

### Features

- RF & Microwave Medium Barrier Silicon 8 V Schottky Diode
- Available as Single Diode, Series Pair or Unconnected Pair Configurations.
- Low Profile Surface Mount Plastic Package
- Lead Free
- RoHS\* Compliant with 260°C Reflow Capability

### Description and Applications

The MA4E1338 Series is a silicon medium barrier Schottky diode suitable for use in mixer, detector and limiter circuits. These diodes are also suitable for usage in anti-parallel, shunt power surge protection circuits for 50  $\Omega$  and 75  $\Omega$  systems.

The MA4E1338 Series of Schottky diodes is available in the SOT-23 (case style 287), SOT-323 (case style 1146), SC-79 (case style 1279) and the SOD 323, (case style 1141) plastic package. These packages are supplied on tape and reel for automatic pick and place assembly and for surface mount placement to circuit boards, as indicated by a "T" to the P/N suffix.

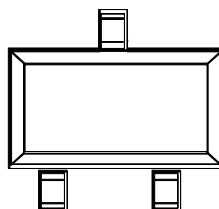
These silicon medium barrier, 8 V Schottky diodes are useful in detector, limiter, mixer, and surge protection applications for operating frequency bands from DC through 6 GHz.

### Part Numbers

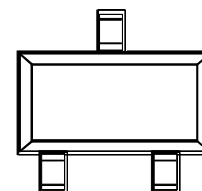
Part Number	Package Style
MA4E1338A1-287T	SOT-23
MA4E1338A1-1146T	SOT-323
MA4E1338B1-287T	SOT-23
MA4E1338B1-1146T	SOT-323
MA4E1338A1-1141T	SOD-323
MADS-001338-12790T	SC-79

### Package Outlines

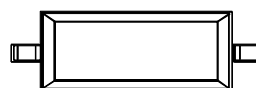
SOT-23 (287)



SOT-323 (1146)



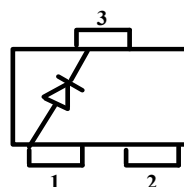
SOD-323 (1141)



SC-79 (1279)

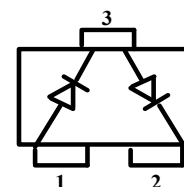


### Configurations (Top View)



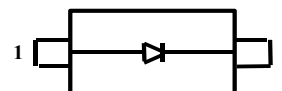
Single

MA4E1338A1-287T  
MA4E1338A1-1146T



Series Pair

MA4E1338B1-287T  
MA4E1338B1-1146T



Single

MA4E1338A1-1141T  
MADS-001338-12790T

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

### Electrical Specifications @ +25°C

Parameter	Condition	Specification
Forward Voltage ( $V_F$ )	$I_F = 1 \text{ mA}$ $I_F = 10 \text{ mA}$	360 mV max. 500 mV max.
Delta Forward Voltage ( $\Delta V_F$ )	$I_F = 1 \text{ mA}$	20 mV max. (for series pair and unconnected pair configurations)
Total Capacitance ( $C_T$ )	$V_R = 0 \text{ V}$ , $F = 1 \text{ MHz}$	1 pF max.
Reverse Leakage Current ( $I_R$ )	$V_R = 1 \text{ V}$	100 nA max.
Reverse Voltage Breakdown ( $V_B$ )	$I_R = 10 \text{ }\mu\text{A}$	8 V min.

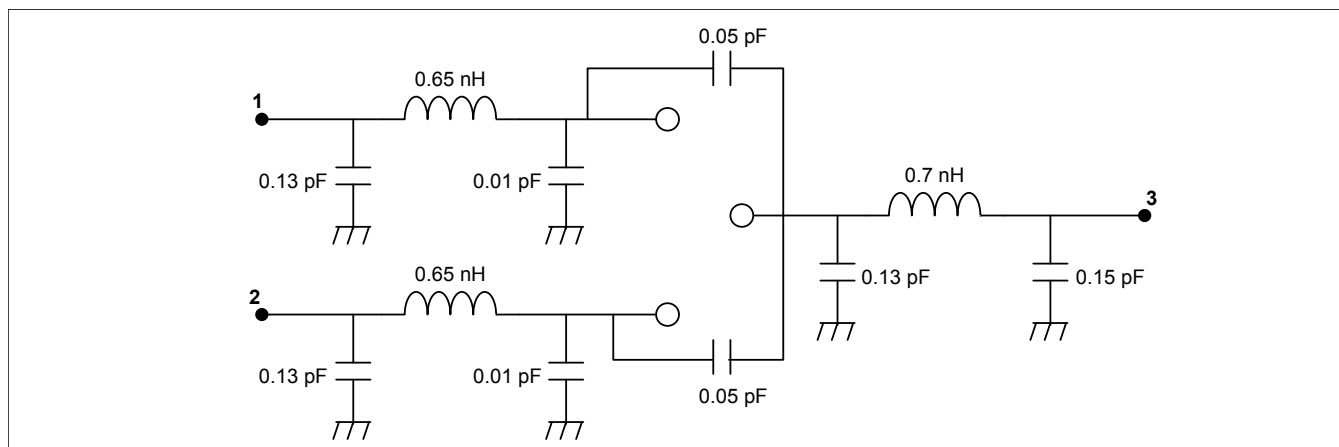
### Maximum Ratings @ 25°C (unless otherwise specified)<sup>1,2</sup>

Parameter	Values
Operating Temperature	-55°C to +125°C
Storage Temperature	-55 to +125
Total Power Dissipation (RF and DC)	250 mW
Continuous Forward Current	30 mA
Surge Forward Current, @ $t < 10 \text{ ms}$	100 mA
Reverse Voltage	8 V
Soldering Temperature	+260°C for 5 sec.

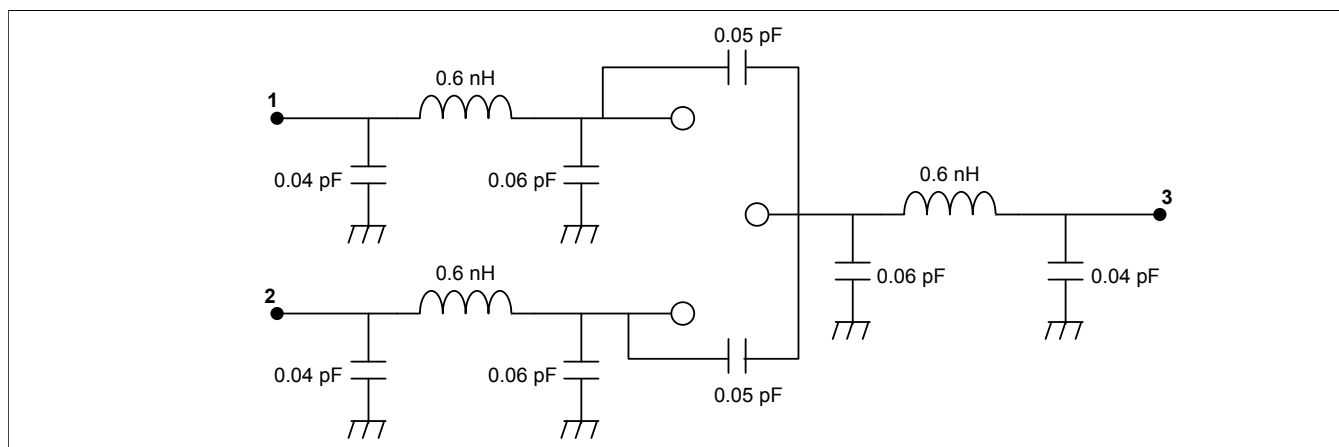
1. Operation of this device above any one of the maximum rated parameters may cause permanent damage.
2. Please refer to application note M538 for surface mounting instructions.

### Circuit Models

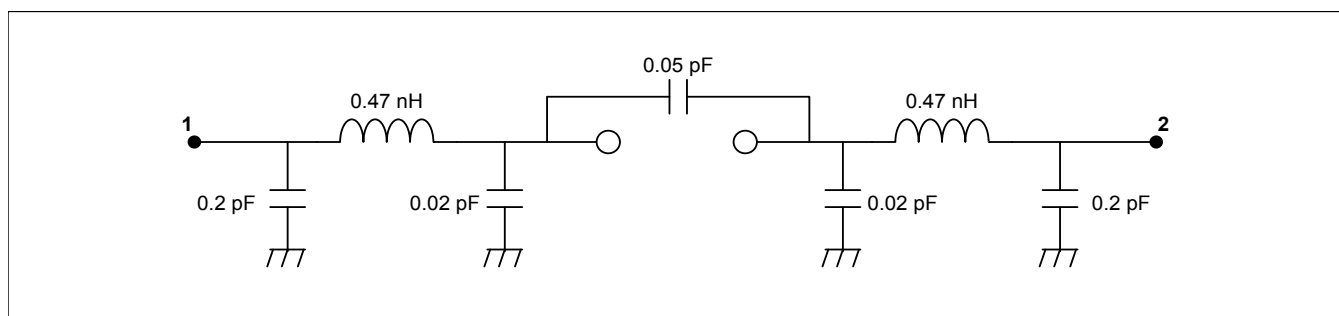
#### SOT-23



#### SOT-323

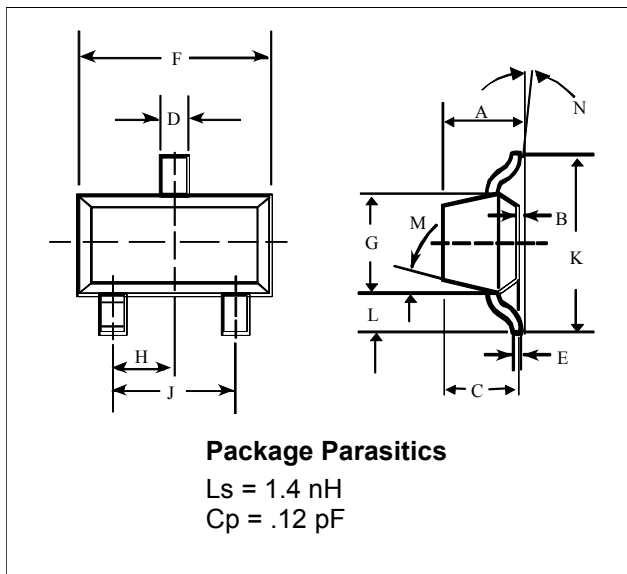


#### SOD-323



### Case Styles

#### SOT-23

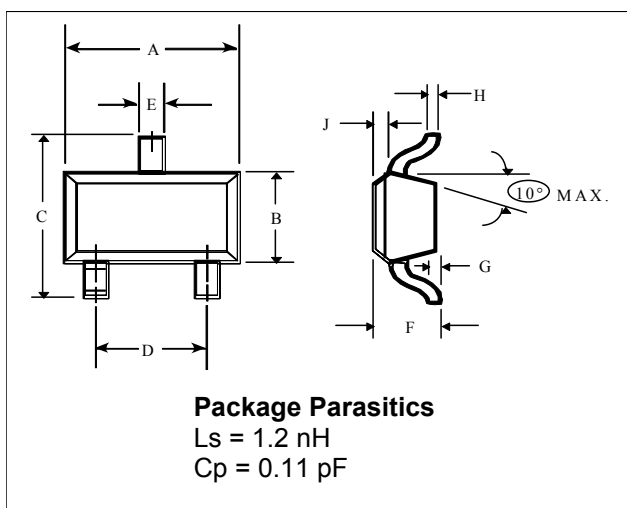


#### SOT-23 (Case Style 287)

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	—	0.048	—	1.22
B	—	0.008	—	0.20
C	—	0.040	—	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	—	0.103	—	2.60
L	—	0.024	—	0.60
DIM.	GRADIENT			
M	10° max. <sup>3</sup>			
N	2° . . .30°			

3. Applicable on all sides

#### SOT-323

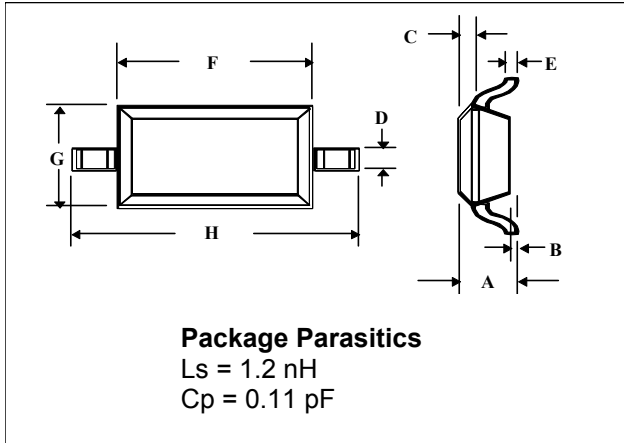


#### SOT-323 (Case Style 1146)

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.063	0.087	1.6	2.2
B	0.045	0.053	1.15	1.35
C	0.079	0.087	2.0	2.2
D	0.047	0.055	1.2	1.4
E	0.008	0.016	0.2	0.4
F	0.031	0.039	0.8	1.0
G	—	0.004	—	0.1
H	0.003	0.006	0.08	0.15
J	0.004	0.010	0.1	0.25

### Case Styles (Cont'd)

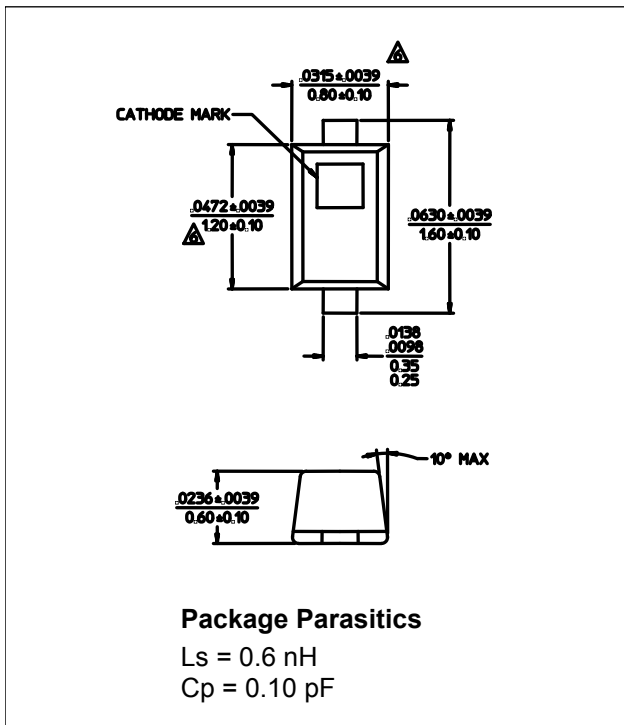
#### SOD-323



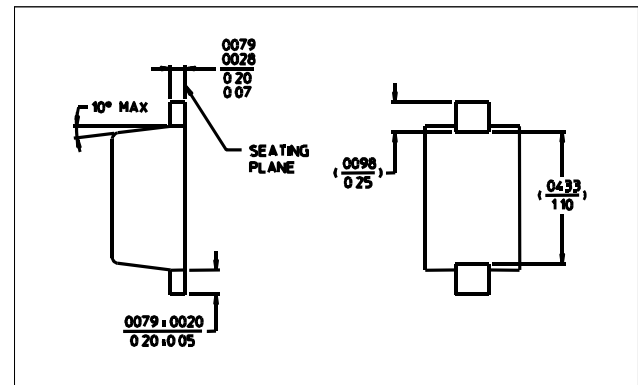
#### SOD-323 (Case Style 1141)

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	—	0.043	—	1.1
B	—	0.004	—	0.1
C	—	0.008	—	0.2
D	0.010	0.016	0.25	0.4
E	0.003	0.006	0.08	0.15
F	0.063	0.075	1.6	1.9
G	0.045	0.057	1.15	1.45
H	0.091	0.106	2.3	2.7

#### SC-79



#### SC-79 (Case Style 1279)



MACOM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with MACOM 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.