



MOTOROLA

SEMICONDUCTORS

P.O. BOX 20912 • PHOENIX, ARIZONA 85036

SOT-23 SWITCHING DIODES

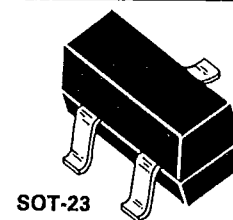
These devices are intended for high speed switching applications. . . .

- 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

MBAL99
MBAS16
MBAV70
MBAV74
MBAV99
MBAW56

MMBD914X
MMBD2835X
MMBD2836X
MMBD2837X
MMBD2838X
MMBD6050X

HI SPEED SWITCHING DIODES



SOT-23

MAXIMUM RATINGS

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

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation, $T_A = 25^\circ\text{C}^*$ Derate above 25°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.

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)*

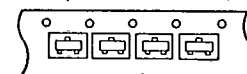
T2 Suffix = Standard Lead Form, 8 mm Tape and Reel (Option 2)*

LT1 Suffix = Low Profile Lead Form, 8 mm Tape and Reel (Option 1)*

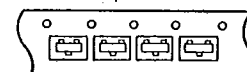
LT2 Suffix = Low Profile Lead Form, 8 mm Tape and Reel (Option 2)*

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

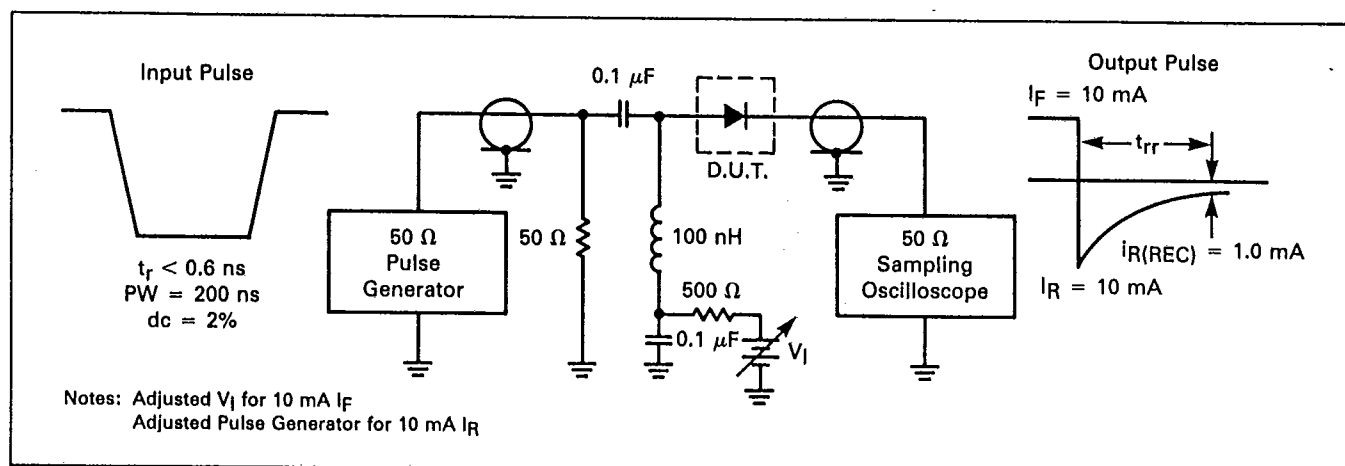
CASE 318-02
TO-236AA
STANDARD

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
OFF CHARACTERISTICS				
Reverse Voltage Leakage Current ($V_R = 30\text{ V}$) MMBD2835X/2837X ($V_R = 50\text{ V}$) MMBD2836X/2838X/6050X ($V_R = 70\text{ V}$) MBAL99/MBAV99/MBAW56 MBAV70 ($V_R = 75\text{ V}$) MBAS16 MMBD914X	I_R	—	0.1 0.1 2.5 5.0 1.0 5.0	μA
Reverse Breakdown Voltage ($I_{(BR)} = 100\text{ }\mu\text{A}$) MMBD914X/MMBD2837X MMBD2836X MBAL99/MBAV70/MBAW56/MMBD6050X MBAS16/MMBD2835X/MMBD2837X/2838X ($I_{(BR)} = 5.0\text{ }\mu\text{A}$) MBAV74	$V_{(BR)}$	100 75 70 35 50	—	V
Forward Voltage ($I_F = 1.0\text{ mA}$) MBAL99/MBAS16/MBAV70/99/MBAW56 MMBD6050X ($I_F = 10\text{ mA}$) MBAL99/MBAS16/MBAV70/99/MBAW56 MMBD914X/2835X/2836X/2837X/2838X ($I_F = 50\text{ mA}$) MMBD2835X/2836X/2837X/2838X MBAL99/MBAS16/MBAV70/99/MBAW56 ($I_F = 100\text{ mA}$) MBAV74 MMBD6050X MMBD2835X/2836X/2837X/2838X MBAL99/MBAS16/MBAV70/99/MBAW56	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/MBAV70/99 MBAS16/MBAV74 MBAW56/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

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