PAD/JPAD/SSTPAD Series

Low-Leakage Pico-Amp Diodes

PAD1 JPAD5 SSTPAD5
PAD5 JPAD50 SSTPAD100
PAD50

Product Summary

Part Number	I_R Max (pA)
PAD1	–1
PAD5/JPAD5/SSTPAD5	–5
PAD50/JPAD50	–50
SSTPAD100	–100

Features

- Ultralow Leakage: PAD1 <1 pA
- Ultralow Capacitance: PAD1 <0.8 pF
- Two-Leaded Package

Benefits

- Negligible Circuit Leakage Contribution
- Circuit "Transparent" Except to Shunt High-Frequency Spikes
- Simplicity of Operation

Applications

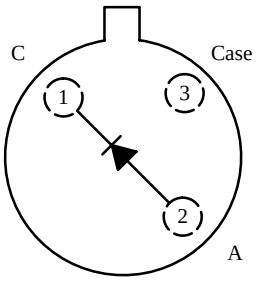
- Op Amp Input Protection
- Multiplexer Overvoltage Protection

Description

The PAD/JPAD/SSTPAD series of extremely low-leakage diodes provides a superior alternative to conventional diode technology when reverse current (leakage) must be minimized. They feature leakage currents ranging from –1 pA (PAD1) to –100 pA (SSTPAD100) to support a wide range of applications. These devices are well suited for use in applications such as input protection for operational amplifiers.

The hermetically sealed TO-206AF (TO-72) package allows full military processing per MIL-S-19500 (see Military Information). The TO-226A (TO-92) plastic package provides a low-cost option. The TO-236 (SOT-23) package provides surface-mount capability. Both J and SST series are available in tape-and-reel for automated assembly. (See Packaging Information.)

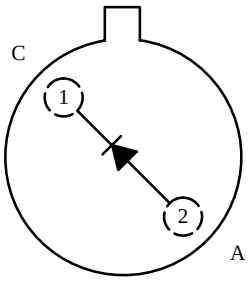
TO-206AF (TO-72)
Modified



Top View

PAD1
PAD5

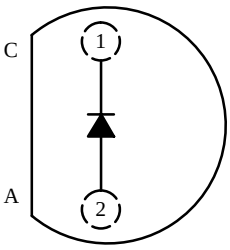
TO-206AA (TO-18)
Modified



Top View

PAD50

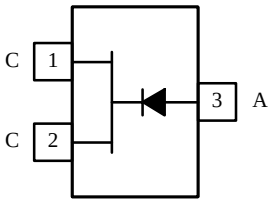
TO-226AA (TO-92)
Modified



Top View

JPAD5
JPAD50

TO-236
(SOT-23)



Top View

SSTPAD5 (05)*
SSTPAD100 (01)

*Marking Code for TO-236

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70339.

PAD/JPAD/SSTPAD Series

Absolute Maximum Ratings[a]

Forward Current: (PAD . . . . . 50 mA
(JPAD/SSTPAD) . . . . . 10 mA
Total Device Dissipation: (PAD)[b] . . . . . 300 mW
(JPAD/SSTPAD)[b] . . . . . 350 mW
Operation Junction Temp: (PAD) . . . . . –55 to 175°C
(JPAD/SSTPAD)[c] . . . . . –55 to 150°C
Lead Temperature ($^1/_{16}$" from case for 10 sec.) . . . . . 300°C

Notes:
a. T_A = 25°C unless otherwise noted.
b. Derate 2 mW/°C above 25°C.
c. Derate 2.8 mW/°C above 25°C.

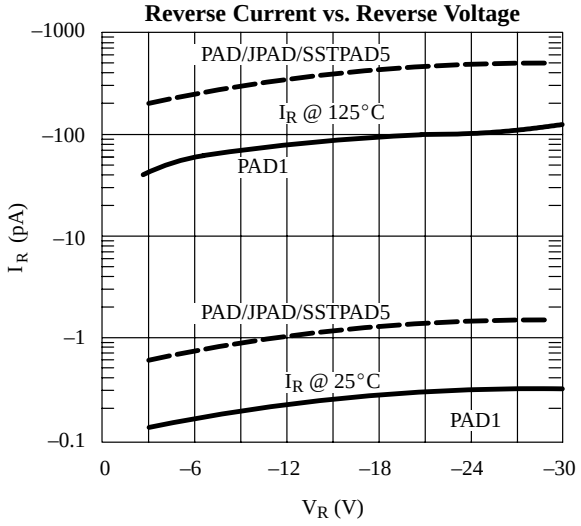
Specifications[a]

Parameter	Symbol	Test Conditions		Limits Min	Limits Typ[b]	Limits Max	Unit
Static							
Reverse Current	I_R	V_R = –20 V	PAD1		–0.3	–1	pA
			PAD5/JPAD5/SSTPAD5		–1	–5	
			PAD50/JPAD50		–5	–50	
			SSTPAD100		–10	–100	
Reverse Breakdown Voltage	BV_R	I_R = –1 μA	PAD1/PAD5	–45	–60		V
			SSTPAD5/100	–30	–55		
			All Others	–35	–55		
Forward Voltage Drop	V_F	I_F = 1 mA			0.8	1.5	
Dynamic							
Reverse Capacitance	C_R	V_R = –5V, f = 1 MHz	PAD1/PAD5		0.5	0.8	pF
			All Others		1.5	2	

Notes:
a. T_A = 25°C unless otherwise noted. NT/NPA
b. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.

Typical Characteristics

Reverse Current vs. Reverse Voltage



Reverse Current vs. Temperature