



## SURFACE MOUNT

# Power Splitter/Combiner

# SCA-4-20+

4 Way-0° 50Ω 1000 to 2000 MHz

### FEATURES

- Wideband, 1000 to 2000 MHz
- High isolation, 20 dB typ.
- Small surface mount package (0.25"x0.3")
- Low profile (0.045")
- Welded leads



Generic photo used for illustration purposes only

CASE STYLE: DZ944

### +RoHS Compliant

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

### APPLICATIONS

- PCS
- GPS

### ELECTRICAL SPECIFICATIONS AT 25°C<sup>1</sup>

| Parameter                    | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|------------------------------|-----------------|------|------|------|--------|
| Frequency Range              |                 | 1000 |      | 2000 | MHz    |
| Insertion Loss, above 6.0 dB | 1000-2000       |      | 1.0  | 1.8  | dB     |
|                              | 1500-1700       |      | 1.0  | 1.2  |        |
|                              | 1700-2000       |      | 1.5  | 1.8  |        |
| Isolation                    | 1000-2000       | 8    | 15   |      | dB     |
|                              | 1500-1700       | 17   | 20   |      |        |
|                              | 1700-2000       | 17   | 20   |      |        |
| Phase Unbalance              | 1000-2000       |      |      | 5    | Degree |
|                              | 1500-1700       |      |      | 5    |        |
|                              | 1700-2000       |      |      | 5    |        |
| Amplitude Unbalance          | 1000-2000       |      |      | 0.9  | dB     |
|                              | 1500-1700       |      |      | 0.8  |        |
|                              | 1700-2000       |      |      | 0.9  |        |

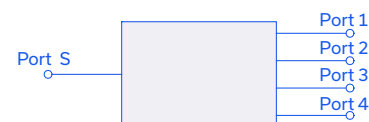
1. Tested on Evaluation Board TB-SCA-4-20+

### MAXIMUM RATINGS

| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -40°C to 85°C  |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 5W max.        |
| Internal Dissipation        | 0.25W max.     |

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

### ELECTRICAL SCHEMATIC





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Mini-Circuits

4 Way-0° 50Ω 1000 to 2000 MHz

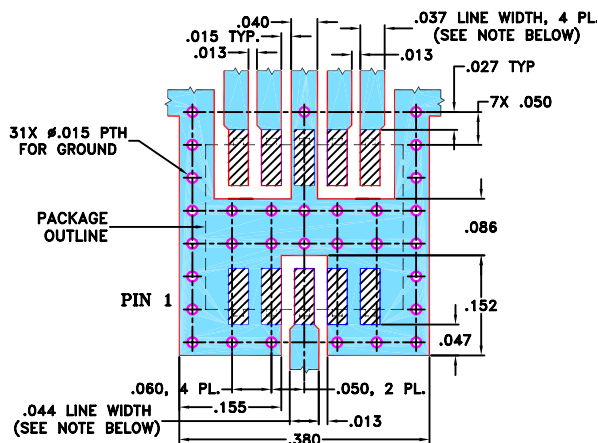
### PIN CONNECTIONS

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

### \*PRODUCT MARKING: SCA-4-20

\*Marking may contain other features or characters for internal lot control

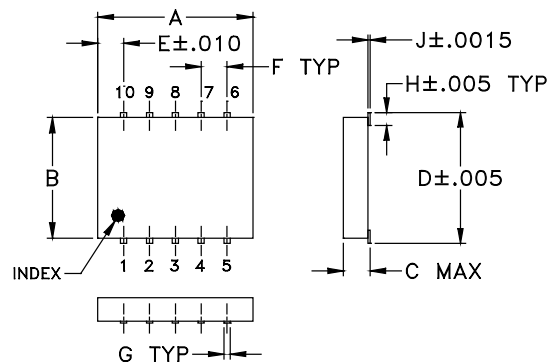
### EVALUATION BOARD MCL P/N: TB-SCA-4-20+ SUGGESTED PCB LAYOUT (PL-125)



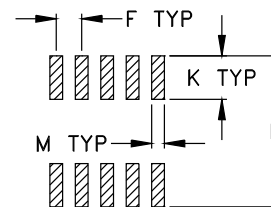
**NOTE:** 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350 WITH DIELECTRIC THICKNESS  $0.020 \pm 0.0015$ ", COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

### OUTLINE DRAWING



### PCB L and Pattern



Suggested Layout, Tolerance to be within  $\pm 0.02$

### OUTLINE DIMENSIONS (Inches/mm)

|      |      |      |      |      |      |       |
|------|------|------|------|------|------|-------|
| A    | B    | C    | D    | E    | F    | G     |
| .30  | .250 | .052 | .266 | .050 | .050 | .012  |
| 7.62 | 6.35 | 1.32 | 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 |      | 0.25  |

### TAPE & REEL INFORMATION: F34





**SURFACE MOUNT**

# Power Splitter/Combiner

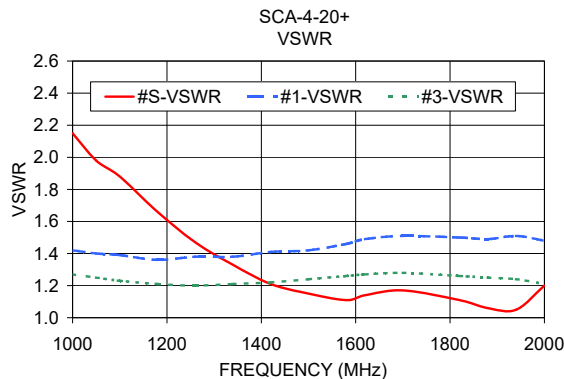
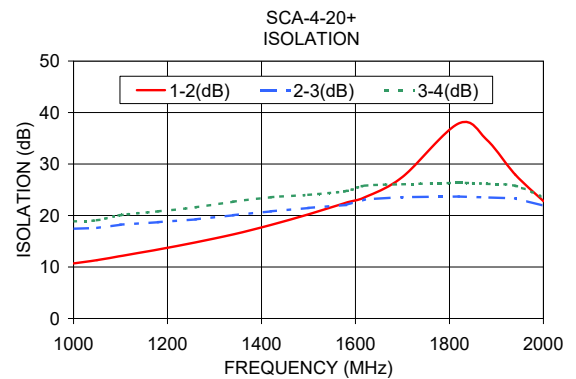
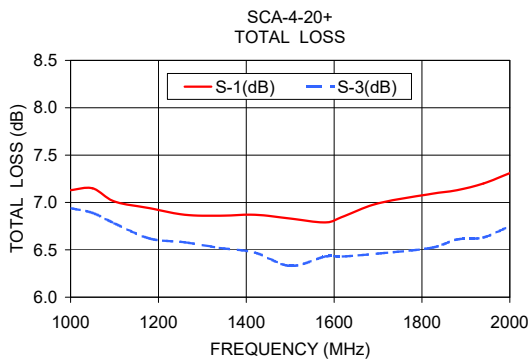
**SCA-4-20+**

4 Way-0° 50Ω 1000 to 2000 MHz

**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    |
| 1000.00         | 7.13                         | 6.97 | 6.94 | 7.29 | 0.35                     | 10.70          | 17.43 | 18.86 | 0.86                   | 2.15      | 1.42 | 1.29 | 1.27 | 1.44 |
| 1050.00         | 7.15                         | 6.96 | 6.89 | 7.25 | 0.36                     | 11.34          | 17.57 | 19.08 | 0.31                   | 1.98      | 1.40 | 1.27 | 1.25 | 1.41 |
| 1100.00         | 7.01                         | 6.85 | 6.78 | 7.11 | 0.33                     | 12.12          | 18.22 | 20.08 | 0.48                   | 1.88      | 1.39 | 1.25 | 1.23 | 1.39 |
| 1180.00         | 6.94                         | 6.73 | 6.62 | 7.00 | 0.38                     | 13.40          | 18.71 | 20.81 | 0.93                   | 1.66      | 1.36 | 1.25 | 1.21 | 1.37 |
| 1260.00         | 6.87                         | 6.68 | 6.58 | 6.94 | 0.36                     | 14.79          | 19.24 | 21.60 | 1.09                   | 1.47      | 1.38 | 1.25 | 1.20 | 1.35 |
| 1340.00         | 6.86                         | 6.63 | 6.52 | 6.92 | 0.39                     | 16.34          | 20.06 | 22.68 | 0.82                   | 1.33      | 1.38 | 1.25 | 1.21 | 1.36 |
| 1420.00         | 6.87                         | 6.58 | 6.47 | 6.91 | 0.44                     | 18.17          | 20.82 | 23.55 | 1.04                   | 1.21      | 1.41 | 1.27 | 1.22 | 1.37 |
| 1500.00         | 6.83                         | 6.44 | 6.33 | 6.84 | 0.51                     | 20.24          | 21.46 | 24.01 | 0.89                   | 1.15      | 1.42 | 1.29 | 1.24 | 1.38 |
| 1580.00         | 6.79                         | 6.45 | 6.43 | 6.86 | 0.43                     | 22.50          | 22.05 | 24.74 | 0.95                   | 1.11      | 1.46 | 1.29 | 1.26 | 1.39 |
| 1620.00         | 6.85                         | 6.49 | 6.43 | 6.88 | 0.45                     | 23.56          | 23.13 | 25.80 | 1.38                   | 1.14      | 1.49 | 1.31 | 1.27 | 1.42 |
| 1700.00         | 6.99                         | 6.52 | 6.46 | 7.06 | 0.60                     | 27.50          | 23.57 | 26.06 | 2.23                   | 1.17      | 1.51 | 1.30 | 1.28 | 1.42 |
| 1820.00         | 7.09                         | 6.56 | 6.52 | 7.14 | 0.62                     | 37.89          | 23.68 | 26.33 | 1.50                   | 1.11      | 1.50 | 1.28 | 1.26 | 1.42 |
| 1880.00         | 7.13                         | 6.61 | 6.61 | 7.23 | 0.62                     | 34.66          | 23.52 | 26.14 | 2.04                   | 1.06      | 1.49 | 1.27 | 1.25 | 1.42 |
| 1940.00         | 7.20                         | 6.67 | 6.63 | 7.27 | 0.64                     | 27.96          | 23.34 | 25.78 | 1.94                   | 1.05      | 1.51 | 1.24 | 1.24 | 1.42 |
| 2000.00         | 7.31                         | 6.76 | 6.75 | 7.38 | 0.63                     | 22.79          | 21.89 | 23.53 | 1.31                   | 1.20      | 1.48 | 1.21 | 1.21 | 1.41 |

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.
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