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Kind regards,

Team Nexperia

# 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	$\delta = 0.5$ ; $f = 20$ kHz; $T_{amb} \leq 50$ °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)	 K  A aaa-003679
2	A	anode		

[1] The marking band indicates the cathode.



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### 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

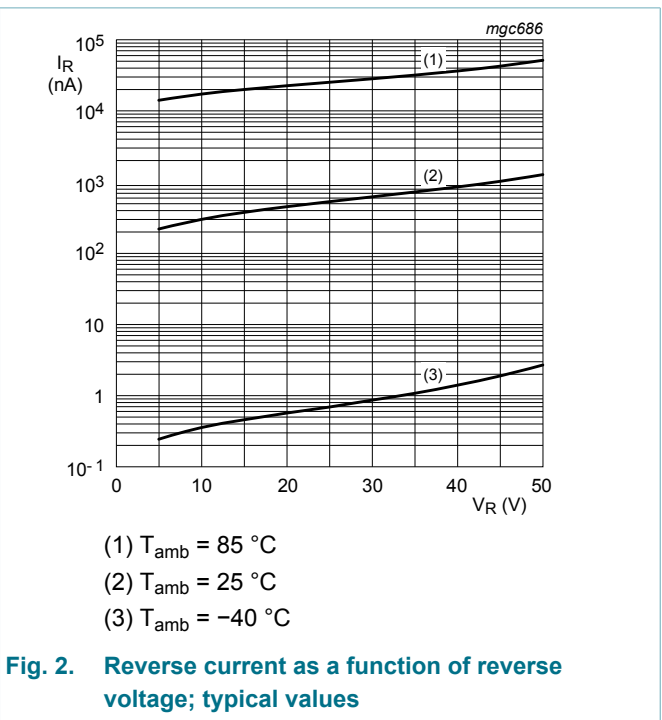
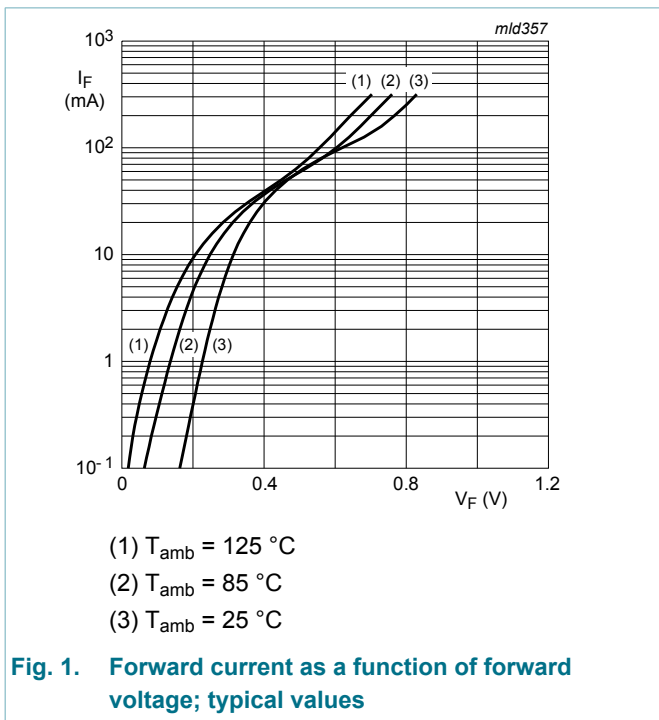
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	320	K/W

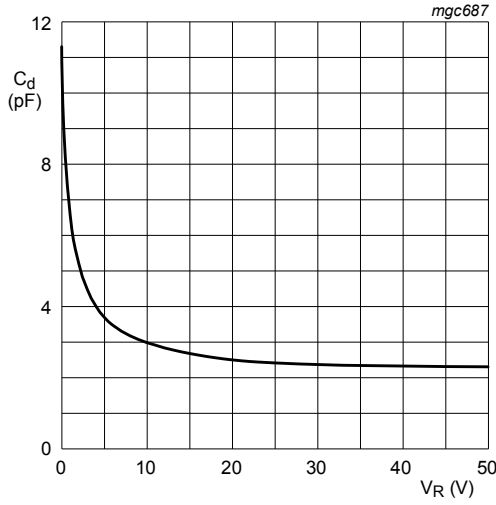
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 7. Characteristics

Table 7. Characteristics

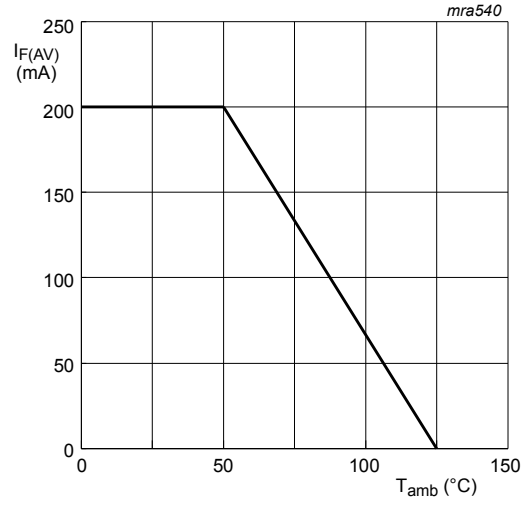
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	300	mV
		$I_F = 1 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	380	mV
		$I_F = 10 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	450	mV
		$I_F = 30 \text{ mA};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





$T_{amb} = 25\text{ }^{\circ}\text{C}; f = 1\text{ MHz}$

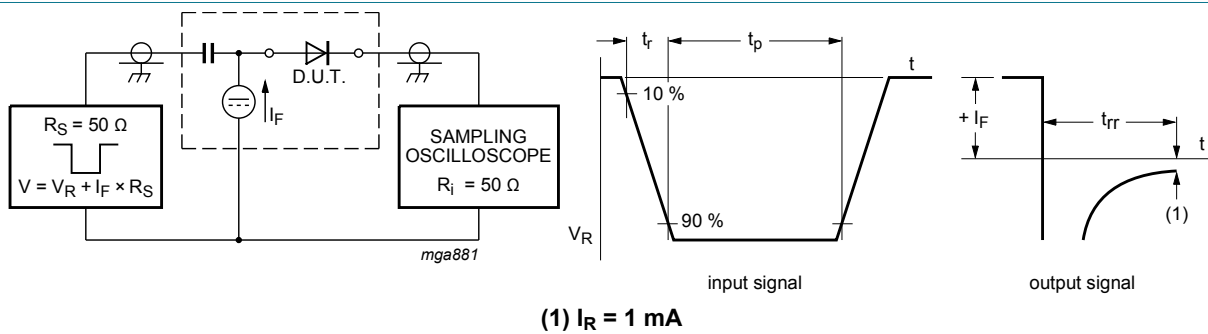
**Fig. 3. Diode capacitance as a function of reverse voltage; typical values**



FR4 PCB, standard footprint

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

## 8. Test information



**Fig. 5. Reverse recovery time test circuit and waveforms**

## 9. Package outline

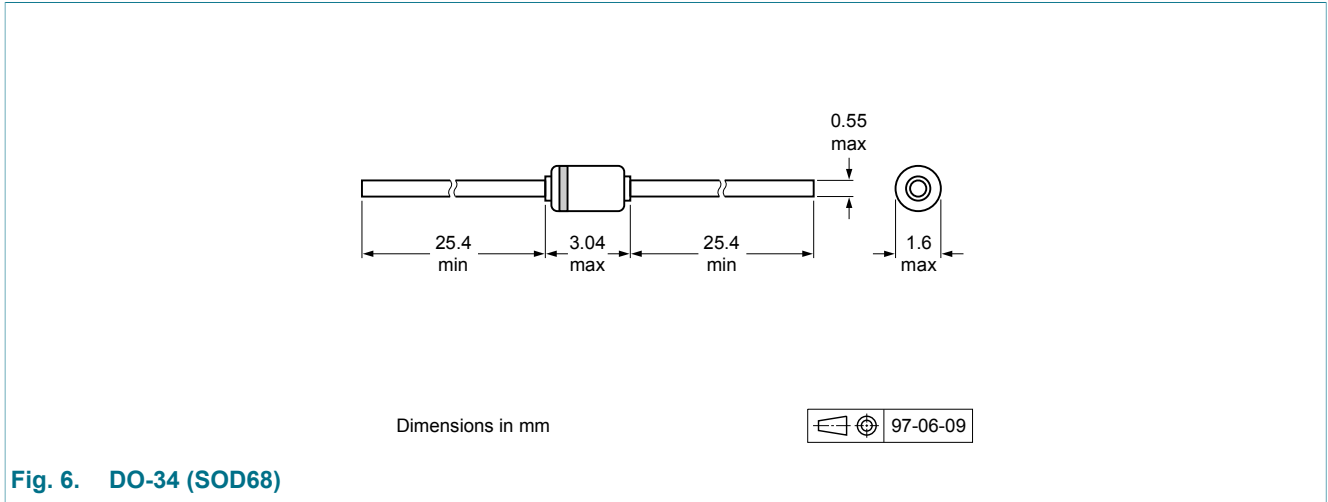


Fig. 6. DO-34 (SOD68)

## 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:	<ul style="list-style-type: none"> <li>The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Section "Marking" added</li> <li>Package outline drawing replaced by minimized package outline drawing</li> <li>Section "Test information" added</li> </ul>			
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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