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

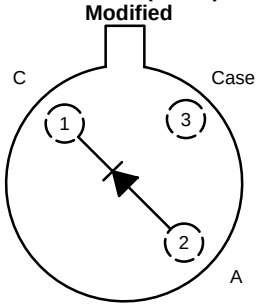
- Op Amp Input Protection
- Multiplexer Overvoltage Protection

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.)

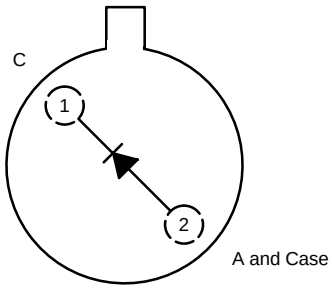
TO-206AF (TO-72) Modified



Top View

PAD1
PAD5

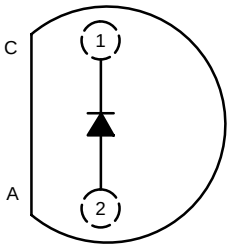
TO-206AA (TO-18) Modified



Top View

PAD50

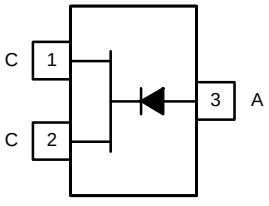
TO-226AA (TO-92) Modified



Top View

JPAD5
JPAD50

TO-236 (SOT-23)



Top View

SSTPAD5 (05)*
SSTPAD100 (01)

*Marking Code for TO-236

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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

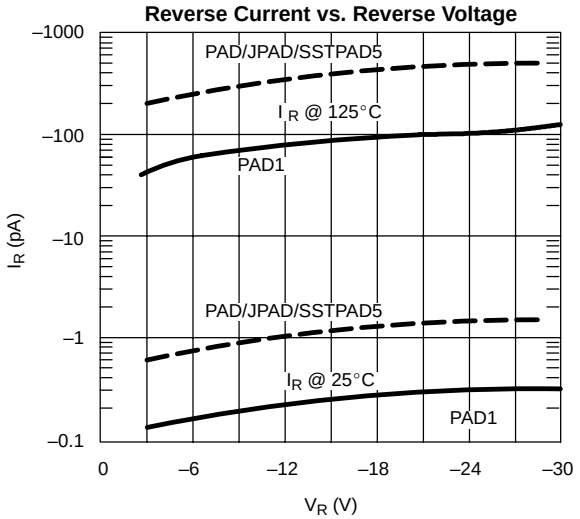
Notes:
a. T_A = 25°C unless otherwise noted.
b. Derate 2 mW/°C above 25°C.
c. Derate 2.8 mW/°C above 25°C.

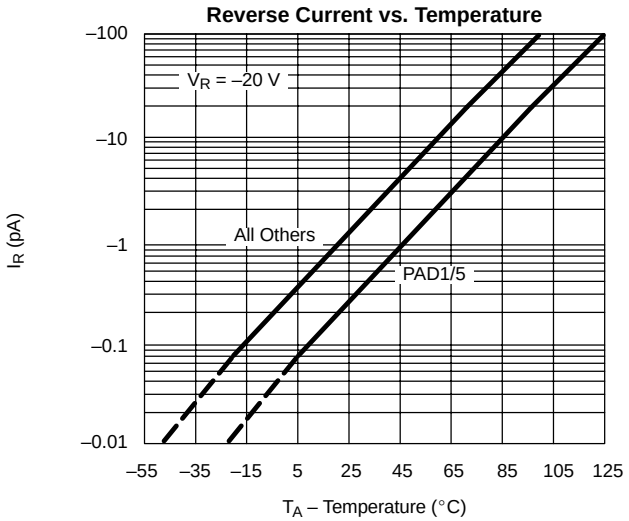
SPECIFICATIONS SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Conditions		Limits Min	Limits Typ[a]	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. Typical values are for DESIGN AID ONLY, not guaranteed nor subject to production testing.

TYPICAL CHARACTERISTICS (T_A = 25°C UNLESS OTHERWISE NOTED)





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