KA-BAND QPSK/BPSK
PHASE MODULATOR

TLCPMLB01, 02, 03 & 04 Series

- 28 GHz to 40 GHz
- Insertion loss < 6 dB
- Direct phase modulation
- Fast switching (nsec)
- Negligible power consumption

DESCRIPTION AND APPLICATIONS

The VS-QPSK-PM is a delay line phase shifter which can be operated as a digital phase modulator for up to 5% fractional bandwidth.

The flat insertion loss provided by the VS-QPSK-PM makes it an excellent candidate for use as a digital phase modulator in angle modulation communication systems.

PERFORMANCE SUMMARY

<table>
<thead>
<tr>
<th>PARAMETER (@ 25°)</th>
<th>MIN</th>
<th>TYP</th>
<th>MAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency (GHz)</td>
<td>28</td>
<td>-</td>
<td>40</td>
</tr>
<tr>
<td>Insertion loss (dB)</td>
<td>-</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Delta Insertion loss (dB)</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>DC Power (mW)</td>
<td>-</td>
<td>~0</td>
<td>-</td>
</tr>
</tbody>
</table>

TYPICAL OPERATING CONDITIONS

$V_{gs} = 0$ to 4.5V  $V_{ds} = 0$V
Max Input Power Levels $\leq 23$ dBm

ASSEMBLY

Ti/Pt/Au metallization is used for the bond pads and backside which is compatible with eutectic die attach and thermocompression or thermosonic bonding. Either 3 mil Au ribbon or 1 mil Au wire may be used to connect the MMW and DC pads to the system.

Additional DC bypass capacitors (22 pf & 0.1 µf) are recommended but not necessary.

The data contained in this data sheet is for information only. TLC reserves the right to change this product without notice.

TLC PRECISION WAFER TECHNOLOGY, INC.

1411 WEST RIVER ROAD NORTH - MINNEAPOLIS, MINNESOTA 55411