



## ULTRA-SMALL CERAMIC

# Power Splitter/Combiner

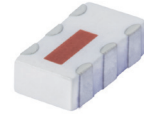
# SCN-2-45+

Mini-Circuits

2 Way-0° 50Ω 3700 to 4200 MHz

### FEATURES

- Isolation resistor, external 100 ohms
- Low insertion loss, 0.7 dB typ.
- Excellent amplitude unbalance, 0.2 dB typ.
- Excellent phase unbalance, 1.5 deg. typ.
- High isolation, 22 dB typ.
- Excellent power handling, 4W as splitter
- Small size, 0.12"X0.06"X0.035"
- ESD non-sensitive
- Temperature stable LTCC technology
- Wrap around terminations for excellent solderability
- Low cost
- Protected by US patent 6,967,544



Generic photo used for illustration purposes only

CASE STYLE: FV1206-1

### +RoHS Compliant

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

### APPLICATIONS

- Maritime mobile

### ELECTRICAL SPECIFICATIONS AT 25°C

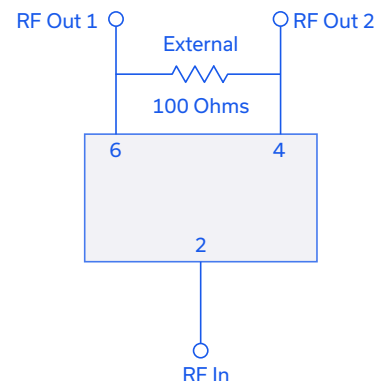
| Parameter                    | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|------------------------------|-----------------|------|------|------|--------|
| Frequency Range              |                 | 3700 |      | 4200 | MHz    |
| Insertion Loss, above 3.0 dB | 3700-4200       |      | 0.7  | 1.0  | dB     |
|                              | 3800-4100       |      | 0.7  | 1.0  |        |
| Isolation                    | 3700-4200       | 13   | 22   |      | dB     |
|                              | 3800-4100       | 15   | 22   |      |        |
| Phase Unbalance              | 3700-4200       |      | 1.5  | 4.0  | Degree |
|                              | 3800-4100       |      | 1.5  | 4.0  |        |
| Amplitude Unbalance          | 3700-4200       |      | 0.2  | 0.4  | dB     |
|                              | 3800-4100       |      | 0.2  | 0.4  |        |
| Return Loss (Input)          | 3700-4200       |      | 14   |      | dB     |
|                              | 3800-4100       |      | 17   |      |        |
| Return Loss (Output)         | 3700-4200       |      | 16   |      | dB     |
|                              | 3800-4100       |      | 17   |      |        |

### MAXIMUM RATINGS

| Parameter                   | Ratings        |
|-----------------------------|----------------|
| Operating Temperature       | -55°C to 100°C |
| Storage Temperature         | -55°C to 100°C |
| Power Input (as a splitter) | 4W* max.       |

\*Derate linearly to 1.3W at 100°C ambient, power input as combiner is limited by rating of external 100Ω Resistor. Permanent damage may occur if any of these limits are exceeded.

### ELECTRICAL SCHEMATIC



Mini-Circuits

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REV. F  
ECO-010142  
SCN-2-45+  
ED-11378C/2  
AD/TD/CP/AM  
220929  
PAGE 1 OF 3

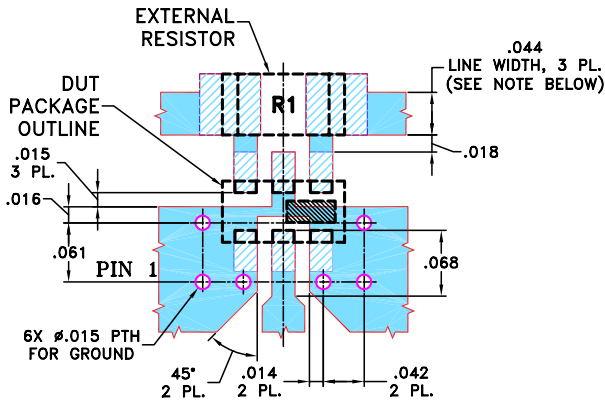


### PIN CONNECTIONS

|          |                            |
|----------|----------------------------|
| SUM PORT | 2                          |
| PORT 1   | 6                          |
| PORT 2   | 4                          |
| GROUND   | 1,3,5                      |
| PORT 1-2 | resistor external 100 ohms |

PRODUCT MARKING: N/A

DEMO BOARD MCL P/N: TB-252  
SUGGESTED PCB LAYOUT (PL-129)



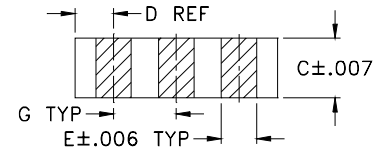
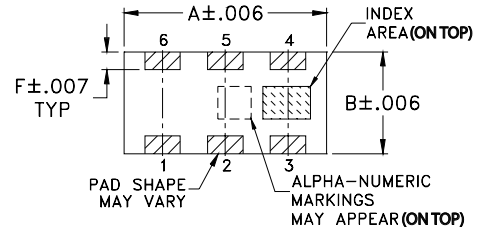
RESISTOR R1: 100 Ohm, 1206 SIZE

NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS  $0.020" \pm 0.0015"$ ; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.

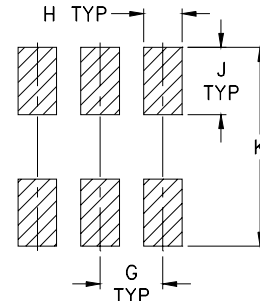
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

### OUTLINE DRAWING



### PCB Land Pattern



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

### OUTLINE DIMENSIONS (Inches/mm)

| A    | B    | C    | D    | E     | F    |
|------|------|------|------|-------|------|
| .126 | .063 | .035 | .024 | .022  | .011 |
| 3.20 | 1.60 | 0.89 | 0.61 | 0.56  | 0.28 |
| G    | H    | J    | K    | wt    |      |
| .039 | .024 | .042 | .123 | grams |      |
| 0.99 | 0.61 | 1.07 | 3.12 | .020  |      |

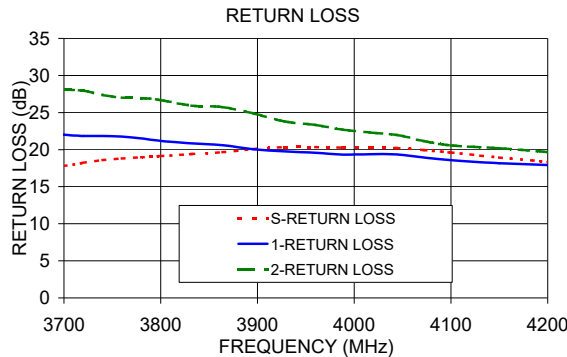
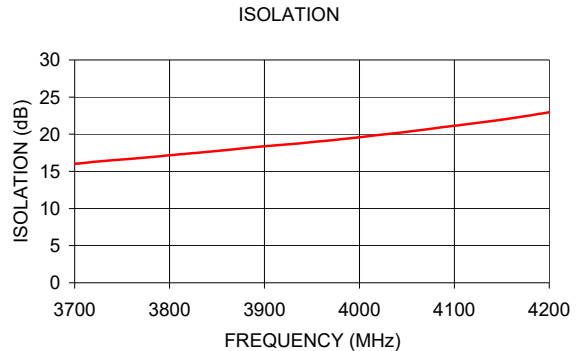
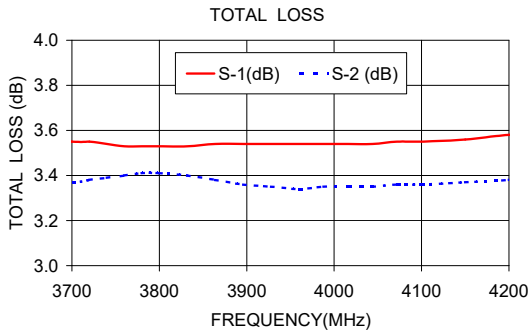
### TAPE & REEL INFORMATION: F75



### TYPICAL PERFORMANCE DATA

| Frequency (MHz) | Total Loss <sup>1</sup> (dB) |      | Amplitude Unbalance (dB) | Isolation (dB) | Phase Unbalance (deg.) | Return Loss (dB) |       |       |
|-----------------|------------------------------|------|--------------------------|----------------|------------------------|------------------|-------|-------|
|                 | S-1                          | S-2  |                          |                |                        | S                | 1     | 2     |
| 3700.00         | 3.55                         | 3.37 | 0.18                     | 16.04          | 1.57                   | 17.81            | 22.02 | 28.10 |
| 3720.00         | 3.55                         | 3.38 | 0.17                     | 16.28          | 1.65                   | 18.21            | 21.85 | 27.94 |
| 3740.00         | 3.54                         | 3.39 | 0.15                     | 16.49          | 1.66                   | 18.58            | 21.83 | 27.36 |
| 3760.00         | 3.53                         | 3.40 | 0.13                     | 16.69          | 1.60                   | 18.81            | 21.77 | 27.02 |
| 3780.00         | 3.53                         | 3.41 | 0.12                     | 16.91          | 1.46                   | 18.96            | 21.52 | 26.95 |
| 3800.00         | 3.53                         | 3.41 | 0.12                     | 17.16          | 1.31                   | 19.12            | 21.17 | 26.69 |
| 3864.00         | 3.54                         | 3.38 | 0.16                     | 17.92          | 1.09                   | 19.67            | 20.59 | 25.75 |
| 3896.00         | 3.54                         | 3.36 | 0.18                     | 18.33          | 1.16                   | 20.06            | 20.04 | 24.89 |
| 3960.00         | 3.54                         | 3.34 | 0.19                     | 19.05          | 1.26                   | 20.35            | 19.56 | 23.33 |
| 4016.00         | 3.54                         | 3.35 | 0.19                     | 19.83          | 1.35                   | 20.24            | 19.39 | 22.30 |
| 4044.00         | 3.54                         | 3.35 | 0.19                     | 20.24          | 1.35                   | 20.20            | 19.35 | 21.98 |
| 4072.00         | 3.55                         | 3.36 | 0.19                     | 20.68          | 1.35                   | 19.94            | 18.95 | 21.14 |
| 4100.00         | 3.55                         | 3.36 | 0.19                     | 21.14          | 1.38                   | 19.60            | 18.59 | 20.57 |
| 4150.00         | 3.56                         | 3.37 | 0.19                     | 21.95          | 1.40                   | 18.95            | 18.16 | 20.17 |
| 4200.00         | 3.58                         | 3.38 | 0.19                     | 22.97          | 1.44                   | 18.34            | 17.92 | 19.66 |

1. Total Loss = Insertion Loss + 3dB 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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