

## Surface Mount Plastic PIN Diodes

Rev. V25

### Electrical Specifications @ +25°C

Part #	Reverse Voltage <sup>1</sup> (V)	Total Capacitance <sup>2</sup> Maximum (pF)	RS @ 10 mA <sup>3</sup> Maximum (Ohms)	Nominal Characteristics	
				Carrier Lifetime <sup>4</sup> (µs)	I-Region Thickness (mils)
MA4P7436 MADP-007436 Series	75	1.00 @ 20 V	0.5	0.2	0.4
MA4P7433 MADP-007433 Series	75	0.35 @ 20 V	1.5	0.2	0.4
MA4P7447 MADP-007155 Series	100	1.20 @ 20 V	0.6	1.0	0.8
MADP-007448 Series	100	0.25 @ 50 V	2.0	0.4	0.6
MA4P7455 MADP-007455 Series	100	0.35 @ 50 V	3.0	1.0	2.0
MA4P7437 MADP-007437 Series	200	0.35 @ 50 V	6.0	2.0	4.0
MA4P7438 MADP-007438 Series	200	0.35 @ 50 V	10.0	3.0	5.0
MADP-007167	200	0.30 @ 50 V	16.0	3.0	7.0

1. The reverse current will not exceed 10 µA at the reverse voltage rating.
2. Total capacitance is measured at 1 MHz at the indicated voltage.
3. Series resistance is measured at the specified current and a frequency of 100 MHz.
4. Nominal minority carrier lifetime is measured at  $I_F = 10$  mA,  $I_R = 6$  mA, 90% recovery.

### Absolute Maximum Ratings @ +25°C<sup>5</sup> (Unless Otherwise Noted)

Parameter	Rating
Operating Temperature	-65°C to +150°C
Storage Temperature	-65°C to +125°C
Junction Temperature	+175°C
RF CW Incident Power: MA4P7447, MADP-007155 Series ( $\theta$ die = 15°C/W), RF & DC Incident De-rating Coefficient = -21.3 mW/°C MA4P7436, MADP-007436 Series ( $\theta$ die = 25°C/W), RF & DC Incident De-rating Coefficient = -16.8 mW/°C MA4P7438, MADP-007438 Series ( $\theta$ die = 30°C/W), RF & DC Incident De-rating Coefficient = -13.3 mW/°C MA4P7455, MADP-007455 Series ( $\theta$ die = 35°C/W), RF & DC Incident De-rating Coefficient = -13.3 mW/°C MA4P7437, MADP-007437 Series ( $\theta$ die = 45°C/W), RF & DC Incident De-rating Coefficient = -13.3 mW/°C MADP-007167 Series ( $\theta$ die = 55°C/W), RF & DC Incident De-rating Coefficient = -13.3 mW/°C MA4P7433, MADP-007433 Series ( $\theta$ die = 80°C/W), RF & DC Incident De-rating Coefficient = -10.7 mW/°C MADP-007448 Series ( $\theta$ die = 80°C/W), RF & DC Incident De-rating Coefficient = -10.7 mW/°C	+32 dBm +31 dBm +30 dBm +30 dBm +30 dBm +30 dBm +30 dBm +29 dBm +32 dBm
Total (RF + DC) Power Dissipation: (SOT-23): RF & DC Dissipated De-rating Coefficient = -33.3 mW/°C (SOT-323, SOD-323, SC-79): RF & DC Dissipated De-rating Coefficient = -26.7 mW/°C	250 mW 200 mW
Reverse Voltage	Voltage Rating
Forward Current	150 mA DC

5. Operation of these devices above any one of these parameters may cause permanent damage.

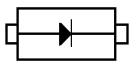
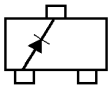
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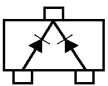
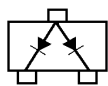
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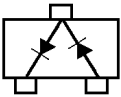
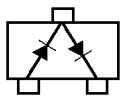
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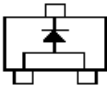
### Packaging and Configurations

			
Single		Single	
SC-79 Part #	SOD-323 Part #	SOT-23 Part #	SC70 (3L) Part #
$L_s = 0.6 \text{ nH}, C_p = 0.10 \text{ pF}$	$L_s = 1.3 \text{ nH}, C_p = 0.11 \text{ pF}$	$L_s = 1.4 \text{ nH}, C_p = 0.12 \text{ pF}$	$L_s = 1.3 \text{ nH}, C_p = 0.12 \text{ pF}$
MADP-007436-12790T	MA4P7436-1141T	MA4P7436-287T	MA4P7436-1146T
MADP-007433-12790T	MA4P7433-1141T	MA4P7433-287T	—
—	MA4P7447-1141T	MA4P7447-287T	—
MADP-007448-12790T	MADP-007448-11410T	MADP-007448-0287AT	—
MADP-007455-12790T	MA4P7455-1141T	MA4P7455-287T	—
—	MA4P7437-1141T	MA4P7437-287T	—
—	MA4P7438-1141T	MA4P7438-287T	—
—	MADP-007167-11410T	MADP-007167-0287AT	—

			
Common Cathode		Common Anode	
SOT-23 Part #	SC70 (3L) Part #	SOT-23 Part #	SC70 (3L) Part #
$L_s = 1.4 \text{ nH}, C_p = 0.12 \text{ pF}$	$L_s = 1.3 \text{ nH}, C_p = 0.12 \text{ pF}$	$L_s = 1.4 \text{ nH}, C_p = 0.12 \text{ pF}$	$L_s = 1.3 \text{ nH}, C_p = 0.12 \text{ pF}$
MA4P7436CK-287T	MA4P7436CK-1146T	MA4P7436CA-287T	MA4P7436CA-1146T
MA4P7433CK-287T	MA4P7433CK-1146T	MA4P7433CA-287T	MA4P7433CA-1146T
MA4P7447CK-287T	—	MA4P7447CA-287T	—
MADP-007448-0287FT	—	MADP-007448-0287GT	MADP-007448-1146GT
MA4P7455CK-287T	MA4P7455CK-1146T	MA4P7455CA-287T	MA4P7455CA-1146T
MADP-007437-0287FT	—	MA4P7437CA-287T	—
MADP-007438-0287FT	—	MA4P7438CA-287T	—
MADP-007167-0287FT	—	MADP-007167-0287GT	—

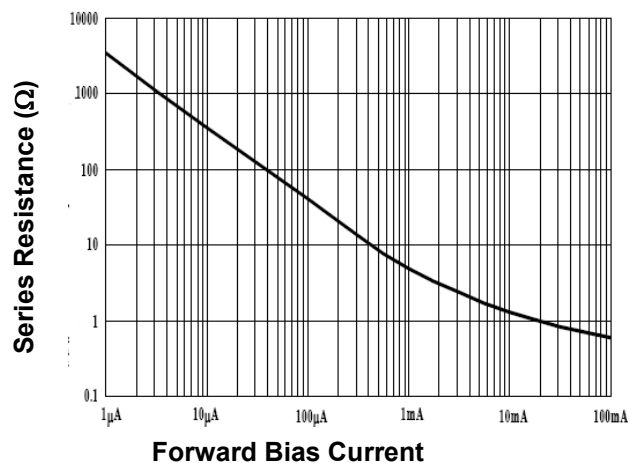
### Packaging and Configurations

			
Series Tee		Series Tee Reverse	
SOT-23 Part #	SC70 (3L) Part #	SOT-23 Part #	SC70 (3L) Part #
$L_S = 1.4 \text{ nH}, C_P = 0.12 \text{ pF}$	$L_S = 1.3 \text{ nH}, C_P = 0.12 \text{ pF}$	$L_S = 1.4 \text{ nH}, C_P = 0.12 \text{ pF}$	$L_S = 1.3 \text{ nH}, C_P = 0.12 \text{ pF}$
MA4P7436ST-287T	MA4P7436ST-1146T	MADP-007436-0287DT	MADP-007436-1146DT
MA4P7433ST-287T	MA4P7433ST-1146T	MADP-007433-0287DT	MADP-007433-1146DT
MA4P7447ST-287T	—	MADP-007155-0287DT	—
MADP-007448-0287BT	MADP-007448-1146BT	MADP-007448-0287DT	MADP-007448-1146DT
MA4P7455ST-287T	MA4P7455ST-1146T	MADP-007455-0287DT	MADP-007455-1146DT
MADP-007437-0287BT	—	MADP-007437-0287DT	—
MADP-007438-0287BT	—	MADP-007438-0287DT	—
MADP-007167-0287BT	—	MADP-007167-0287DT	—

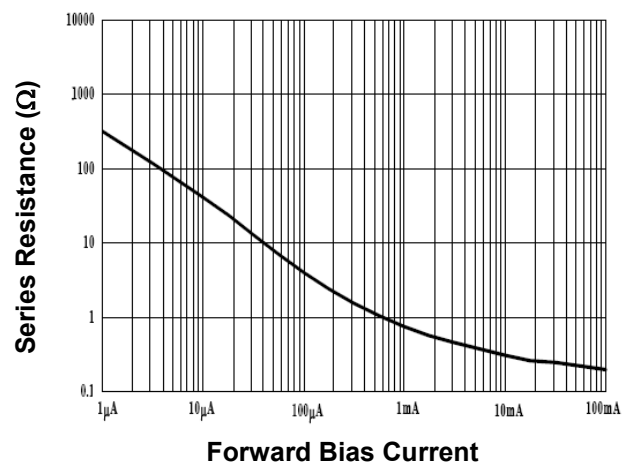

Low Inductance
SOT-23 Part #
$L_S = 0.4 \text{ nH}, C_P = 0.12 \text{ pF}$
MADP-007167-0287HT
MADP-007433-0287HT

### Typical Forward Resistance vs. DC Bias Current Curves @ 100 MHz

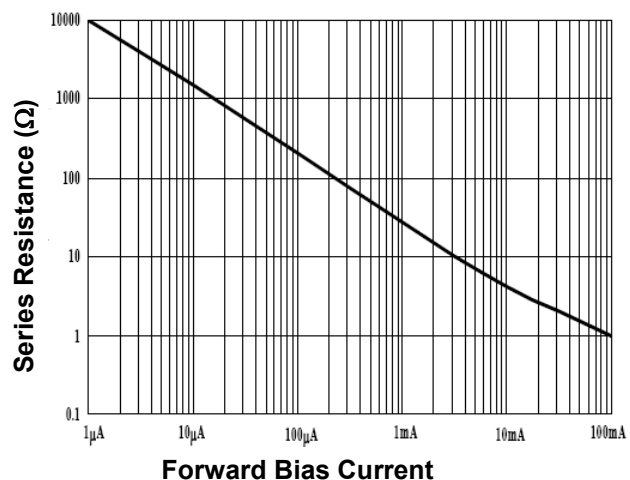
*Resistance vs. Forward Current  
(MA4P7455 /MADP-007155 Series)*



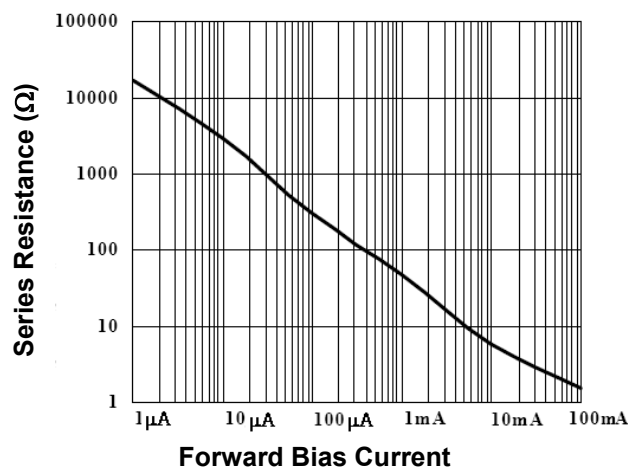
*Resistance vs. Forward Current  
(MA4P7436 /MADP-007436 Series)*



*Resistance vs. Forward Current  
(MA4P7437 /MADP-007437 Series)*

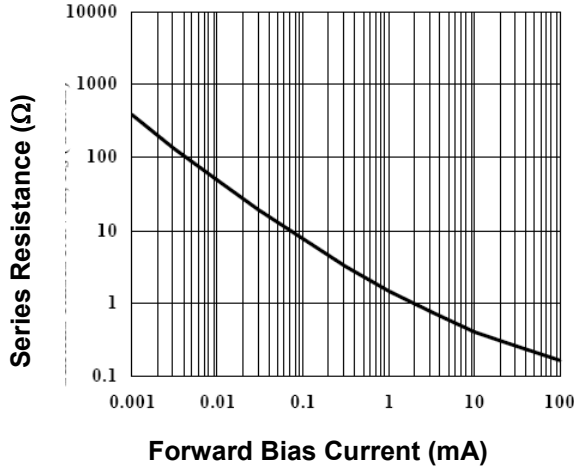


*Resistance vs. Forward Current  
(MA4P7438 /MADP-007438 Series)*

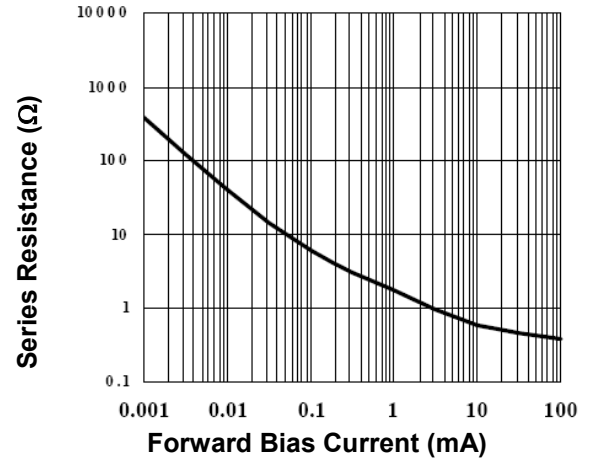


### Typical Forward Resistance vs. DC Bias Current Curves @ 100 MHz

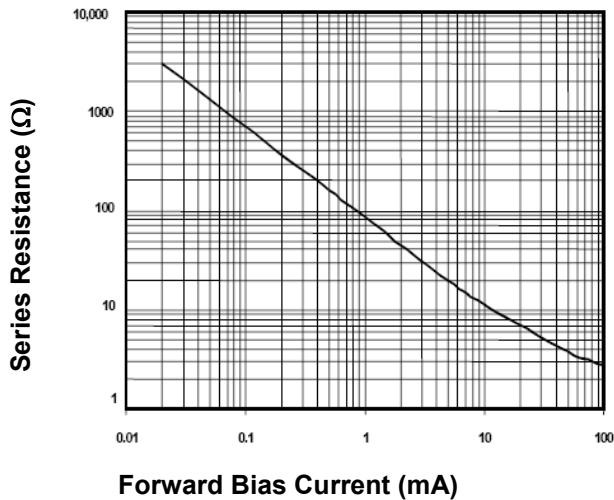
**Resistance vs. Forward Current**  
(MA4P7447 / MADP-007155 Series)



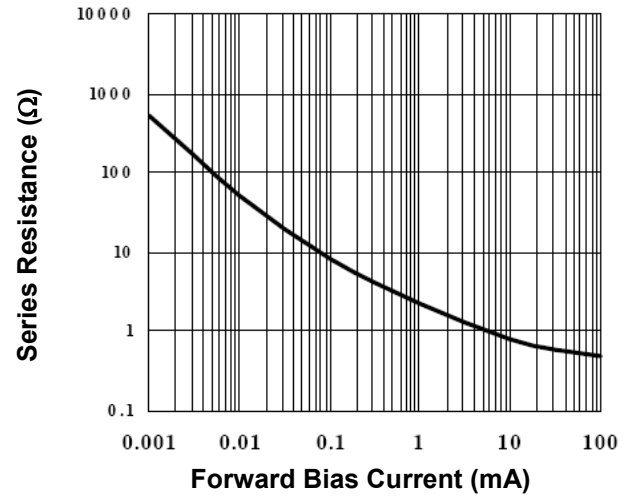
**Resistance vs. Forward Current**  
(MA4P7433/ MADP-007433 Series)



**Resistance vs. Forward Current**  
(MADP-007167 Series)

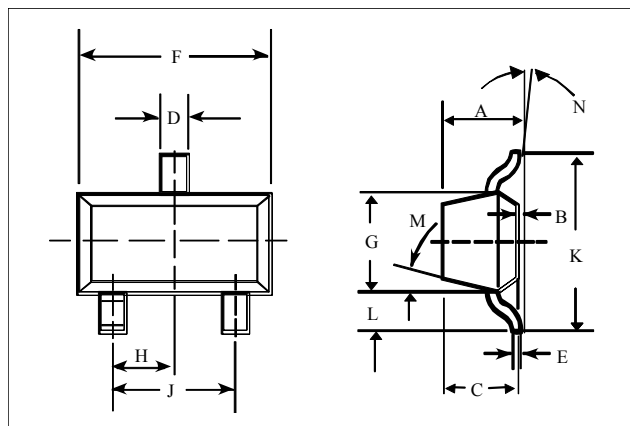


**Resistance vs. Forward Current**  
(MADP-007448 Series)



### Case Styles

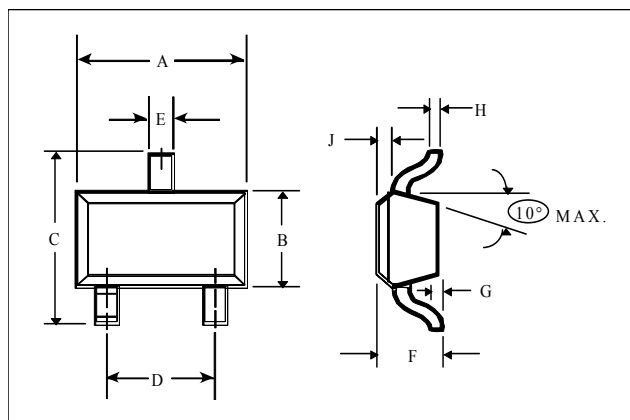
#### SOT-23 (Case Style 287)



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>6</sup>			
N	2° . . . 30°			

6. Applicable on all sides

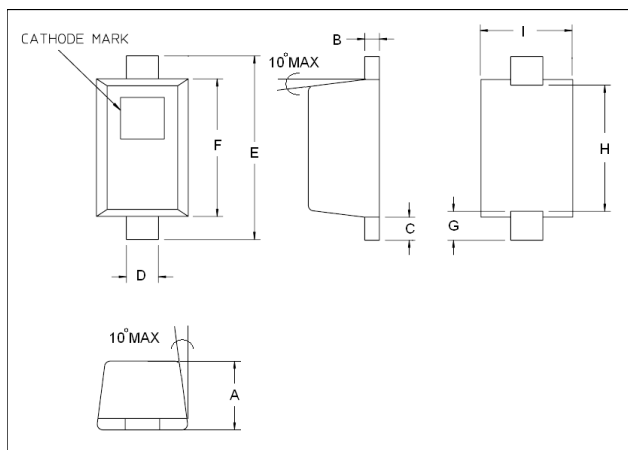
#### SC-70, 3 Lead (Case Style 1146)



DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.071	0.087	1.80	2.21
B	0.045	0.053	1.14	1.35
C	0.071	0.094	1.80	2.39
D	0.047	0.057	1.19	1.45
E	0.010	0.016	0.25	0.41
F	0.031	0.039	0.79	1.00
G	0.000	0.004	0.00	0.10
H	0.004	0.007	0.10	0.18
J	0.004	0.010	0.10	0.25

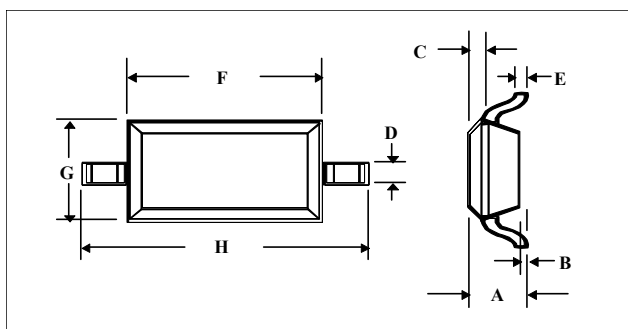
### Case Styles (Cont'd)

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



DIM.	INCHES		MILLIMETERS	
	MIN.	MAX.	MIN.	MAX.
A	0.0197	0.0276	0.50	0.70
B	0.003	0.008	0.07	0.20
C	0.006	0.010	0.15	0.25
D	0.010	0.014	0.25	0.35
E	0.059	0.067	1.50	1.70
F	0.043	0.051	1.09	1.30
G	0.0098 nominal		0.250 nominal	
H	0.0433 nominal		1.10 nominal	
I	0.027	0.035	0.68	0.89

#### 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	0.41
E	0.003	0.006	0.07	0.15
F	0.063	0.075	1.6	1.9
G	0.045	0.057	1.14	1.45
H	0.091	0.106	2.3	2.7

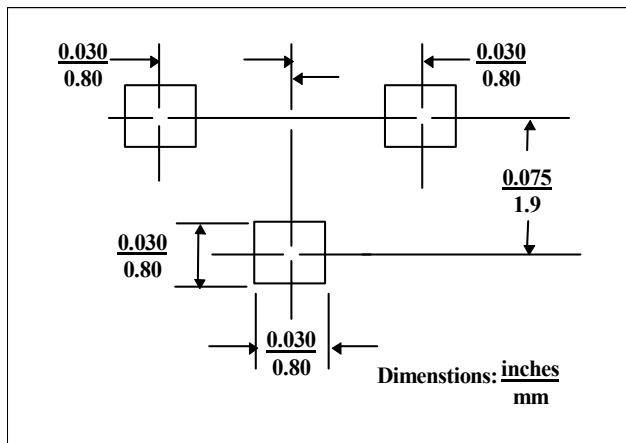
### Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-23, SOT-323, SOD-323, and SC-79 packages. Solder paste containing flux should be screened onto the pads to a thickness of 0.005- 0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

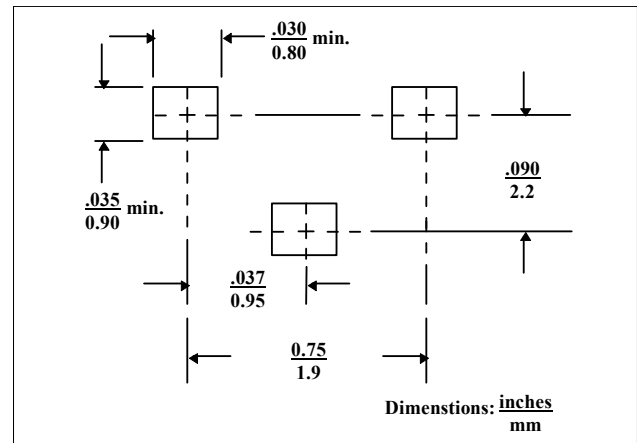
Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275°C and the body temperature does not exceed +250°C, for standard models and +260°C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.

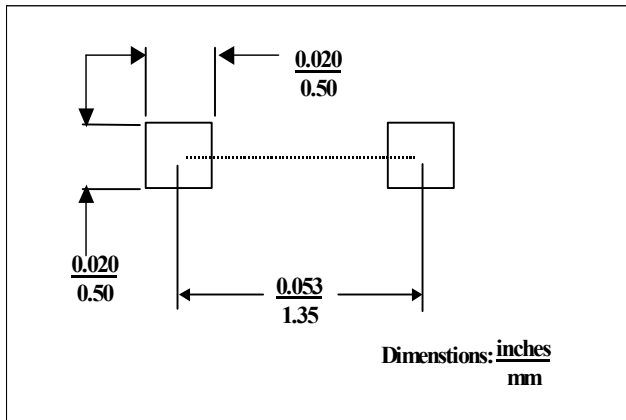
### SOT-323



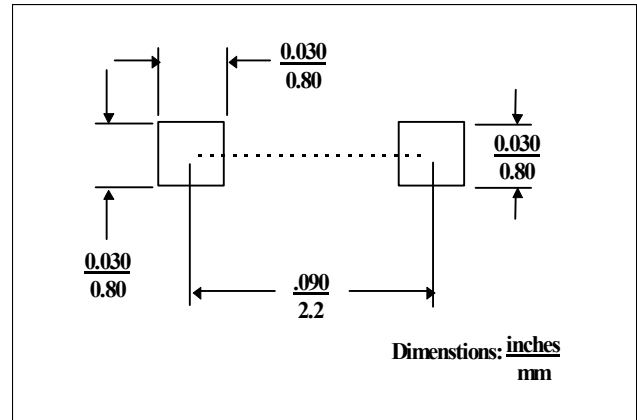
### SOT-23



### SC-79



### SOD-323





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