

## DATA SHEET

# SKYFR-001721 4500 to 5000 MHz Single Junction Robust Lead Circulator

## Applications

- Wireless infrastructure
- Power amplifiers

## Features

- Small surface-mount package
- Operating frequency range: 4500 MHz to 5000 MHz
- BeO free
- RoHS compliant
- Parts delivered on tape and reel



Skyworks Green™ products are compliant with all applicable legislation and are halogen-free. For additional information, refer to *Skyworks Definition of Green™*, document number SQ04-0074.



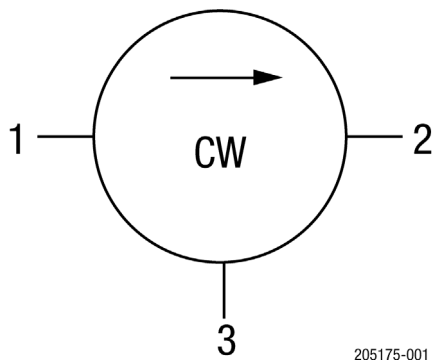
## Description

The SKYFR-001721 is a single-junction, surface-mount circulator designed for wireless infrastructure and power-amplifier applications. It operates over the frequency range of 4500 MHz to 5000 MHz with an operating temperature range of -40 °C to +105 °C.

The SKYFR-001721 comes in an industry-standard surface-mount package and is designed for automated SMT placement.

A block diagram of the SKYFR-001721 is shown in Figure 1.

For tape and reel information, refer to the *Tape and Reel Guidelines for Isolators and Circulators* Application Note.



**Figure 1. SKYFR-001721 Block Diagram**

## Electrical and Mechanical Specifications

The absolute maximum ratings of the SKYFR-001721 are provided in Table 1. Electrical specifications are provided in Table 2.

Plating information is shown in Table 3. Figure 2 shows the package dimensions and PCB footprint information.

**Table 1. SKYFR-001721 Absolute Maximum Ratings<sup>1</sup>**

Parameter	Symbol	Minimum	Maximum	Units
Average power	$P_{AVG}$		20	W
Peak power	$P_{PK}$		160	W
Operating temperature <sup>2</sup>	$T_{OP}$	-40	+105	°C
Storage temperature	$T_{STOR}$	-65	+150	°C

<sup>1</sup> 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.

<sup>2</sup> The power rating and reliability of the device will not degrade with an operating temperature of up to +130°C. Exceeding any of the other limits listed here may result in permanent damage to the device or may reduce device reliability.

**Table 2. SKYFR-001721 Electrical Specifications<sup>1, 3</sup>**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Frequency range	f		4500		5000	MHz
Impedance				50		$\Omega$
Input impedance, real			45		55	$\Omega$
Input impedance, imaginary		@ 4500 MHz	-j3		j8	j $\Omega$
Input impedance, imaginary		@ 4600 MHz	-j4		j7	j $\Omega$
Input impedance, imaginary		@ 4700 MHz	-j5		j6	j $\Omega$
Input impedance, imaginary		@ 4800 MHz	-j6		j3	j $\Omega$
Input impedance, imaginary		@ 4900 MHz	-j5		j3	j $\Omega$
Input impedance, imaginary		@ 5000 MHz	-j4		j4	j $\Omega$
Insertion loss	IL	-40 °C-110 °C			0.25	dB
Isolation	ISO		22			dB
Isolation	ISO	4300 MHz to 5200 MHz	14			dB
Return loss	RL		22			dB
Intermodulation distortion <sup>2</sup>	IMD	2 x 5W CW tones, 5 MHz spacing	60			dBc
Group delay					2.0	ns
2nd harmonic suppression			7			dBc
3rd harmonic suppression			5			dBc
Out of band resonance point			4350		5200	MHz

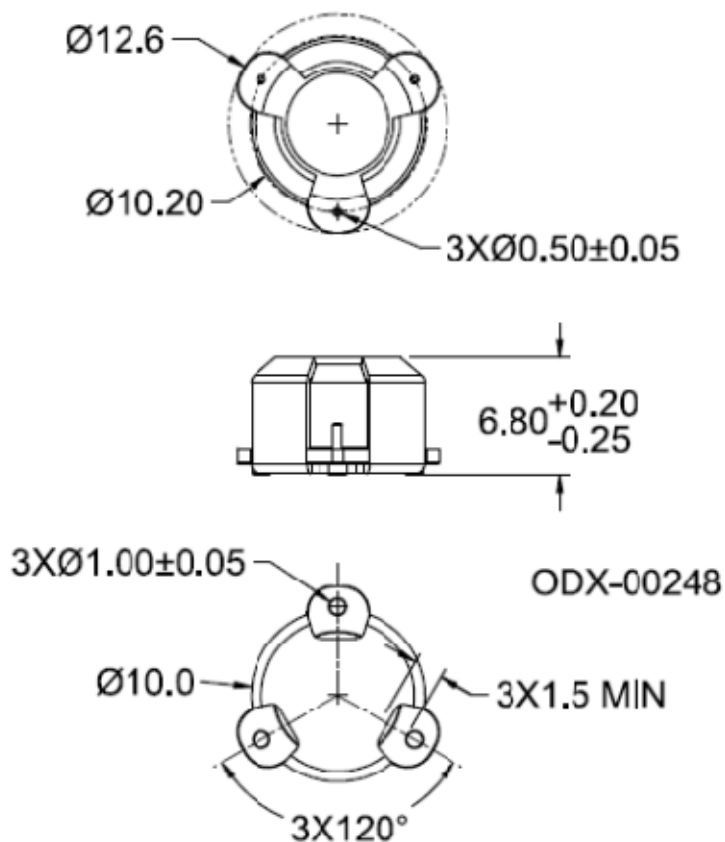
<sup>1</sup> Performance is guaranteed under the conditions listed in this table and over the operating temperature range.

<sup>2</sup> See Skyworks Application Note, *Intermodulation Distortion Measurements of Ferrites*, document number 201537 for further details.

<sup>3</sup> Performance will not degrade by > 10% (Insertion loss >20%) with an operating temperature of up to 130°C.

**Table 3. SKYFR-001721 Plating Specification**

Section	Base Material	Plating
Pins	Brass	Silver
Housing	Steel	Silver



All dimensions in millimeters.

Tolerance:  $\pm 0.2\text{mm}$  unless otherwise specified.

Coplanarity specification: 0.1mm maximum.

Model number, lot code and port designation printed on top side of device.

**Figure 2. SKYFR-001721 Package Dimensions and PCB Footprint**

## Ordering Information

Part Number	Product Description	Evaluation Board Part Number
SKYFR-001721	2496 to 2690 MHz Single-Junction Robust Lead Circulator	TFX-00296

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