



# Switching Diode

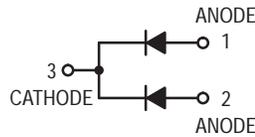
Part of the GreenLine™ Portfolio of devices with energy-conserving traits.

This switching diode has the following features:

- Very Low Leakage ( $\leq 500$  pA) promotes extended battery life by decreasing energy waste. Guaranteed leakage limit is for each diode in the pair contingent upon the other diode being in a non-forward-biased condition.
- Offered in four Surface Mount package types
- Available in 8 mm Tape and Reel in quantities of 3,000

### Applications

- ESD Protection
- Reverse Polarity Protection
- Steering Logic
- Medium-Speed Switching



### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Continuous Reverse Voltage	$V_R$	30	Vdc
Peak Forward Current	$I_F$	200	mAdc
Peak Forward Surge Current	$I_{FM}$ (surge)	500	mA

### DEVICE MARKING

MMBD1010LT1 = A5  
MMBD2010T1 = DP  
MMBD3010T1 = XS

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-4 Board (1) $T_A = 25^\circ\text{C}$	$P_D$	225	mW
		150	
Derate above $25^\circ\text{C}$		1.8	mW/ $^\circ\text{C}$
		1.2	
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
		833	
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

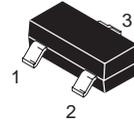
(1) Device mounted on a FR-4 glass epoxy printed circuit board using the minimum recommended footprint.

Preferred devices are Motorola recommended choices for future use and best overall value.

## MMBD1010LT1 MMBD2010T1 MMBD3010T1

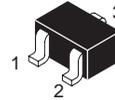
Motorola Preferred Devices

### MMBD1010LT1



CASE 318-08, STYLE 9  
SOT-23 (TO-236AB)

### MMBD2010T1



CASE 419-02, STYLE 5  
SC-70/SOT-323

### MMBD3010T1

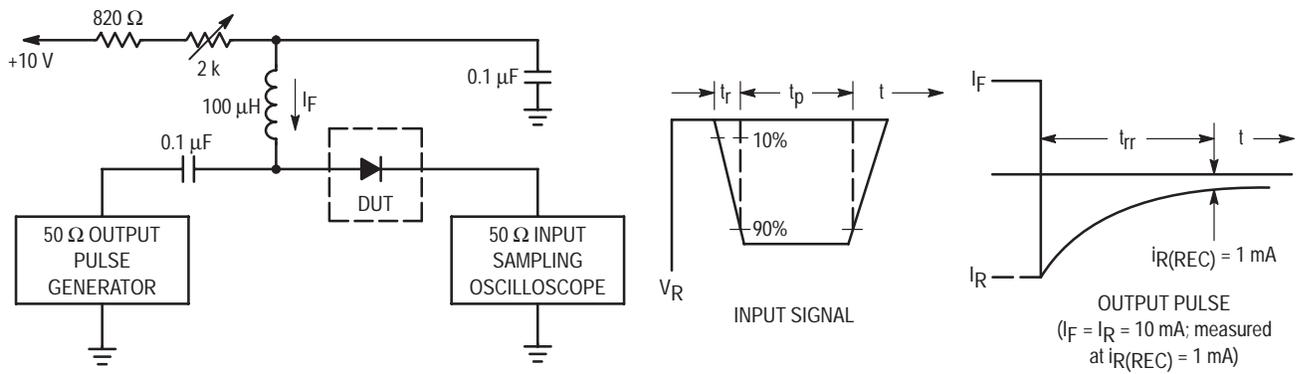


CASE 318D-04, STYLE 3  
SC-59

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

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Reverse Breakdown Voltage ( $I_{BR} = 100 \mu\text{A}$ )	$V_{(BR)}$	30	—	V
Reverse Voltage Leakage Current ( $V_R = 75 \text{V}$ )(2)	$I_R$	—	500	pA
Forward Voltage ( $I_F = 1.0 \text{mA}$ ) ( $I_F = 10 \text{mA}$ )	$V_F$	— —	850 950	mV
Diode Capacitance ( $V_R = 0 \text{V}$ , $f = 1.0 \text{MHz}$ )	$C_D$	—	2.0	pF
Reverse Recovery Time ( $I_F = I_R = 10 \text{mA}$ ) (Figure 1)	$t_{rr}$	—	3.0	$\mu\text{s}$

(2) Guaranteed leakage limit is for each diode in the pair contingent upon the other diode being in a non-forward-biased condition.



- Notes: 1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.
- 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.
- 3.  $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**