

# Directional Coupler

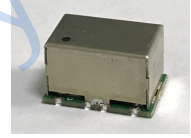
## Features

- high power, 40W max. with output load VSWR 2.0 max
- high power, 20W max. with output open or short
- low mainline loss, 0.1 dB typ.
- good VSWR, 1.05 typ.

## Applications

- military mobile

## HT-SYDC-20-61VHP+

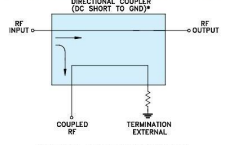


50Ω 20 dB Coupling 1.5 to 60 MHz 40 Watt

### Electrical Specifications at 25°C

| Parameter                                  | Condition(MHz) | Min. | Typ. | Max. | Unit |
|--|----------------|------|------|------|------|
| Frequency Range                            |                | 1.5  | -    | 60   | MHz  |
| Mainline Loss1 (above theoretical 0.04 dB) | 1.5            | -    | 0.1  | 0.1  | dB   |
|  | 30             | -    | 0.1  | 0.2  |      |
|  | 60             | -    | 0.1  | 0.3  |      |
| Coupling                                   | 1.5-60         | 20.5 | 21   | -    | dB   |
|  | 1.5            | 20.5 | 20.9 | 21.4 |      |
|  | 30             | 20.5 | 21.0 | 21.5 |      |
| Coupling Flatness(±)                       | 1.5-30         | -    | 0.1  | 0.3  | dB   |
|  | 30-60          | -    | 0.1  | 0.3  |      |
|  | 1.5            | 28   | 42.2 | -    |      |
| Directivity                                | 1.5            | 28   | 22   | 30.5 | dB   |
|  | 30             | 22   | 16   | 22.7 |      |
|  | 60             | 16   | 22.7 | -    |      |
| Return Loss (Input)                        | 1.5            | 28   | 42   | -    | dB   |
|  | 30             | 25   | 41   | -    |      |
|  | 60             | 19   | 37   | -    |      |
| Return Loss (Output)                       | 1.5            | 28   | 43   | -    | dB   |
|  | 30             | 25   | 39   | -    |      |
|  | 60             | 19   | 33   | -    |      |

### Electrical Schematic



\* ELECTRICAL SCHEMATIC IS FOR DIRECTIONAL COUPLER WITH INTERNAL TRANSFORMER(S) AND EXTERNAL TERMINATION.

### Maximum Ratings

|   |                |
|---|----------------|
| Operating Temperature   | -70°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| Permanent damage may occur if any of these limits are exceeded. |                |

### Pad Connections

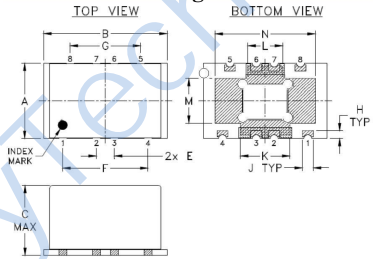
|                    |         |
|--------------------|---------|
| INPUT              | 1       |
| OUTPUT             | 8       |
| COUPLED            | 4       |
| 50Ω TERM EXTERNAL* | 5       |
| GROUND             | 2,3,6,7 |

\* External termination must be able to handle 250 mW min.

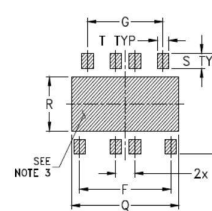
### Typical Performance Data

| Frequency (MHz) | Mainline Loss (dB) In-Out | Coupling (dB) In-Cpl | Directivity (dB) | Return Loss (dB) |       |       |
|-----------------|---------------------------|----------------------|------------------|------------------|-------|-------|
|                 |                           |                      |                  | in               | Out   | Cpl   |
| 1.5             | 0.07                      | 20.89                | 42.10            | 42.83            | 43.50 | 41.69 |
| 2.00            | 0.07                      | 20.90                | 42.35            | 44.35            | 44.45 | 41.71 |
| 4.00            | 0.08                      | 20.91                | 42.43            | 45.76            | 44.90 | 40.48 |
| 5.00            | 0.08                      | 20.91                | 42.22            | 46.17            | 44.92 | 39.52 |
| 10.00           | 0.08                      | 20.92                | 39.08            | 46.52            | 43.05 | 34.60 |
| 20.00           | 0.10                      | 20.94                | 33.83            | 45.20            | 40.30 | 28.62 |
| 30.00           | 0.11                      | 20.97                | 30.15            | 43.81            | 38.21 | 25.00 |
| 40.00           | 0.12                      | 21.00                | 27.09            | 42.58            | 36.30 | 22.41 |
| 50.00           | 0.13                      | 21.04                | 24.42            | 41.47            | 34.44 | 20.38 |
| 60.00           | 0.14                      | 21.09                | 22.14            | 39.72            | 32.72 | 18.69 |

### Outline Drawing



### PCB Land Pattern



Suggested L layout, Tolerance to be within ±0.05mm

### Dimensions are in metric (mm)

|       |       |       |      |       |       |
|-------|-------|-------|------|-------|-------|
| A     | B     | C     | E    | F     | G     |
| 11.0  | 17.53 | 10.54 | 2.54 | 12.09 | 10.01 |
| H     | J     | K     | L    | M     | N     |
| 1.14  | 1.52  | 7.01  | 4.93 | 6.53  | 14.22 |
| P     | Q     | R     | S    | T     |       |
| 12.07 | 14.25 | 6.55  | 1.75 | 1.55  |       |

