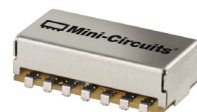


# Phase Shifter

50Ω 180° Voltage Variable 26 to 32 MHz

## JSPHS-32+



CASE STYLE: BK276

PRICE: \$32.95 ea. QTY (1-9)

+RoHS Compliant

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

### Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Input Power        | 20 dBm max.    |
| Control Voltage       | 12V            |

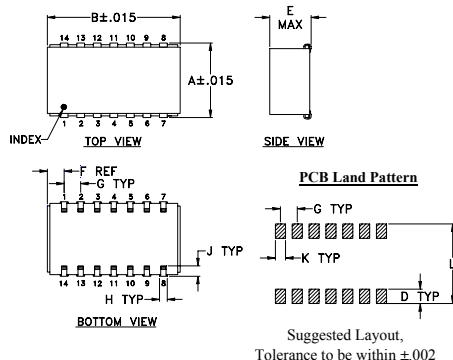
Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

|        |                          |
|--------|--------------------------|
| IN     | 1                        |
| OUT    | 7                        |
| BIAS   | 4,6^                     |
| GROUND | 2,3,5,8,9,10,11,12,13,14 |

^ proper operation is achieved with pins 4 or 6 or both connected to BIAS.

### Outline Drawing



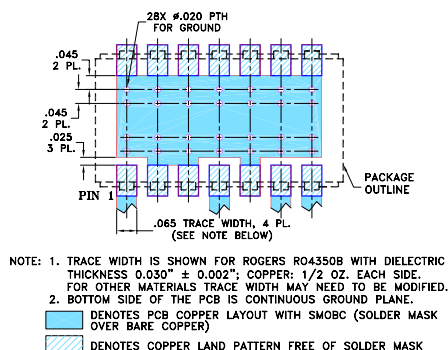
### Outline Dimensions (inch mm)

| A     | B     | C  | D    | E    | F    | G    |
|-------|-------|----|------|------|------|------|
| .450  | .803  | -- | .100 | .250 | .102 | .100 |
| 11.43 | 20.40 | -- | 2.54 | 6.35 | 2.59 | 2.54 |

| H    | J    | K    | L     | wt    |
|------|------|------|-------|-------|
| .047 | .065 | .065 | .470  | grams |
| 1.19 | 1.65 | 1.65 | 11.94 | 3.0   |

### Demo Board MCL P/N: TB-122 Suggested PCB Layout (PL-030)



### Features

- low insertion loss, 1.2 dB typ.
- good VSWR, 1.2:1 typ.
- J-leads for excellent solderability and strain relief
- aqueous washable

### Applications

- IF signal processing

### Phase Shifter Electrical Specifications

| FREQUENCY (MHz) | PHASE RANGE (Degrees) | INSERTION LOSS (dB) | CONTROL VOLTAGE (V) | CONTROL BANDWIDTH (kHz) | VSWR (:1) |
|-----------------|-----------------------|---------------------|---------------------|-------------------------|-----------|
|                 | Min.                  | Typ. Max.           |                     | Typ.                    | Typ. Max. |
| 26-32           | 180                   | 1.2 2.5             | 0-12                | DC-50                   | 1.2 1.9   |

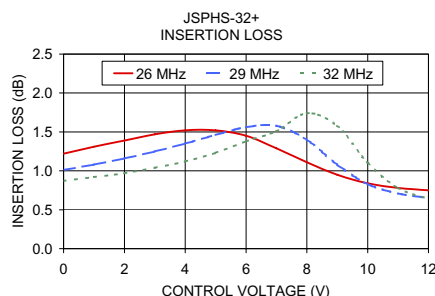
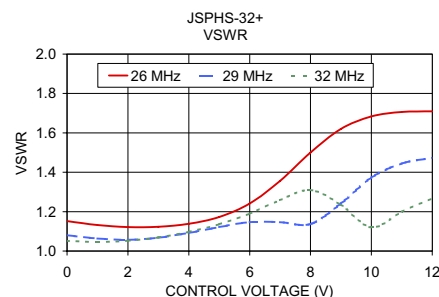
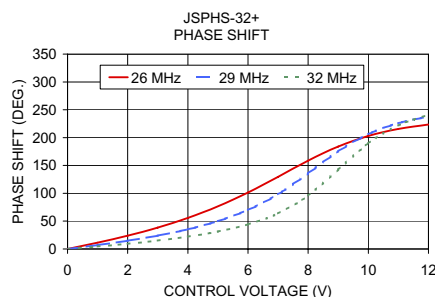
Maximum operating power, 0 dBm

DC input resistance at Control port: 5400 ohms typ.

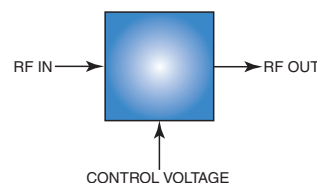
### Typical Performance Data

| Control Voltage (V) | Phase Shift* (Degrees) |        |        | VSWR (:1) |        |        | Insertion Loss (dB) |        |        |
|---------------------|------------------------|--------|--------|-----------|--------|--------|---------------------|--------|--------|
|                     | 26 MHz                 | 29 MHz | 32 MHz | 26 MHz    | 29 MHz | 32 MHz | 26 MHz              | 29 MHz | 32 MHz |
| 0.00                | 0.01                   | 0.00   | 0.00   | 1.15      | 1.08   | 1.05   | 1.22                | 1.01   | 0.87   |
| 1.00                | 11.36                  | 7.03   | 4.51   | 1.13      | 1.06   | 1.05   | 1.31                | 1.08   | 0.92   |
| 2.00                | 24.01                  | 14.85  | 9.46   | 1.12      | 1.06   | 1.05   | 1.39                | 1.16   | 0.97   |
| 3.00                | 38.50                  | 23.97  | 15.15  | 1.12      | 1.07   | 1.07   | 1.47                | 1.25   | 1.04   |
| 4.00                | 55.75                  | 35.27  | 22.15  | 1.14      | 1.09   | 1.10   | 1.52                | 1.35   | 1.12   |
| 5.00                | 76.51                  | 49.92  | 31.25  | 1.17      | 1.12   | 1.14   | 1.52                | 1.46   | 1.23   |
| 6.00                | 101.30                 | 69.99  | 44.11  | 1.24      | 1.15   | 1.19   | 1.45                | 1.56   | 1.38   |
| 7.00                | 129.57                 | 98.28  | 63.84  | 1.36      | 1.15   | 1.26   | 1.29                | 1.58   | 1.51   |
| 8.00                | 158.60                 | 135.79 | 95.90  | 1.50      | 1.14   | 1.31   | 1.11                | 1.40   | 1.74   |
| 9.00                | 184.09                 | 175.39 | 142.69 | 1.62      | 1.24   | 1.23   | 0.95                | 1.08   | 1.58   |
| 10.00               | 203.01                 | 206.24 | 189.85 | 1.68      | 1.37   | 1.12   | 0.84                | 0.83   | 1.10   |
| 11.00               | 215.56                 | 225.92 | 221.95 | 1.71      | 1.44   | 1.20   | 0.78                | 0.71   | 0.78   |
| 12.00               | 223.55                 | 237.78 | 240.52 | 1.71      | 1.47   | 1.27   | 0.75                | 0.65   | 0.64   |

\* Normalized at control voltage = 0V



### electrical schematic



#### 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-Circuits' applicable established test performance criteria and measurement instructions.  
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