

## Surface Mount Zero Bias Schottky Detector Diodes

MA4E2200 Series  
V4

### Features

- Designed for High Volume, Low Cost Detector Applications
- Available in Single, Series Pair and Unconnected Pair Configurations
- Small Profile Surface Mount Packages
- Tape and Reel Deliverable
- **Lead Free (RoHS Compliant) Equivalents Available With 260 Deg. C Reflow Capability**

### Description

The MA4E2200 series are Silicon zero bias P-type detector diodes assembled in low cost surface mount plastic packages. They are designed for usage in a wide variety of detector applications.

The MA4E2200 series of zero bias detector diodes are available in the SOT-23 (case style 287) in series pair configurations, SOD-323 (case style 1141), SC-79 (1279) in a single configuration, and the SOT-143 (case style 1068) in a reverse unconnected pair configuration.

The part number consists of the base number MA4E2200, followed by the wiring configuration (A, B, D, E), the package style (287, 1068, 1141) and a "T" for tape and reel. The SC-79 part number is MADS-002200-12790T.

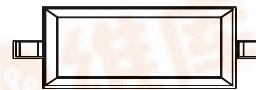
These parts are offered with Sn/Pb plating, as well as with 100 % matte Sn plating on the RoHS compliant part numbers.

### Applications

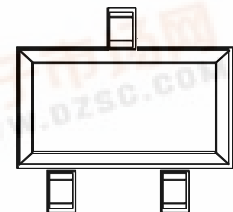
The small diode package size and moderate parasitics make these parts attractive for Low Leakage Limiters and RF Temperature Compensated Envelope Detectors for RF ID Tags and Additional Applications up to 4 GHz.

### Package Outlines ( Topview )

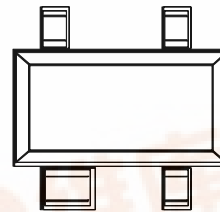
SOD-323 (1141)



SOT-23 (287)



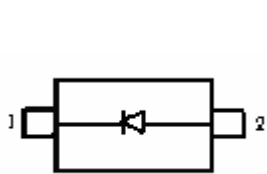
SOT-143 (1068)



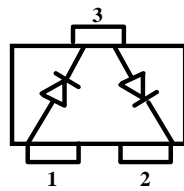
SC-79 (1279)



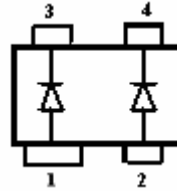
Configurations (Top view)



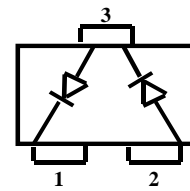
**SINGLE**  
**MA4E2200A-1141T**  
**MADS-002200-12790T**



**SERIES PAIR**  
**MA4E2200B-287T**



**REVERSE UNCONNECTED PAIR**  
**MA4E2200E-1068T**



**REVERSE SERIES PAIR**  
**MA4E2200D-287T**

Standard Part Numbers and RoHS Equivalents

Standard Part Number	RoHS Compliant Part Number	Package Style
MA4E2200A-1141T	MA4E2200A1-1141T	SOD-323
MA4E2200B-287T	MA4E2200B1-287T	SOT-23
MA4E2200D-287T	MA4E2200D1-287T	SOT-23
MA4E2200E-1068T	MA4E2200E1-1068T	SOT-143
N/A	MADS-002200-12790T	SC-79

**Maximum Ratings @ + 25 ° C ( Unless Otherwise Defined ) \***

Parameter	Unit	Values
Operating Temperature	° C	-65 to +125
Storage Temperature	° C	-65 to +150
Junction Temperature	° C	+ 175
RF Incident Power ( CW )	mW	75
Reverse Voltage @ 25 ° C	V	1.5 V

\* Operation above any one of the above parameters may cause permanent damage.

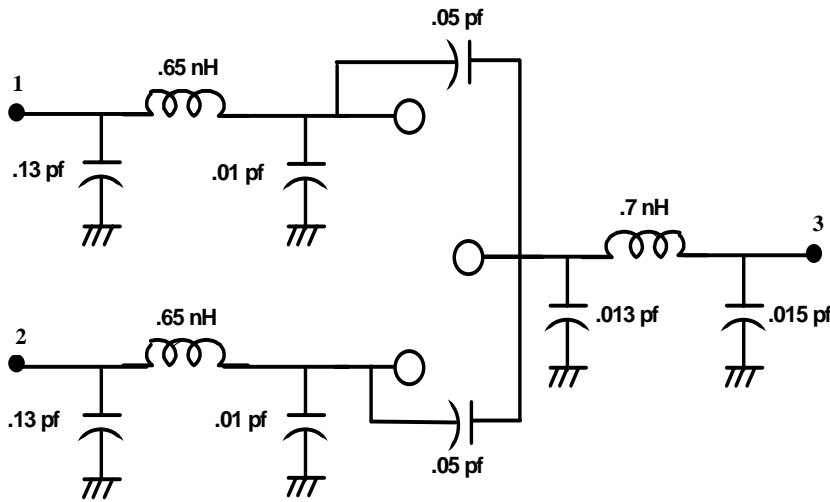
Please refer to Application Note M538 for Surface Mounting Instructions

**Electrical Specifications @ + 25° C**

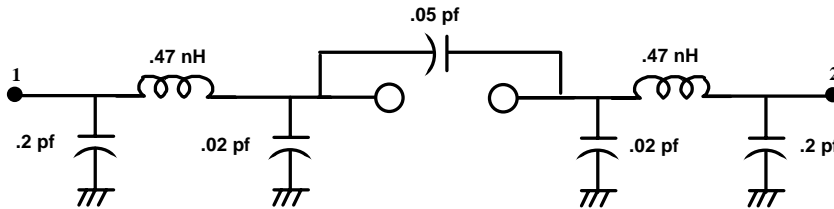
Parameter	Condition	Symbol	Specification
Reverse Voltage Breakdown	$I_r = 100 \mu\text{A}$	$V_b$	1.5 V min.
Forward Voltage	$I_F = 0.1 \text{ mA}$	$V_F$	60 – 120 mV max.
Forward Voltage	$I_F = 1 \text{ mA}$	$V_F$	150 – 220 mV max.
Total Capacitance	$V_R = 0.15 \text{ V}$	$C_T$	.25 pF typical
Delta Forward Voltage	$I_F = 1 \text{ mA}$	$\Delta V_f$	10 mV max.
Video Resistance		$R_v$	7000 $\Omega$ typical

Equivalent Circuit Parasitics

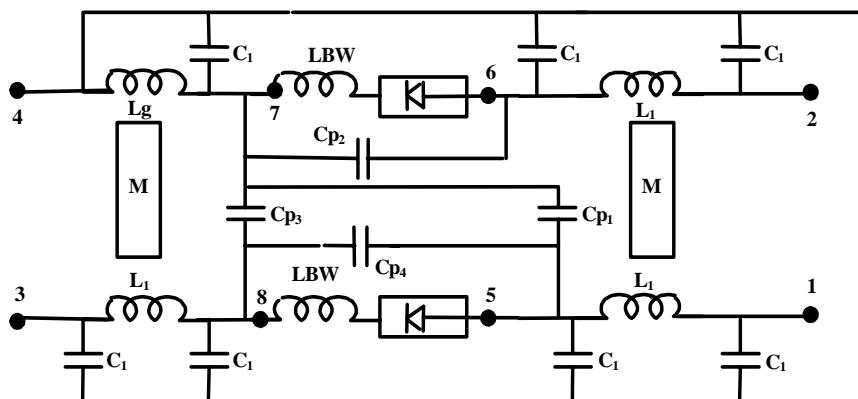
SOT-23



SOD-323



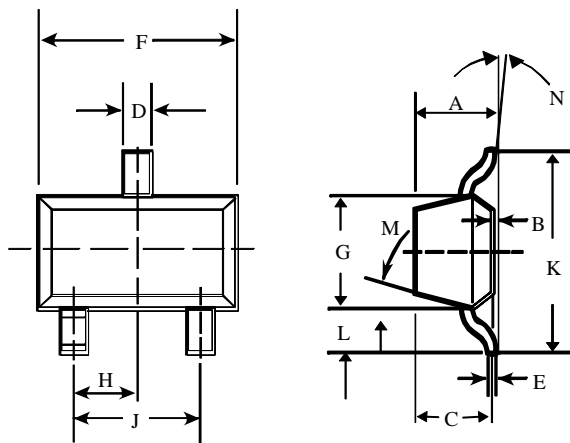
SOT-143



LBW = 0.08nH, L<sub>g</sub> = 0.36nH, L<sub>1</sub> = 0.31nH, M = 0.12nH, C<sub>1</sub> = 0.01pF, C<sub>p1</sub> = 0.05pF, C<sub>p2</sub> = 0.10pF, C<sub>p3</sub> = 0.05pF, C<sub>p4</sub> = 0.03pF

Specification Subject to Change Without Notice

Case Styles  
SOT-23



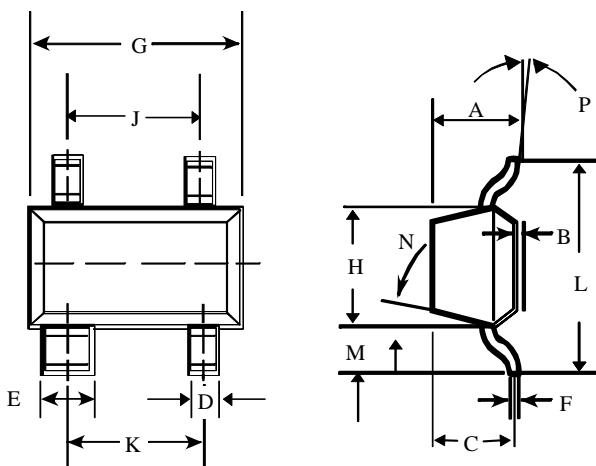
SOT-23 (Case 287)

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>1</sup>
N	2° .. .30°

Note:  
1. Applicable on all sides

SOT-143



SOT-143 (Case Style 1068)

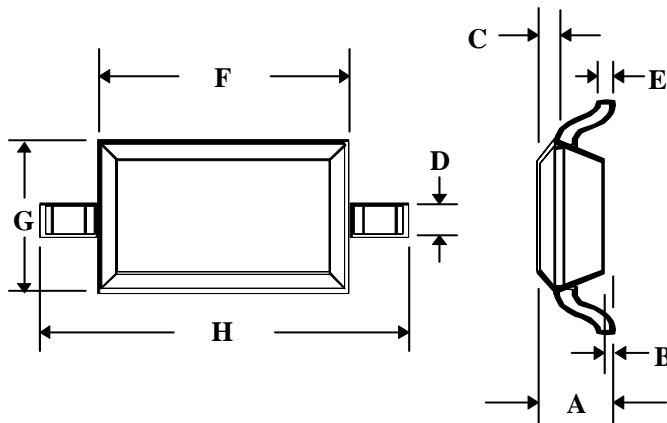
DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	—	0.044	—	1.10
B	—	0.004	—	0.10
C	—	0.040	—	1.00
D	0.013	0.020	0.35	0.50
E	0.030	0.035	0.75	0.90
F	0.003	0.006	0.08	0.15
G	0.110	0.119	2.80	3.00
H	0.047	0.056	1.20	1.40
J	0.075 typical		1.90 typical	
K	0.075 typical		1.90 typical	
L	—	0.103	—	2.6
M	—	0.024	—	0.6

DIM.	GRADIENT
M	10° max. <sup>1</sup>
N	2° ... 30°

NOTE:  
1. Applicable on all sides

Case Styles

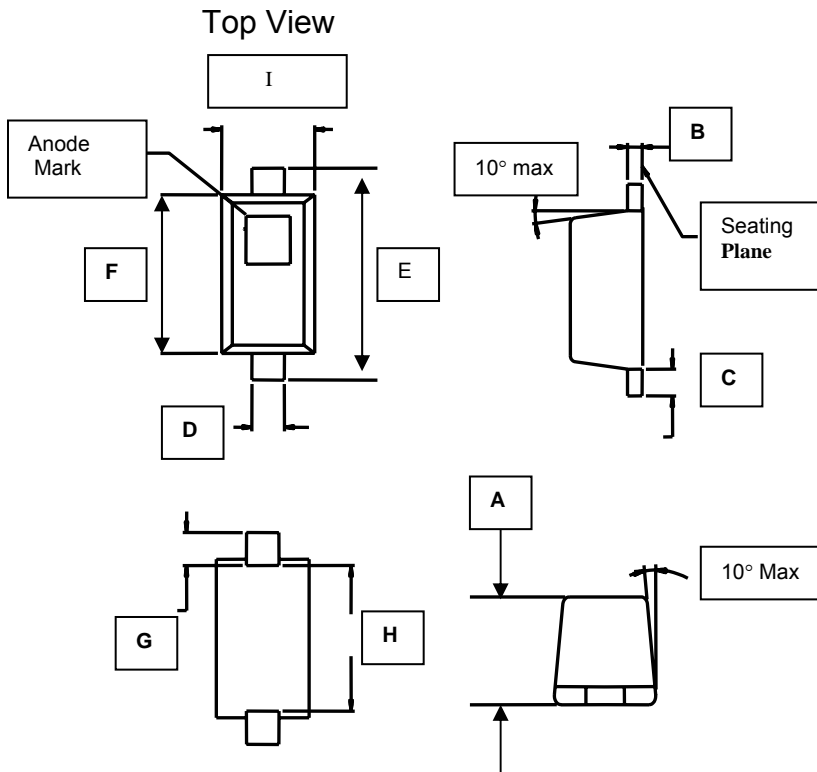
SOD-323



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 )

DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.020	0.028	0.50	0.71
B	0.003	0.008	0.08	0.20
C	0.006	0.010	0.15	0.25
D	0.010	0.014	0.25	0.36
E	0.059	0.067	0.08	0.15
F	0.043	0.051	1.10	1.30
G	0.011	0.012	0.28	0.30
H	0.037	0.043	0.94	1.09
I	0.027	0.035	0.68	0.96