

Features

- Designed for MRI Applications
- Anti-Parallel Self Bias Arrangement
- Non-Magnetic Surface Mount Package
- SPC Process for Superior Parametric Repeatability
- RoHS* Compliant

Applications

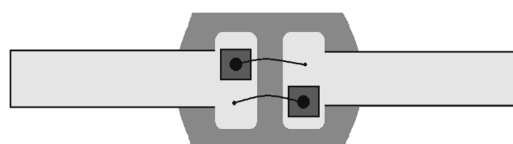
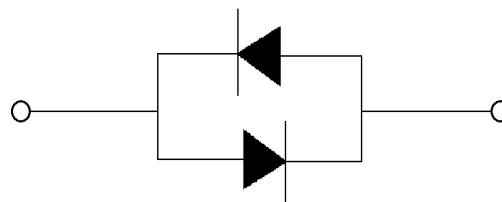
- MRI Passive Switching Applications

Description

The MADP-011084-1134B0 device acts as a passive switch using silicon PIN diodes in a surface mount non-magnetic package. The PIN diode pair are arranged in an anti-parallel configuration and encapsulated with a non conductive epoxy resin.

The MADP-011084-1134B0 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 arrangement provides for more efficient RF power handling.

Functional Schematic



Internal Construction

Electrical Performance @ $T_A = +25^\circ\text{C}$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Junction Capacitance	1 MHz, 20 V	pF	0.9	—	1.35
Total Capacitance	1 MHz, 0 V	pF	—	—	4.5
Breakdown Voltage	$I_F = 10 \mu\text{A}$	V	50	—	—
Forward Voltage	$I_F = 10 \text{ mA}$	V	—	—	1
Delta Forward Voltage	$I_F = 10 \text{ mA}$ (between each diode)	mV	—	± 20	—
Carrier Lifetime	$I_F = 10 \text{ mA} / I_R = 6 \text{ mA}$	ns	—	55	—

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

Ordering Information

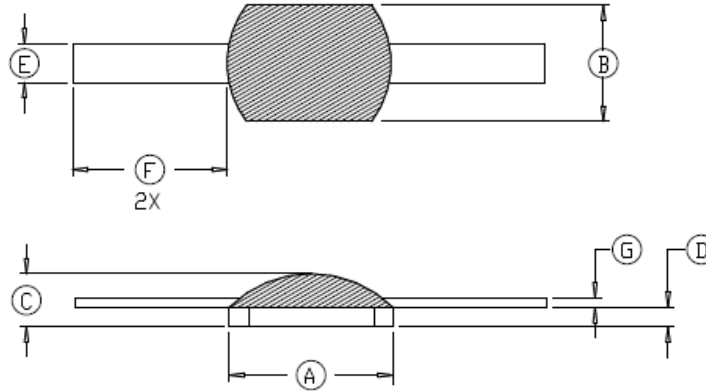
Part Number	Package
MADP-011084-1134B0	bulk

Absolute Maximum Ratings: T_A = +25°C (Unless Otherwise Noted)^{1,2,3}

Parameter	Absolute Maximum
CW Incident Power 50 mA, 400 MHz @ +85°C	50 dBm
DC Reverse Voltage	-50 V
AC _{RMS} + DC Forward Current (per diode D1 or D2)	1.8 A
Power Dissipation @ +85°C (per diode D1 or D2)	4 W
Junction Temperature	+175°C
Operating & Storage Temperature	-55°C to +125°C

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

Case Style 1134



Dim.	Inches		Mm	
	Min.	Max.	Min.	Max.
A	0.162	0.178	4.11	4.52
B	0.112	0.128	2.84	3.25
C	—	0.055	—	1.40
D	0.017	0.023	0.43	0.58
E	0.036	0.044	0.91	1.12
F	0.150	—	3.81	—
G	0.008	0.012	0.20	0.30

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