

## 1. General description

Dual ultrafast power diode in a SOT404 (D2PAK) surface-mountable plastic package.

## 2. Features and benefits

- High reverse voltage surge capability
- High thermal cycling performance
- Low thermal resistance
- Very low on-state loss
- Soft recovery characteristic minimizes power consuming oscillations
- Surface-mountable package

## 3. Applications

- Output rectifiers in high-frequency switched-mode power supplies

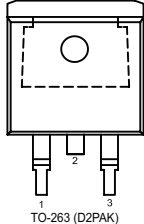
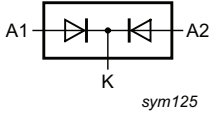
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
<b>Absolute maximum rating</b>						
$V_{RRM}$	repetitive peak reverse voltage		200			V
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ ; both diodes conducting; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a>	20			A
$I_{RRM}$	repetitive peak reverse current	$\delta = 0.001$ ; $t_p = 2\text{ }\mu\text{s}$ ;	0.2			A
$V_{ESD}$	electrostatic discharge voltage	HBM; $C = 250\text{ pF}$ ; $R = 1.5\text{ k}\Omega$ ; all pins	8			kV
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 8\text{ A}$ ; $T_j = 150\text{ }^{\circ}\text{C}$ ; <a href="#">Fig. 4</a>	-	0.72	0.85	V
		$I_F = 20\text{ A}$ ; $T_j = 25\text{ }^{\circ}\text{C}$	-	1	1.15	V
<b>Dynamic characteristics</b>						
$t_{rr}$	reverse recovery time	$I_F = 1\text{ A}$ ; $V_R = 30\text{ V}$ ; $di_F/dt = 100\text{ A}/\mu\text{s}$ ; $T_j = 25\text{ }^{\circ}\text{C}$ ; ramp recovery; <a href="#">Fig. 5</a>	-	20	25	ns

## 5. Pinning information

**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode 1	 <p>TO-263 (D2PAK)</p>	 <p>sym125</p>
2	K	cathode [1]		
3	A2	anode 2		
mb	K	mounting base; cathode		

[1] it is not possible to make a connection to pin 2 of the SOT404 package

## 6. Ordering information

**Table 3. Ordering information**

Type number	Package		
	Name	Description	Version
BYV32EB-200	D2PAK	plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped)	SOT404

## 7. Marking

**Table 4. Marking codes**

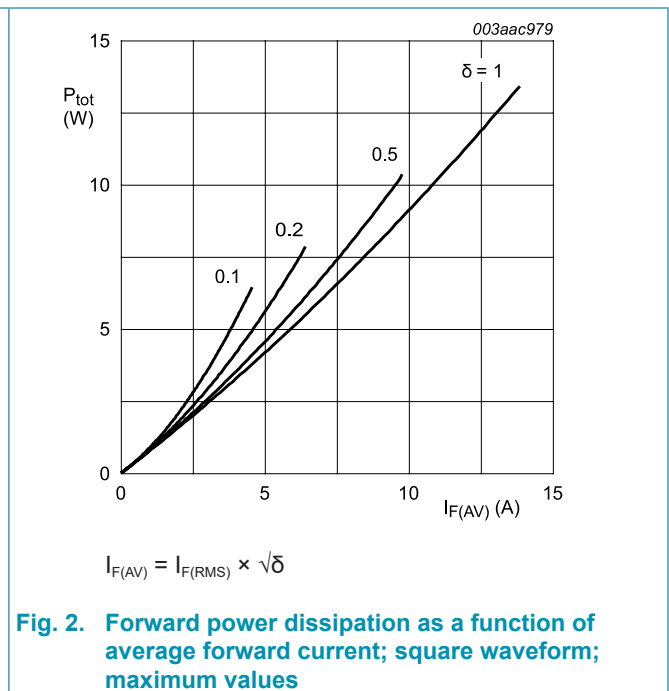
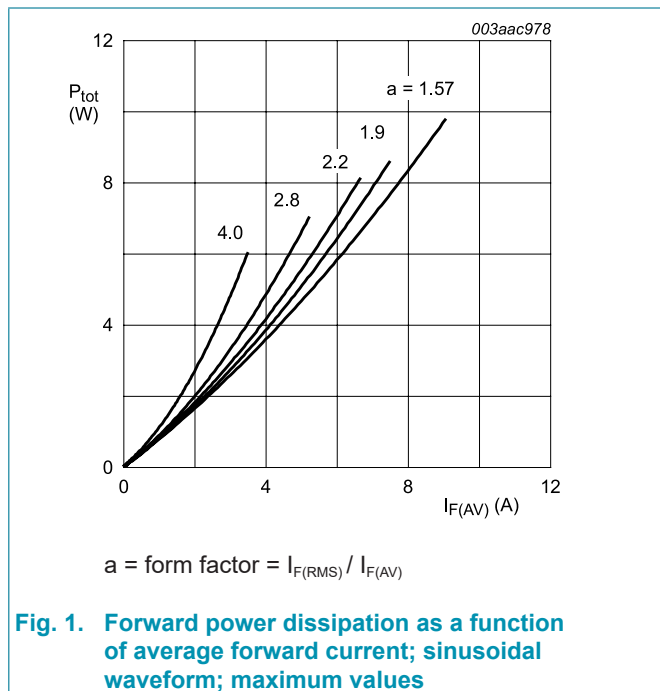
Type number	Marking codes
BYV32EB-200	BYV32EB-200

### 8. Limiting values

**Table 5. Limiting values**

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

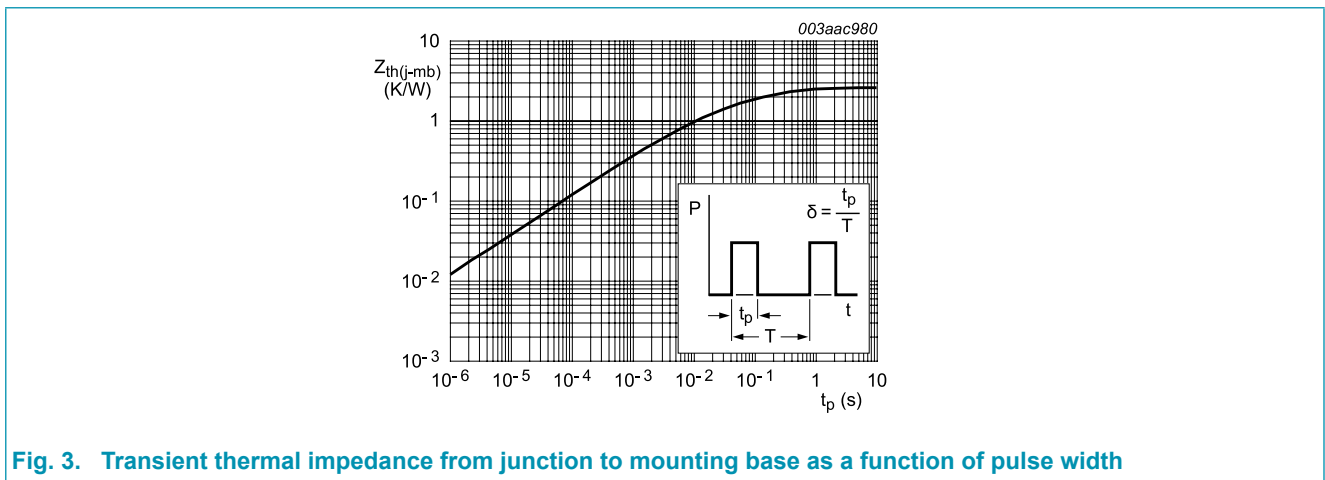
Symbol	Parameter	Conditions	Values	Unit
$V_{RRM}$	repetitive peak reverse voltage		200	V
$V_{RWM}$	crest working reverse voltage		200	V
$V_R$	reverse voltage	DC	200	V
$I_{O(AV)}$	average output current	$\delta = 0.5$ ; square-wave pulse; $T_{mb} \leq 115\text{ }^\circ\text{C}$ ; both diodes conducting; Fig 1; Fig 2	20	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25\text{ }\mu\text{s}$ ; $T_{mb} \leq 115\text{ }^\circ\text{C}$ ; per diode	20	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10\text{ ms}$ ; sine-wave pulse; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; per diode	125	A
		$t_p = 8.3\text{ ms}$ ; sine-wave pulse; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$ ; per diode	137	A
$I_{RRM}$	repetitive peak reverse current	$\delta = 0.001$ ; $t_p = 2\text{ }\mu\text{s}$ ; per diode	0.2	A
$I_{RSM}$	non-repetitive peak reverse current	$t_p = 100\text{ }\mu\text{s}$ ; per diode	0.2	A
$T_{stg}$	storage temperature		-40 to 150	$^\circ\text{C}$
$T_j$	junction temperature		150	$^\circ\text{C}$
$V_{ESD}$	electrostatic discharge voltage	HBM; all pins; C = 250 pF; R = 1.5 k $\Omega$	8	kV



### 9. Thermal characteristics

Table 6. Thermal characteristics

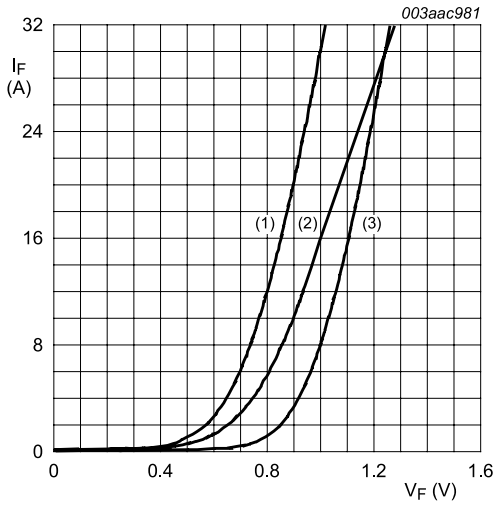
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	with heatsink compound; both diodes conducting	-	-	1.6	K/W
		with heatsink compound; per diode; <a href="#">Fig 3</a>	-	-	2.4	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient		-	60	-	K/W



## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 8 \text{ A}; T_j = 150 \text{ }^\circ\text{C};$ <a href="#">Fig. 4</a>	-	0.72	0.85	V
		$I_F = 20 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$	-	1	1.15	V
$I_R$	reverse current	$V_R = 200 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	-	6	30	$\mu\text{A}$
		$V_R = 200 \text{ V}; T_j = 100 \text{ }^\circ\text{C}$	-	0.2	0.6	mA
<b>Dynamic characteristics</b>						
$Q_r$	recovered charge	$I_F = 2 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 20 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C}$	-	8	12.5	nC
$t_{rr}$	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ ramp recovery; <a href="#">Fig. 5</a>	-	20	25	ns
		$I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ measured at $I_R = 0.25 \text{ A};$ step recovery; <a href="#">Fig. 6</a>	-	10	20	ns
$V_{FR}$	forward recovery voltage	$I_F = 1 \text{ A}; dI_F/dt = 10 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C};$ <a href="#">Fig. 7</a>	-	-	1	V



(1)  $T_j = 150\text{ }^\circ\text{C}$ ; typical values  
 (2)  $T_j = 150\text{ }^\circ\text{C}$ ; maximum values  
 (3)  $T_j = 25\text{ }^\circ\text{C}$ ; maximum values

Fig. 4. Forward current as a function of forward voltage

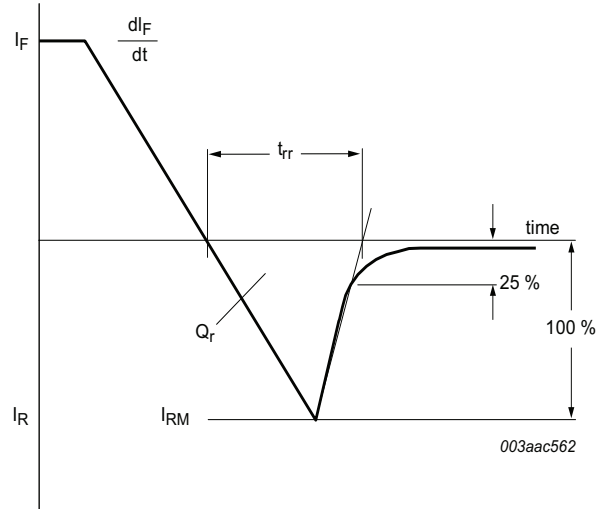


Fig. 5. Reverse recovery definitions; ramp recovery

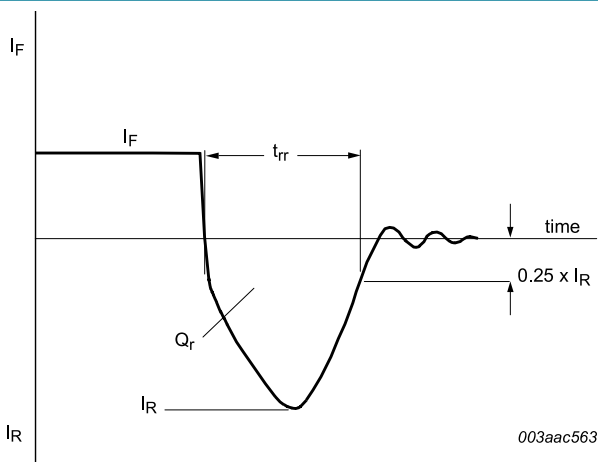


Fig. 6. Reverse recovery definitions; step recovery

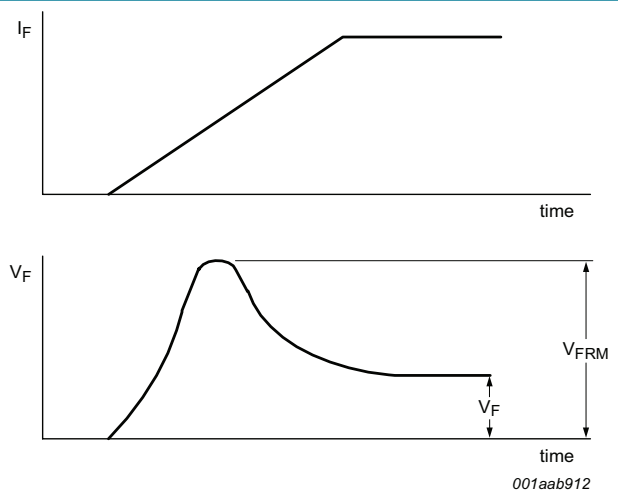
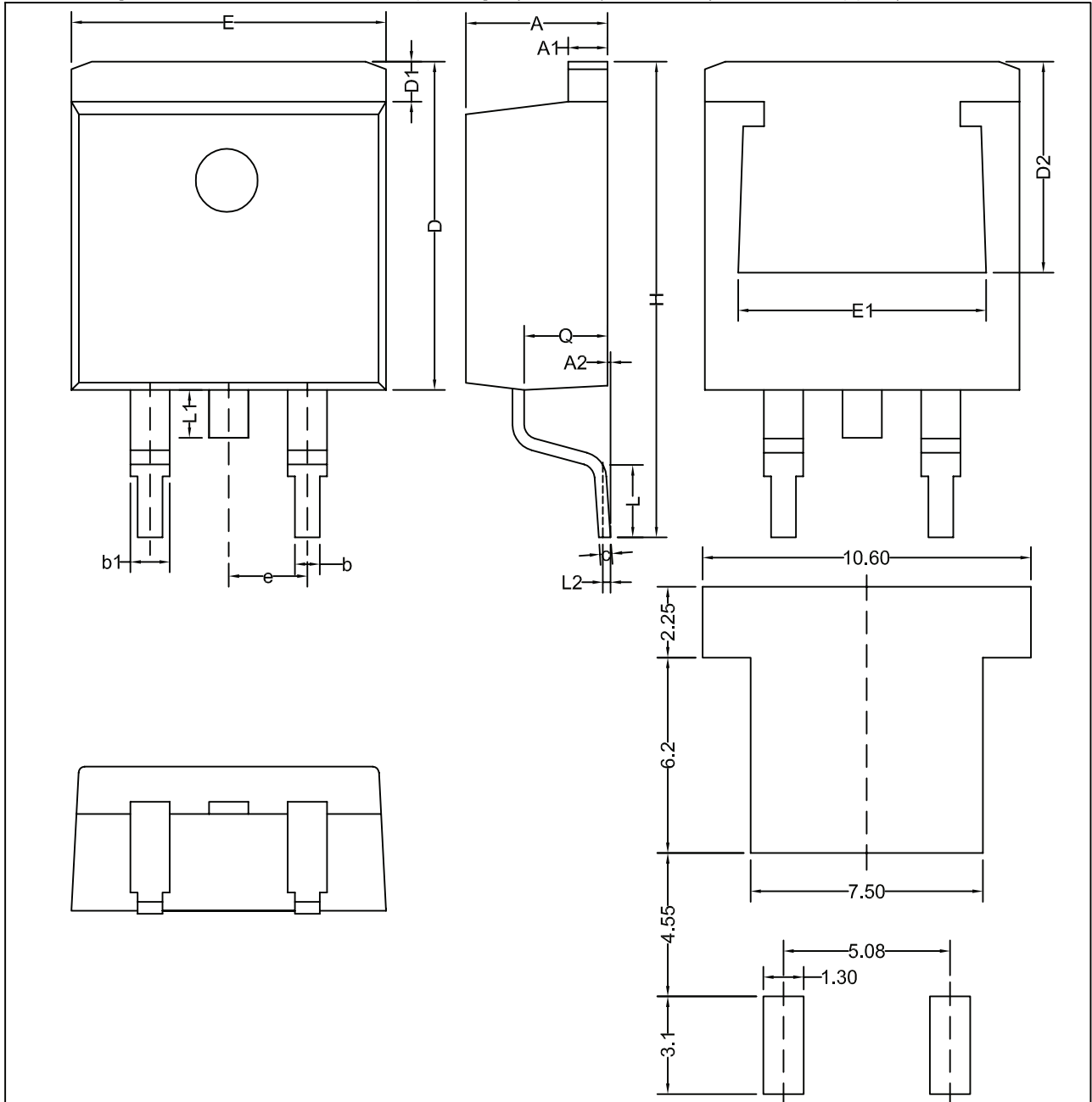


Fig. 7. Forward recovery definitions

### 11. Package outline

Plastic single-ended surface-mounted package (D2PAK); 3 leads (one lead cropped)

TO263



Recommended Footprint

	A	A1	A2	b	b1	c	D	D1	D2	e	E	E1	H	L	L1	L2	Q
min	4.10	1.22	0.00	0.60	1.05	0.34	---	1.20	6.60		9.70	7.80	14.80	2.10	---	0.25 (BSC)	2.20
max	4.70	1.40	0.25	0.90	1.45	0.64	11.00	1.60	---	2.54 (BSC)	10.30	---	15.80	2.90	1.75	0.25 (BSC)	2.79

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