Product data sheet

1. General description

Enhanced ultrafast power diode in a SOD113 (2-lead TO-220F) plastic package.

2. Features and benefits

- Isolated package
- Low thermal resistance
- Low on-state losses
- · High thermal cycling performance
- · Soft recovery characteristic

3. Applications

- Dual Mode (DCM and CCM) PFC
- Power Factor Correction (PFC) for Interleaved Topology

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit	
Absolute	maximum rating						
V_{RRM}	repetitive peak reverse voltage			6	00		V
I _{F(AV)}	average forward current	$δ = 0.5$; square-wave pulse; $T_h \le 72$ °C; Fig. 1; Fig. 2	9		А		
I _{FRM}	repetitive peak forward current	δ = 0.5; t _p = 25 μs; T _h ≤ 72 °C; square-wave pulse	18			А	
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 3	91		А		
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	100		А		
Symbol	Parameter	Conditions		Min	Тур	Max	Unit
Static ch	aracteristics			,			
V _F	forward voltage	I _F = 8 A; T _j = 25 °C; <u>Fig. 5</u>		-	1.45	1.9	V
		I _F = 8 A; T _j = 150 °C; <u>Fig. 5</u>		-	1.25	1.7	V
Dynamic	characteristics						
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}$; $V_R = 30 \text{ V}$; $dI_F/dt = 100 \text{ A/s}$; $T_j = 25 \text{ °C}$; Fig. 6		-	17.5	35	ns

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	mb	
2	А	anode		K —— A
mb	n.c.	mounting base; isolated	1 2 SOD113 (2-lead TO-220F)	001aaa020

6. Ordering information

Table 3. Ordering information

Type number	Package	Package				
	Name	Description	Version			
BYV29FX-600	TO-220F	plastic single-ended package; isolated heatsink mounted; 1 mounting hole; 2-lead TO-220 "full pack"	SOD113			

7. Marking

Table 4. Marking codes

Type number	Marking codes
BYV29FX-600	BYV29FX-600

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		600	V
V_{RWM}	crest working reverse voltage		600	V
V_R	reverse voltage	DC	600	V
I _{F(AV)}	average forward current	$δ$ = 0.5; square-wave pulse; $T_h \le 72$ °C; Fig. 1; Fig. 2	9	Α
I _{FRM}	repetitive peak forward current	$δ = 0.5$; $t_p = 25 \mu s$; $T_h \le 72 °C$; square-wave pulse	18	А
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 3	91	Α
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	100	Α
T _{stg}	storage temperature		-40 to 150	°C
T _j	junction temperature		150	°C

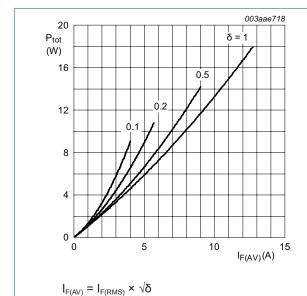


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values

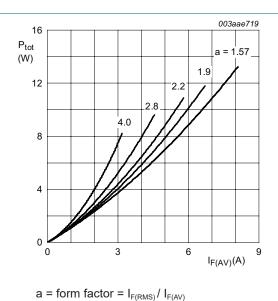


Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

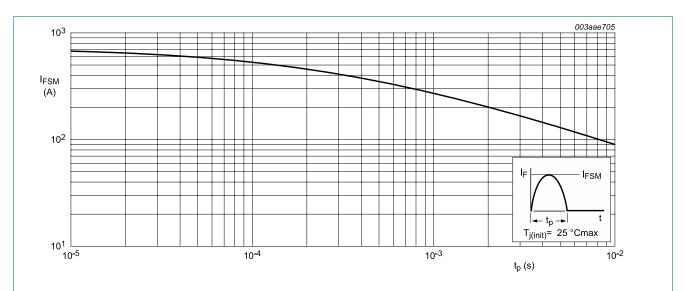


Fig. 3. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R _{th(j-h)}	thermal resistance from junction to heatsink	with heatsink compound; Fig 4	-	-	5.5	K/W
R _{th(j-a)}	thermal resistance from junction to ambient free air	in free air	-	55	-	K/W

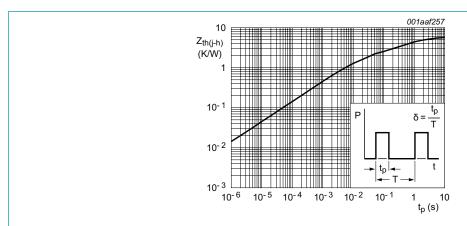


Fig. 4. Transient thermal impedance from junction to heatsink as a function of pulse width

10. Isolation characteristics

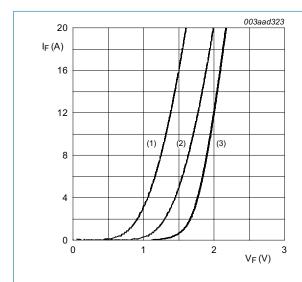
Table 7. Isolation characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
$V_{isol(RMS)}$	RMS isolation voltage	50 Hz ≤ f ≤ 60 Hz; RH ≤ 65 %; from all pins to external heatsink; sinusoidal waveform; clean and dust free	-	-	2500	V
C _{isol}	isolation capacitance	f = 1 MHz; from cathode to external heatsink	-	10	-	pF

11. Characteristics

Table 8. Characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Static cha	aracteristics					
V _F	forward voltage	I _F = 8A; T _j = 25 °C; <u>Fig. 5</u>	-	1.45	1.9	V
		I _F = 8 A; T _j = 150 °C; <u>Fig. 5</u>	-	1.25	1.7	V
I _R	reverse current	V _R = 600 V; T _j = 25 °C	-	-	50	μA
		V _R = 600 V; T _j = 100 °C	-	-	1.5	mA
Dynamic	characteristics			'	'	
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/s};$ $T_j = 25 \text{ °C}; Fig. 6$	-	17.5	35	ns
I _{RM}	peak reverse recovery current	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/s};$ $T_j = 25 \text{ °C}; Fig. 6$	-	1.5	-	А
V_{FRM}	forward recovery voltage	$I_F = 1 \text{ A}; dI_F/dt = 100 \text{ A/s};$ $T_j = 25 \text{ °C}; Fig. 7$	-	3.2	-	V
Q _r	recovered charge	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/s};$ $T_j = 25 \text{ °C}; Fig. 6$	-	13	-	nC



(1) T_j = 150 °C; typical values (2) T_j = 150 °C; maximum values

(3) $T_i = 25$ °C; maximum values

Fig. 5. Forward current as a function of forward voltage

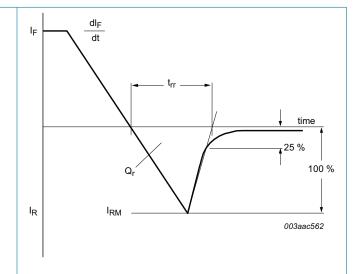
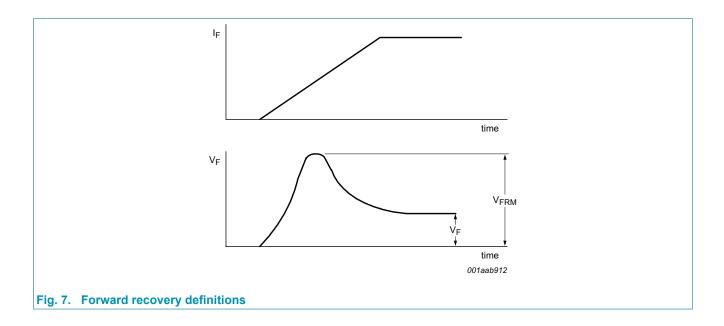
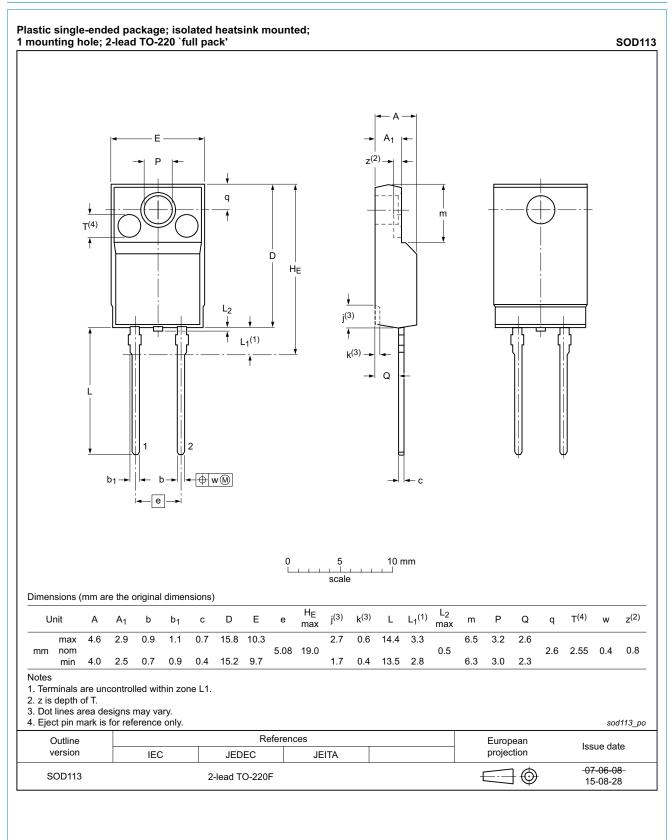


Fig. 6. Reverse recovery definitions; ramp recovery



12. Package outline



13. 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.
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9 / 11

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14. Contents

1. General description	1
2. Features and benefits	1
3. Applications	1
4. Quick reference data	1
5. Pinning information	2
6. Ordering information	2
7. Marking	2
8. Limiting values	3
9. Thermal characteristics	5
10. Isolation characteristics	5
11. Characteristics	6
12. Package outline	8
13. Legal information	9
14. Contents	11

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