

Silicon Medium Barrier Schottky Diodes

MA4E1339 Series
V6

Features

- RF & Microwave Medium Barrier Silicon 20 V Schottky Diode
- Available as Single Diode, Series Pair or Unconnected Pair Configurations.
- Low Profile Surface Mount Plastic Packages
- **Lead Free (RoHS Compliant) Equivalents Available With 260 Deg. C Reflow Capability**

Description and Applications

The MA4E1339 series is a silicon medium barrier Schottky diode suitable for use in mixer, detector and limiter circuits. These diodes are also usable in anti-parallel, shunt power surge protection circuits for 50 Ω and 75 Ω systems.

These parts are offered with Sn/Pb plating, as well as with 100 % matte Sn plating on the RoHS compliant part numbers.

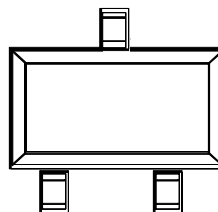
The MA4E1339 Series of Schottky diodes is available in the SOT-23 (case style 287), SOT-143 (case style 1068), SOT-323 (case style 1146), SOD 323 (case style 1141) and the SC-79 (case style 1279).

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.

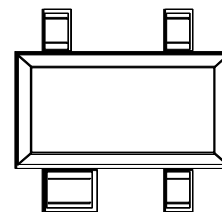
These Silicon Medium Barrier, 20 V Schottky Diodes are Useful in Detector, Limiter, Mixer, and Surge Protection Applications for Operating Frequency Bands from D.C. through 6 GHz.

Package Outlines

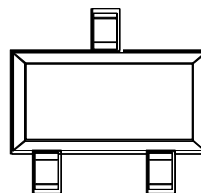
SOT-23 (287)



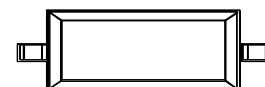
SOT-143 (1068)



SOT-323 (1146)



SOD-323 (1141)



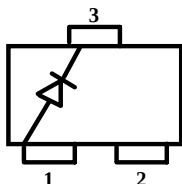
SC-79 (1279)



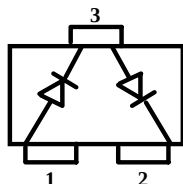
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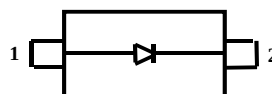
Configurations (Top View)



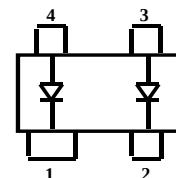
Single
MA4E1339A-287T
MA4E1339A-1146T



Series Pair
MA4E1339B-287T
MA4E1339B-1146T



Single
MA4E1339A-1141T
MADS-001339-1279OT



Unconnected Pair
MA4E1339E-1068T

Standard Part Numbers and RoHS Equivalents

Standard Part Number	RoHS Compliant Part Number	Package Style
MA4E1339A-287T	MA4E1339A1-287T	SOT-23
MA4E1339A-1146T	MA4E1339A1-1146T	SOT-323
MA4E1339B-287T	MA4E1339B1-287T	SOT-23
MA4E1339B-1146T	MA4E1339B1-1146T	SOT-323
MA4E1339A-1141T	MA4E1339A1-1141T	SOT-23
N/A	MADS-001339-1279OT	SC-79
MA4E1339E-1068T	MA4E1339E1-1068T	SOT-143

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Maximum Ratings 25 °C (unless otherwise specified)*

Parameter	Unit	Values
Operating Temperature	°C	-55 to +125
Storage Temperature	°C	-55 to +125
Total Power Dissipation (RF and D.C.)	mW	250
Continuous Forward Current	mA	30
Surge Forward Current, @ t<10 millisec	mA	100
Reverse Voltage	V	20
Soldering Temperature (Standard Part #)	°C	+235 for 5 sec.**
Soldering Temperature (RoHS Compliant Part #)	°C	+260 for 5 sec.**

* Exceeding these limits may cause permanent damage.

** Please refer to Application Note M538 for surface mounting instructions.

Electrical Specifications @ T_A = +25 °C

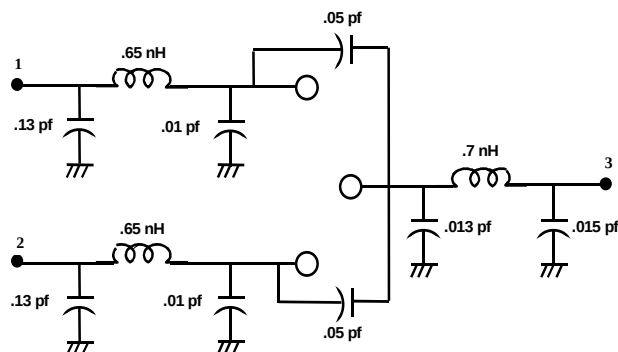
Parameter	Condition	Symbol	Specification
Forward Voltage	I _F = 1 mA	V _F	410 mV max.
Delta Forward Current	I _F = 1 mA	Δ V _F	20 mV max. For series pair and unconnected pair configurations
Forward Voltage	I _F = 10 mA	V _F	1.0 V max.
Total Capacitance	V _R = 0 V F = 1 MHz	C _T	1.2 pF max.
Reverse Leakage Current	V _R = 15 V	I _R	200 nA max.
Reverse Voltage Breakdown	I _R = 10 μA	V _B	20 V min.

Silicon Medium Barrier Schottky Diodes

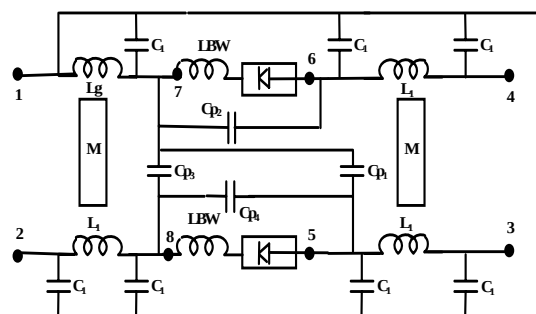
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Circuit Models

SOT-23

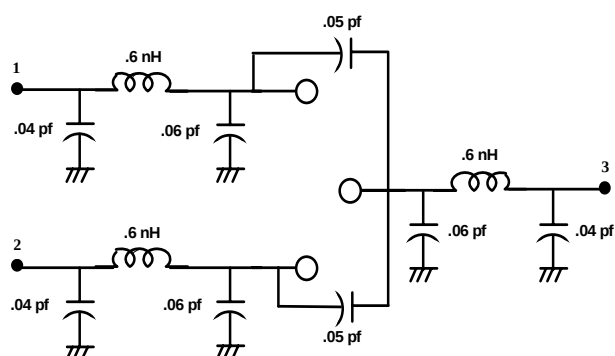


SOT-143

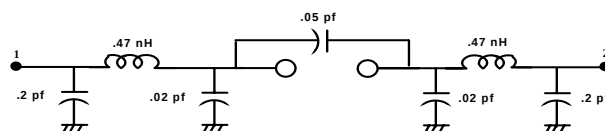


LBW = 0.08nH, Lg = 0.36nH, L1 = 0.31nH, M = 0.12nH, C1 = 0.01pF,
Cp1 = 0.05pF, Cp2 = 0.10pF, Cp3 = 0.05pF, Cp4 = 0.03pF

SOT-323



SOD-323

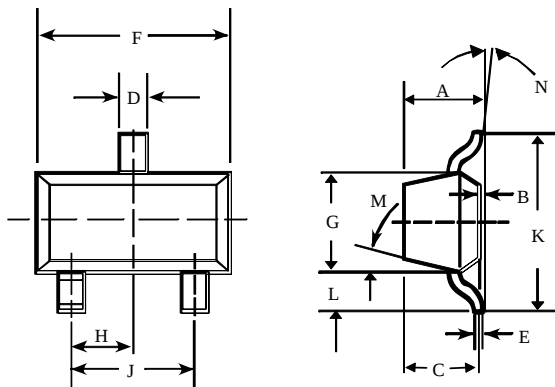


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Case Styles

SOT-23



Package Parasitics

$L_s = 1.4 \text{ nH}$

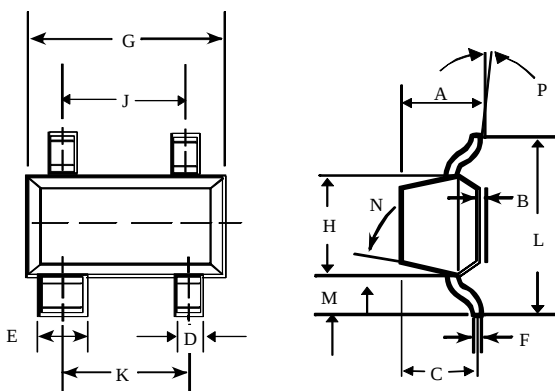
$C_p = .12 \text{ pF}$

SOT-23 (Case Style 287)

	INCHES		MILLIMETERS	
DIM.	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. ¹			
N	2° ... 30°			

Note: 1. Applicable on all sides

SOT-143



Package Parasitics

$L_s = 1.2 \text{ nH}$

$C_p = .14 \text{ pF}$

SOT-143 (Case Style 1068)

	INCHES		MILLIMETERS	
DIM.	MIN.	MAX.	MIN.	MAX.
A	–	0.044	–	1.10
B	–	0.044	–	1.10
C	–	0.040	–	1.00
D	0.030	0.035	0.75	0.90
E	0.013	0.020	0.35	0.50
F	0.003	0.006	0.08	0.15
G	0.110	0.119	2.80	3.00
H	0.047	0.056	1.20	1.40
J	0.075 typical		1.90 typical	
K	0.075 typical		1.90 typical	
L	–	0.103	–	2.6
M	–	0.024	–	0.6
DIM.	GRADIENT			
N	10° max. ¹			
P	2° ... 30°			

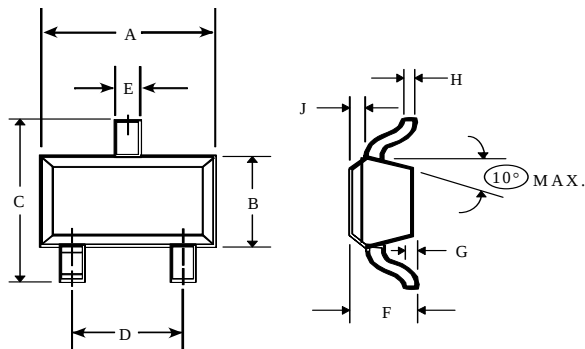
Note: 1. Applicable on all sides

Silicon Medium Barrier Schottky Diodes

MA4E1339 Series
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Case Styles

SOT-323



Package Parasitics

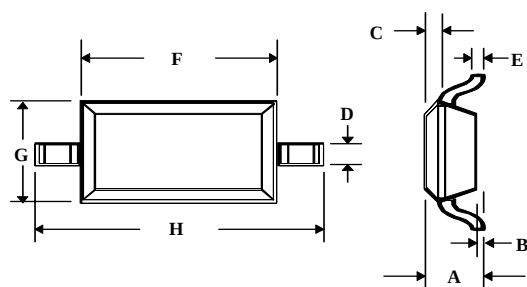
$L_s = 1.2 \text{ nH}$

$C_p = .11 \text{ pF}$

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 typical	0.15
J	0.004	0.010	0.1	0.25

SOD-323



Package Parasitics

$L_s = 1.2 \text{ nH}$

$C_p = .11 \text{ pF}$

SOD-323 (Case Style 1141)

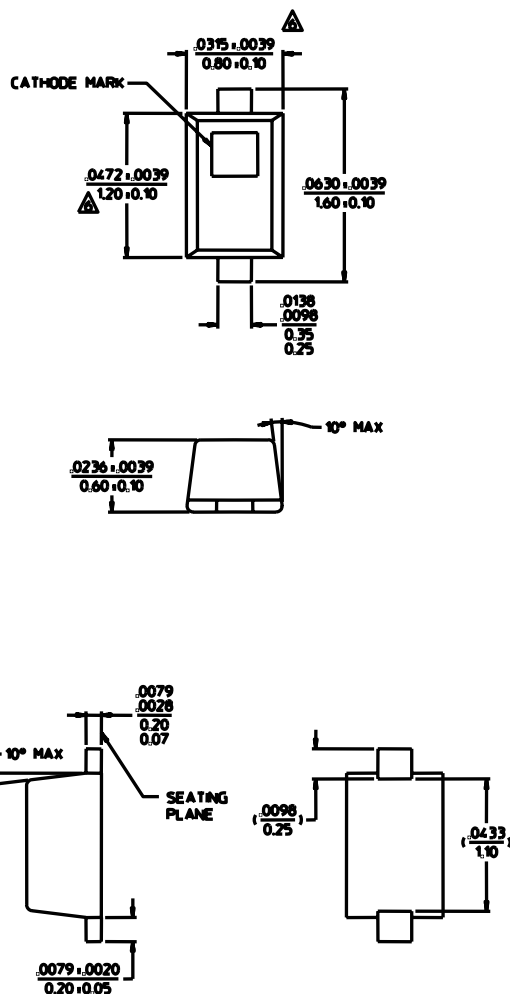
DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	–	0.043	–	1.1
B	–	0.004	–	0.1
C	–	0.008	–	0.2
D	0.010	0.016	0.25	0.4
E	0.003	0.006	0.08	0.15
F	0.063	0.075	1.6	1.9
G	0.045	0.057	1.15	1.45
H	0.091	0.106	2.3	2.7

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Case Styles

ODS-1279



Package Parasitics

$L_s = .6 \text{ nH}$

$C_p = .10 \text{ pF}$