: Vs= +7V

For Input IP3: Vs= +5V, Pin=+0dBm/tone, 1 MHz tone spacing.

For Switching time: RF frequency: 100 MHz at 0 dBm, Control Frequency: 10 KHz and 0 and +5V.

Recommended Application Circuit



Product Marking

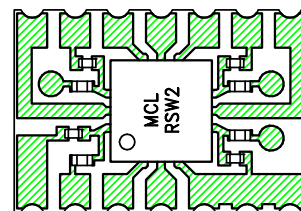


Figure 2 Test Board TB-23A+ includes case connectors & components soldered to PCB. C1, C2, C3=0.1µF, 0805 size

<b>Additional Detailed Technical Information</b>	
<i>additional information is available on our dash board. To access this information <a href="#">click here</a></i>	
<b>Performance Data</b>	Data Table
	Swept Graphs
<b>Case Style</b>	CL620-1, Base: FR4 PCB, Termination Finish: Gold over Nickel
<b>Tape &amp; Reel</b> Standard quantities available on reel	F43 <i>7" reels with 500 devices</i>
<b>Suggested Layout for PCB Design</b>	PL-444
<b>Evaluation Board</b>	TB-23A+
<b>Environmental Ratings</b>	ENV65

**ESD Rating**

Human Body Model (HBM): Class 1B (500 to <1000V) in accordance with ANSI/ESD STM 5.1 - 2007

Machine Model (MM): Class M2 (100 to <200V) in accordance with ANSI/ESD STM5.2-1999

**Additional 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.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

# High Isolation Switch

# RSW-2-25PA+

50Ω SPDT, Reflective

## Typical Performance Data

Conditions: Vs=+5V, Control=0/4.8V, Pin=-8 dBm, Temperature= +25°C

Frequency (MHz)	Insertion Loss (dB)		Isolation (dB)		Isolation (dB)		Return Loss (dB) RF IN		Return Loss (dB) RF1 & RF2			
	RF IN-RF1	RF IN-RF2	RF IN-RF1	RF IN-RF2	RF1-RF2	RF2-RF1	RF1 ON	RF2 ON	RF1 ON	RF2 ON	RF1 OFF	RF2 OFF
1.0	0.47	0.47	99.95	103.91	104.50	97.70	24.26	24.41	24.08	24.23	0.92	0.92
10.0	0.48	0.49	76.94	78.08	83.20	80.85	26.48	26.51	27.05	26.93	2.52	2.49
20.0	0.51	0.51	75.62	77.13	79.70	79.08	27.28	27.23	28.02	28.00	3.05	3.02
30.0	0.53	0.53	76.14	76.27	76.65	75.84	27.68	27.62	28.69	28.64	3.20	3.17
40.0	0.54	0.53	74.73	75.88	78.79	76.45	27.98	27.83	28.91	28.79	3.26	3.23
50.0	0.54	0.54	72.56	72.75	75.50	73.80	28.00	27.89	28.79	28.63	3.29	3.25
60.0	0.54	0.54	71.65	71.82	73.87	73.67	28.05	28.06	28.76	28.61	3.30	3.27
70.0	0.55	0.55	69.82	72.02	72.03	72.43	28.16	28.17	28.71	28.67	3.31	3.28
80.0	0.56	0.56	68.13	70.50	71.51	73.27	28.20	28.12	28.92	28.69	3.32	3.29
90.0	0.56	0.55	66.41	67.49	73.13	71.19	28.30	27.94	29.01	28.65	3.32	3.29
100.0	0.55	0.55	68.55	67.35	71.29	67.92	28.15	27.81	28.94	28.61	3.32	3.29
200.0	0.57	0.57	61.42	61.83	64.74	64.21	27.98	27.91	28.21	28.15	3.34	3.31
300.0	0.58	0.59	57.70	58.19	61.49	60.76	26.84	26.77	27.20	27.29	3.37	3.34
400.0	0.61	0.61	55.15	55.77	59.14	58.42	25.44	25.39	25.80	25.91	3.40	3.37
500.0	0.63	0.63	53.49	54.01	56.69	56.04	24.12	24.05	24.56	24.64	3.43	3.40
600.0	0.66	0.65	51.78	52.42	55.24	54.64	22.75	22.71	23.27	23.37	3.47	3.44
700.0	0.68	0.68	50.72	51.23	53.51	52.70	21.48	21.45	22.21	22.29	3.50	3.47
800.0	0.71	0.71	49.86	50.70	51.55	50.70	20.45	20.41	21.30	21.36	3.54	3.51
900.0	0.74	0.74	48.89	49.69	50.57	49.32	19.53	19.51	20.44	20.56	3.57	3.54
1000.0	0.77	0.77	48.32	49.12	49.10	48.03	18.81	18.84	19.81	20.01	3.60	3.57
1100.0	0.80	0.81	47.84	48.68	47.73	46.46	18.17	18.19	19.28	19.54	3.64	3.60
1200.0	0.83	0.83	47.41	47.70	46.35	44.92	17.63	17.68	18.79	19.13	3.68	3.63
1300.0	0.86	0.86	46.40	47.83	44.66	43.83	17.20	17.29	18.43	18.80	3.70	3.65
1400.0	0.88	0.88	45.14	45.99	44.62	43.11	16.73	16.85	18.05	18.53	3.73	3.66
1500.0	0.92	0.91	43.81	44.96	42.68	41.54	16.41	16.54	17.69	18.18	3.76	3.67
1600.0	0.94	0.94	42.22	43.73	41.39	39.97	16.08	16.17	17.41	17.96	3.77	3.68
1700.0	0.97	0.97	41.12	43.09	39.73	38.52	15.79	15.88	17.17	17.63	3.79	3.67
1800.0	1.01	1.00	39.76	41.55	38.19	36.93	15.54	15.59	17.00	17.48	3.80	3.67
1900.0	1.03	1.04	38.13	40.36	36.98	35.66	15.30	15.33	16.93	17.38	3.79	3.65
2000.0	1.06	1.06	36.58	38.80	35.60	34.28	15.07	15.05	16.90	17.33	3.78	3.63
2100.0	1.10	1.10	34.98	36.99	34.27	32.89	14.90	14.82	17.01	17.41	3.77	3.62
2200.0	1.13	1.14	33.51	35.40	33.24	31.60	14.73	14.59	17.17	17.49	3.76	3.61
2300.0	1.16	1.18	31.74	33.61	31.66	30.28	14.65	14.43	17.37	17.52	3.74	3.58
2400.0	1.22	1.24	30.20	32.05	30.61	29.05	14.57	14.26	17.45	17.48	3.73	3.61
2500.0	1.26	1.29	28.65	30.15	29.00	27.85	14.47	14.09	17.52	17.17	3.73	3.58
2750.0	1.40	1.47	24.73	26.20	25.78	24.75	14.24	13.67	16.78	15.76	3.81	3.69
3000.0	1.61	1.73	21.00	22.41	22.62	21.64	13.86	13.25	15.35	13.97	4.15	4.06

# High Isolation Switch

# RSW-2-25PA+

50Ω SPDT, Reflective

## Typical Performance Data

Conditions: Vs=+5V, Control=0/4.8V, Pin=-8 dBm, Temperature= -55°C

Frequency (MHz)	Insertion Loss (dB)		Isolation (dB)		Isolation (dB)		Return Loss (dB) RF IN		Return Loss (dB) RF1 & RF2			
	RF IN-RF1	RF IN-RF2	RF IN-RF1	RF IN-RF2	RF1-RF2	RF2-RF1	RF1 ON	RF2 ON	RF1 ON	RF2 ON	RF1 OFF	RF2 OFF
1.0	0.43	0.43	94.21	113.22	119.79	105.57	24.14	23.88	24.23	24.25	0.95	0.96
10.0	0.44	0.45	76.94	77.55	79.39	80.22	27.31	27.29	27.95	27.68	2.46	2.57
20.0	0.48	0.47	73.82	75.40	75.79	74.90	27.90	27.96	28.91	28.55	2.99	3.15
30.0	0.49	0.49	76.22	77.27	76.28	76.30	28.04	28.21	29.34	28.94	3.14	3.31
40.0	0.50	0.50	76.30	77.35	76.12	74.73	28.07	28.14	29.70	29.09	3.18	3.36
50.0	0.51	0.50	73.51	72.34	75.43	73.12	27.78	27.84	29.82	29.12	3.20	3.39
60.0	0.51	0.51	71.76	73.03	72.49	72.77	27.59	27.72	29.83	29.25	3.21	3.41
70.0	0.52	0.52	70.31	72.66	71.24	72.03	27.48	27.62	30.05	29.36	3.22	3.42
80.0	0.53	0.52	68.68	69.56	72.74	73.22	27.39	27.68	30.21	29.50	3.23	3.43
90.0	0.53	0.52	66.45	68.03	72.35	70.61	27.42	27.63	30.40	29.53	3.24	3.44
100.0	0.53	0.52	68.22	66.95	71.65	67.81	27.40	27.62	30.39	29.39	3.25	3.46
200.0	0.54	0.54	61.27	61.72	65.01	63.97	30.61	30.44	28.97	29.14	3.27	3.46
300.0	0.55	0.54	57.76	58.45	61.38	60.57	28.49	27.92	30.31	30.89	3.23	3.41
400.0	0.56	0.55	55.04	55.72	59.34	58.66	26.75	26.67	30.93	29.91	3.20	3.41
500.0	0.57	0.56	53.34	53.95	56.99	56.20	25.44	25.83	27.00	27.11	3.21	3.43
600.0	0.58	0.57	51.55	52.32	55.40	54.67	23.63	23.78	24.26	24.65	3.26	3.46
700.0	0.60	0.59	50.48	51.20	53.60	52.76	22.19	22.21	22.97	23.21	3.30	3.48
800.0	0.61	0.61	50.00	50.47	51.96	50.98	21.30	21.11	22.30	22.21	3.32	3.50
900.0	0.63	0.63	48.56	49.42	50.58	49.48	20.28	20.15	21.54	21.25	3.32	3.53
1000.0	0.65	0.65	48.84	49.69	48.82	48.08	19.71	19.84	20.99	21.08	3.34	3.54
1100.0	0.67	0.67	48.26	49.03	47.37	46.19	18.92	18.92	20.23	20.43	3.36	3.53
1200.0	0.69	0.69	46.82	47.29	46.70	45.31	18.60	18.46	20.13	20.04	3.36	3.55
1300.0	0.71	0.71	46.07	47.45	44.91	43.95	18.10	18.21	19.54	19.62	3.35	3.55
1400.0	0.73	0.72	45.17	45.77	44.45	43.17	17.18	17.46	18.68	19.26	3.36	3.52
1500.0	0.75	0.74	44.04	45.52	42.94	42.06	16.78	16.97	18.24	18.73	3.38	3.52
1600.0	0.77	0.76	42.26	43.40	42.03	40.56	16.29	16.44	17.75	18.21	3.40	3.52
1700.0	0.79	0.78	41.13	43.25	39.98	38.82	16.15	16.22	17.62	18.04	3.39	3.51
1800.0	0.81	0.81	39.71	41.64	38.69	37.39	15.81	15.84	17.36	17.72	3.38	3.49
1900.0	0.83	0.83	38.37	40.58	37.35	36.01	15.49	15.51	17.24	17.54	3.37	3.48
2000.0	0.86	0.85	36.78	38.85	35.98	34.63	15.20	15.24	17.13	17.38	3.35	3.44
2100.0	0.88	0.88	35.27	37.47	34.73	33.29	14.98	15.00	17.11	17.41	3.34	3.42
2200.0	0.91	0.90	33.70	35.69	33.25	31.95	14.73	14.69	17.09	17.27	3.33	3.39
2300.0	0.95	0.94	31.98	34.23	32.30	30.64	14.44	14.34	17.04	17.06	3.31	3.39
2400.0	0.97	0.98	30.47	32.46	30.88	29.34	14.35	14.18	17.08	16.98	3.31	3.39
2500.0	1.01	1.02	29.08	30.60	29.37	28.02	14.25	14.01	17.09	16.96	3.33	3.36
2750.0	1.11	1.15	25.08	26.67	26.38	25.10	14.04	13.48	16.68	15.83	3.30	3.34
3000.0	1.25	1.33	21.26	22.88	23.17	22.04	13.54	12.97	15.33	14.21	3.48	3.47



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4681 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

IF/RF MICROWAVE COMPONENTS

REV. OR  
RSW-2-25PA+  
12/30/2014  
Page 2 of 3

# High Isolation Switch

# RSW-2-25PA+

50Ω SPDT, Reflective

## Typical Performance Data

Conditions: Vs=+5V, Control=0/4.8V, Pin=-8 dBm, Temperature= +85°C

Frequency (MHz)	Insertion Loss (dB)		Isolation (dB)		Isolation (dB)		Return Loss (dB) RF IN		Return Loss (dB) RF1 & RF2			
	RF IN-RF1	RF IN-RF2	RF IN-RF1	RF IN-RF2	RF1-RF2	RF2-RF1	RF1 ON	RF2 ON	RF1 ON	RF2 ON	RF1 OFF	RF2 OFF
1.0	0.52	0.52	96.64	100.78	104.23	100.18	23.69	23.83	23.75	23.89	0.91	0.91
10.0	0.53	0.53	78.44	77.89	81.38	79.89	25.84	25.88	26.12	26.00	2.63	2.61
20.0	0.54	0.55	75.24	77.20	78.53	78.10	26.75	26.73	26.83	26.79	3.28	3.25
30.0	0.55	0.56	76.51	77.56	77.95	75.96	27.29	27.26	27.27	27.19	3.47	3.43
40.0	0.56	0.56	75.53	75.34	77.91	76.61	27.77	27.66	27.36	27.26	3.54	3.50
50.0	0.56	0.56	73.64	73.13	75.81	74.35	28.02	27.96	27.19	27.09	3.57	3.53
60.0	0.56	0.57	71.51	72.79	73.23	73.48	28.32	28.31	27.11	27.03	3.58	3.54
70.0	0.57	0.57	70.19	71.54	72.51	73.09	28.64	28.61	27.01	27.01	3.58	3.55
80.0	0.58	0.58	68.62	69.85	72.30	72.40	28.82	28.66	27.15	26.98	3.59	3.55
90.0	0.58	0.57	67.94	68.17	72.59	70.15	28.95	28.58	27.18	26.98	3.59	3.55
100.0	0.58	0.58	67.99	67.50	71.45	69.30	28.80	28.53	27.17	27.06	3.58	3.55
200.0	0.61	0.61	61.44	61.92	65.23	64.47	25.65	25.57	27.18	27.04	3.58	3.55
300.0	0.64	0.64	57.90	58.41	61.59	60.85	24.88	24.95	25.41	25.40	3.64	3.61
400.0	0.67	0.67	55.35	55.88	59.29	58.61	23.54	23.62	23.30	23.52	3.72	3.68
500.0	0.70	0.70	53.58	54.12	57.02	56.28	22.40	22.35	22.61	22.81	3.77	3.73
600.0	0.73	0.73	52.17	52.67	55.14	54.31	21.29	21.16	21.59	21.65	3.81	3.77
700.0	0.76	0.77	50.97	51.49	53.32	52.51	20.00	19.94	20.64	20.65	3.86	3.83
800.0	0.80	0.80	50.10	50.70	51.77	50.81	19.20	19.19	19.92	20.00	3.92	3.89
900.0	0.83	0.83	49.20	49.96	50.45	49.31	18.47	18.48	19.28	19.43	3.97	3.93
1000.0	0.86	0.87	48.56	49.27	49.06	47.76	17.98	18.01	18.98	19.21	4.01	3.96
1100.0	0.90	0.90	48.33	48.90	47.42	46.06	17.51	17.50	18.65	18.89	4.05	4.00
1200.0	0.93	0.93	47.77	48.11	46.24	45.11	17.10	17.15	18.39	18.72	4.09	4.04
1300.0	0.96	0.97	46.47	48.18	44.58	44.05	16.74	16.86	18.21	18.59	4.12	4.05
1400.0	0.99	0.99	45.33	46.46	43.98	42.62	16.41	16.52	17.97	18.46	4.14	4.06
1500.0	1.03	1.03	43.88	45.39	42.52	41.15	16.17	16.26	17.75	18.25	4.16	4.06
1600.0	1.06	1.06	42.64	44.27	40.98	39.68	15.93	15.98	17.62	18.14	4.17	4.06
1700.0	1.09	1.09	41.26	43.33	39.42	38.22	15.63	15.69	17.41	17.88	4.18	4.05
1800.0	1.12	1.12	39.65	41.66	37.95	36.80	15.39	15.39	17.28	17.74	4.18	4.04
1900.0	1.16	1.16	37.96	40.16	36.70	35.39	15.15	15.11	17.20	17.63	4.19	4.03
2000.0	1.19	1.20	36.30	38.51	35.27	33.98	14.91	14.81	17.18	17.55	4.17	4.01
2100.0	1.24	1.25	34.69	36.78	33.84	32.56	14.71	14.59	17.25	17.60	4.16	4.00
2200.0	1.28	1.29	33.02	35.15	32.65	31.20	14.52	14.32	17.38	17.61	4.16	4.00
2300.0	1.32	1.35	31.36	33.32	31.28	29.89	14.37	14.13	17.44	17.58	4.15	3.98
2400.0	1.38	1.41	29.76	31.53	30.00	28.60	14.25	13.96	17.43	17.43	4.16	4.02
2500.0	1.43	1.47	28.21	29.78	28.57	27.39	14.14	13.79	17.42	17.12	4.17	4.01
2750.0	1.61	1.69	24.27	25.71	25.23	24.20	13.92	13.44	16.61	15.68	4.29	4.16
3000.0	1.87	2.01	20.50	21.94	22.05	21.05	13.60	13.11	15.20	13.92	4.74	4.66



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 • Fax (718) 332-4681 For detailed performance specs & shopping online see Mini-Circuits web site



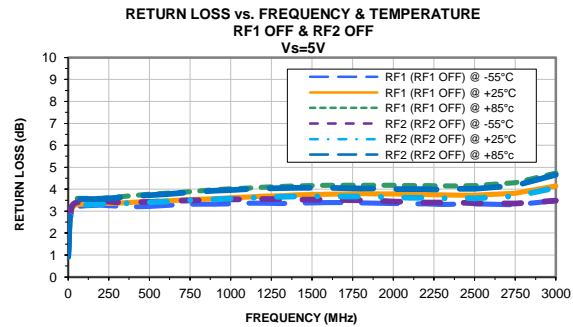
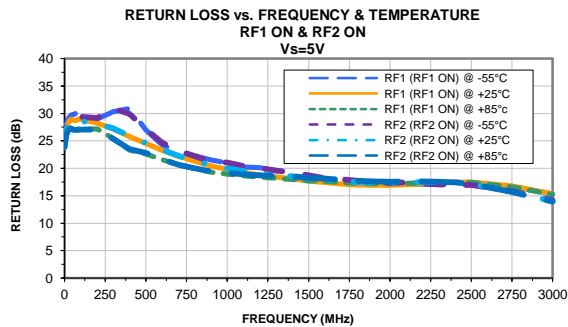
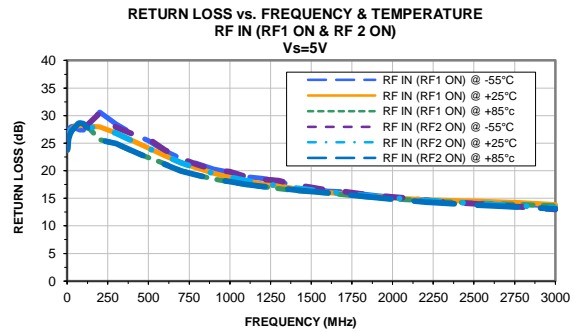
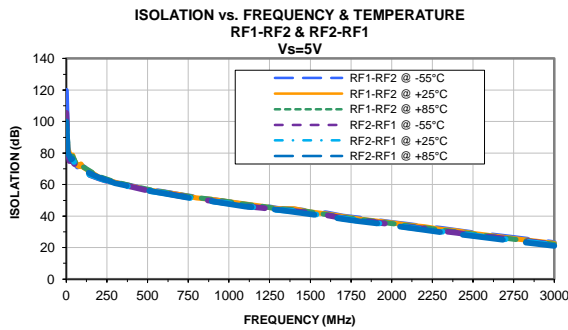
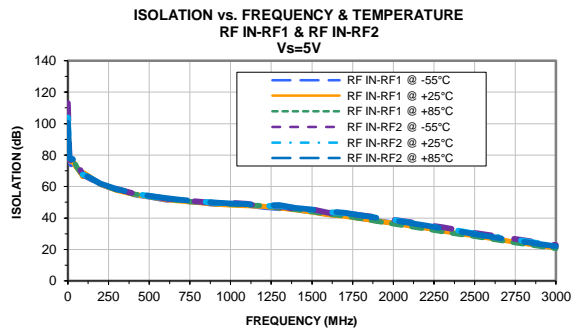
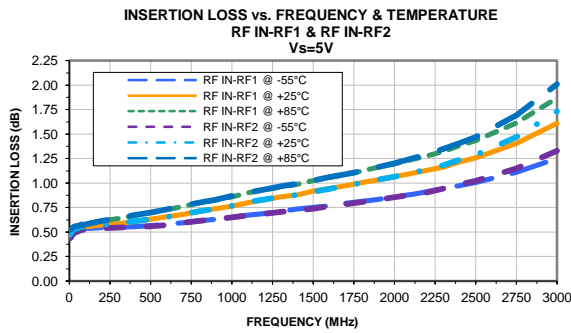
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

IF/RF MICROWAVE COMPONENTS

REV. OR  
RSW-2-25PA+  
12/30/2014  
Page 3 of 3

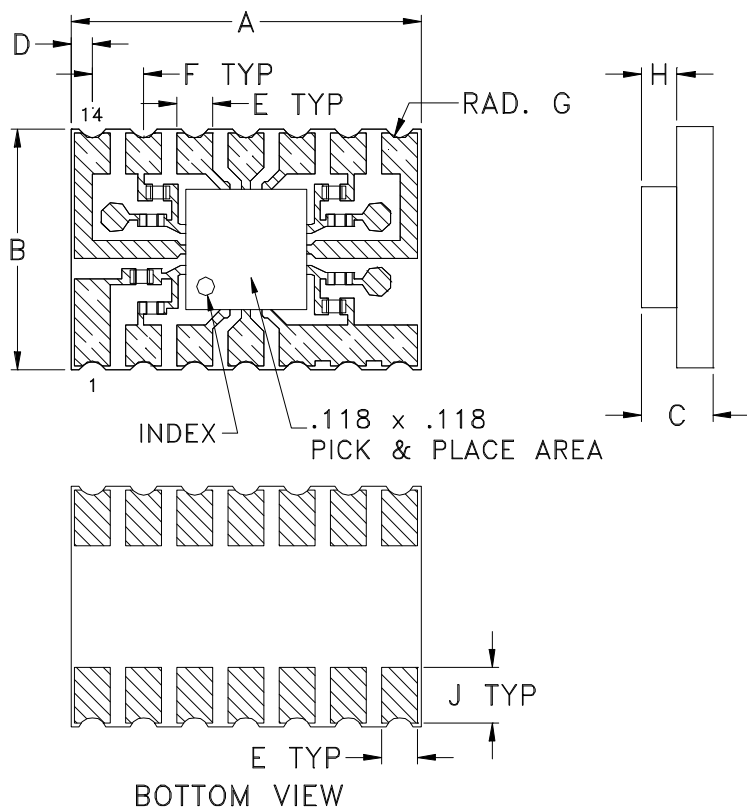


### Typical Performance Curves

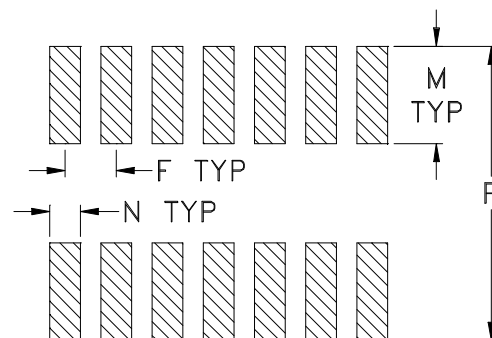


CL620-1

## Outline Dimensions



## PCB Land Pattern



Suggested Layout,  
Tolerance to be within  $\pm .002$

CASE #	A	B	C	D	E	F	G	H	J	K	L	M	N	P	WT. GRAM
CL620-1	.342 (8.69)	.235 (5.97)	.070 (1.78)	.021 (.53)	.035 (.89)	.050 (1.27)	.014 (0.36)	.035 (.89)	.054 (1.37)	-	-	.095 (2.41)	.028 (0.71)	.287 (7.29)	.1

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .01$ ; Pl.  $\pm .005$

### Notes:

- Case material: Printed wiring laminate.
- Termination finish: 3-5  $\mu$  inch (.08-.13) microns Gold over 120-210  $\mu$  inch (3.05-6.10 microns) Nickel Plate.

**Mini-Circuits**<sup>®</sup>

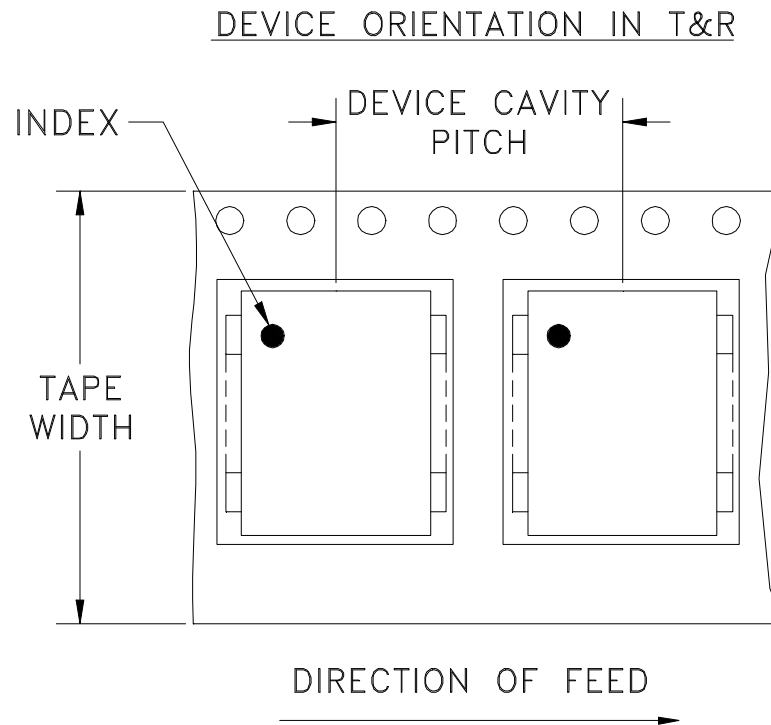
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

# Tape & Reel Packaging TR-F43



Tape Width, mm	Device Cavity Pitch, mm	Reel Size, inches	Devices per Reel	
16	8	7	Small Quantity Standards (See Note)	20
				50
				100
				200
			Standard	500

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

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](http://www.minicircuits.com/pages/pdfs/tape.pdf)



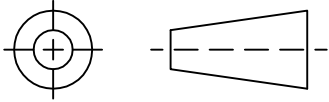
INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010

Mini-Circuits ISO 9001 & ISO 14001 Certified

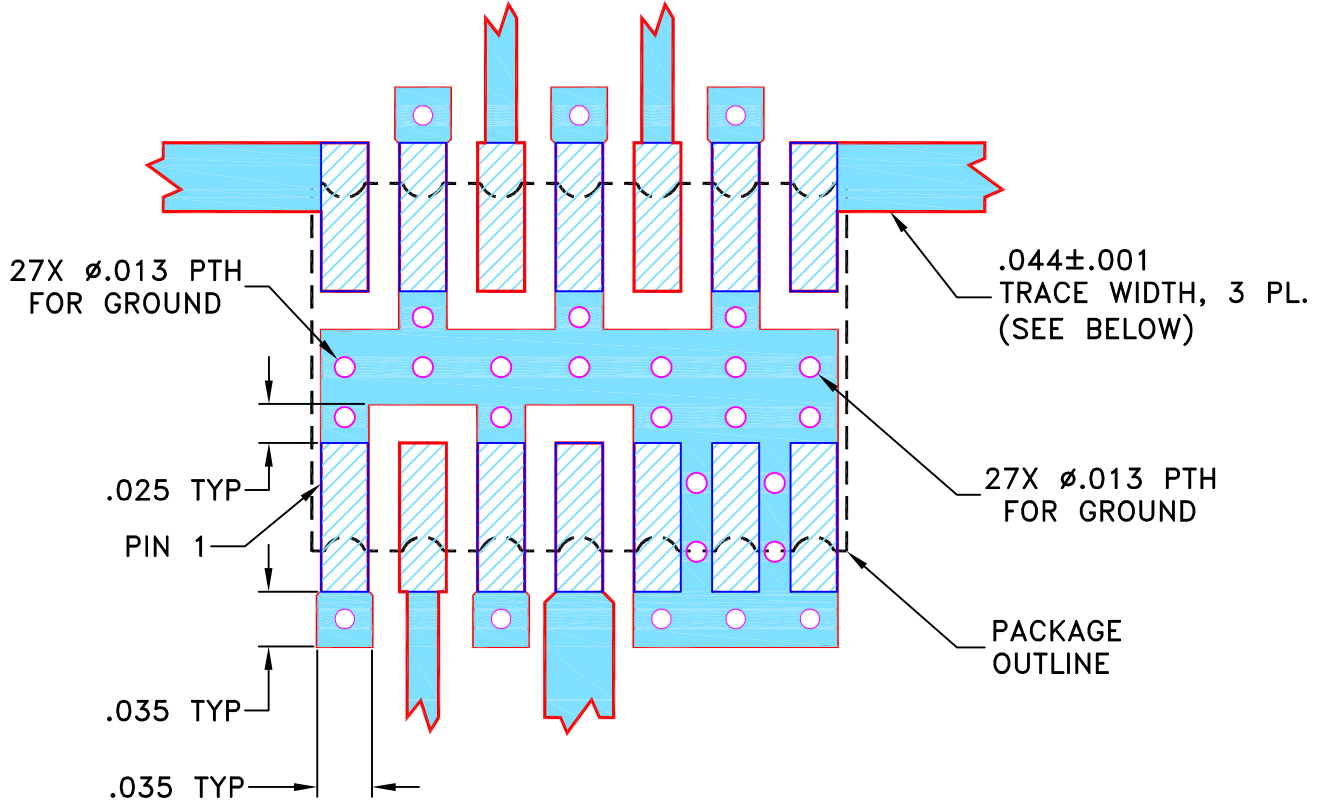
THIRD ANGLE PROJECTION



REVISIONS

REV	ECN No.	DESCRIPTION	DATE	DR	AUTH
OR	M149466	NEW RELEASE	12/24/14	ITG	RS

**SUGGESTED MOUNTING CONFIGURATION  
FOR CL620-1 CASE STYLE, "14SW01" PIN CODE**



**NOTES:**

1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .020"±.0015". 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 TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ±	DRAWN	ITG	12/19/14
	CHECKED	GF	12/24/14
	APPROVED	RS	12/24/14

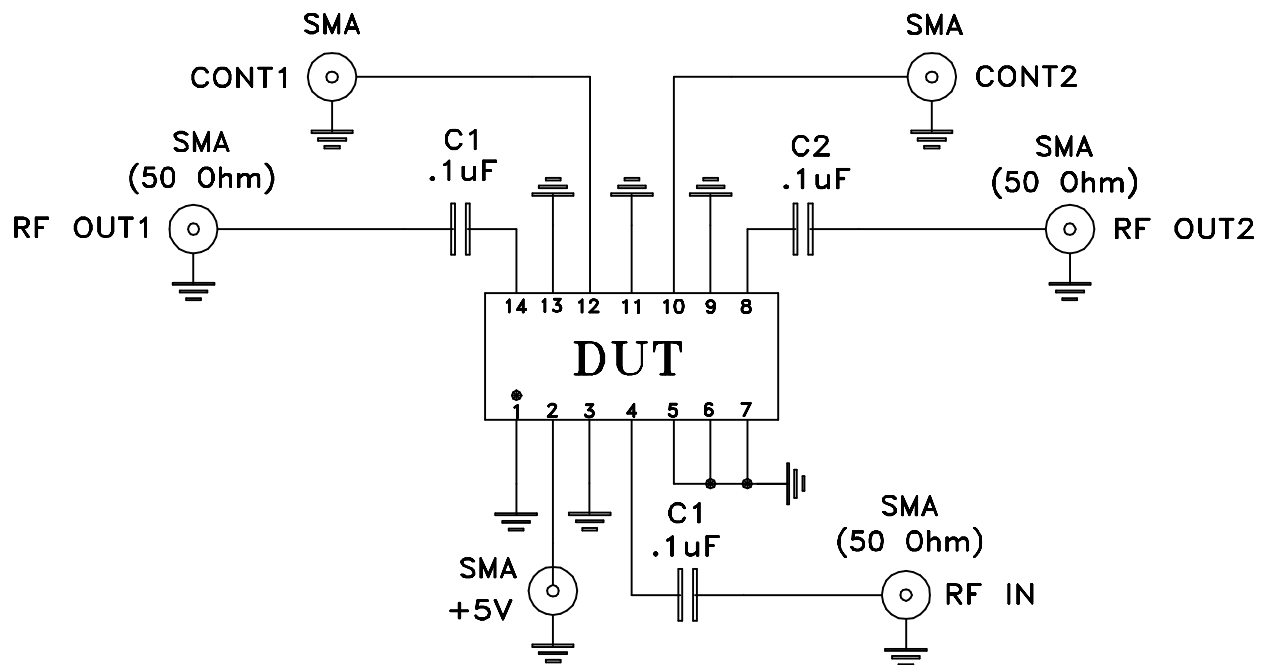
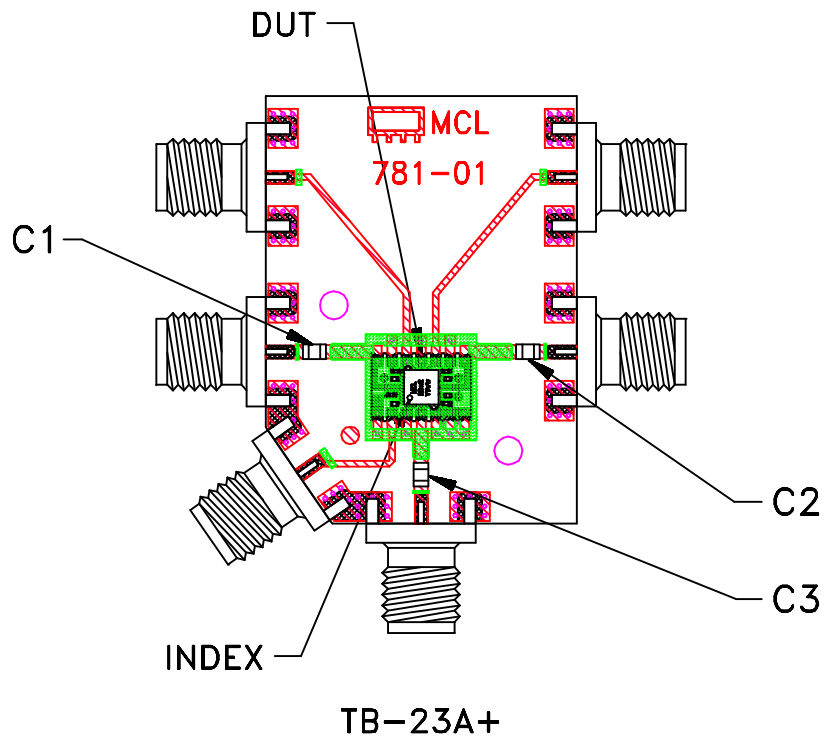
**Mini-Circuits®** 13 Neptune Avenue  
Brooklyn NY 11235

**PL, 14SW01, CL620-1, TB-23A+**

Mini-Circuits®  
THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

SIZE A	CODE IDENT 15542	DRAWING NO: 98-PL-444	REV: OR
FILE: 98PL444	SCALE: 8:1	SHEET: 1 OF 1	


# Evaluation Board and Circuit



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.020 inch.

 **Mini-Circuits®**

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
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