Silicon Fast Switching PIN Diode

MADP-011136-N287xx
Rev. V1

Features

- Non-Magnetic
- Industry Standard Surface Mount Package
- Low Loss, High Insulation
- RoHS* Compliant

Applications

- Medical MRI Coils
- Multi Market

Description

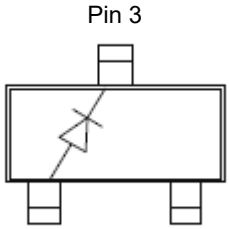
The MADP-011136 series is a silicon PIN diode in a non-magnetic, surface mount plastic package for use as a fast switching diode. These diodes are offered with 100% matte Sn plating.

These PIN diodes feature short I-region length resulting in lower resistance, and lower capacitance devices for various VHF through S-Band control circuit applications.

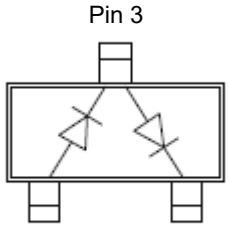
The MADP-011136 series is offered as a series pair and single configuration in a non-magnetic SOT-23 package. The fast switching characteristics are achieved through MACOM's gold doped process.

This provides nanosecond switching and high parallel resistance in off state. These switching diodes are ideal devices used in MRI coils and other applications requiring high isolation and fast switching.

SOT-23



Single Configuration



Series "T" Configuration

Ordering Information

Part #	Configuration	Package Cp (pF)	Package Ls (nH)
MADP-011136-N287BT	Series "T"	0.12	1.3
MADP-011136-N287T0	Single	0.12	1.3

* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

Electrical Specifications @ T_A = +25°C[1]

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Forward Voltage	V_F @ 1 mA V_F @ 10 mA V_F @ 50 mA V_F @ 100 mA V_F @ 150 mA	V	—	0.66 0.79 0.91 0.99 1.05	0.70 0.85 1.00 1.20 1.25
Voltage Breakdown	V_B @ 100 µA	V	85	180	—
Reverse Current	I_R @ 70 V	µA	—	0.5	1.5
Total Capacitance	C_T @ 0 V, 1 MHz	pF	—	0.3	0.5
Reverse Recovery Time	T_{RR} = I_F 10 mA / I_R 10 mA	ns	—	5.8	—

1. Specification reflects single diode measurement.

Absolute Maximum Ratings[3,4] @ T_A = +25°C (Unless Otherwise Noted)

Parameter	Rating
Operating Temperature	-55°C to +125°C
Storage Temperature	-65°C to +150°C
Junction Temperature	+175°C
RF CW Incident Power: (θ die = 80°C/W), RF & DC Incident De-rating Coefficient = -10.7 mW/°C	+29 dBm
Total (RF + DC) Power Dissipation: (SOT-23,): RF & DC Dissipated De-rating Coefficient = -33.3 mW/°C	250 mW
Reverse Voltage	Voltage Rating
Forward Current	150 mA DC

3. Operation of this device above any one of these parameters may cause permanent damage.
4. Please refer to application note M538 for surface mounting instructions.

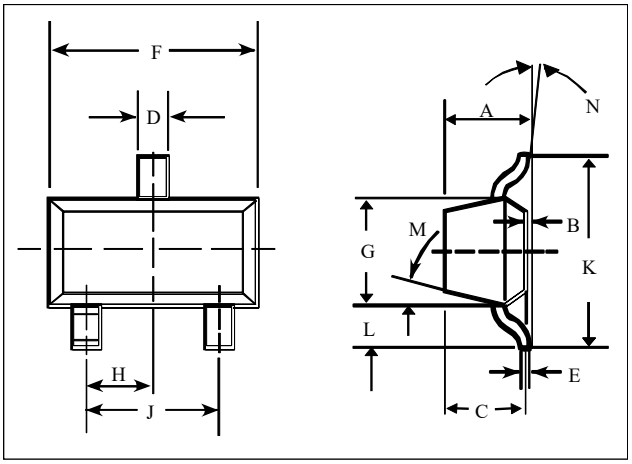
Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-23 packages. Solder paste containing flux should be screened onto the pads to a thickness of 0.005 - 0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

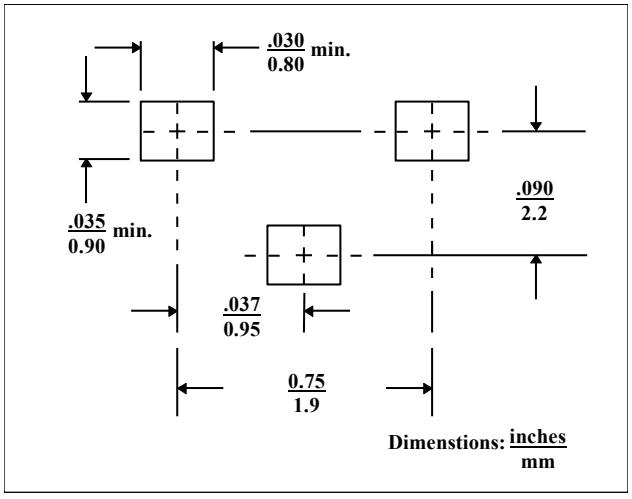
Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275°C and the body temperature does not exceed +250°C, for standard models and +260°C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.

SOT-23 (Case Style 287)



SOT-23



DIM.	INCHES		MILLIMETERS	
	Min.	Max.	Min.	Max.
A	¾	0.048	¾	1.22
B	¾	0.008	¾	0.20
C	¾	0.040	¾	1.00
D	0.013	0.020	0.35	0.50
E	0.003	0.006	0.08	0.15
F	0.110	0.119	2.80	3.00
G	0.047	0.056	1.20	1.40
H	0.037 typical		0.95 typical	
J	0.075 typical		1.90 typical	
K	¾	0.103	¾	2.60
L	¾	0.024	¾	0.60
DIM.	GRADIENT			
M	10° max.			
N	2° . . .30°			