



MOTOROLA

# SEMICONDUCTORS

P.O. BOX 20912 • PHOENIX, ARIZONA 85036

## SOT-23 SWITCHING DIODES

These devices are intended for high speed switching applications. . .

- Various Voltage and Current Ratings
- Various Pin-Out Configurations
- Designed for Space-Saving Applications
- Epoxy Encapsulated
- Body Coated and Laser Marked for Ease of Identification
- Available in 8 mm Tape and Reel
- Can be used with Reflow or Wave Solder Processes
- Package Options — Low Profile or Standard Lead Form

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Reverse Voltage MMBD2837X MBAV74/MMBD2838X MBAL99/MBAV70/99/MBAW56/MMBD914X/ 2835X/2836X/6050X MBAS16	$V_R$	30 50 70 75	V
Forward Current MBAL99/MBAV99/MMBD2835X/2836X/2838X MMBD2837X MBAS16/MBAV70/74/MBAW56/MMBD914X/ MMBD6050X		100 150 200	mA

## THERMAL CHARACTERISTICS

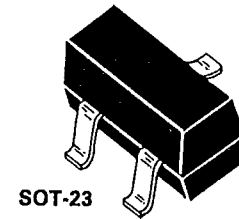
Characteristic	Symbol	Max	Unit
Total Device Dissipation, $T_A = 25^\circ\text{C}^*$ Derate above $25^\circ\text{C}$	$P_D$	350 2.8	mW mW/°C
Storage Temperature	$T_{stg}$	150	°C
Thermal Resistance Junction to Ambient*	$R_{\theta JA}$	357	°C/W

\*Package mounted on 99.5% alumina 10 x 8 x 0.6 mm.

MBAL99  
MBAS16  
MBAV70  
MBAV74  
MBAV99  
MBAW56

MMBD914X  
MMBD2835X  
MMBD2836X  
MMBD2837X  
MMBD2838X  
MMBD6050X

## HI SPEED SWITCHING DIODES



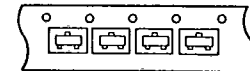
SOT-23

## ORDERING INFORMATION

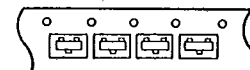
- No Suffix = Standard Lead Form, Bulk Package
- L Suffix = Low Profile Lead Form, Bulk Package
- T1 Suffix = Standard Lead Form, 8 mm Tape and Reel (Option 1)\*
- T2 Suffix = Standard Lead Form, 8 mm Tape and Reel (Option 2)\*
- LT1 Suffix = Low Profile Lead Form, 8 mm Tape and Reel (Option 1)\*
- LT2 Suffix = Low Profile Lead Form, 8 mm Tape and Reel (Option 2)\*

Orientation of the Device in 8 mm Embossed Tape

\*Option 1 (Preferred)



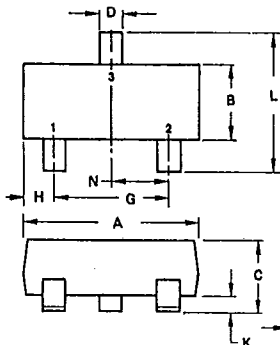
\*Option 2



Tape and Reel Information

Minimum order quantity — 9,000

Order must be in increments of 3,000



STYLE 8:  
PIN 1. ANODE  
2. NO CONNECTION  
3. CATHODE

MBAS16  
MMBD914X  
MMBD6050X

STYLE 9:  
PIN 1. ANODE  
2. ANODE  
3. CATHODE

MBAV70/74  
MMBD2837X  
MMBD2838X

STYLE 11:  
PIN 1. ANODE  
2. CATHODE  
3. CATHODE-ANODE

MBAV99

STYLE 12:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE

MBAW56  
MMBD2835X  
MMBD2836X

STYLE 18:  
PIN 1. NO CONNECTION  
2. CATHODE  
3. ANODE

MBAL99

## NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.85	1.20	0.033	0.0472
D	0.37	0.46	0.015	0.0177
F	0.085	0.13	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.51	0.60	0.020	0.0236
K	0.10	0.25	0.004	0.0098
L	2.10	2.50	0.083	0.0984
M	0.45	0.60	0.018	0.0236
N	0.89	1.02	0.035	0.0401

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.80	3.04	0.1102	0.1197
B	1.20	1.40	0.0472	0.0551
C	0.89	1.04	0.035	0.0412
D	0.37	0.46	0.015	0.0177
F	0.085	0.13	0.0034	0.0051
G	1.78	2.04	0.0701	0.0807
H	0.51	0.60	0.020	0.0236
K	0.013	0.10	0.0005	0.0040
L	2.10	2.50	0.083	0.0984
M	0.45	0.60	0.018	0.0236
N	0.89	1.02	0.035	0.0401

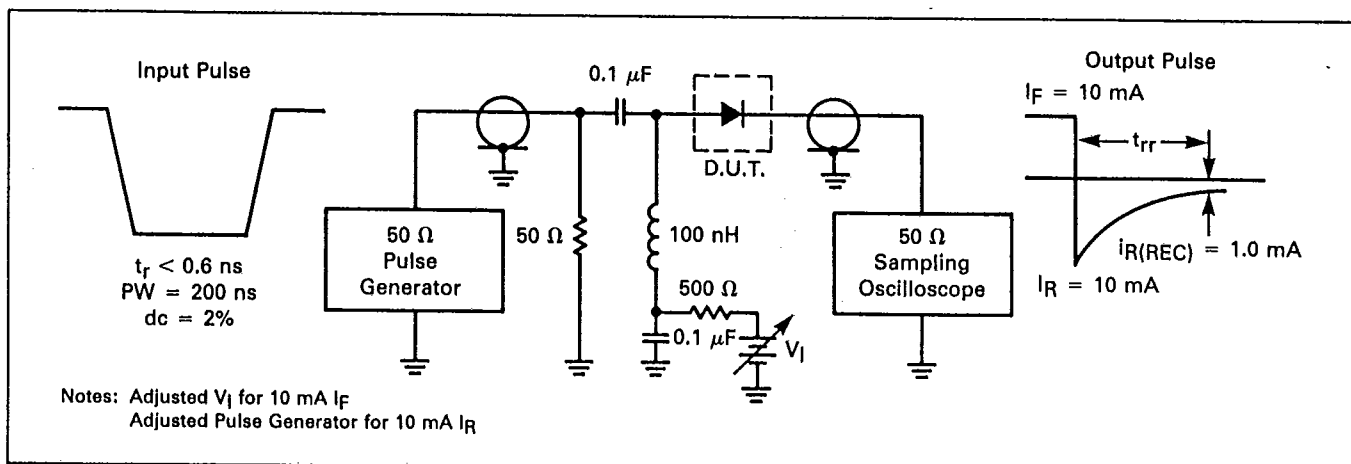
CASE 318-02  
TO-236AA  
STANDARD

CASE 318-03  
TO-236AB  
LOW PROFILE

ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$  unless otherwise noted.)

59 DE 6367255 0061865 1

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Reverse Voltage Leakage Current ( $V_R = 30\text{ V}$ ) MMBD2835X/2837X ( $V_R = 50\text{ V}$ ) MBSV74/MMBD2836X/2838X/6050X ( $V_R = 70\text{ V}$ ) MBAL99/MBSV99/MBSV56 MBSV70 ( $V_R = 75\text{ V}$ ) MBAS16 MMBD914X	$I_R$	—	0.1 0.1 2.5 5.0 1.0 5.0	$\mu\text{A}$
Reverse Breakdown Voltage ( $I_{(BR)} = 100\ \mu\text{A}$ ) MMBD914X/MMBD2837X MMBD2836X MBAL99/MBSV70/MBSV56/MMBD6050X MBAS16/MMBD2835X/MMBD2837X/2838X ( $I_{(BR)} = 5.0\ \mu\text{A}$ ) MBSV74	$V_{(BR)}$	100 75 70 35 50	—	V
Forward Voltage ( $I_F = 1.0\text{ mA}$ ) MBAL99/MBSV16/MBSV70/99/MBSV56 MMBD6050X ( $I_F = 10\text{ mA}$ ) MBAL99/MBSV16/MBSV70/99/MBSV56 MMBD914X/2835X/2836X/2837X/2838X ( $I_F = 50\text{ mA}$ ) MMBD2835X/2836X/2837X/2838X MBAL99/MBSV16/MBSV70/99/MBSV56 ( $I_F = 100\text{ mA}$ ) MBSV74 MMBD6050X MMBD2835X/2836X/2837X/2838X MBAL99/MBSV16/MBSV70/99/MBSV56	$V_F$	—	.715 1.0 .855 1.0 1.0 1.1 1.0 1.1 1.2 1.3	V
Diode Capacitance ( $V_R = 0, f = 1.0\text{ MHz}$ ) MBAL99/MBSV70/99 MBSV16/MBSV74 MBSV56/MMBD6050X MMBD914X/2835X/2836X/2837X/2838X	$C_t$	—	1.5 2.0 2.5 4.0	pF
Reverse Recovery Time ( $I_F = I_R = 10\text{ mA}$ , measured at $I_R = 1.0\text{ mA}$ ) (Figure 1)	$t_{rr}$	—	15	ns

FIGURE 1 —  $t_{rr}$  REVERSE RECOVERY TIME TEST CIRCUIT

Motorola reserves the right to make changes without further notice to any products herein to improve reliability, function or design. Motorola does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights nor the rights of others. Motorola and  $\text{\textcircled{M}}$  are registered trademarks of Motorola, Inc. Motorola, Inc. is an Equal Employment Opportunity/Affirmative Action Employer.



**MOTOROLA Semiconductor Products Inc.**

BOX 20912 • PHOENIX, ARIZONA 85036 • A SUBSIDIARY OF MOTOROLA INC.