

Power Splitter/Combiner

HT-SYPS-3-142W+

Features

- low insertion loss 1.5, dB typ. at midband
- wide frequency band, 5 to 1450 MHz
- low amplitude unbalance, 0.3 dB typ.

Applications

- VHF/UHF CATV
- cellular
- GPS
- satellite distribution



3 Way-0° 50Ω 5 to 1450 MHz

Electrical Schematic



Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| Power Input (as a splitter)                                     | 1 W max.       |
| Internal Dissipation                                            | 0.15W max.     |
| Permanent damage may occur if any of these limits are exceeded. |                |

Pin Connections

|          |             |
|----------|-------------|
| SUM PORT | 8 (input)   |
| PORT 1   | 1 (output1) |
| PORT 2   | 4 (output2) |
| PORT 3   | 5 (output3) |
| GROUND   | 2,3,6,7     |

Transformer Electrical Specifications

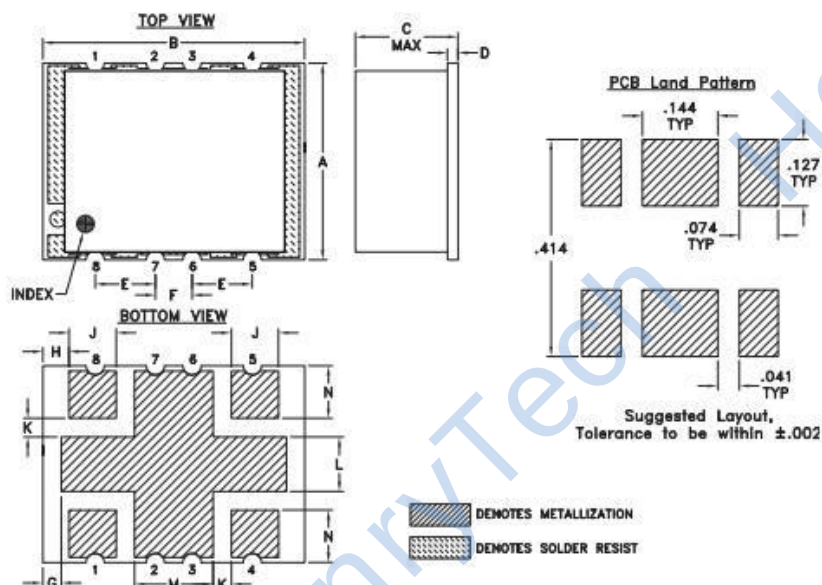
| Parameter                   | Frequency (MHz) | Min. | Typ. | Max. | Unit   |
|-----------------------------|-----------------|------|------|------|--------|
| Frequency Range             |                 | 5    |      | 1450 | MHz    |
| Insertion Loss Above 4.8 dB | 5-400           | -    | 0.7  | 1.3  | dB     |
|                             | 400-1200        | -    | 1.5  | 2.4  |        |
|                             | 1200-1450       | -    | 2.2  | 3.3  |        |
| Isolation                   | 5-400           | 17   | 24   | -    | dB     |
|                             | 400-1200        | 15   | 20   | -    |        |
|                             | 1200-1450       | 13   | 19   | -    |        |
| Phase Unbalance             | 5-400           | -    | -    | 2.0  | Degree |
|                             | 400-1200        | -    | -    | 5.0  |        |
|                             | 1200-1450       | -    | -    | 9.0  |        |
| Amplitude Unbalance         | 5-400           | -    | -    | 0.3  | dB     |
|                             | 400-1200        | -    | -    | 0.7  |        |
|                             | 1200-1450       | -    | -    | 0.9  |        |
| VSWR (Port S)               | 5-400           | -    | 1.20 | -    | :1     |
|                             | 400-1200        | -    | 1.65 | -    |        |
|                             | 1200-1450       | -    | 1.65 | -    |        |
| VSWR (Port 1-3)             | 5-400           | -    | 1.10 | -    | :1     |
|                             | 400-1200        | -    | 1.20 | -    |        |
|                             | 1200-1450       | -    | 1.20 | -    |        |

Typical Performance Data(TEST CONDITIONS: INPUT POWER = 0dBm @Temperature = +25°C)

| Freq. (MHz) | Total Loss (dB) |      |      | Amp. Unbal. (dB) | Isolation(dB) |       |       | PhaseUnbal. (deg.) | VSWRS |      |      |      |
|-------------|-----------------|------|------|------------------|---------------|-------|-------|--------------------|-------|------|------|------|
|             | S-1             | S-2  | S-3  |                  | 1-2           | 2-3   | 3-4   |                    | S     | 1    | 2    | 3    |
| 5           | 5.15            | 5.15 | 5.14 | 0.01             | 31.98         | 31.52 | 32.33 | 0.04               | 1.29  | 1.17 | 1.18 | 1.17 |
| 10          | 5.23            | 5.23 | 5.22 | 0.01             | 34.60         | 34.45 | 35.32 | 0.03               | 1.16  | 1.10 | 1.10 | 1.10 |
| 40          | 5.20            | 2.19 | 5.19 | 0.01             | 34.20         | 35.08 | 35.25 | 0.03               | 1.11  | 1.07 | 1.07 | 1.07 |
| 60          | 5.19            | 5.18 | 5.18 | 0.01             | 32.72         | 33.92 | 33.79 | 0.04               | 1.12  | 1.07 | 1.07 | 1.07 |
| 100         | 5.20            | 5.20 | 5.19 | 0.01             | 29.79         | 31.28 | 31.02 | 0.04               | 1.15  | 1.08 | 1.08 | 1.08 |
| 200         | 5.30            | 5.29 | 5.29 | 0.00             | 25.02         | 26.73 | 26.32 | 0.14               | 1.24  | 1.10 | 1.10 | 1.12 |
| 400         | 5.60            | 5.58 | 5.59 | 0.02             | 20.24         | 22.09 | 21.64 | 0.29               | 1.45  | 1.16 | 1.16 | 1.19 |
| 500         | 5.78            | 5.74 | 5.76 | 0.03             | 19.00         | 20.92 | 20.48 | 0.35               | 1.53  | 1.19 | 1.18 | 1.21 |
| 600         | 5.94            | 5.90 | 5.91 | 0.05             | 18.19         | 20.20 | 19.79 | 0.48               | 1.60  | 1.20 | 1.20 | 1.23 |
| 800         | 6.20            | 6.12 | 6.14 | 0.08             | 17.55         | 19.89 | 19.53 | 0.98               | 1.68  | 1.21 | 1.21 | 1.24 |
| 1000        | 6.37            | 6.25 | 6.26 | 0.13             | 17.98         | 21.09 | 20.73 | 1.61               | 1.66  | 1.19 | 1.19 | 1.20 |
| 1100        | 6.45            | 6.30 | 6.31 | 0.14             | 18.47         | 22.36 | 21.87 | 2.14               | 1.62  | 1.17 | 1.17 | 1.17 |
| 1200        | 6.57            | 6.39 | 6.40 | 0.18             | 18.78         | 23.67 | 22.63 | 2.76               | 1.58  | 1.15 | 1.14 | 1.15 |
| 1400        | 7.34            | 7.09 | 7.08 | 0.26             | 16.62         | 20.33 | 18.49 | 4.89               | 1.66  | 1.10 | 1.09 | 1.20 |
| 1450        | 7.71            | 7.52 | 7.46 | 0.26             | 15.69         | 18.76 | 17.06 | 5.31               | 1.72  | 1.29 | 1.09 | 1.25 |

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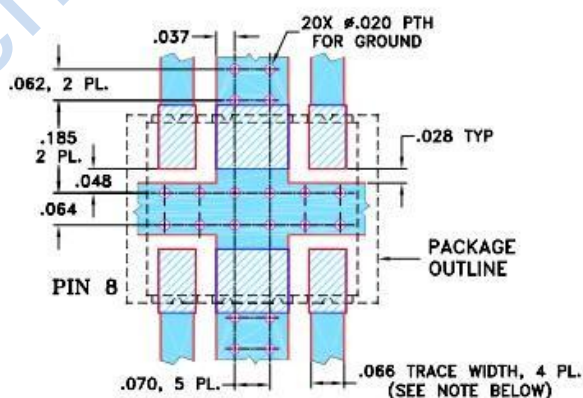
## Outline Drawing



| Outline Dimensions: Unit ( mm) |       |   |      |
|--------------------------------|-------|---|------|
| A                              | 9.65  | J | 2.29 |
| B                              | 12.70 | K | 1.02 |
| C                              | 4.80  | L | 2.67 |
| D                              | 0.51  | M | 3.56 |
| E                              | 2.92  | N | 2.41 |
| F                              | 1.78  |   |      |
| G                              | 0.89  |   |      |
| H                              | 1.27  |   |      |
| WT                             | 0.80g |   |      |

Suggested Layout,  
Tolerance to be within  $\pm 0.2$

**Demo Board MCL P/N: TB-364**  
**Suggested PCB Layout (PL-231)**



**NOTES:**

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030"  $\pm$  .002"; 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

