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DATA SHEET

# PD18-73/PD18-73LF: 1.71-1.99 GHz Two-Way 0° Power Splitter/Combiner

## Applications

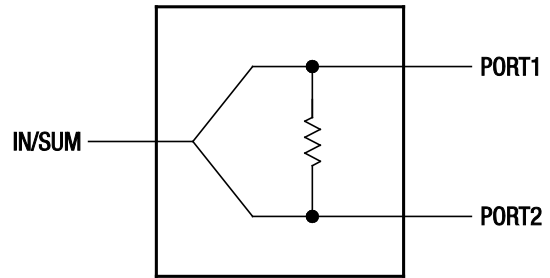
- Signal distribution/combining
- GSM, WCDMA, PCS/DCS

## Features

- Low cost
- Low profile
- Small SOT-6 package (MSL1, 260 °C per JEDEC J-STD-020)



Skyworks Pb-free products are compliant with all applicable legislation. For additional information, refer to *Skyworks Definition of Lead (Pb)-Free*, document number SQ04-0073.



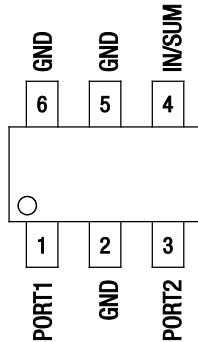
S2709

Figure 1. PD18-73/PD18-73LF Block Diagram

## Description

The PD18-73/PD18-73LF are monolithic, two-way in-phase hybrid junction power splitter/combiners for the 1.71 to 1.99 GHz band. Either device offers low loss, high isolation, good input/output matching, and exceptional phase/amplitude balance.

A functional block diagram is shown in Figure 1. The pin configuration and package are shown in Figure 2. Signal pin assignments and functional pin descriptions are provided in Table 1.



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Figure 2. PD18-73/PD18-73LF Pinout – 6-Pin SOT-6 (Top View)

**Table 1. PD18-73/PD18-73LF Signal Descriptions**

Pin #	Name	Description	Pin #	Name	Description
1	PORT1	RF port 1	4	IN/SUM	RF in or sum port
2	GND	RF ground	5	GND	RF ground
3	PORT2	RF port 2	6	GND	RF ground

**Table 2. PD18-73/PD18-73LF Absolute Maximum Ratings (Note 1)**

Parameter	Symbol	Minimum	Maximum	Units
RF input power, CW (Note 2)	P <sub>IN</sub>		1.5	W
RF input power, CW (Note 3)	P <sub>IN</sub>		0.75	W
Operating temperature	T <sub>OP</sub>	-40	+85	°C
Storage temperature	T <sub>STG</sub>	-65	+150	°C

**Note 1:** Exposure to maximum rating conditions for extended periods may reduce device reliability. There is no damage to device with only one parameter set at the limit and all other parameters set at or below their nominal value. Exceeding any of the limits listed here may result in permanent damage to the device.

**Note 2:** When used as a power divider with a 2.0:1 maximum VSWR on all ports.

**Note 3:** When used as a power combiner with a 2.0:1 maximum VSWR on all ports.

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**CAUTION:** Although this device is designed to be as robust as possible, Electrostatic Discharge (ESD) 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 should be used at all times.

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**Table 3. PD18-73/PD18-73LF Electrical Specifications (Note 1)**  
**(Characteristic Impedance [Z<sub>0</sub>] = 50 Ω, Unless Otherwise Noted)**

Parameter	Symbol	Test Condition	Min	Typical	Max	Units
Frequency	f		1.71		1.99	GHz
Insertion loss less 3 dB split	IL	P <sub>IN</sub> @ pin 4 = 0 dBm		0.4	0.6	dB
Isolation	Iso	P <sub>IN</sub> @ pin 4 = 0 dBm	18	23		dB
Input VSWR	VSWR <sub>IN</sub>	P <sub>IN</sub> @ pin 4 = 0 dBm		1.3:1	1.5:1	-
Output VSWR	VSWR <sub>OUT</sub>	P <sub>IN</sub> @ pin 4 = 0 dBm		1.2:1	1.4:1	-
Amplitude balance		P <sub>IN</sub> @ pin 4 = 0 dBm		±0.1	±0.2	dB
Phase balance		P <sub>IN</sub> @ pin 4 = 0 dBm		±1	±3	deg

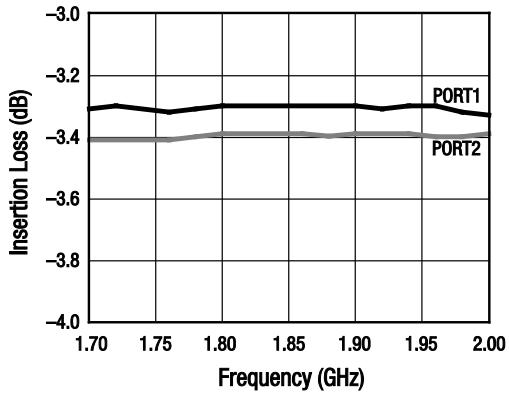
**Note 1:** Performance is guaranteed only under the conditions listed in this Table.

### Electrical and Mechanical Specifications

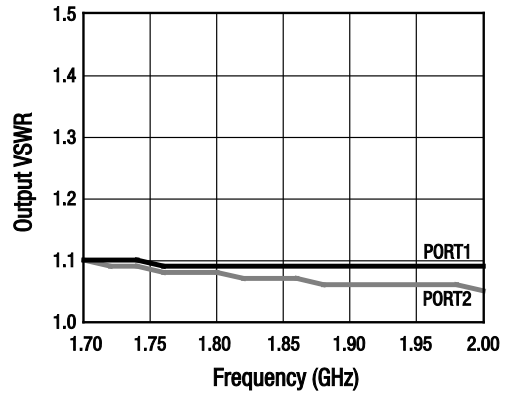
The absolute maximum ratings of the PD18-73/PD18-73LF are provided in Table 2. Electrical specifications are provided in Table 3.

Typical performance characteristics of the PD18-73/PD18-73LF are illustrated in Figures 3 through 8.

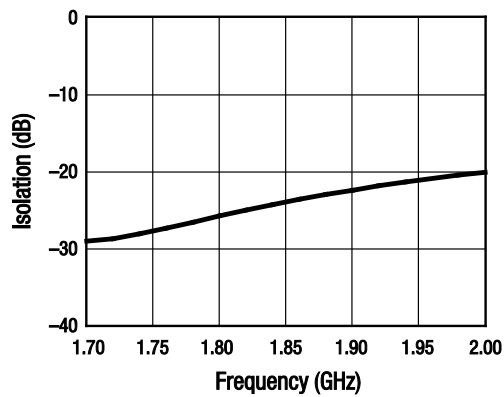
**Typical Performance Characteristics**  
 (Characteristic Impedance [ $Z_0$ ] = 50  $\Omega$ , Unless Otherwise Noted)



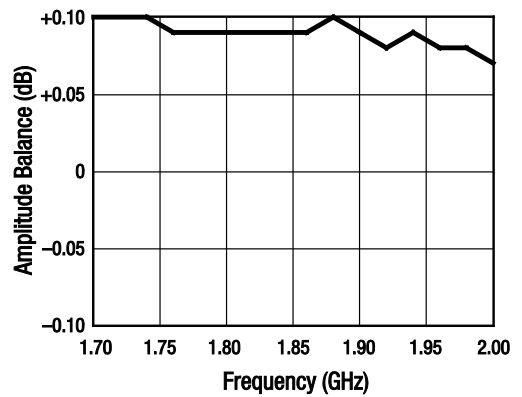
**Figure 3. Insertion Loss vs Frequency**



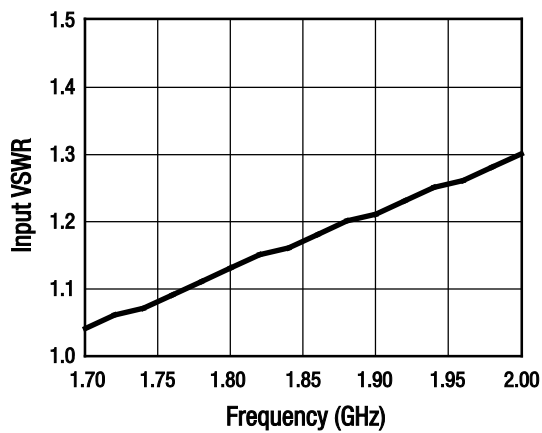
**Figure 4. Output VSWR vs Frequency**



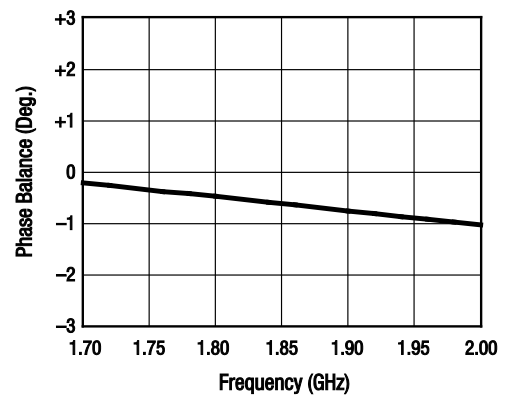
**Figure 5. Isolation vs Frequency**



**Figure 6. Amplitude Balance vs Frequency**



**Figure 7. Input VSWR vs Frequency**



**Figure 8. Phase Balance vs Frequency**

**Recommended Board Layout**

The recommended layout for the PD18-73/PD18-73LF is shown in Figure 9.

**Package Dimensions**

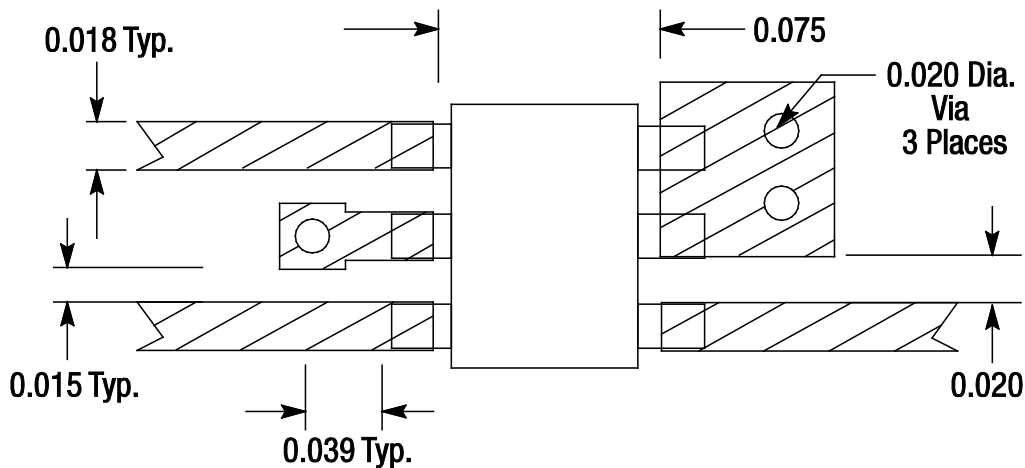
Package dimensions for the 6-pin SOT-6 are shown in Figure 10, and tape and reel dimensions are provided in Figure 11.

**Package and Handling Information**

Instructions on the shipping container label regarding exposure to moisture after the container seal is broken must be followed. Otherwise, problems related to moisture absorption may occur when the part is subjected to high temperature during solder assembly.

THE PD18-73/PD18-73LF is rated to Moisture Sensitivity Level 1 (MSL1) at 260 °C. It can be used for lead or lead-free soldering. For additional information, refer to the Skyworks Application Note, *Solder Reflow Information*, document number 200164.

Care must be taken when attaching this product, whether it is done manually or in a production solder reflow environment. Production quantities of this product are shipped in a standard tape and reel format.



Material is 10 mil FR4.  
All measurements in inches.

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**Figure 9. PD18-73/PD18-73LF Recommended Board Layout**

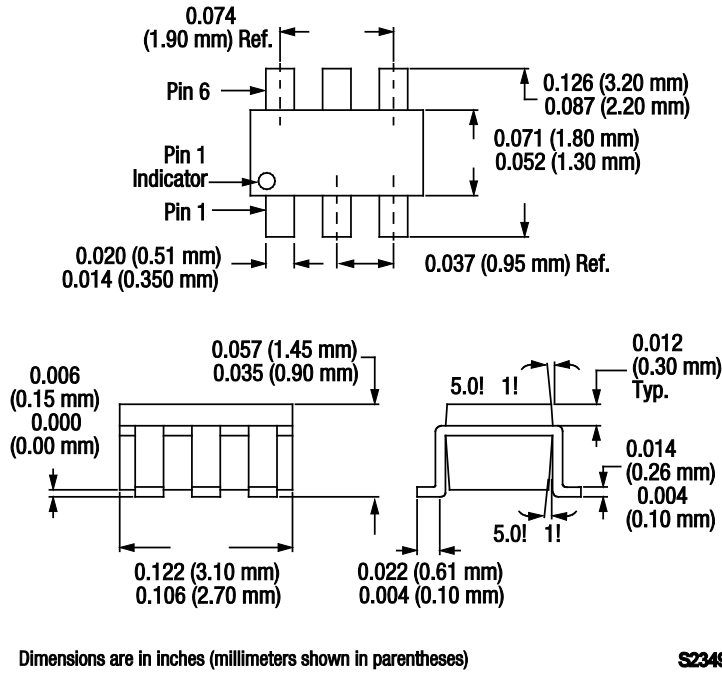
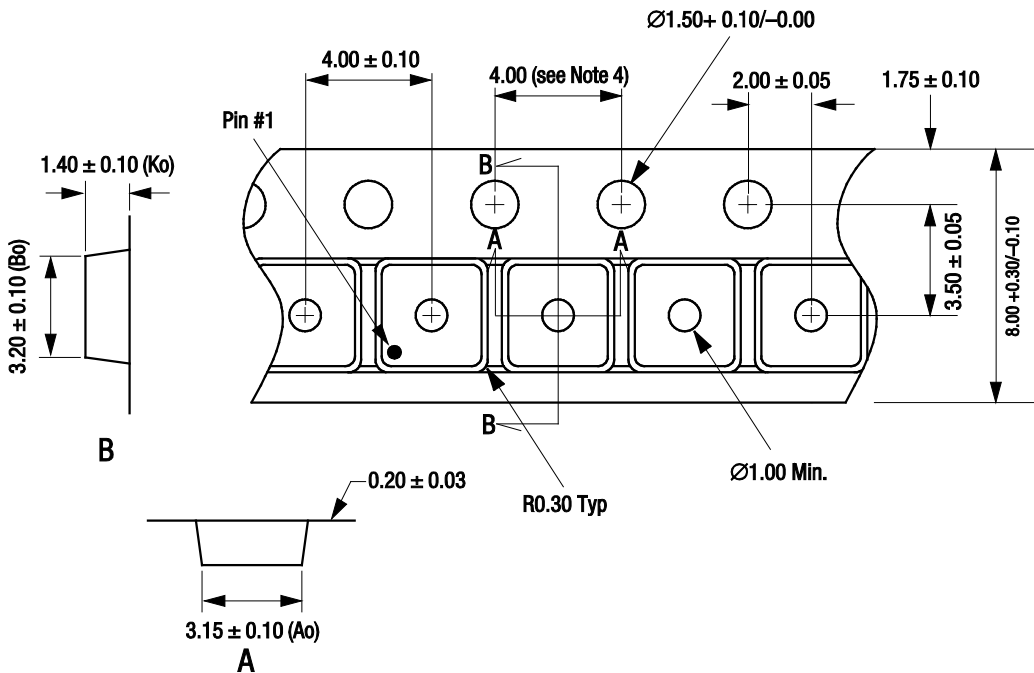


Figure 10. PD18-73/PD18-73LF 6-Pin SOT-6 Package Dimensions



- Notes:
1. Carrier tape: black conductive polystyrene.
  2. Cover tape material: transparent conductive HSA.
  3. Cover tape size: 5.40 mm width.
  4. Ten sprocket hole pitch cumulative tolerance =  $\pm 0.20$  mm.
  5. All measurements are in millimeters.
  6. Standard reel size is 7 inches. Standard reel quantity is 3000 pcs.

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Figure 11. PD18-73/PD18-73LF Tape and Reel Dimensions

## Ordering Information

Model Name	Manufacturing Part Number
PD18-73/PD18-73LF Two-Way Power Splitter/Combiner	PD18-73/PD18-73LF

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