

High Speed Diode SOT-23

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**RoHS
Compliant**



Description:

Epitaxial medium-speed switching diode with a low leakage current in a small SOT-23 plastic SMD package.

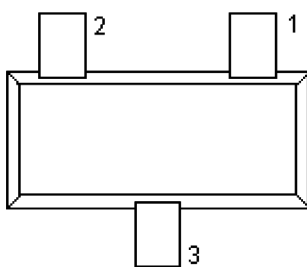
Features:

- Plastic SMD package
- Low leakage current: typical 3pA
- Switching time: typical 0.8μs
- Continuous reverse voltage: maximum 75V
- Repetitive peak reverse voltage: maximum 85V
- Repetitive peak forward current: maximum 500mA

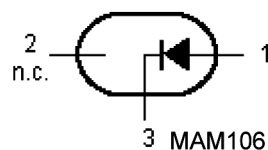
Application:

Low leakage current applications in surface mounted circuits.

Simplified Outline (SOT-23) and Symbol



Top view



Pin	Description
1	Anode
2	Not Connected
3	Cathode

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Limiting Values

In accordance with the Absolute Maximum Rating System (IEC 134).

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	-	-	85	V
V_R	Continuous Reverse Voltage	-	-	75	
I_F	Continuous Forward Current	Note 1	-	215	mA
I_{FRM}	Repetitive Peak Forward Current	-	-	500	
I_{FSM}	Non-repetitive Peak Forward Current	Square Wave, $T_j = 25^\circ\text{C}$ Prior to Surge $t_p = 1\mu\text{s}$ $t_p = 1\mu\text{s}$ $t_p = 1\text{s}$	-	4 1 0.5	A A A
P_{tot}	Total Power Dissipation	$-T_a = 25^\circ\text{C}$, Note 1	-65	250	mW
T_{stg}	Storage Temperature	-	-	+150	$^\circ\text{C}$
T_j	Junction Temperature	-	-	150	

Note: 1. Device mounted on a FR4 printed-circuit board.

Electrical Characteristics ($T_j = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_F	Forward Voltage	$I_F = 1\text{mA}$	-	0.9	V
		$I_F = 10\text{mA}$	-	1	V
		$I_F = 50\text{mA}$	-	1.1	V
		$I_F = 150\text{mA}$	-	1.25	V
I_R	Reverse Current	$V_R = 75\text{V}$ $V_R = 75\text{V}; T_j = 150^\circ\text{C}$	0.003 3	5 80	nA nA
C_d	Diode Capacitance	$f = 1\text{MHz}$, $V_R = 0$	3	-	pF
t_{rr}	Reverse Recovery Time	When Switched from $I_F = 10\text{mA}$ to $I_R = 10\text{mA}$; $R_L = 100\Omega$; Measured at $I_R = 1\text{mA}$	0.8	3	μs

Thermal Characteristics

Symbol	Parameter	Conditions	Value	Unit
$R_{th\ j-tp}$	Thermal Resistance from Junction to Tie-Point	-	330	K/W
$R_{th\ j-a}$	Thermal Resistance from Junction to Ambient	Note 1	500	

Note: 1. Device mounted on a FR4 printed-circuit board.

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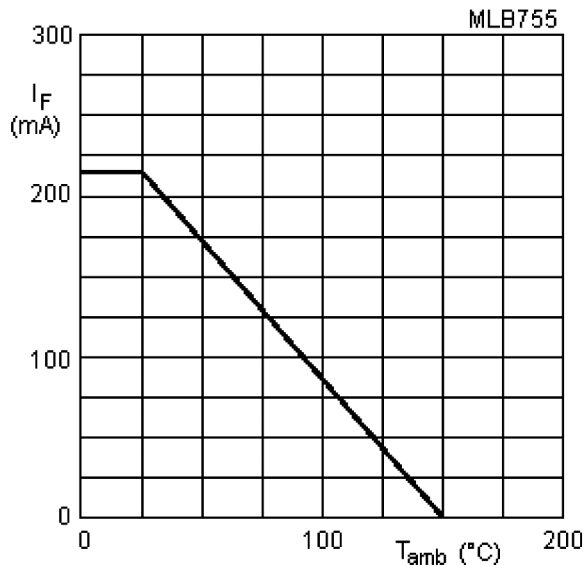
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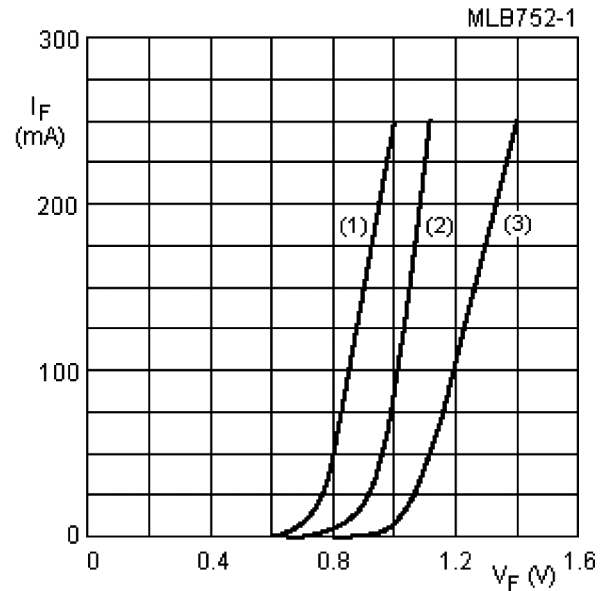
Graphical Data

Maximum Permissible Continuous Forward Current
as a Function of Ambient Temperature



Device Mounted on a FR4 Printed-Circuit Board.

Forward Current as a Function of Forward Voltage

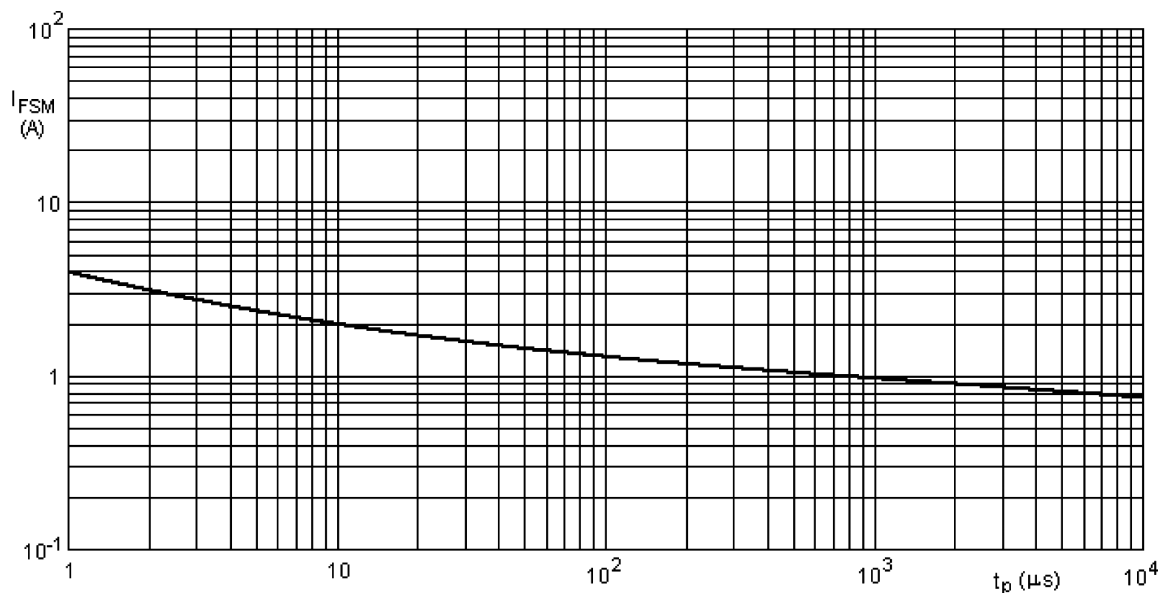


(1) $T_j = 150^\circ\text{C}$; Typical values.

(2) $T_j = 25^\circ\text{C}$; Typical values.

(3) $T_j = 25^\circ\text{C}$; maximum values.

Maximum Permissible Non-Repetitive Peak Forward Current as a Function of Pulse Duration



Based on square wave currents; $T_j = 25^\circ\text{C}$ prior to surge.

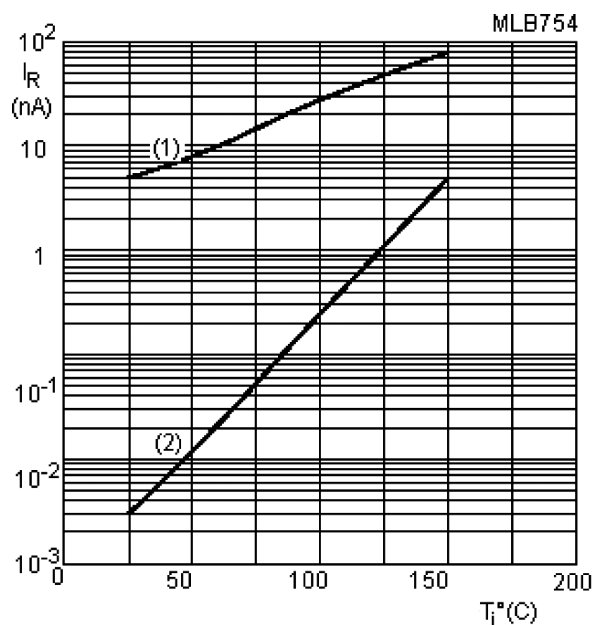
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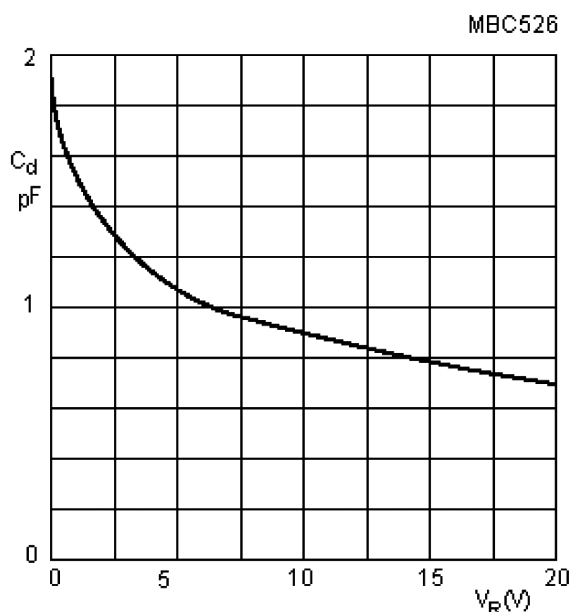
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Reverse Current as a Function of Junction Temperature



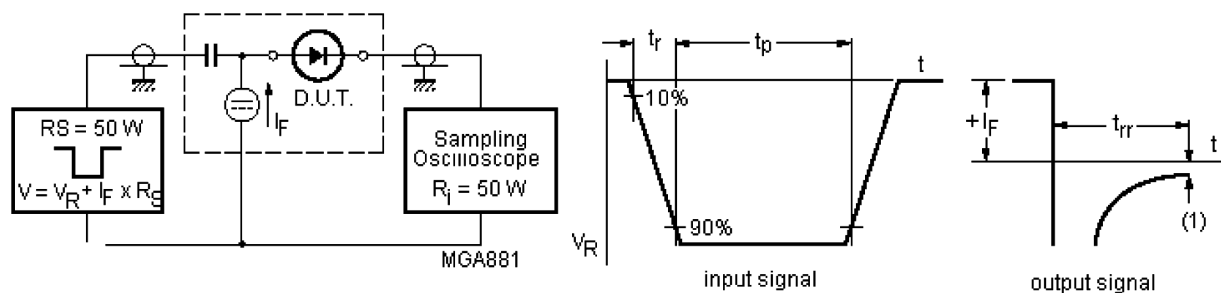
$V_R = 75$ V

Diode Capacitance as a Function of Reverse Voltage; Typical Values



$f = 1$ MHz; $T_j = 25$ °C

Reverse Recovery Time Test Circuit and Waveforms



Part Number Table

Description	Part Number
Diode, High Speed, SOT-23	BAS116+

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