



**SURFACE MOUNT**

# Power Splitter/Combiner

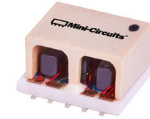
## SCA-4-10+

Mini-Circuits

4 Way-0° 50Ω 5 to 1000 MHz

### FEATURES

- Wideband, 5-1000 MHz
- High isolation, 25 dB typ.
- Good matching VSWR, 1.20 typ.
- Excellent amplitude unbalance, 0.3 dB typ.



Generic photo used for illustration purposes only

CASE STYLE: DZ943

**+RoHS Compliant**

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

### APPLICATIONS

- Cellular
- UHF/VHF receivers/transmitters

### ELECTRICAL SPECIFICATIONS AT 25°C

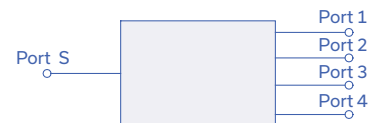
| Parameter                    | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|------------------------------|-----------------|------|------|------|--------|
| Frequency Range              |                 | 5    |      | 1000 | MHz    |
| Insertion Loss, above 6.0 dB | 5-400           |      | 0.7  | 1.3  | dB     |
|                              | 400-500         |      | 0.8  | 1.5  |        |
|                              | 500-1000        |      | 1.2  | 2.5  |        |
| Isolation                    | 5-400           | 18   | 30   |      | dB     |
|                              | 400-500         | 17   | 25   |      |        |
|                              | 500-1000        | 15   | 20   |      |        |
| Phase Unbalance              | 5-400           |      |      | 5    | Degree |
|                              | 400-500         |      |      | 6    |        |
|                              | 500-1000        |      |      | 11   |        |
| Amplitude Unbalance          | 5-400           |      |      | 0.8  | dB     |
|                              | 400-500         |      |      | 0.7  |        |
|                              | 500-1000        |      |      | 0.9  |        |

### MAXIMUM RATINGS

| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 0.5W max.      |
| Internal Dissipation        | 0.375W max.    |

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

### ELECTRICAL SCHEMATIC



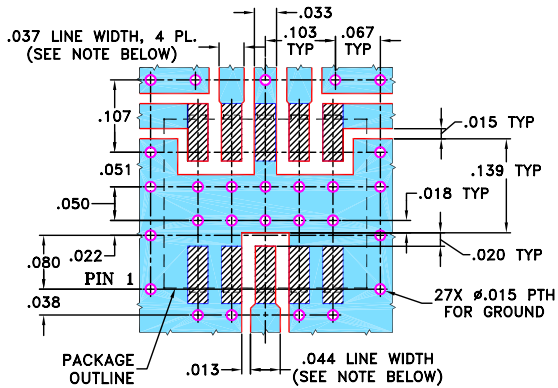


**PIN CONNECTIONS**

|          |           |
|----------|-----------|
| SUM PORT | 3         |
| PORT 1   | 6         |
| PORT 2   | 7         |
| PORT 3   | 9         |
| PORT 4   | 10        |
| GROUND   | 1,2,4,5,8 |

**PRODUCT MARKING:** N/A

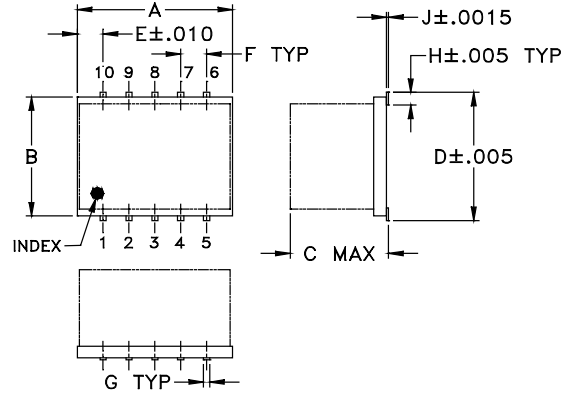
**DEMO BOARD MCL P/N:** TB-238  
**SUGGESTED PCB LAYOUT (PL-124)**



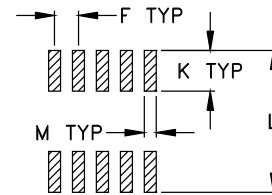
**NOTE:** 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS  $0.020" \pm 0.0015"$ , COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

**OUTLINE DRAWING**



**PCB Land Pattern**



**OUTLINE DIMENSIONS (Inches/mm)**

|      |      |      |      |      |      |       |
|------|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F    | G     |
| .30  | .250 | .190 | .266 | .050 | .050 | .012  |
| 7.62 | 6.35 | 4.83 | 6.76 | 1.27 | 1.27 | 0.30  |
| H    | J    | K    | L    | M    |      | wt    |
| .029 | .004 | .085 | .296 | .030 |      | grams |
| 0.74 | 0.10 | 2.16 | 7.52 | 0.76 |      | 0.5   |

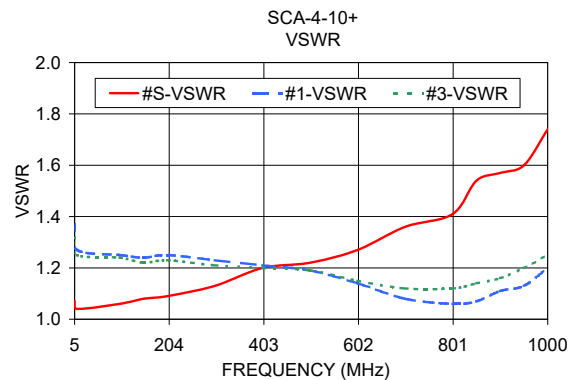
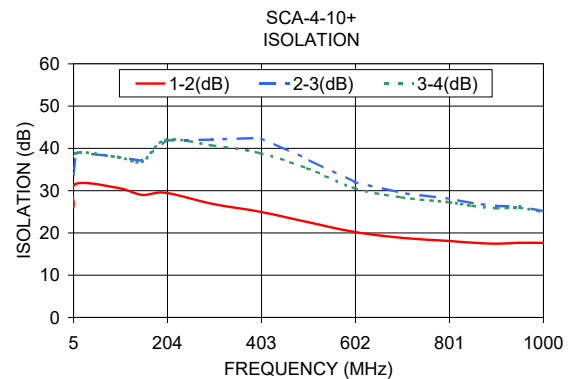
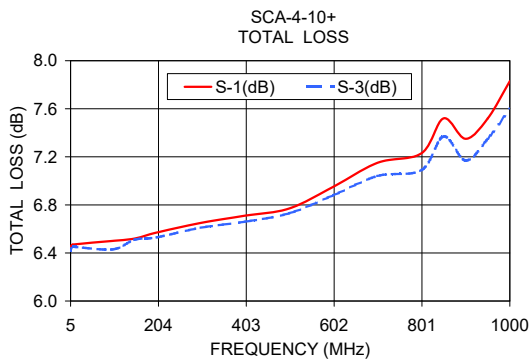
**TAPE & REEL INFORMATION: F34**



TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Total Loss <sup>1</sup> (dB) |      |      |      | Amplitude Unbalance (dB) | Isolation (dB) |       |       | Phase Unbalance (deg.) | VSWR (:1) |      |      |      |      |
|-----------------|------------------------------|------|------|------|--------------------------|----------------|-------|-------|------------------------|-----------|------|------|------|------|
|                 | S-1                          | S-2  | S-3  | S-4  |                          | 1-2            | 1-3   | 2-3   |                        | S         | 1    | 2    | 3    | 4    |
| 5.00            | 6.45                         | 6.24 | 6.42 | 6.64 | 0.40                     | 26.19          | 34.01 | 33.81 | 1.29                   | 1.07      | 1.37 | 1.31 | 1.32 | 1.38 |
| 10.00           | 6.47                         | 6.29 | 6.45 | 6.63 | 0.34                     | 31.60          | 39.09 | 38.86 | 0.13                   | 1.04      | 1.27 | 1.22 | 1.25 | 1.30 |
| 100.00          | 6.50                         | 6.29 | 6.43 | 6.66 | 0.37                     | 30.63          | 37.97 | 37.92 | 0.15                   | 1.06      | 1.25 | 1.21 | 1.24 | 1.28 |
| 150.00          | 6.52                         | 6.35 | 6.51 | 6.66 | 0.31                     | 29.01          | 37.05 | 36.89 | 0.44                   | 1.08      | 1.24 | 1.20 | 1.22 | 1.26 |
| 200.00          | 6.57                         | 6.39 | 6.53 | 6.71 | 0.32                     | 29.49          | 41.86 | 41.97 | 0.24                   | 1.09      | 1.25 | 1.21 | 1.23 | 1.26 |
| 300.00          | 6.65                         | 6.48 | 6.61 | 6.79 | 0.31                     | 26.87          | 42.07 | 40.69 | 0.32                   | 1.13      | 1.23 | 1.21 | 1.21 | 1.23 |
| 400.00          | 6.71                         | 6.53 | 6.66 | 6.84 | 0.31                     | 25.00          | 42.50 | 38.88 | 0.55                   | 1.20      | 1.21 | 1.20 | 1.20 | 1.20 |
| 500.00          | 6.77                         | 6.61 | 6.73 | 6.89 | 0.29                     | 22.58          | 37.45 | 35.25 | 0.71                   | 1.22      | 1.19 | 1.20 | 1.19 | 1.18 |
| 600.00          | 6.95                         | 6.76 | 6.88 | 7.06 | 0.30                     | 20.22          | 32.04 | 30.58 | 0.90                   | 1.27      | 1.14 | 1.16 | 1.15 | 1.12 |
| 700.00          | 7.15                         | 6.93 | 7.04 | 7.24 | 0.32                     | 18.85          | 29.45 | 28.38 | 1.14                   | 1.36      | 1.08 | 1.13 | 1.12 | 1.06 |
| 800.00          | 7.23                         | 6.99 | 7.09 | 7.30 | 0.31                     | 18.09          | 28.08 | 27.25 | 1.36                   | 1.41      | 1.06 | 1.15 | 1.12 | 1.03 |
| 850.00          | 7.52                         | 7.28 | 7.37 | 7.57 | 0.29                     | 17.68          | 27.02 | 26.38 | 1.88                   | 1.54      | 1.07 | 1.17 | 1.14 | 1.06 |
| 900.00          | 7.35                         | 7.11 | 7.17 | 7.39 | 0.29                     | 17.46          | 26.36 | 25.85 | 1.56                   | 1.57      | 1.11 | 1.19 | 1.16 | 1.09 |
| 950.00          | 7.52                         | 7.27 | 7.35 | 7.52 | 0.26                     | 17.66          | 26.27 | 25.91 | 1.88                   | 1.60      | 1.13 | 1.24 | 1.20 | 1.13 |
| 1000.00         | 7.83                         | 7.57 | 7.60 | 7.85 | 0.29                     | 17.65          | 25.13 | 24.92 | 2.65                   | 1.74      | 1.20 | 1.29 | 1.25 | 1.19 |

1. Total Loss = Insertion Loss + 6.0 dB splitter loss.



- 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)

