

Surface Mount Zero Bias Schottky Detector Diodes

**MA4E2200 Series
V1**

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

Description and Applications

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.

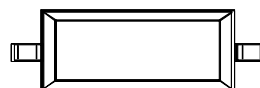
The MA4E2200 series of zero bias detector diodes are available in the SOT-23 (case style 287) in series pair configurations, SOD-323 (case style 1141) in a single configuration, and the SOT-143 (case style 1068) in a reverse unconnected pair configuration.

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.

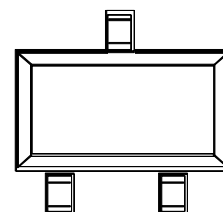
The small diode package size and moderate parasitics make these parts attractive for Low Leakage Limiters and RF Temperature Compensated Envelope Detectors for RF ID Tags Applications up to 4 GHz.

Package Outlines (Topviews)

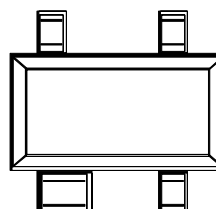
SOD-323 (1141)



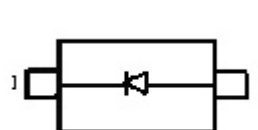
SOT-23 (287)



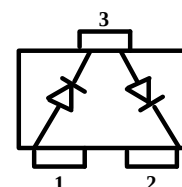
SOT-143 (1068)



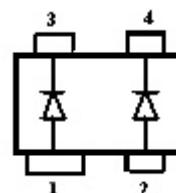
Configurations (Topviews)



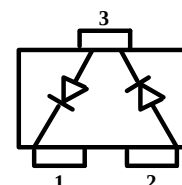
**SINGLE
MA4E2200A-1141**



**SERIES PAIR
MA4E2200B-287T**



**REVERSE UNCONNECTED PAIR
MA4E2200E-1068T**



**REVERSE SERIES PAIR
MA4E2200D-287T**

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Maximum Ratings @ +25 °C (unless otherwise specified)¹

Parameter	Maximum Ratings
Operating Temperature	-65 °C to +125 °C
Storage Temperature	-65 °C to +150°C
Junction Temperature	+175°C
Incident RF Power C.W.	75 mW
Reverse Voltage @ 25 °C	1.5 V
Soldering Temperature	230 °C for 10 sec.

1. Operation of this device above any one of these parameters may cause permanent damage.

Electrical Specifications @ +25 °C

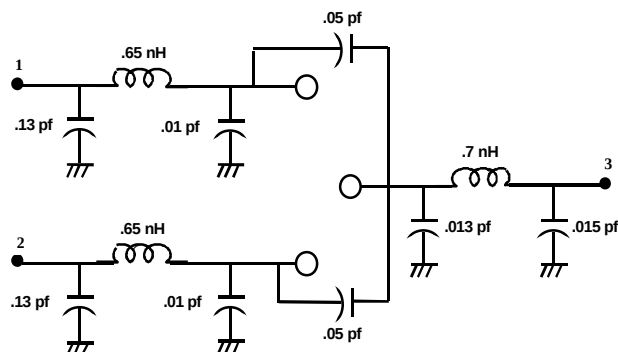
Parameter	Condition	Symbol	Specification
Reverse Voltage Breakdown	$I_R = 100 \mu A$	V_B	1.5 V min.
Forward Voltage	$I_F = 0.1 \text{ mA}$	V_F	60 - 120 mV max.
Forward Voltage	$I_F = 1 \text{ mA}$	V_F	150 - 220 mV max.
Total Capacitance	$V_R = 0.15 \text{ V}$	C_T	.25 pF typical
Delta Forward Voltage	$I_F = 1 \text{ mA}$	ΔV_F	10 mV max.
Video Resistance		R_V	7000 Ω typical

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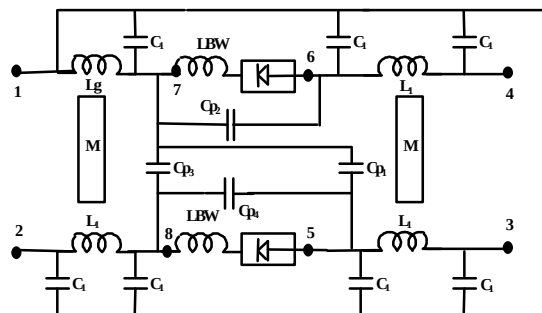
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Equivalent Circuit Parasitics

SOT-23

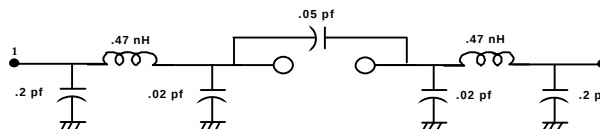


SOT-143



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

SOD-323

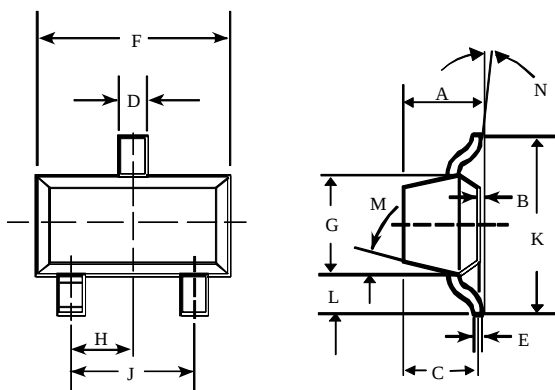


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Case Styles

SOT-23

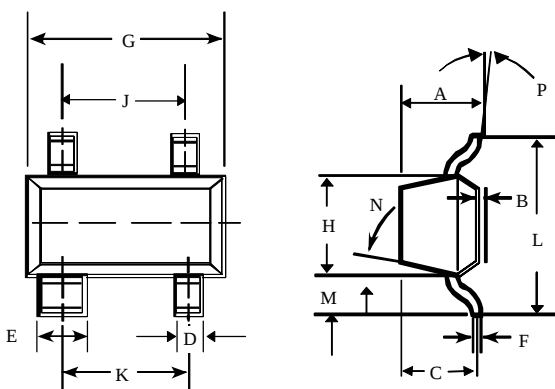


SOT-23 (Case Style 287)

	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



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°			

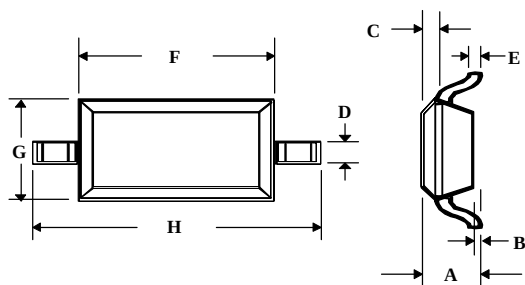
Note: 1. Applicable on all sides

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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