

Silicon Medium Barrier Schottky Diode

MA4E1339 Series

Features

- Medium Barrier Si Schottky Diode
- Available as Single Diode, Series Tee or Unconnected Pair
- Surface Mount Packages
- Tape and Reel

Description

The MA4E1339 series is a silicon, medium barrier Schottky diode suitable for use in mixer or detector circuits.

Applications

The MA4E1339 family of silicon Schottky diodes may be used in mixer or detector circuits. The MA4E1339A-287T, MA4E1339A-1146T, and MA4E1339A-1141T are suitable for use in single ended mixers or single diode detectors. The MA4E1339B-287T and MA4E1339B-1146T are suitable for use in single balanced mixers or voltage doubler detectors. The MA4E1339E-1068T may be used in temperature compensated detectors, single balanced mixers or double balanced mixers.

The MA4E1339 series of Schottky diodes is available in the SOT-23 (case style 287), the SOT-143 (case style 1068), the SOT-323 (case style 1146) and the SOD-323 (case style 1141) packages. These packages are supplied on tape and reel for automatic pick and place assembly on surface mount circuit boards, as indicated by a "T" to the case style suffix.

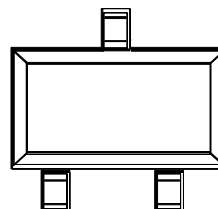
Absolute Maximum Ratings

@TA = +25 °C (unless otherwise specified)

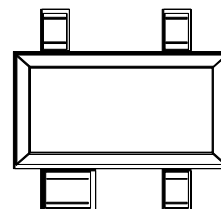
Parameter	Maximum Ratings
Reverse Voltage	20 V
Forward Current	100 mA
Surge Forward Current	500 mA
Total Power Dissipation (TC = 25 °C)	250 mW
Operating Temperature	-55 °C to +125 °C
Storage Temperature	-55 °C to +125 °C

Case Styles

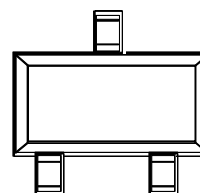
SOT-23



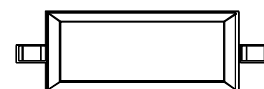
SOT-143



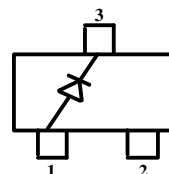
SOT-323



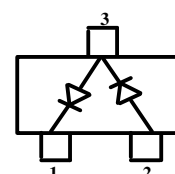
SOD-323



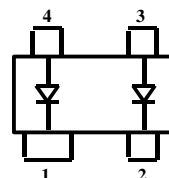
Configurations



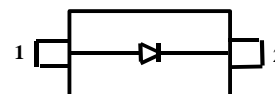
Single
MA4E1339A-287T
MA4E1339A-1146T



Series Pair
MA4E1339B-287T
MA4E1339B-1146T



Unconnected Pair
MA4E1339E-1068T



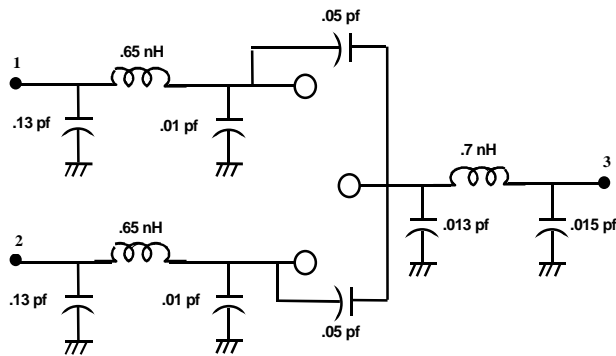
Single
MA4E1339A-1141T

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

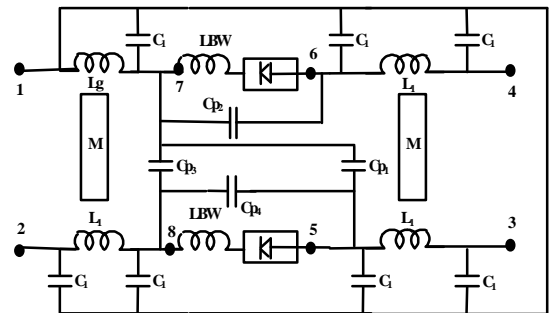
Parameters and Test Conditions	Symbol	Specification
Forward Voltage at $I_F = 1\text{ mA}$	V_F	410 mV maximum
Delta Forward Voltage at $I_F = 1\text{ mA}$	ΔV_F	20 mV maximum (for series pair and unconnected pair configurations)
Forward Voltage at $I_F = 35\text{ mA}$	V_F	1.0 V maximum
Total Capacitance at $V_R = 0\text{ V}$ and $f = 1\text{ MHz}$	C_{T0}	1.2 pF maximum
Reverse Leakage Current at $V_R = 15\text{ V}$	I_R	200 nA maximum
Reverse Voltage Breakdown at $I_R = 10\text{ }\mu\text{A}$	V_b	20 V minimum

Circuit Models

SOT-23

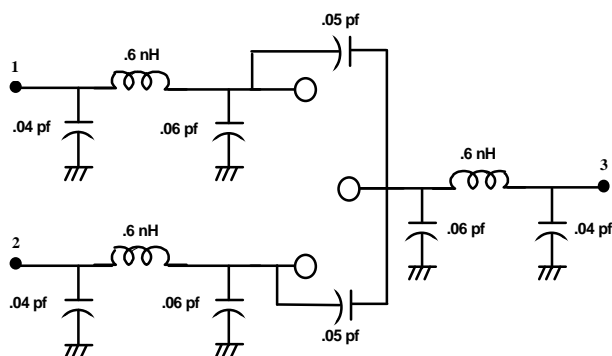


SOT-143

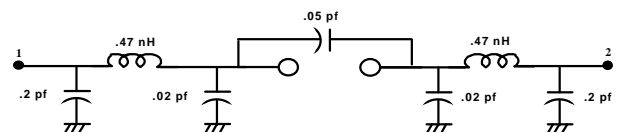


LBW = 0.08nH, $L_g = 0.36\text{ nH}$, $L_1 = 0.31\text{ nH}$, $M = 0.12\text{ nH}$, $C_1 = 0.01\text{ pF}$, $C_{p1} = 0.05\text{ pF}$, $C_{p2} = 0.10\text{ pF}$, $C_{p3} = 0.05\text{ pF}$, $C_{p4} = 0.03\text{ pF}$

SOT-323



SOD-323



Spice Model Parameters

$I_S = 5.1\text{E-}9\text{ amps}$	$M = 0.5$
$R_S = 12.5\Omega$	$FC = 0.5$
$N = 1.02$	$BV = 20\text{ V}$
$I_K = 4.5\text{ mA}$	$IBV = 10\text{ }\mu\text{A}$
$CT = 0.87\text{ pF}$	
$V_J = 0.59\text{ V}$	

Specifications subject to change without notice.

■ North America: Tel. (800) 366-2266
 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

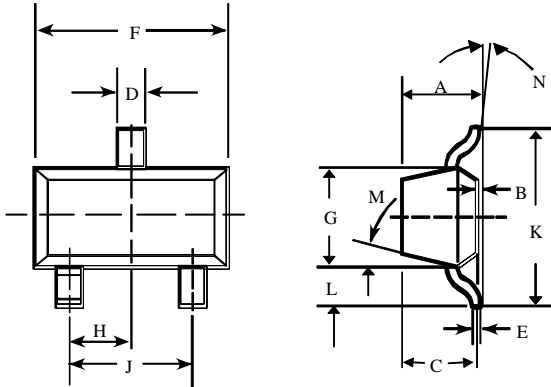
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Case Styles

SOT-23

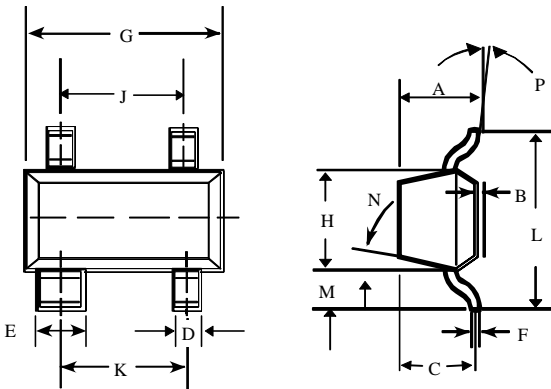


SOT-23 (Case Style 287)

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. ¹			
N	2° ... 30°			

Note: 1. Applicable on all

SOT-143



SOT-143 (Case Style 1068)

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.031	0.044	0.97	1.10
B	0.001	0.005	0.03	0.13
C	0.038 ref.		0.965 ref.	
D	0.013	0.020	0.33	0.51
E	0.030	0.035	0.76	0.90
F	0.003	0.006	0.08	0.15
G	0.105	0.120	2.7	3.10
H	0.047	0.056	1.2	1.40
J	0.075 typical		1.90 typical	
K	0.065 typical		1.70 typical	
L	0.083	0.103	2.11	2.62
M	0.024 ref.		0.61 ref.	
N	0.006 typical		0.15 typical	
DIM.	GRADIENT			
P	10° max. ¹			
Q	2° . . . 30°			

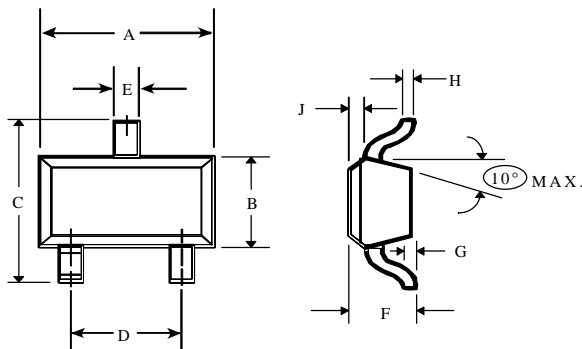
Note: 1. Applicable on all

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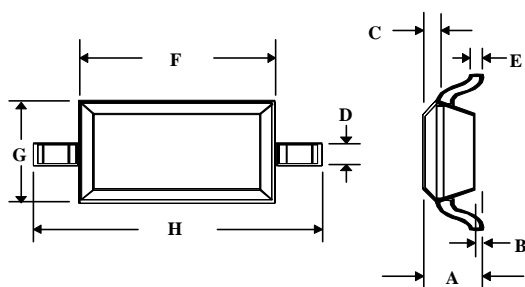
Visit www.macom.com for additional data sheets and product information.

Case Styles (Cont'd)

SOT-323
Case Style 1146

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

SOD-323
Case Style 1141

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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