

PRELIMINARY DATA SHEET

SKY13272-340LF: 4 x 2 Switch Matrix

250 MHz–2.15 GHz

Applications

- DBS switching applications, cable modems, cable TV

Features

- Four inputs, two outputs
- Any input can be directed to either output
- Only four control lines required
- High interport isolation: 40 dB typ. up to 0.95 GHz
- Miniature QFN-20 4 x 4 mm package
- Available lead (Pb)-free and RoHS-compliant MSL-1 @ 260 °C per JEDEC J-STD-020

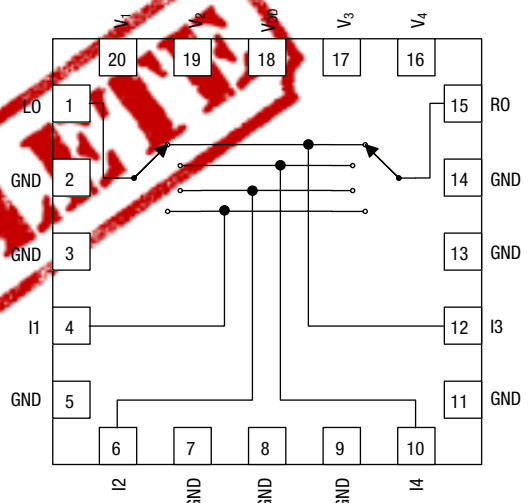
Description

The SKY13272-340LF is a four-input to two-output switch in a low-cost QFN-20 4 x 4 mm package. The SKY13272-340LF enables 16 states, directing any of the four inputs to either of the two outputs. States are selected by four positive voltage control inputs. The switch can operate over the temperature range of -40 °C to +85 °C.

NEW Skyworks offers lead (Pb)-free, RoHS (Restriction of Hazardous Substances)-compliant packaging.



Functional Block Diagram and Pin Out



Electrical Specifications

$V_{CTL} = 0\text{ V}/5\text{ V}$, $T = 25\text{ °C}$, $P_{INPUT} = -20\text{ dBm}$, $Z_0 = 50\text{ }\Omega$, unless otherwise noted.

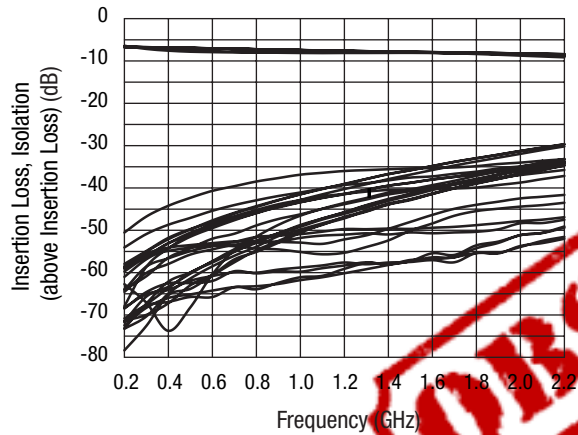
| Parameter | Conditions | Frequency | Min. | Typ. | Max. | Unit |
|-------------------------|--------------------------|---------------|------|------|------|------|
| Insertion loss | | 0.25–0.95 GHz | | 7.5 | 8 | dB |
| | | 0.95–2.15 GHz | | 8.5 | 9 | dB |
| Insertion loss flatness | | 0.25–0.95 GHz | | 1 | 1.5 | dB |
| | | 0.95–2.15 GHz | | 1 | 1.5 | dB |
| Isolation | | 0.25–0.95 GHz | 38 | 40 | | dB |
| | | 0.95–2.15 GHz | 28 | 31 | | dB |
| Return loss | I1, I2, I3, I4 LO, RO | 0.25–2.15 GHz | 10 | 15 | | dB |
| | | | 8 | 10 | | dB |

Operating Characteristics

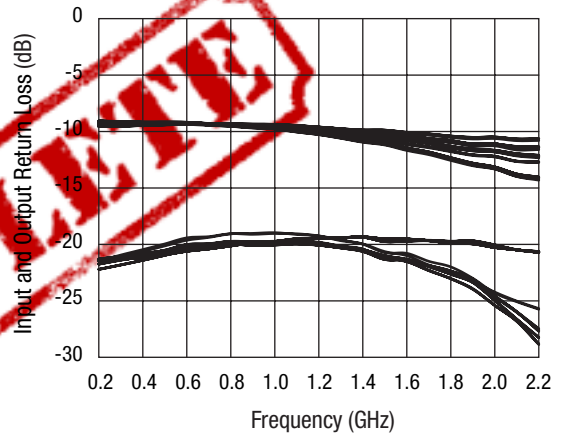
T = 25 °C, Z₀ = 50 Ω, unless otherwise noted

| Parameter | Condition | Frequency | Min. | Typ. | Max. | Unit |
|----------------------------------|---|---------------|------|------|------|------|
| Input power for 1 dB compression | V _{CC} = 5 V | 0.25–2.15 GHz | | 15 | | dBm |
| Control voltages | V _{LOW} = 0 V to 0.2 V @ 50 μA maximum V _{HIGH} = 2.5 V to V _{CC} @ 50 μA maximum | | | | | |

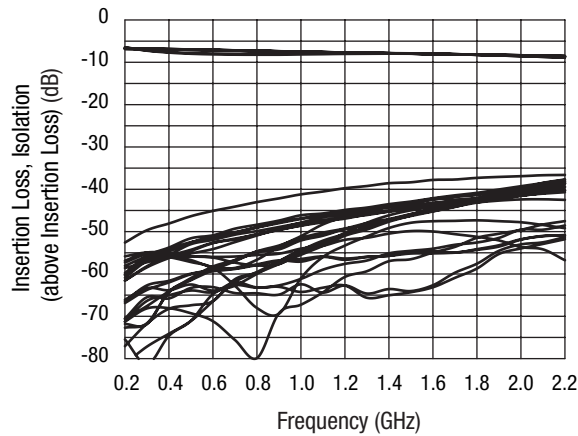
Typical Performance Data



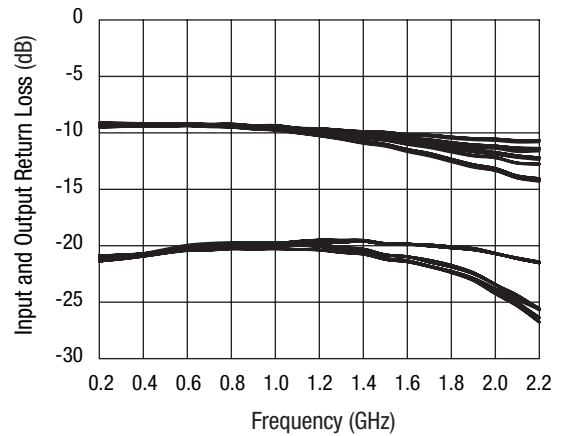
I1LO and I1RO Paths State 0–15



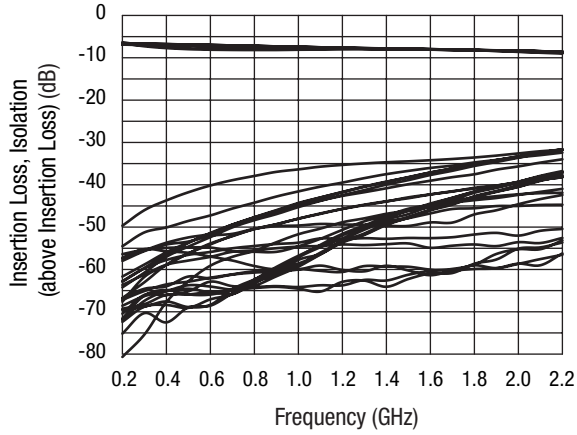
I1LO and I1RO Paths State 0–15



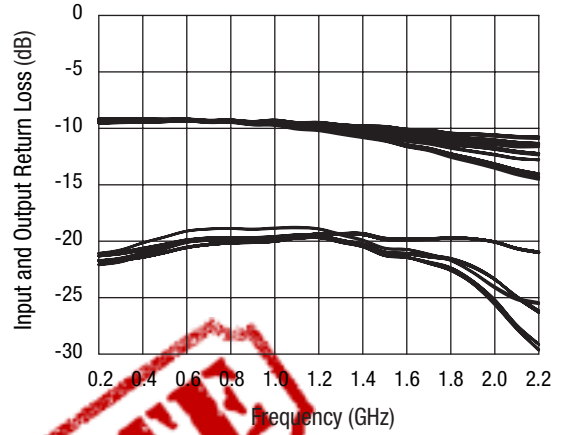
I2LO and I2RO Paths State 0–15



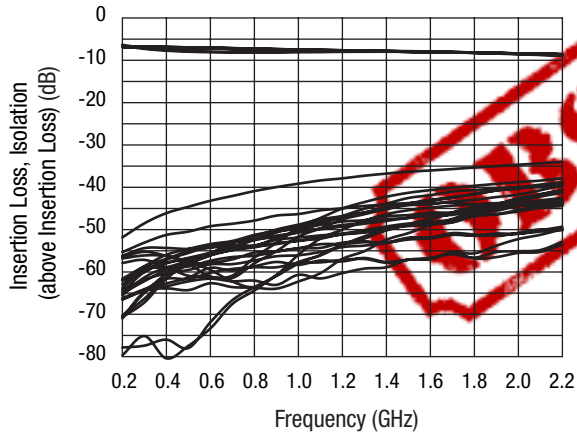
I2LO and I2RO Paths State 0–15



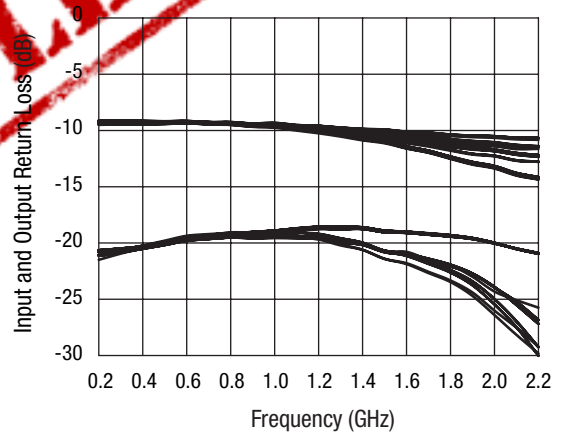
I3LO and I3RO Paths State 0-15



I3LO and I3RO Paths State 0-15



I4LO and I4RO Paths State 0-15



I4LO and I4RO Paths State 0-15



Absolute Maximum Ratings

| Characteristic | Value |
|-----------------------|-----------------------|
| RF input power | 15 dBm |
| Supply voltage | 6 V |
| Control voltage | $0 \leq V_C \leq 6 V$ |
| Operating temperature | -40 °C to +85 °C |
| Storage temperature | -65 °C to +150 °C |

Performance is guaranteed only under the conditions listed in the specifications table and is not guaranteed under the full range(s) described by the Absolute Maximum specifications. Exceeding any of the absolute maximum/minimum specifications may result in permanent damage to the device and will void the warranty.

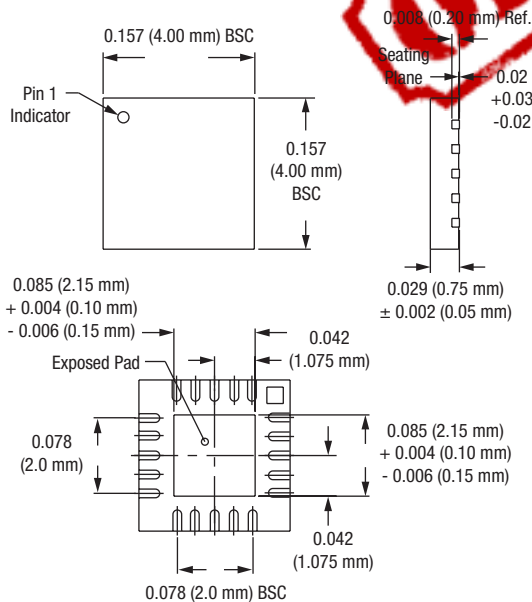
CAUTION: Although this device is designed to be as robust as possible, ESD (Electrostatic Discharge) can damage this device. This device must be protected at all times from ESD. Static charges may easily produce potentials of several kilovolts on the human body or equipment, which can discharge without detection. Industry-standard ESD precautions must be employed at all times.

Truth Table⁽¹⁾

| State | Signal Path (Insertion Loss Path) ⁽¹⁾ | Controls | | | |
|-------|--|------------------|----------------|-------------------|----------------|
| | | LO (Left Output) | | RO (Right Output) | |
| | | V ₁ | V ₂ | V ₃ | V ₄ |
| 0 | I1 → LO, I1 → RO | 0 | 0 | 0 | 0 |
| 1 | I1 → LO, I2 → RO | 0 | 0 | 0 | 1 |
| 2 | I1 → LO, I3 → RO | 0 | 0 | 1 | 0 |
| 3 | I1 → LO, I4 → RO | 0 | 0 | 1 | 1 |
| 4 | I2 → LO, I1 → RO | 0 | 1 | 0 | 0 |
| 5 | I2 → LO, I2 → RO | 0 | 1 | 0 | 1 |
| 6 | I2 → LO, I3 → RO | 0 | 1 | 1 | 0 |
| 7 | I2 → LO, I4 → RO | 0 | 1 | 1 | 1 |
| 8 | I3 → LO, I1 → RO | 1 | 0 | 0 | 0 |
| 9 | I3 → LO, I2 → RO | 1 | 0 | 0 | 1 |
| 10 | I3 → LO, I3 → RO | 1 | 0 | 1 | 0 |
| 11 | I3 → LO, I4 → RO | 1 | 0 | 1 | 1 |
| 12 | I4 → LO, I1 → RO | 1 | 1 | 0 | 0 |
| 13 | I4 → LO, I2 → RO | 1 | 1 | 0 | 1 |
| 14 | I4 → LO, I3 → RO | 1 | 1 | 1 | 0 |
| 15 | I4 → LO, I4 → RO | 1 | 1 | 1 | 1 |

1. All other paths are in isolation state.
 "1" = 5 V.
 "0" = 0 V.

QFN-20 (4 x 4)



Recommended Solder Reflow Profiles

Refer to the ["Recommended Solder Reflow Profile"](#) Application Note.

Tape and Reel Information

Refer to the ["Discrete Devices and IC Switch/Attenuators Tape and Reel Package Orientation"](#) Application Note.



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