

High-speed double diodes

PMBD2837; PMBD2838

FEATURES

- Small plastic SMD package
- High switching speed: max. 4 ns
- Continuous reverse voltage: max. 30 V and 50 V respectively
- Repetitive peak reverse voltage: max. 35 V and 75 V respectively
- Repetitive peak forward current: max. 450 mA.

APPLICATIONS

- High-speed switching in e.g. surface mounted circuits.

DESCRIPTION

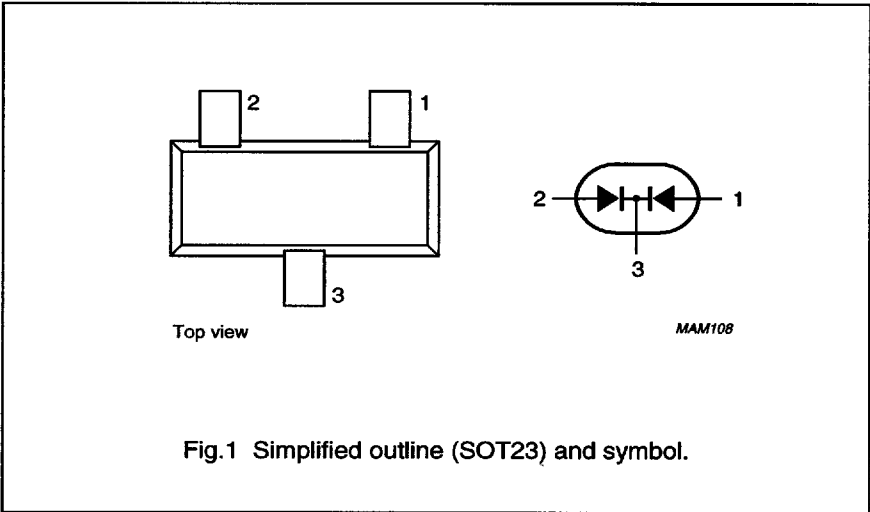
The PMD2837, PMD2838 consist of two high-speed switching diodes with common cathodes, fabricated in planar technology, and encapsulated in small plastic SMD SOT23 packages.

MARKING

TYPE NUMBER	MARKING CODE
PMBD2837	pA5
PMBD2838	pA6

PINNING

PIN	DESCRIPTION
1	anode (a1)
2	anode (a2)
3	common cathode



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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_{RRM}	repetitive peak reverse voltage				
	PMBD2837		—	35	V
	PMBD2838		—	75	V
V_R	continuous reverse voltage				
	PMBD2837		—	30	V
	PMBD2838		—	50	V
I_F	continuous forward current	single diode loaded; see Fig.2; note 1	—	215	mA
		double diode loaded; see Fig.2; note 1	—	125	mA
I_{FRM}	repetitive peak forward current			450	mA
I_{FSM}	non-repetitive peak forward current	square wave; $T_j = 25\text{ °C}$ prior to surge; see Fig.4			
		$t = 1\text{ }\mu\text{s}$	—	4	A
		$t = 1\text{ ms}$	—	1	A
		$t = 1\text{ s}$	—	0.5	A
P_{tot}	total power dissipation	$T_{amb} = 25\text{ °C}$; note 1	—	250	mW
T_{stg}	storage temperature		−65	+150	°C
T_j	junction temperature		—	150	°C

Note

1. Device mounted on an FR4 printed-circuit board.

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ELECTRICAL CHARACTERISTICS $T_j = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Per diode					
V_F	forward voltage	see Fig.3			
		$I_F = 1\text{ mA}$	—	715	mV
		$I_F = 10\text{ mA}$	—	855	mV
		$I_F = 50\text{ mA}$	—	1	V
		$I_F = 150\text{ mA}$	—	1.25	V
I_R	reverse current PMBD2837	see Fig.5			
		$V_R = 30\text{ V}$	—	100	nA
	PMBD2838	$V_R = 30\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	—	40	μA
		$V_R = 50\text{ V}$	—	100	nA
		$V_R = 50\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	—	50	μA
C_d	diode capacitance	$f = 1\text{ MHz}; V_R = 0$; see Fig.6	—	2.5	pF
t_{rr}	reverse recovery time	when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$; $R_L = 100\text{ }\Omega$; measured at $I_R = 1\text{ mA}$; see Fig.7	—	4	ns
V_{fr}	forward recovery voltage	when switched from $I_F = 10\text{ mA}$; $t_r = 20\text{ ns}$; see Fig.8	—	1.75	V

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-tp}$	thermal resistance from junction to tie-point		360	K/W
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

1. Device mounted on an FR4 printed-circuit board.

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GRAPHICAL DATA

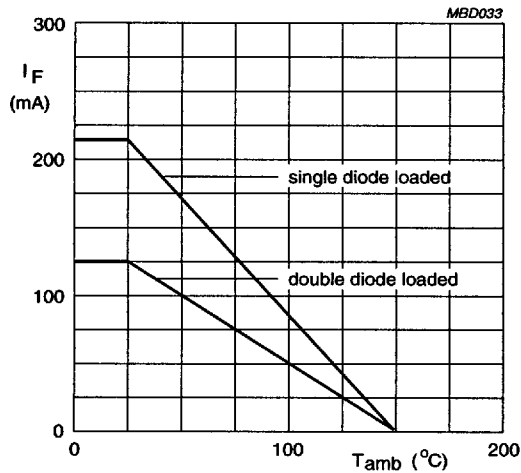
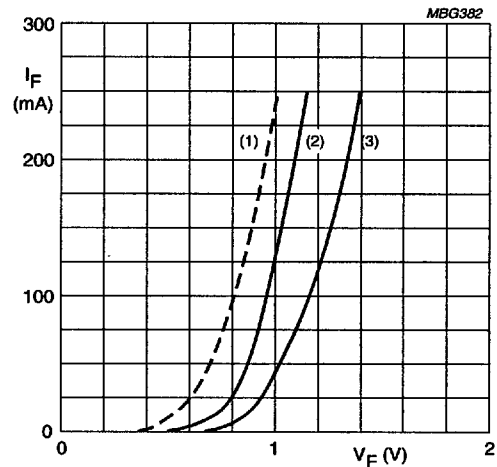
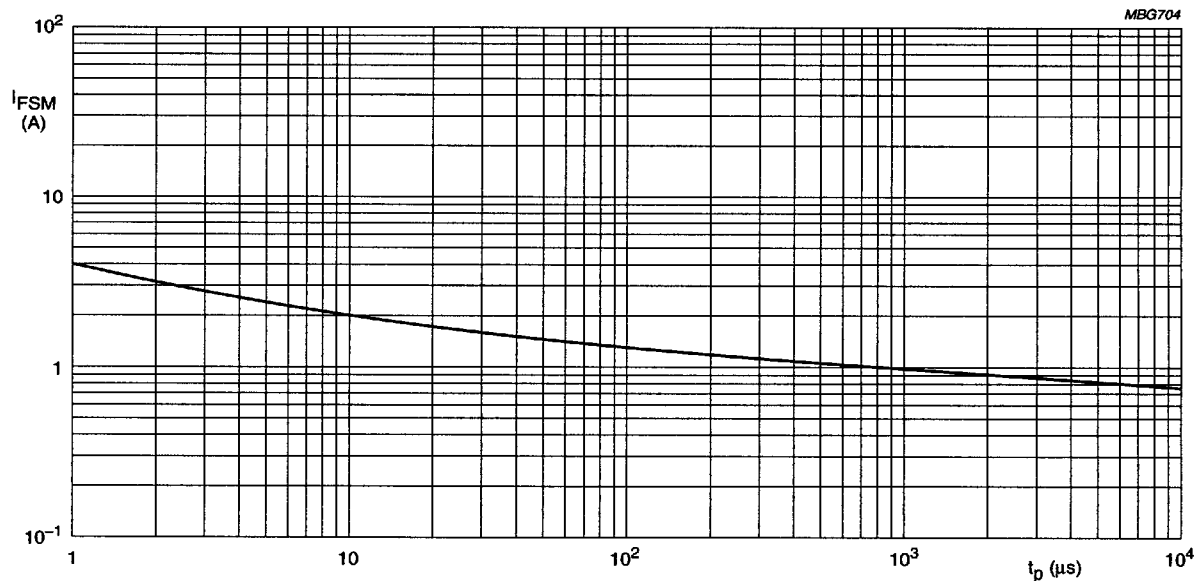


Fig.2 Maximum permissible continuous forward current as a function of ambient temperature.



- (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.

Fig.3 Forward current as a function of forward voltage.

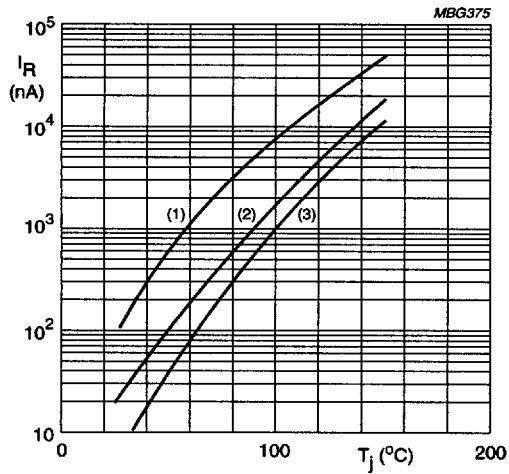


Based on square wave currents.
 $T_j = 25^\circ\text{C}$ prior to surge.

Fig.4 Maximum permissible non-repetitive peak forward current as a function of pulse duration.

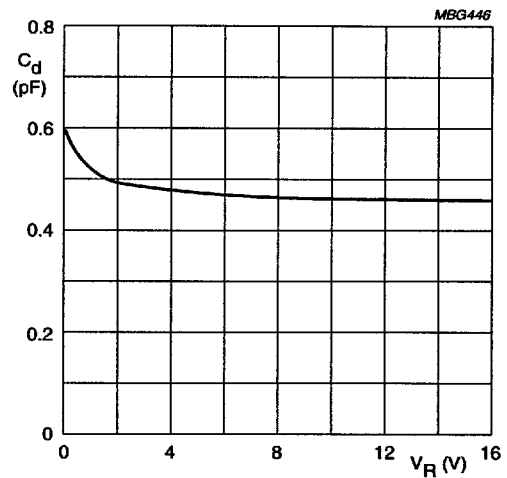
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- (1) $V_R = 50$ V; maximum values.
 (2) $V_R = 50$ V; typical values.
 (3) $V_R = 30$ V; typical values.

Fig.5 Reverse current as a function of junction temperature.



$f = 1$ MHz; $T_J = 25$ °C.

Fig.6 Diode capacitance as a function of reverse voltage; typical values.

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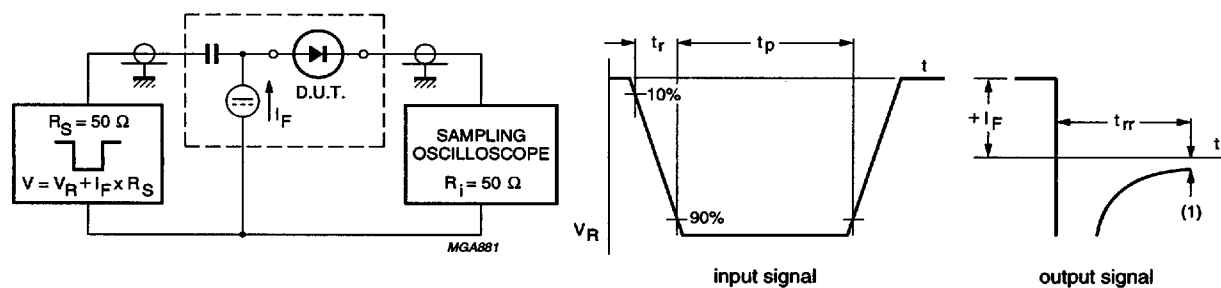
(1) $I_R = 1\text{ mA}$.

Fig.7 Reverse recovery voltage test circuit and waveforms.

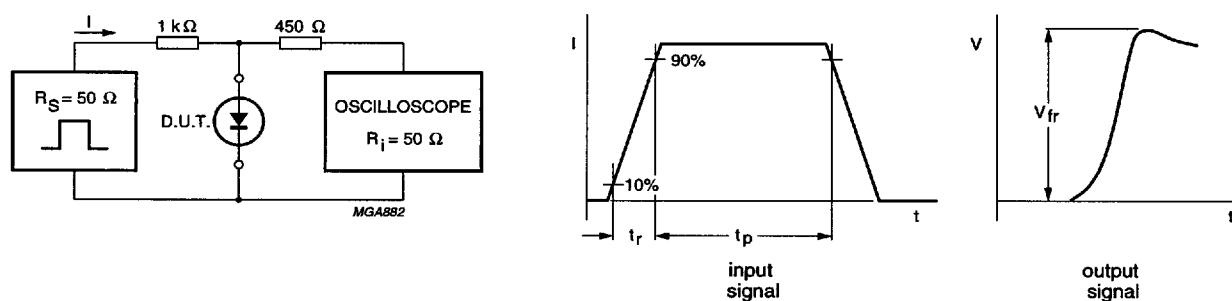
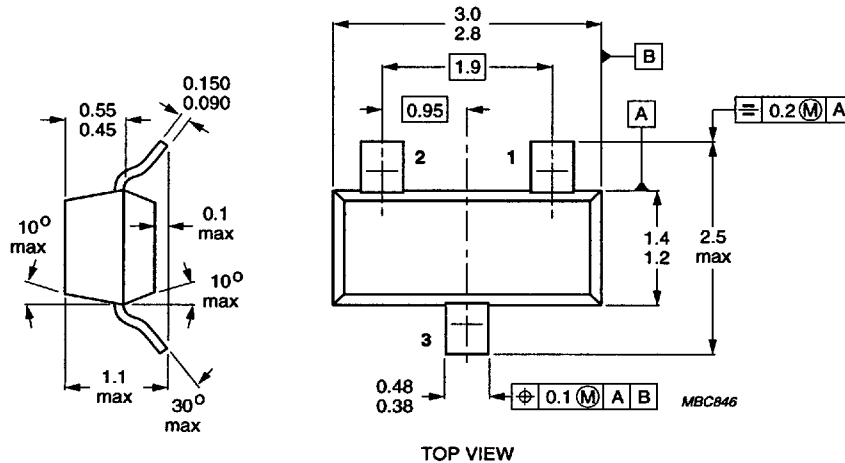


Fig.8 Forward recovery voltage test circuit and waveforms.

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PACKAGE OUTLINE



Dimensions in mm.

Fig.9 SOT23.

DEFINITIONS

Data Sheet Status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

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