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BAT86

Schottky barrier single diode

25 July 2012 **Product data sheet**

1. Product profile

1.1 General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a hermetically-sealed subminiature SOD68 (DO-34) package. The diode is suitable for mounting on a 2 E (5.08 mm) pitch.

1.2 Features and benefits

- Low forward voltage
- Guard ring protected
- Hermetically-sealed leaded glass package

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

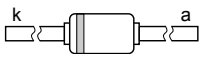
1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$I_{F(AV)}$	average forward current	δ = 0.5 ; f = 20 kHz; T_{amb} ≤ 50 °C; PCB mounting, lead length = 4 mm		-	-	200	mA
V_R	reverse voltage			-	-	50	V
V_F	forward voltage	I_F = 10 mA; T_{amb} = 25 °C		-	-	450	mV

2. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode[1]	 DO-34 (SOD68)	aaa-003679
2	A	anode		

[1] The marking band indicates the cathode.

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT86	DO-34	hermetically sealed glass package; axial leaded; 2 leads	SOD68

4. Marking

Table 4. Marking codes

Type number	Marking code
BAT86	marking band

5. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions		Min	Max	Unit
V_R	reverse voltage			-	50	V
I_F	forward current			-	200	mA
$I_{F(AV)}$	average forward current	$\delta = 0.5$; f = 20 kHz; $T_{amb} \leq 50$ °C; PCB mounting, lead length = 4 mm		-	200	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 1$ s; $\delta \leq 0.5$		-	500	mA
I_{FSM}	non-repetitive peak forward current	$t_p \leq 10$ ms; $T_{j(init)} = 25$ °C		-	5	A
T_j	junction temperature			-	125	°C
T_{amb}	ambient temperature			-65	125	°C
T_{stg}	storage temperature			-65	150	°C

6. Thermal characteristics

Table 6. Thermal characteristics

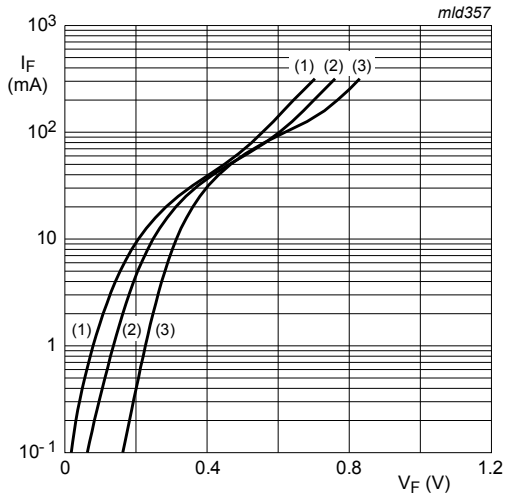
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	320	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

7. Characteristics

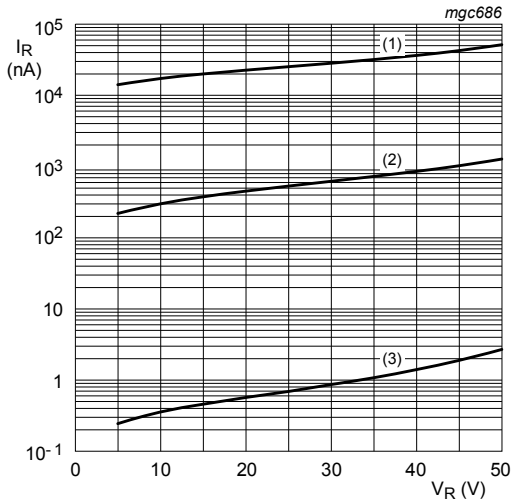
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 0.1 mA; T_{amb} = 25 °C		-	-	300	mV
		I_F = 1 mA; T_{amb} = 25 °C		-	-	380	mV
		I_F = 10 mA; T_{amb} = 25 °C		-	-	450	mV
		I_F = 30 mA; T_{amb} = 25 °C		-	-	600	mV
		I_F = 100 mA; T_{amb} = 25 °C		-	-	900	mV
I_R	reverse current	V_R = 40 V; T_{amb} = 25 °C; pulsed; t_p = 300 µs; δ = 0.02		-	-	5	µA
C_d	diode capacitance	f = 1 MHz; T_{amb} = 25 °C; V_R = 1 V		-	-	8	pF
t_{rr}	reverse recovery time	I_F = 10 mA; I_R = 10 mA; R_L = 100 Ω; $I_{R(meas)}$ = 1 mA; T_{amb} = 25 °C		-	-	4	ns



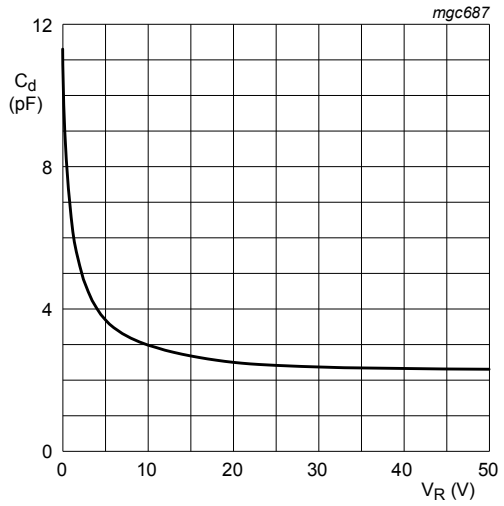
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

Fig. 1. Forward current as a function of forward voltage; typical values



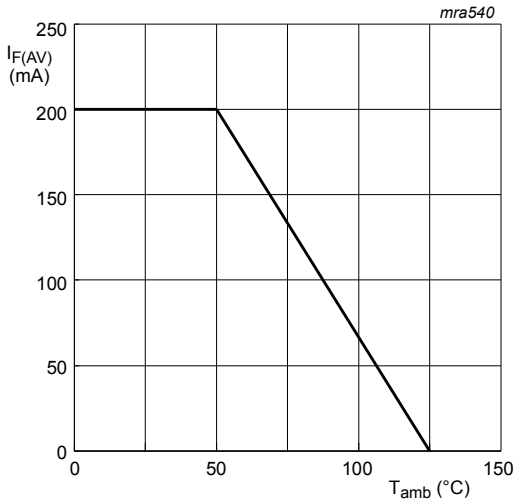
(1) T_{amb} = 85 °C
(2) T_{amb} = 25 °C
(3) T_{amb} = −40 °C

Fig. 2. Reverse current as a function of reverse voltage; typical values



T_{amb} = 25 °C; f = 1 MHz

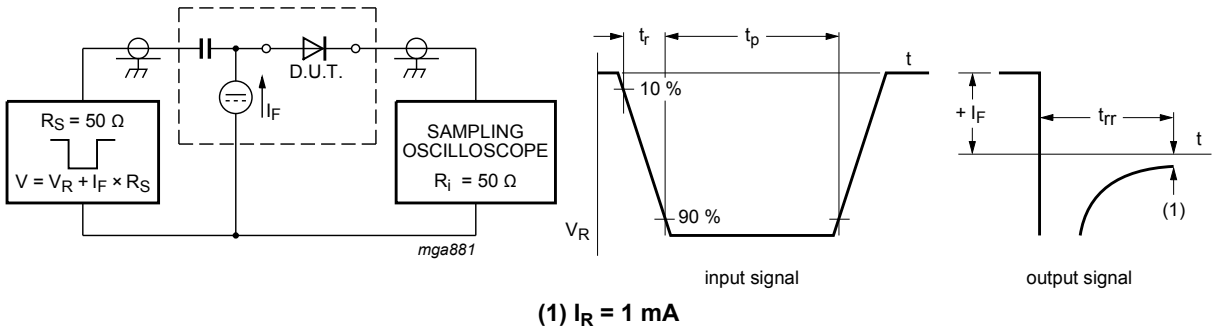
Fig. 3. Diode capacitance as a function of reverse voltage; typical values



FR4 PCB, standard footprint

Fig. 4. Average forward current as a function of ambient temperature; derating curve

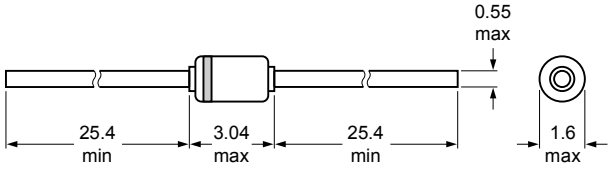
8. Test information



(1) I_R = 1 mA

Fig. 5. Reverse recovery time test circuit and waveforms

9. Package outline



Dimensions in mm

97-06-09

Fig. 6. DO-34 (SOD68)

10. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT86 v.3	20120725	Product data sheet	-	BAT86 v.2
Modifications:	• The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Section "Marking" added • Package outline drawing replaced by minimized package ouline drawing • Section "Test information" added			
BAT86 v.2	20000525	Product specification	-	BAT86 v.1
BAT86 v.1	19960320	Product specification	-	-

11. Legal information

11.1 Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

[1] Please consult the most recently issued document before initiating or completing a design.
[2] The term 'short data sheet' is explained in section "Definitions".
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