



BAS116L

Low-leakage diode

4 May 2016

Product data sheet

1. General description

Single low leakage current switching diode, encapsulated in a leadless ultra small DFN1006-2 (SOD882) Surface-Mounted Device (SMD) plastic package.

2. Features and benefits

- Switching time typical: $t_{rr} = 0.8 \mu s$
- Low leakage current typical: $I_R = 3 \text{ pA}$
- Repetitive peak reverse voltage: $V_{RRM} \leq 85 \text{ V}$
- Low capacitance typical: $C_d = 2 \text{ pF}$
- Leadless ultra small SMD plastic package
- Low package height of 0.48 mm
- AEC-Q101 qualified

3. Applications

- Low-leakage current applications
- General-purpose switching

4. Quick reference data

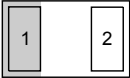
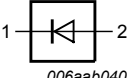
Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage	$T_j = 25 \text{ }^\circ\text{C}$		-	-	85	V
I_F	forward current	$T_{amb} = 25 \text{ }^\circ\text{C}$	[1]	-	-	325	mA
V_R	reverse voltage	$T_j = 25 \text{ }^\circ\text{C}$		-	-	75	V
V_F	forward voltage	$I_F = 150 \text{ mA}; T_j = 25 \text{ }^\circ\text{C}$		-	-	1.25	V
I_R	reverse current	$V_R = 75 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$		-	0.003	5	nA
t_{rr}	reverse recovery time	$I_F = 10 \text{ mA}; I_R = 10 \text{ mA}; I_{R(meas)} = 1 \text{ mA}; R_L = 100 \text{ } \Omega; T_{amb} = 25 \text{ }^\circ\text{C}$		-	0.8	3	μs

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

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 Transparent top view DFN1006-2 (SOD882)	 <i>006aab040</i>
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAS116L	DFN1006-2	DFN1006-2: leadless ultra small plastic package; 2 terminals	SOD882

7. Marking

Table 4. Marking codes

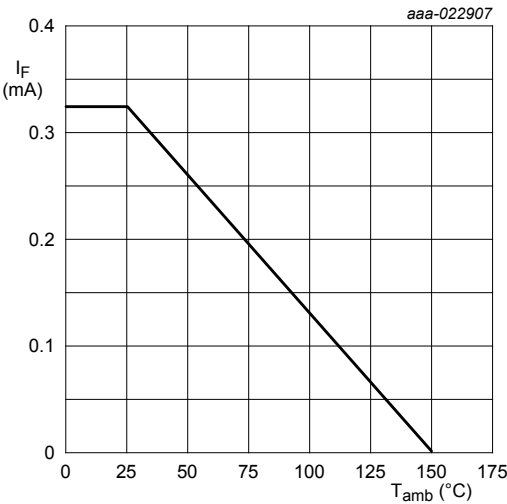
Type number	Marking code
BAS116L	J6

8. 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	$T_j = 25\text{ }^{\circ}\text{C}$		-	75	V
V_{RRM}	repetitive peak reverse voltage			-	85	V
I_F	forward current	$T_{amb} = 25\text{ }^{\circ}\text{C}$	[1]	-	325	mA
I_{FRM}	repetitive peak forward current	$t_p \leq 0.5\text{ ms}$; $\delta \leq 0.25$; $T_j = 25\text{ }^{\circ}\text{C}$		-	700	mA
I_{FSM}	non-repetitive peak forward current	$t_p = 100\text{ }\mu\text{s}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; square wave		-	4	A
		$t_p = 1\text{ ms}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; square wave		-	1.5	A
		$t_p = 1\text{ s}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; square wave		-	0.5	A
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ }^{\circ}\text{C}$	[1]	-	335	mW
			[2]	-	610	mW
T_j	junction temperature			-	150	$^{\circ}\text{C}$
T_{amb}	ambient temperature			-55	150	$^{\circ}\text{C}$
T_{stg}	storage temperature			-65	150	$^{\circ}\text{C}$

- [1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².



FR4 PCB, standard footprint

Fig. 1. Forward current as a function of ambient temperature; derating curve

9. 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]	-	-	375	K/W
			[2]	-	-	205	K/W
$R_{th(j-sp)}$	thermal resistance from junction to solder point		[3]	-	-	40	K/W

- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².
[3] Soldering point of cathode tab.

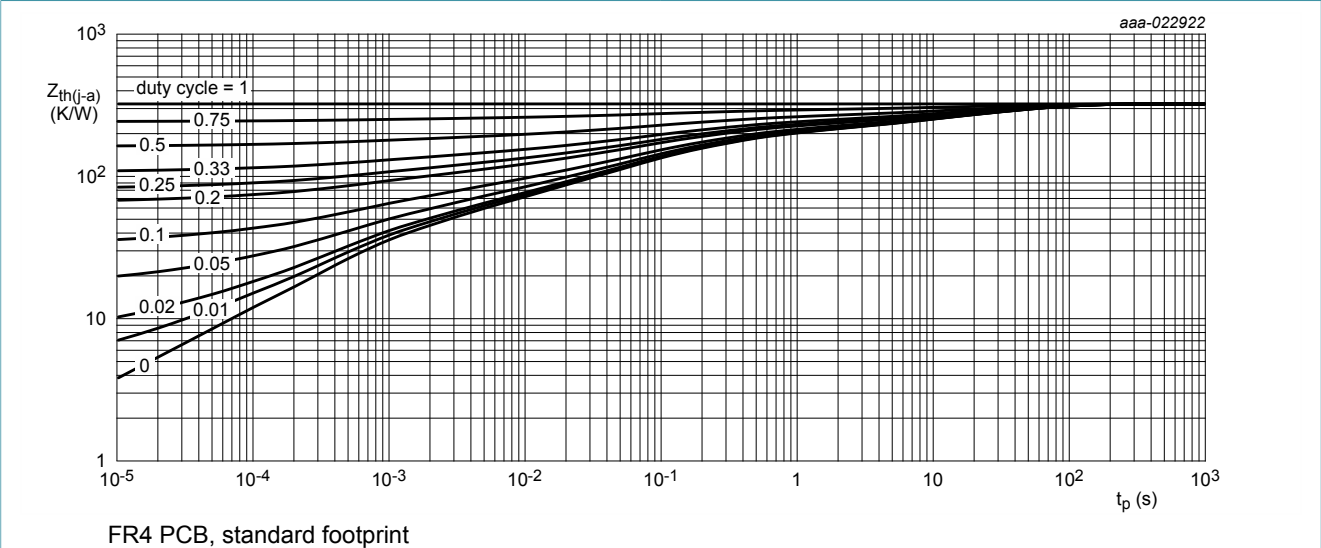


Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

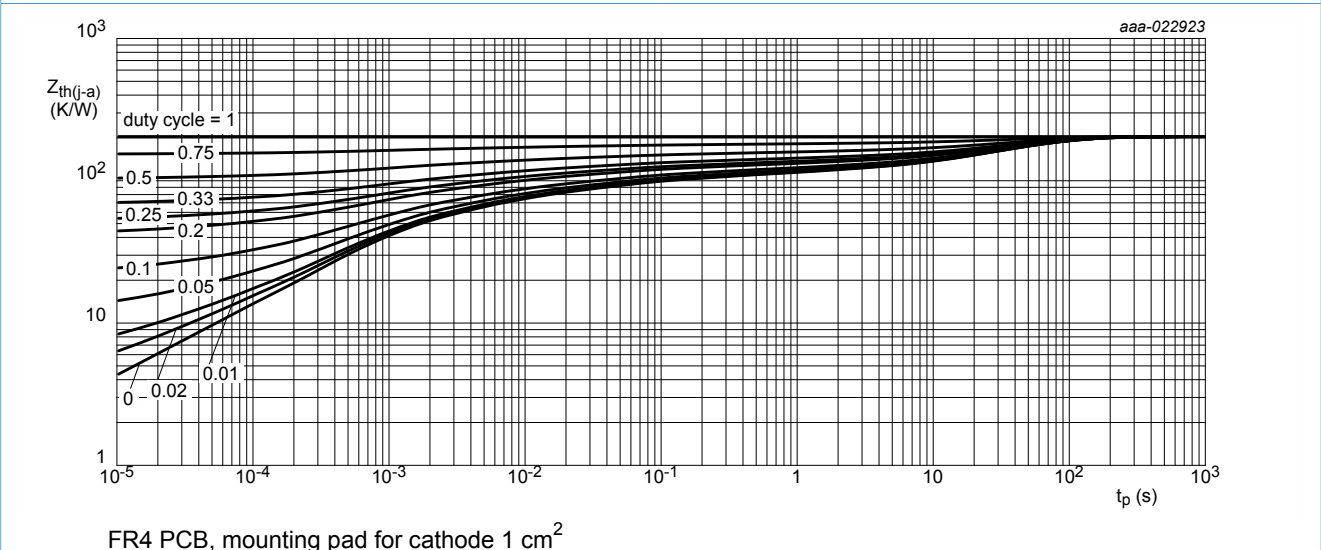
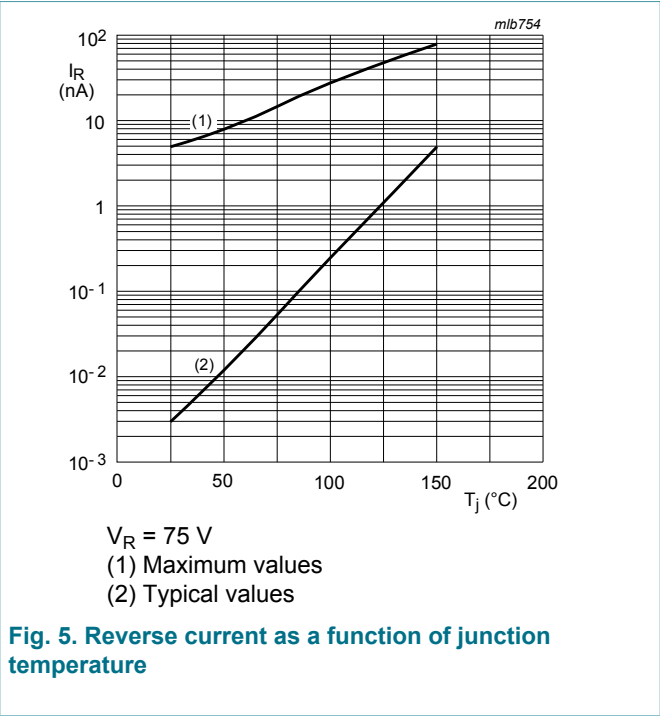
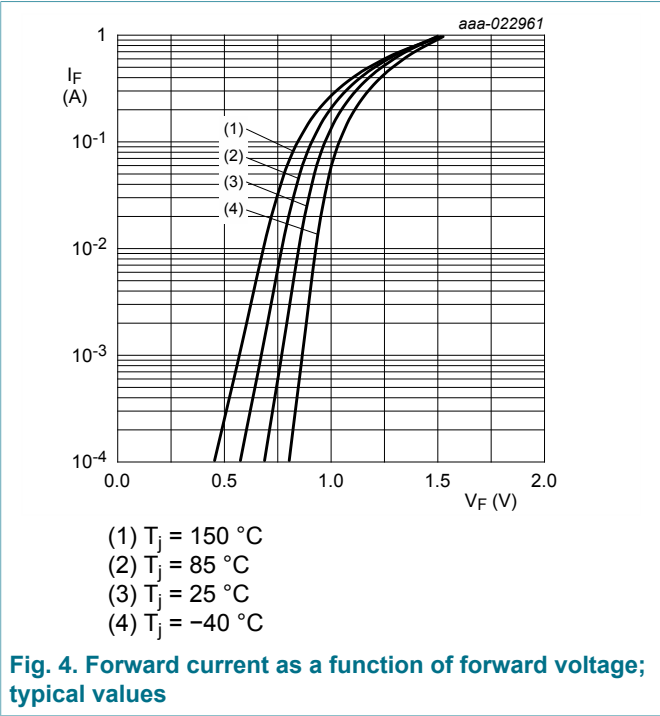


Fig. 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 1\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	0.9	V
		$I_F = 10\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	1	V
		$I_F = 50\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	1.1	V
		$I_F = 150\text{ mA}; T_j = 25\text{ }^{\circ}\text{C}$	-	-	1.25	V
I_R	reverse current	$V_R = 75\text{ V}; T_j = 25\text{ }^{\circ}\text{C}$	-	0.003	5	nA
		$V_R = 75\text{ V}; T_j = 150\text{ }^{\circ}\text{C}$	-	3	80	nA
C_d	diode capacitance	$V_R = 0\text{ V}; f = 1\text{ MHz}; T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	2	-	pF
t_{rr}	reverse recovery time	$I_F = 10\text{ mA}; I_R = 10\text{ mA}; I_{R(\text{meas})} = 1\text{ mA}; R_L = 100\text{ }\Omega; T_{\text{amb}} = 25\text{ }^{\circ}\text{C}$	-	0.8	3	μs



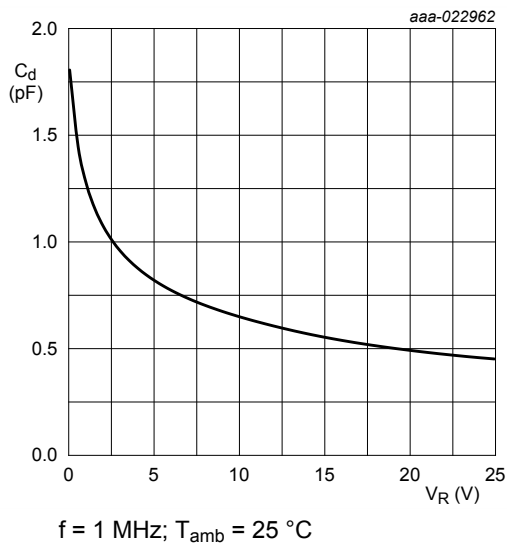


Fig. 6. Diode capacitance as a function of reverse voltage; typical values

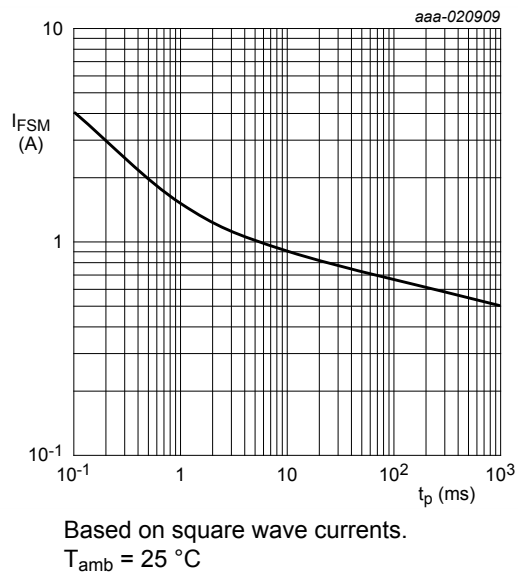


Fig. 7. Non-repetitive forward current as a function of pulse duration; maximum values

11. Test information

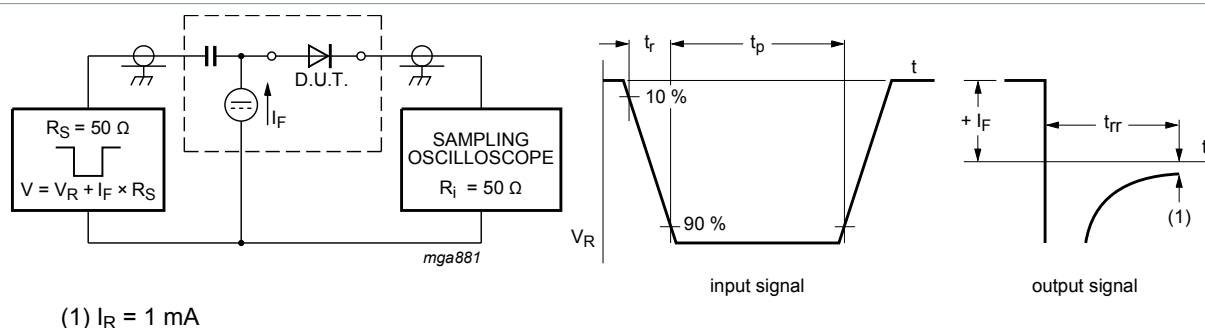


Fig. 8. Reverse recovery time test circuit and waveforms

Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - *Stress test qualification for discrete semiconductors*, and is suitable for use in automotive applications.

12. Package outline

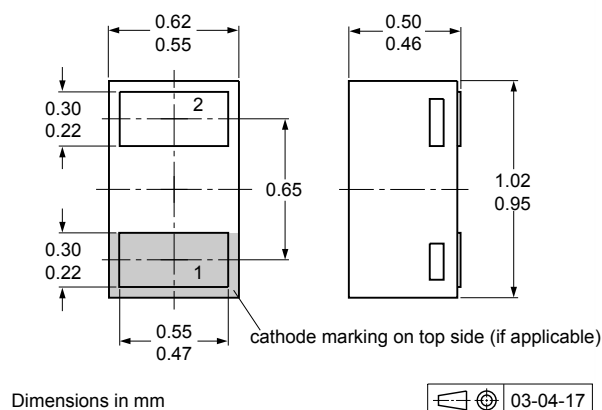


Fig. 9. Package outline DFN1006-2 (SOD882)

13. Soldering

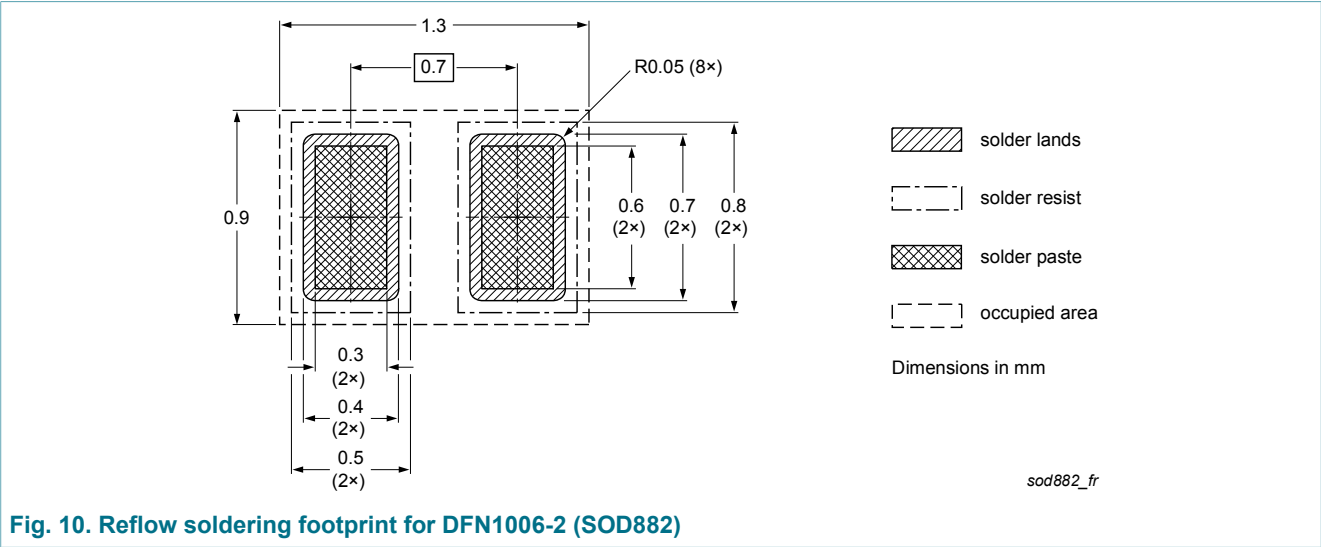


Fig. 10. Reflow soldering footprint for DFN1006-2 (SOD882)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAS116L v.1	20160504	Product data sheet	-	-

15. Legal information

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.

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