

Surface Mount Power Splitter/Combiner

ADQ-180+

2 Way-90° 50Ω 120 to 180 MHz



Generic photo used for illustration purposes only

CASE STYLE: CJ725

+RoHS Compliant

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

| Available Tape and Reel at no extra cost | |
|--|----------------------|
| Reel Size | Devices/Reel |
| 7" | 10, 20, 50, 100, 200 |
| 13" | 500 |

Maximum Ratings

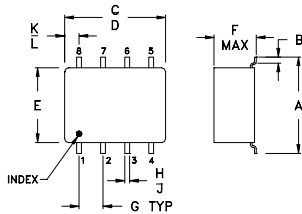
| | |
|-----------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Power Input (as a splitter) | 1W max. |

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

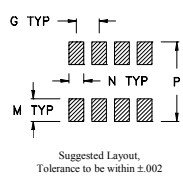
Pin Connections

| | |
|----------------------|---------|
| SUM PORT | 1 |
| PORT 1 (+90°) | 8 |
| PORT 2 (0°) | 4 |
| GROUND | 2,3,6,7 |
| 50 OHM TERM EXTERNAL | 5 |

Outline Drawing



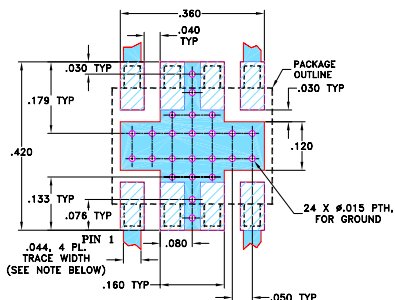
PCB Land Pattern



Outline Dimensions (inch/mm)

| | | | | | | | |
|-------|------|------|-------|------|------|-------|-------|
| A | B | C | D | E | F | G | |
| .397 | .032 | .385 | .435 | .310 | .215 | .100 | |
| 10.08 | 0.81 | 9.78 | 11.05 | 7.87 | 5.46 | 2.54 | |
| H | J | K | L | M | N | P | wt |
| .015 | .025 | .035 | .075 | .120 | .060 | .420 | grams |
| 0.38 | 0.64 | 0.89 | 1.91 | 3.05 | 1.52 | 10.67 | 0.45 |

Demo Board MCL P/N: TB-83 Suggested PCB Layout (PL-063)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". 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

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-Circuit's 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-Circuit's website at www.minicircuits.com/MCLStore/terms.jsp

Features

- excellent amplitude unbalance, 0.6 dB typ. and phase unbalance, 0.7 deg. typ.
- very low insertion loss, 0.2 dB typ.
- small surface mount package
- protected under U.S. Patent 6,133,525

Applications

- VHF TV

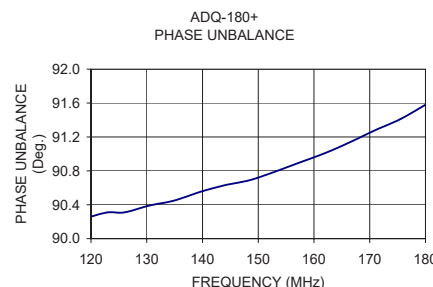
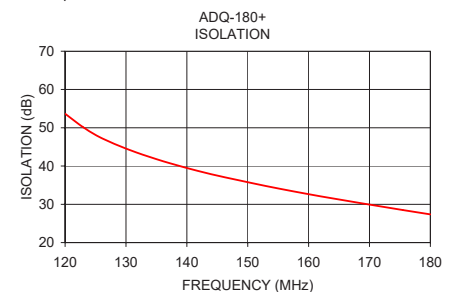
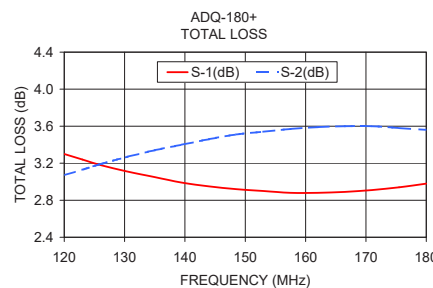
Electrical Specifications

| FREQ. RANGE (MHz) | ISOLATION (dB) | | INSERTION LOSS (dB) Avg. of Coupled Outputs ABOVE 3 dB | | PHASE UNBALANCE (Degrees) | AMPLITUDE UNBALANCE (dB) |
|-------------------|----------------|------|--|------|---------------------------|--------------------------|
| | Typ. | Min. | Typ. | Max. | | |
| f_c - f_u | | | | | Max. | Max. |
| 120-180 | 35 | 20 | 0.2 | 0.7 | 6 | 1.5 |

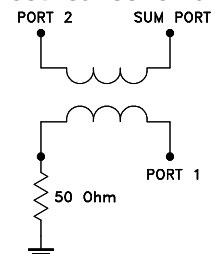
Typical Performance Data

| Frequency (MHz) | Total Loss ¹ (dB) | | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | VSWR S | VSWR 1 | VSWR 2 |
|-----------------|------------------------------|------|--------------------------|----------------|------------------------|--------|--------|--------|
| | S-1 | S-2 | | | | | | |
| 120.00 | 3.30 | 3.07 | 0.23 | 53.66 | 90.26 | 1.04 | 1.03 | 1.05 |
| 123.00 | 3.24 | 3.13 | 0.11 | 50.12 | 90.31 | 1.04 | 1.03 | 1.05 |
| 126.00 | 3.18 | 3.19 | 0.01 | 47.30 | 90.31 | 1.04 | 1.03 | 1.05 |
| 130.50 | 3.11 | 3.27 | 0.16 | 44.27 | 90.39 | 1.03 | 1.03 | 1.05 |
| 135.00 | 3.05 | 3.34 | 0.30 | 41.81 | 90.45 | 1.03 | 1.03 | 1.06 |
| 139.50 | 2.99 | 3.40 | 0.41 | 39.71 | 90.55 | 1.03 | 1.03 | 1.06 |
| 144.00 | 2.95 | 3.46 | 0.51 | 37.87 | 90.63 | 1.03 | 1.03 | 1.06 |
| 148.50 | 2.92 | 3.51 | 0.59 | 36.28 | 90.69 | 1.03 | 1.03 | 1.06 |
| 153.00 | 2.90 | 3.54 | 0.65 | 34.78 | 90.79 | 1.03 | 1.03 | 1.06 |
| 157.50 | 2.88 | 3.57 | 0.69 | 33.39 | 90.90 | 1.03 | 1.03 | 1.06 |
| 162.00 | 2.88 | 3.59 | 0.71 | 32.08 | 91.01 | 1.04 | 1.04 | 1.07 |
| 166.50 | 2.89 | 3.60 | 0.71 | 30.85 | 91.14 | 1.04 | 1.04 | 1.07 |
| 171.00 | 2.91 | 3.60 | 0.69 | 29.66 | 91.28 | 1.05 | 1.05 | 1.08 |
| 175.50 | 2.94 | 3.58 | 0.64 | 28.50 | 91.41 | 1.05 | 1.06 | 1.08 |
| 180.00 | 2.98 | 3.56 | 0.57 | 27.36 | 91.58 | 1.06 | 1.06 | 1.09 |

1. Total Loss = Insertion Loss + 3dB splitter loss.



electrical schematic



2 Way-90° Power Splitter/Combiner

ADQ-180+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +25°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | AMP. UNBAL. (dB) | PHASE UNBAL. From 90° (deg.) | ISOLATION (dB) 1-2 | VSWR (:1) | | |
|----------------|---------------------------------|------|------|------------------------|------------------------------------|--------------------------|--------------|------|------|
| | S-1 | S-2 | AVG. | | | | S | 1 | 2 |
| 60 | 6.36 | 1.29 | 3.82 | 5.07 | 0.41 | 40.55 | 1.02 | 1.03 | 1.03 |
| 65 | 5.89 | 1.45 | 3.67 | 4.45 | 0.39 | 39.98 | 1.02 | 1.03 | 1.03 |
| 70 | 5.49 | 1.61 | 3.55 | 3.88 | 0.38 | 39.50 | 1.02 | 1.03 | 1.03 |
| 75 | 5.13 | 1.77 | 3.45 | 3.36 | 0.34 | 39.15 | 1.02 | 1.02 | 1.03 |
| 80 | 4.81 | 1.93 | 3.37 | 2.88 | 0.32 | 38.79 | 1.02 | 1.02 | 1.03 |
| 85 | 4.53 | 2.08 | 3.31 | 2.45 | 0.30 | 38.48 | 1.02 | 1.02 | 1.03 |
| 90 | 4.29 | 2.23 | 3.26 | 2.05 | 0.28 | 38.26 | 1.02 | 1.02 | 1.03 |
| 95 | 4.07 | 2.38 | 3.22 | 1.69 | 0.23 | 38.08 | 1.02 | 1.02 | 1.03 |
| 100 | 3.87 | 2.52 | 3.20 | 1.35 | 0.22 | 37.88 | 1.02 | 1.02 | 1.02 |
| 105 | 3.70 | 2.66 | 3.18 | 1.04 | 0.19 | 37.65 | 1.02 | 1.02 | 1.02 |
| 110 | 3.55 | 2.79 | 3.17 | 0.76 | 0.15 | 37.46 | 1.02 | 1.02 | 1.02 |
| 115 | 3.42 | 2.91 | 3.16 | 0.51 | 0.14 | 37.34 | 1.02 | 1.02 | 1.02 |
| 120 | 3.30 | 3.02 | 3.16 | 0.28 | 0.11 | 37.20 | 1.02 | 1.02 | 1.02 |
| 125 | 3.20 | 3.12 | 3.16 | 0.08 | 0.07 | 37.10 | 1.02 | 1.02 | 1.02 |
| 130 | 3.11 | 3.22 | 3.16 | 0.11 | 0.04 | 37.10 | 1.02 | 1.02 | 1.02 |
| 135 | 3.03 | 3.31 | 3.17 | 0.27 | 0.00 | 37.15 | 1.02 | 1.02 | 1.02 |
| 140 | 2.97 | 3.39 | 3.18 | 0.42 | 0.04 | 37.21 | 1.02 | 1.02 | 1.02 |
| 145 | 2.92 | 3.45 | 3.18 | 0.53 | 0.09 | 37.24 | 1.02 | 1.02 | 1.02 |
| 150 | 2.87 | 3.51 | 3.19 | 0.64 | 0.13 | 37.15 | 1.02 | 1.02 | 1.01 |
| 155 | 2.84 | 3.56 | 3.20 | 0.71 | 0.16 | 37.04 | 1.02 | 1.03 | 1.01 |
| 160 | 2.82 | 3.59 | 3.21 | 0.77 | 0.18 | 36.84 | 1.02 | 1.03 | 1.01 |
| 165 | 2.81 | 3.62 | 3.21 | 0.81 | 0.26 | 36.64 | 1.02 | 1.03 | 1.01 |
| 170 | 2.81 | 3.63 | 3.22 | 0.82 | 0.28 | 36.31 | 1.02 | 1.03 | 1.01 |
| 175 | 2.82 | 3.64 | 3.23 | 0.82 | 0.32 | 35.92 | 1.03 | 1.04 | 1.02 |
| 180 | 2.84 | 3.63 | 3.23 | 0.79 | 0.37 | 35.44 | 1.03 | 1.04 | 1.02 |
| 185 | 2.87 | 3.61 | 3.24 | 0.73 | 0.45 | 34.76 | 1.03 | 1.05 | 1.02 |
| 190 | 2.92 | 3.57 | 3.24 | 0.65 | 0.52 | 33.96 | 1.04 | 1.05 | 1.02 |
| 195 | 2.98 | 3.52 | 3.25 | 0.54 | 0.59 | 33.04 | 1.04 | 1.06 | 1.03 |
| 200 | 3.05 | 3.45 | 3.25 | 0.40 | 0.68 | 32.00 | 1.05 | 1.07 | 1.03 |
| 205 | 3.15 | 3.38 | 3.26 | 0.23 | 0.75 | 30.85 | 1.06 | 1.08 | 1.04 |
| 210 | 3.26 | 3.29 | 3.27 | 0.03 | 0.91 | 29.67 | 1.07 | 1.09 | 1.05 |
| 215 | 3.40 | 3.19 | 3.29 | 0.21 | 1.04 | 28.45 | 1.08 | 1.11 | 1.06 |
| 220 | 3.57 | 3.07 | 3.32 | 0.50 | 1.19 | 27.19 | 1.10 | 1.12 | 1.07 |
| 225 | 3.77 | 2.94 | 3.35 | 0.83 | 1.38 | 25.92 | 1.11 | 1.14 | 1.09 |
| 230 | 4.01 | 2.80 | 3.40 | 1.21 | 1.62 | 24.62 | 1.13 | 1.17 | 1.11 |
| 235 | 4.30 | 2.64 | 3.47 | 1.65 | 1.94 | 23.32 | 1.16 | 1.19 | 1.13 |
| 240 | 4.65 | 2.48 | 3.56 | 2.17 | 2.34 | 22.00 | 1.19 | 1.22 | 1.16 |
| 245 | 5.08 | 2.31 | 3.69 | 2.77 | 2.91 | 20.69 | 1.22 | 1.26 | 1.19 |
| 250 | 5.62 | 2.14 | 3.88 | 3.48 | 3.67 | 19.39 | 1.26 | 1.31 | 1.23 |

¹Total Loss = Insertion Loss + 3dB Splitter Loss

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The Design Engineers Search Engine finds the model you need, Instantly • For detailed performance specs & shopping online see



2 Way-90° Power Splitter/Combiner

ADQ-180+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = -40°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | AMP. UNBAL. (dB) | PHASE UNBAL. From 90° (deg.) | ISOLATION (dB) 1-2 | VSWR (:1) | | |
|----------------|---------------------------------|------|------|------------------------|------------------------------------|--------------------------|--------------|------|------|
| | S-1 | S-2 | AVG. | | | | S | 1 | 2 |
| 60 | 6.43 | 1.22 | 3.82 | 5.21 | 0.01 | 36.96 | 1.05 | 1.04 | 1.07 |
| 65 | 5.96 | 1.38 | 3.67 | 4.58 | 0.07 | 36.45 | 1.06 | 1.04 | 1.07 |
| 70 | 5.54 | 1.54 | 3.54 | 4.01 | 0.10 | 36.04 | 1.06 | 1.04 | 1.07 |
| 75 | 5.18 | 1.69 | 3.44 | 3.49 | 0.13 | 35.76 | 1.06 | 1.04 | 1.07 |
| 80 | 4.86 | 1.85 | 3.35 | 3.01 | 0.15 | 35.53 | 1.06 | 1.04 | 1.07 |
| 85 | 4.57 | 2.00 | 3.29 | 2.57 | 0.22 | 35.40 | 1.06 | 1.04 | 1.06 |
| 90 | 4.32 | 2.15 | 3.23 | 2.18 | 0.26 | 35.34 | 1.06 | 1.04 | 1.06 |
| 95 | 4.10 | 2.29 | 3.19 | 1.81 | 0.31 | 35.40 | 1.05 | 1.04 | 1.05 |
| 100 | 3.90 | 2.43 | 3.16 | 1.47 | 0.34 | 35.49 | 1.05 | 1.04 | 1.05 |
| 105 | 3.72 | 2.56 | 3.14 | 1.16 | 0.40 | 35.63 | 1.04 | 1.04 | 1.04 |
| 110 | 3.56 | 2.69 | 3.13 | 0.87 | 0.45 | 35.88 | 1.04 | 1.04 | 1.04 |
| 115 | 3.43 | 2.81 | 3.12 | 0.62 | 0.48 | 36.25 | 1.03 | 1.04 | 1.03 |
| 120 | 3.30 | 2.92 | 3.11 | 0.39 | 0.54 | 36.68 | 1.03 | 1.04 | 1.03 |
| 125 | 3.20 | 3.02 | 3.11 | 0.18 | 0.59 | 37.16 | 1.02 | 1.04 | 1.03 |
| 130 | 3.11 | 3.12 | 3.11 | 0.01 | 0.66 | 37.75 | 1.02 | 1.04 | 1.03 |
| 135 | 3.03 | 3.20 | 3.12 | 0.17 | 0.70 | 38.45 | 1.02 | 1.04 | 1.03 |
| 140 | 2.96 | 3.28 | 3.12 | 0.32 | 0.77 | 39.21 | 1.02 | 1.04 | 1.03 |
| 145 | 2.90 | 3.35 | 3.12 | 0.44 | 0.84 | 40.03 | 1.02 | 1.04 | 1.03 |
| 150 | 2.86 | 3.41 | 3.13 | 0.55 | 0.87 | 40.71 | 1.03 | 1.04 | 1.03 |
| 155 | 2.83 | 3.45 | 3.14 | 0.62 | 0.90 | 41.46 | 1.03 | 1.04 | 1.03 |
| 160 | 2.80 | 3.49 | 3.15 | 0.69 | 0.96 | 42.01 | 1.03 | 1.04 | 1.03 |
| 165 | 2.78 | 3.52 | 3.15 | 0.73 | 1.04 | 42.56 | 1.04 | 1.05 | 1.03 |
| 170 | 2.78 | 3.53 | 3.15 | 0.75 | 1.09 | 42.74 | 1.04 | 1.05 | 1.03 |
| 175 | 2.79 | 3.54 | 3.16 | 0.75 | 1.13 | 42.63 | 1.04 | 1.05 | 1.03 |
| 180 | 2.81 | 3.53 | 3.17 | 0.72 | 1.20 | 42.12 | 1.04 | 1.05 | 1.03 |
| 185 | 2.84 | 3.51 | 3.17 | 0.67 | 1.27 | 40.91 | 1.05 | 1.05 | 1.03 |
| 190 | 2.88 | 3.47 | 3.18 | 0.59 | 1.36 | 39.32 | 1.05 | 1.05 | 1.03 |
| 195 | 2.93 | 3.43 | 3.18 | 0.49 | 1.43 | 37.55 | 1.05 | 1.06 | 1.02 |
| 200 | 3.00 | 3.36 | 3.18 | 0.36 | 1.52 | 35.65 | 1.05 | 1.06 | 1.03 |
| 205 | 3.08 | 3.28 | 3.18 | 0.20 | 1.60 | 33.76 | 1.05 | 1.07 | 1.03 |
| 210 | 3.19 | 3.20 | 3.19 | 0.00 | 1.76 | 31.93 | 1.06 | 1.08 | 1.04 |
| 215 | 3.33 | 3.09 | 3.21 | 0.23 | 1.85 | 30.18 | 1.07 | 1.09 | 1.06 |
| 220 | 3.49 | 2.98 | 3.23 | 0.51 | 2.01 | 28.48 | 1.08 | 1.10 | 1.08 |
| 225 | 3.68 | 2.85 | 3.26 | 0.83 | 2.20 | 26.87 | 1.10 | 1.12 | 1.10 |
| 230 | 3.91 | 2.71 | 3.31 | 1.20 | 2.42 | 25.28 | 1.12 | 1.14 | 1.12 |
| 235 | 4.18 | 2.55 | 3.37 | 1.63 | 2.72 | 23.74 | 1.15 | 1.17 | 1.14 |
| 240 | 4.52 | 2.39 | 3.46 | 2.14 | 3.09 | 22.24 | 1.18 | 1.20 | 1.17 |
| 245 | 4.94 | 2.22 | 3.58 | 2.72 | 3.60 | 20.78 | 1.21 | 1.24 | 1.21 |
| 250 | 5.45 | 2.05 | 3.75 | 3.40 | 4.29 | 19.36 | 1.26 | 1.29 | 1.24 |

¹Total Loss = Insertion Loss + 3dB Splitter Loss

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ADQ-180+

Typical Performance Data

TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +85°C

| FREQ. (MHz) | TOTAL LOSS ¹ (dB) | | | AMP. UNBAL. (dB) | PHASE UNBAL. From 90° (deg.) | ISOLATION (dB) 1-2 | VSWR (:1) | | |
|----------------|---------------------------------|------|------|------------------------|------------------------------------|--------------------------|--------------|------|------|
| | S-1 | S-2 | AVG. | | | | S | 1 | 2 |
| 60 | 6.41 | 1.28 | 3.85 | 5.13 | 0.66 | 39.93 | 1.01 | 1.03 | 1.02 |
| 65 | 5.94 | 1.44 | 3.69 | 4.50 | 0.64 | 39.90 | 1.02 | 1.03 | 1.02 |
| 70 | 5.54 | 1.60 | 3.57 | 3.93 | 0.65 | 39.95 | 1.02 | 1.03 | 1.02 |
| 75 | 5.18 | 1.77 | 3.47 | 3.41 | 0.67 | 40.19 | 1.02 | 1.03 | 1.02 |
| 80 | 4.86 | 1.92 | 3.39 | 2.94 | 0.68 | 40.37 | 1.02 | 1.03 | 1.02 |
| 85 | 4.58 | 2.08 | 3.33 | 2.50 | 0.69 | 40.55 | 1.01 | 1.03 | 1.02 |
| 90 | 4.33 | 2.23 | 3.28 | 2.11 | 0.66 | 40.75 | 1.01 | 1.03 | 1.02 |
| 95 | 4.11 | 2.37 | 3.24 | 1.74 | 0.67 | 40.88 | 1.01 | 1.03 | 1.02 |
| 100 | 3.92 | 2.51 | 3.21 | 1.40 | 0.67 | 40.93 | 1.01 | 1.03 | 1.02 |
| 105 | 3.74 | 2.65 | 3.20 | 1.09 | 0.66 | 40.83 | 1.02 | 1.03 | 1.02 |
| 110 | 3.59 | 2.78 | 3.19 | 0.82 | 0.65 | 40.73 | 1.02 | 1.02 | 1.02 |
| 115 | 3.46 | 2.90 | 3.18 | 0.56 | 0.68 | 40.61 | 1.02 | 1.02 | 1.02 |
| 120 | 3.34 | 3.01 | 3.18 | 0.33 | 0.66 | 40.46 | 1.03 | 1.02 | 1.02 |
| 125 | 3.24 | 3.12 | 3.18 | 0.13 | 0.66 | 40.20 | 1.03 | 1.02 | 1.03 |
| 130 | 3.15 | 3.21 | 3.18 | 0.06 | 0.66 | 39.95 | 1.03 | 1.02 | 1.02 |
| 135 | 3.07 | 3.30 | 3.19 | 0.22 | 0.64 | 39.74 | 1.03 | 1.02 | 1.02 |
| 140 | 3.01 | 3.38 | 3.19 | 0.36 | 0.62 | 39.49 | 1.03 | 1.02 | 1.02 |
| 145 | 2.96 | 3.44 | 3.20 | 0.48 | 0.59 | 39.18 | 1.03 | 1.02 | 1.02 |
| 150 | 2.92 | 3.50 | 3.21 | 0.58 | 0.58 | 38.75 | 1.03 | 1.02 | 1.01 |
| 155 | 2.89 | 3.55 | 3.22 | 0.66 | 0.59 | 38.36 | 1.03 | 1.03 | 1.01 |
| 160 | 2.87 | 3.59 | 3.23 | 0.72 | 0.58 | 37.91 | 1.03 | 1.03 | 1.01 |
| 165 | 2.85 | 3.61 | 3.23 | 0.76 | 0.54 | 37.45 | 1.03 | 1.03 | 1.02 |
| 170 | 2.85 | 3.62 | 3.24 | 0.77 | 0.51 | 36.90 | 1.03 | 1.04 | 1.02 |
| 175 | 2.87 | 3.62 | 3.24 | 0.76 | 0.52 | 36.29 | 1.03 | 1.04 | 1.03 |
| 180 | 2.89 | 3.62 | 3.25 | 0.72 | 0.46 | 35.56 | 1.03 | 1.05 | 1.03 |
| 185 | 2.93 | 3.60 | 3.26 | 0.67 | 0.41 | 34.66 | 1.04 | 1.06 | 1.04 |
| 190 | 2.97 | 3.56 | 3.27 | 0.59 | 0.35 | 33.65 | 1.04 | 1.07 | 1.05 |
| 195 | 3.04 | 3.51 | 3.27 | 0.48 | 0.29 | 32.57 | 1.05 | 1.07 | 1.05 |
| 200 | 3.11 | 3.45 | 3.28 | 0.34 | 0.22 | 31.40 | 1.06 | 1.09 | 1.06 |
| 205 | 3.21 | 3.37 | 3.29 | 0.17 | 0.14 | 30.20 | 1.07 | 1.10 | 1.06 |
| 210 | 3.33 | 3.29 | 3.31 | 0.04 | 0.00 | 29.00 | 1.08 | 1.11 | 1.07 |
| 215 | 3.47 | 3.19 | 3.33 | 0.28 | 0.08 | 27.79 | 1.10 | 1.13 | 1.08 |
| 220 | 3.64 | 3.07 | 3.36 | 0.57 | 0.25 | 26.57 | 1.11 | 1.15 | 1.09 |
| 225 | 3.85 | 2.95 | 3.40 | 0.90 | 0.42 | 25.38 | 1.13 | 1.17 | 1.10 |
| 230 | 4.10 | 2.81 | 3.45 | 1.29 | 0.69 | 24.15 | 1.15 | 1.19 | 1.11 |
| 235 | 4.40 | 2.65 | 3.52 | 1.74 | 1.02 | 22.91 | 1.18 | 1.22 | 1.13 |
| 240 | 4.76 | 2.49 | 3.62 | 2.27 | 1.44 | 21.65 | 1.20 | 1.25 | 1.15 |
| 245 | 5.20 | 2.32 | 3.76 | 2.88 | 2.04 | 20.38 | 1.23 | 1.29 | 1.18 |
| 250 | 5.76 | 2.16 | 3.96 | 3.60 | 2.90 | 19.12 | 1.27 | 1.33 | 1.21 |

¹Total Loss = Insertion Loss + 3dB Splitter Loss

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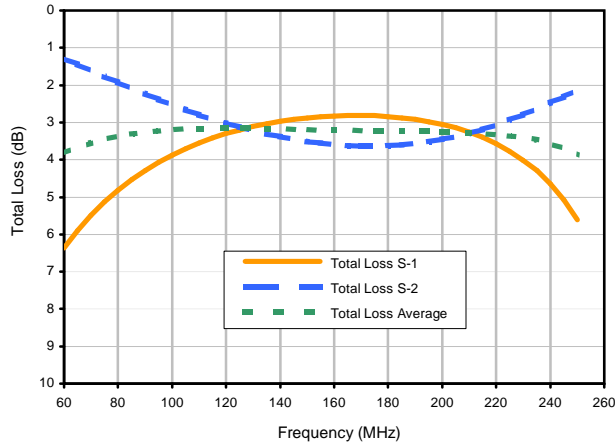


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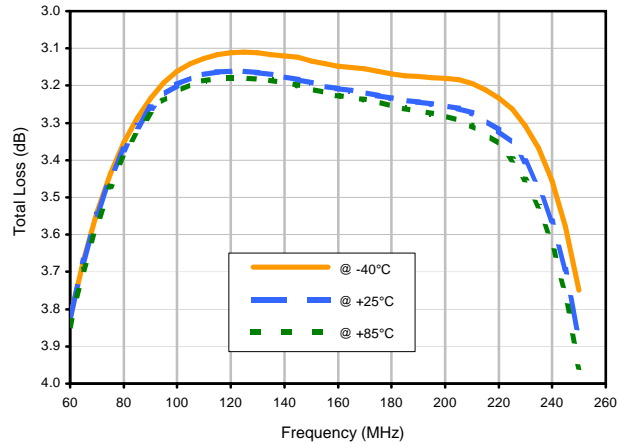


Typical Performance Curves

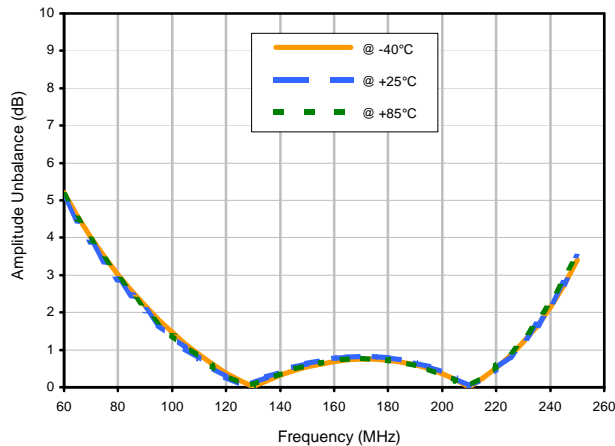
Total Loss



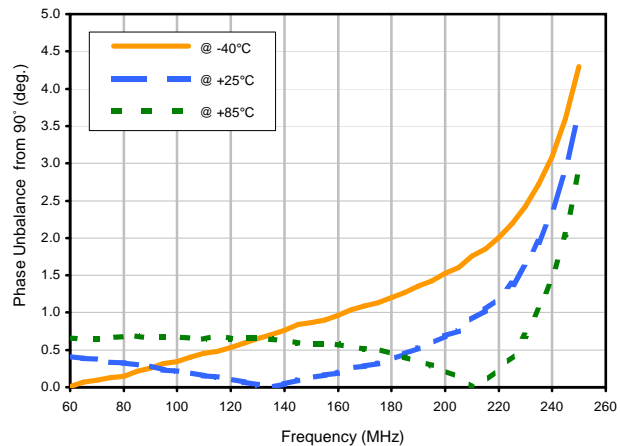
Average Total Loss vs. TEMPERATURE



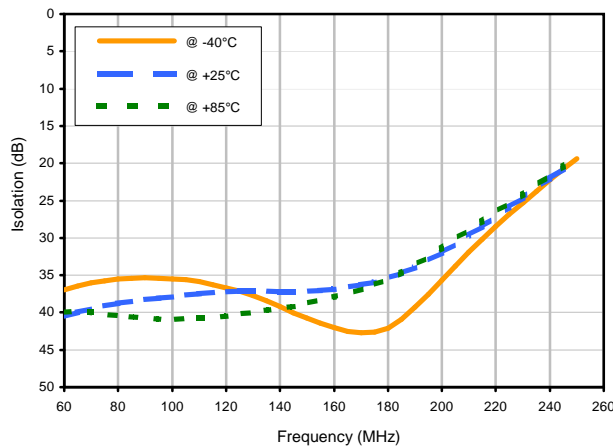
Amplitude Unbalance vs. TEMPERATURE



Phase Unbalance vs. TEMPERATURE

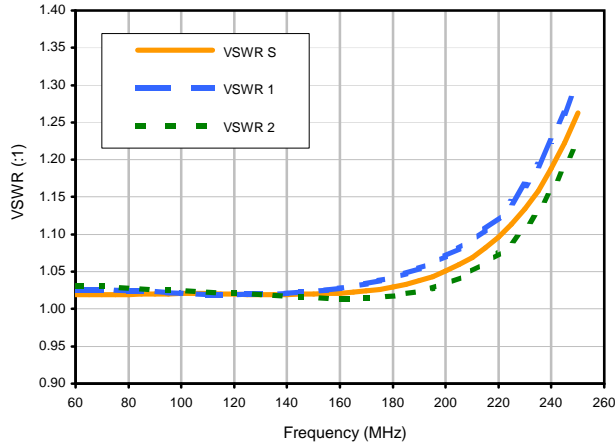


Isolation 1-2 vs. TEMPERATURE

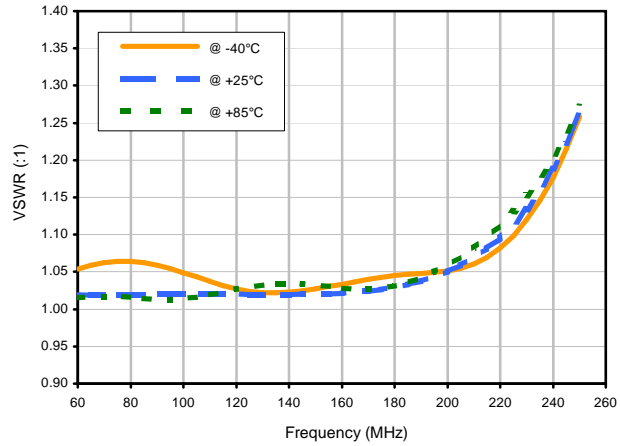


Typical Performance Curves

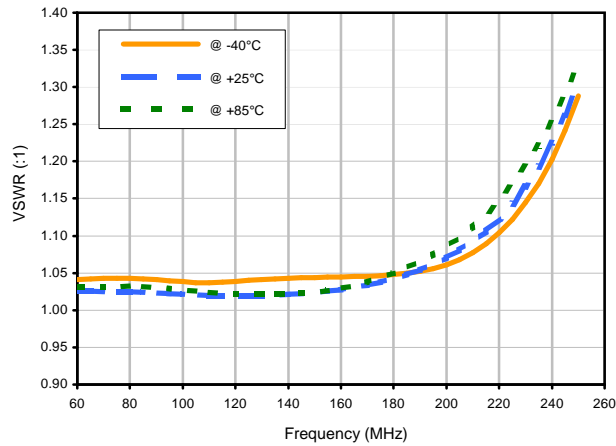
VSWR



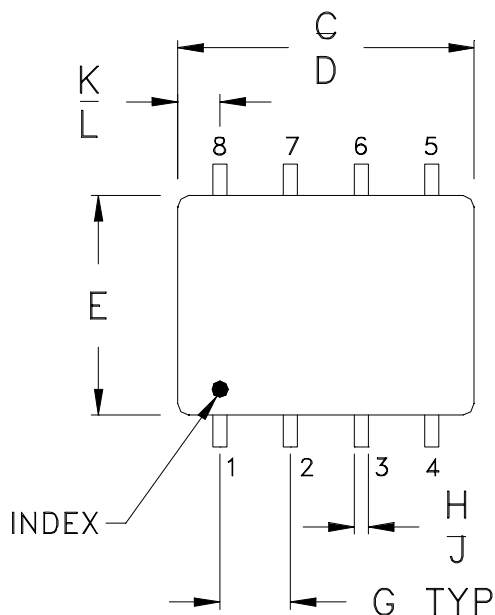
VSWR SUM vs. TEMPERATURE



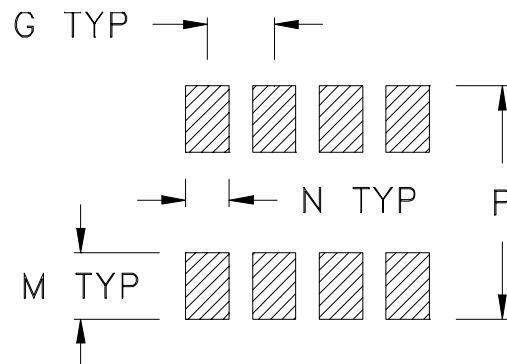
VSWR OUT1 vs. TEMPERATURE



Outline Dimensions



PCB Land Pattern



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

| CASE # | A | B | C | D | E | F | G | H | J | K |
|--------|-----------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| CJ608 | .397 (10.08) | .032 (.813) | .385 (9.78) | .435 (11.05) | .310 (7.87) | .175 (4.45) | .100 (2.54) | .015 (0.38) | .025 (0.64) | .035 (0.89) |
| CJ725 | | | | | | .215 (5.46) | | | | |

| CASE # | L | M | N | P | WT. GRAM |
|--------|----------------|----------------|----------------|-----------------|----------|
| CJ608 | .075 (1.91) | .120 (3.05) | .060 (1.52) | .420 (10.67) | .40 |
| CJ725 | | | | | .45 |

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

Notes:

- Case material: Plastic.
- Termination finish:
Tin plate over Nickel plate.



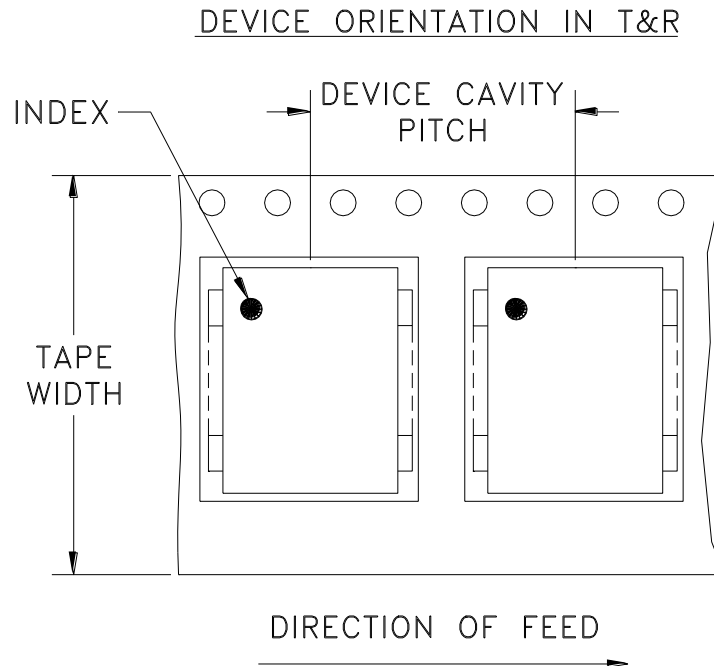
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Tape & Reel Packaging TR-F10



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel |
|----------------|-------------------------|-------------------|------------------|
| 24 | 16 | 7 | 10,20,50,100,200 |
| | | 13 | 500 |

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

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



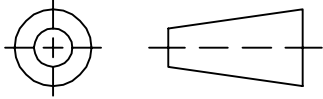
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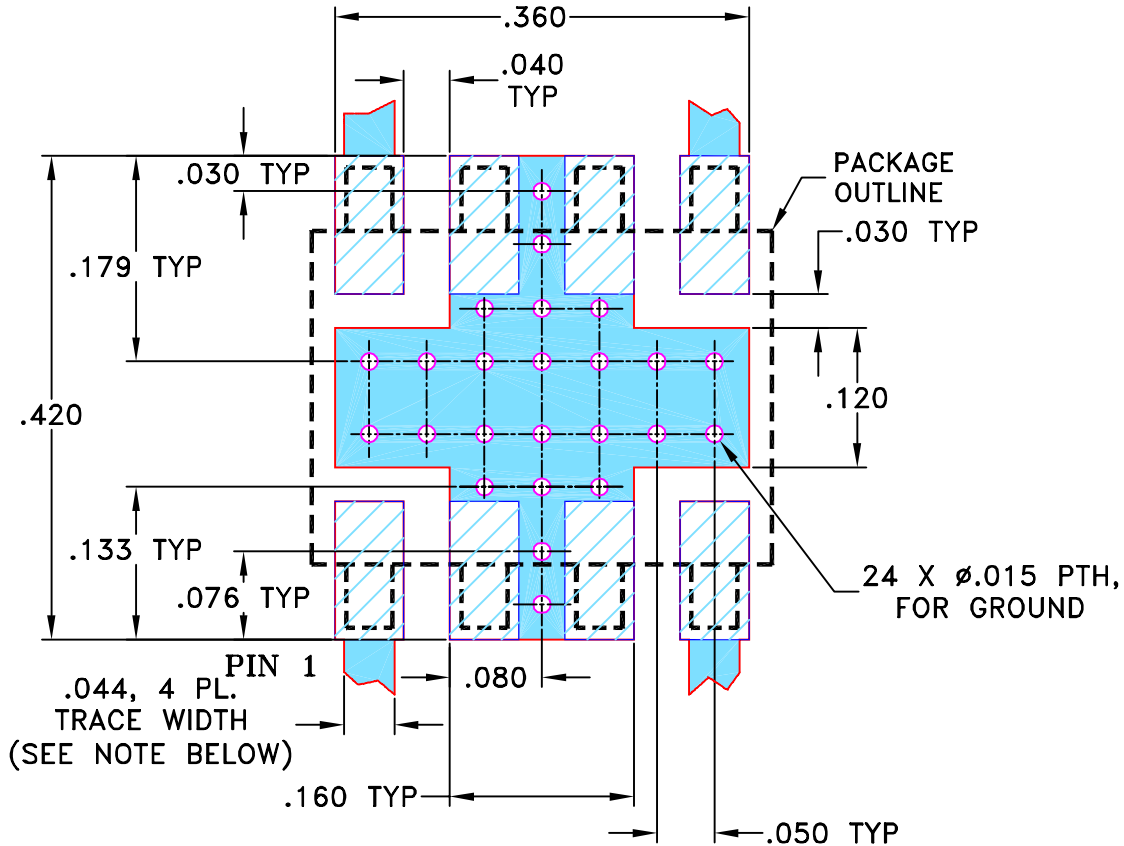
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|--------------------------------------|----------|----|------|
| OR | M82272 | NEW RELEASE | 08/06/02 | GF | DJ |
| A | M102713 | UPDATED NOTES, ADDED "...WITH SMOBC" | 01/16/06 | GT | IL |
| | | | | | |

SUGGESTED MOUNTING CONFIGURATION FOR CJ725 CASE STYLE, "ma", "nf" PIN CONNECTIONS



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015". 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 | DRAWN GF | 07/18/02 |
| TOLERANCES ON: | CHECKED HY | 08/01/02 |
| 2 PL DECIMALS ± | APPROVED DJ | 08/06/02 |
| 3 PL DECIMALS ± .005 | | |
| ANGLES ± | | |
| FRACTIONS ± | | |

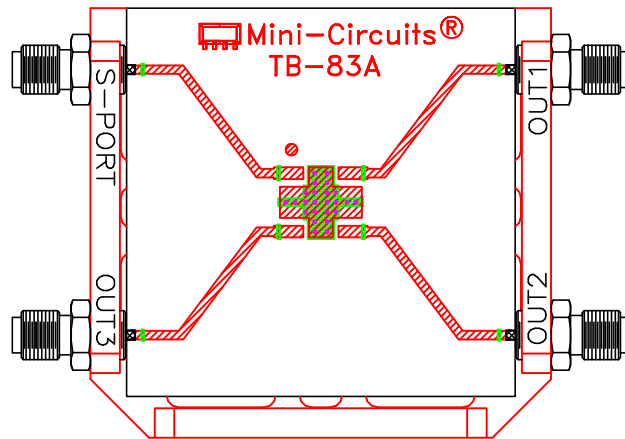
Mini-Circuits[®] 13 Neptune Avenue
Brooklyn NY 11235

PL, ma/nf, CJ725, AD3PS/ADQ, TB-83

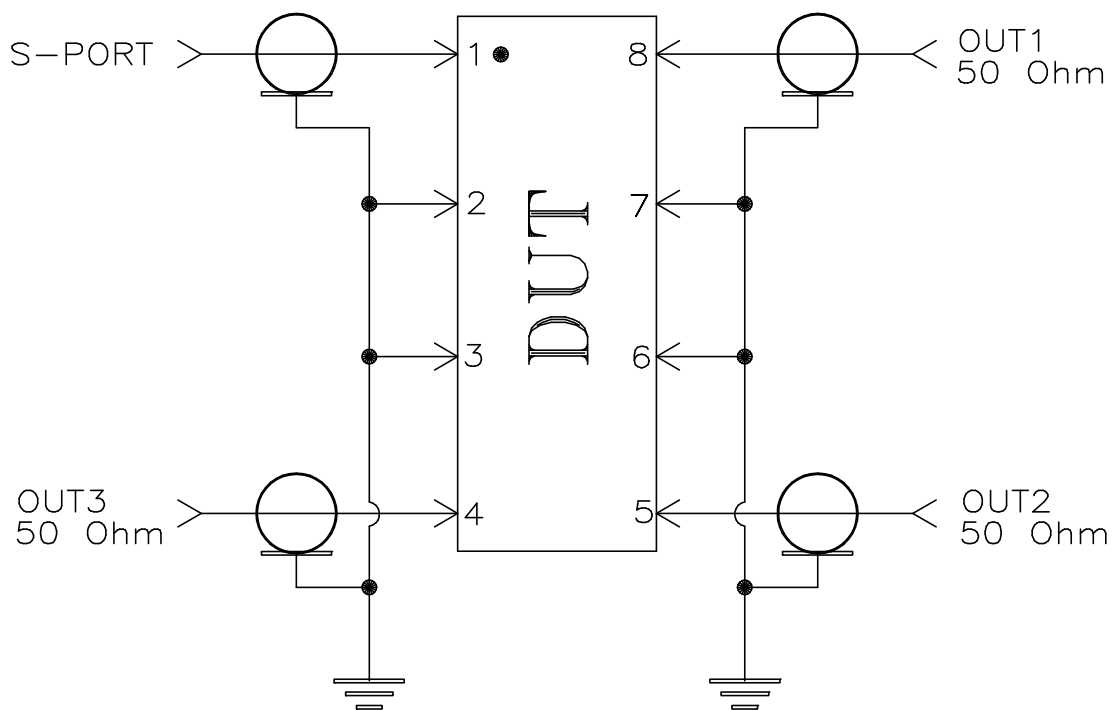
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| SIZE | CODE IDENT | DRAWING NO: | REV: |
|-------|------------|-------------|--------|
| A | 15542 | 98-PL-063 | A |
| FILE: | 98PL063 | SCALE: | SHEET: |
| | | 6:1 | 1 OF 1 |

Evaluation Board and Circuit




TB-83



Schematic Diagram

Notes:

1. SMA Female connectors.
2. PCB Material: Rogers 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 | -40° 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 Eutetic Process: 225°C peak Pb-Free Process 245° - 250°C peak | J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1 |
| Solderability | 10X Magnification | J-STD-002, 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 |
| 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 |