

Dual Pair Anti-Parallel Non-Magnetic PIN Diode

Rev. V5

Features

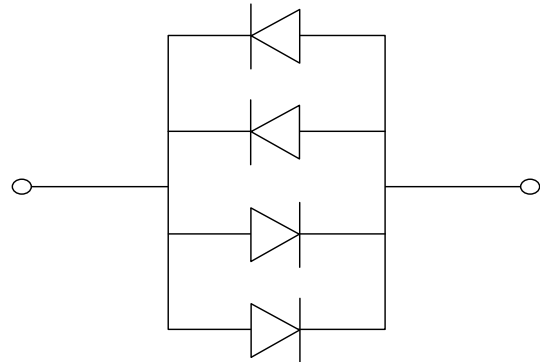
- Designed for MRI Applications
- Anti-Parallel Self Bias Arrangement
- Non-Magnetic Surface Mount Package
- SPC Process for Superior Parametric Repeatability
- RoHS* Compliant and 260°C Reflow Compatible

Description

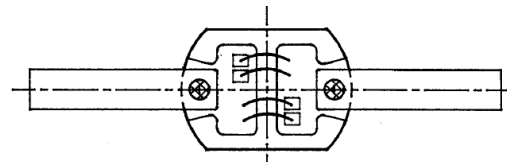
The MA44781 device acts as a passive switch using silicon PIN diodes in a surface mount package. There are two sets of two PIN diode pairs constructed in opposing configurations. The package is sealed with a non-conductive epoxy resin and is suitable for surface mount applications.

The MA44781 device is well suited for MRI passive switching applications. The PIN diodes become a high Q, R-C network under small signal and behave as an effective passive rectifier or short circuit under high RF signal to tune and de-tune the resonant MRI tank circuit. The anti-parallel doublet arrangement provides for more efficient RF power handling.

Schematic



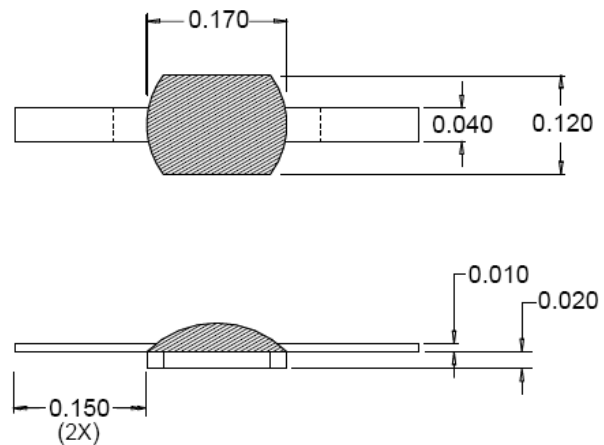
Internal Construction



Ordering Information

Part Number	Package
MA44781	ODS-1134

Case Style 1134



All Dimensions shown as inches

* Restrictions on Hazardous Substances, European Union Directive 2011/65/EU.

Dual Pair Anti-Parallel Non-Magnetic PIN Diode

Rev. V5

Electrical Specifications:

$T_A = +25^\circ\text{C}$, Breakdown Voltage @ $I_R = 10 \mu\text{A}$, $V_b = 60 \text{ V}$ Minimum

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Forward Voltage	$I_F = 20 \mu\text{A}$	V	0.500	—	0.780
Delta Forward Voltage	$I_F = 20 \mu\text{A}$ (between each diodes)	mV	—	+/- 30	—
Junction Capacitance (per diode)	$f = 1 \text{ MHz}$, $V_R = -6.0 \text{ V}$	pF	0.15	—	0.50
Total Capacitance	$V_R = 0 \text{ V}$	pF	1.5	—	3.5

Absolute Maximum Ratings¹

Parameter	Absolute Maximum
Reverse Voltage	60 V
Forward Current (Per Diode Pair) ²	2 A
Total Power Dissipation ³	2 W
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +125°C
Junction Temperature	+175°C

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Total current per diode = $I(\text{rms}) + I(\text{dc})$ @ +25°C
3. Please refer to application note M538 for surface mounting instructions.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.