Product data sheet

1. General description

Dual ultrafast power diode in TO263 (D2PAK) plastic package.

2. Features and benefits

- Low on-state loss
- Ultra low leakage
- Fast switching
- Soft recovery characteristic minimizes power consuming oscillations
- · High reverse surge capability
- High thermal cycling performance
- Low thermal resistance

3. Applications

Home appliance power supply

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Values		Unit
Absolute	maximum rating					
V_{RRM}	repetitive peak reverse voltage			200		V
$I_{O(AV)}$	average output current	$\bar{\delta}$ = 0.5 ; square-wave pulse; $T_{mb} \le$ 143 °C; both diodes conducting; Fig. 1; Fig. 2; Fig. 3		20		А
I _{FRM}	repetitive peak forward current	$\bar{\delta}$ = 0.5 ; t_p = 25 µs; $T_{mb} \le$ 151 °C; square-wave pulse ; per diode		20		А
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode; Fig. 4		125		А
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode		137		А
I _{RRM}	repetitive peak reverse current	square-wave pulse; f = 1 kHz; t_p = 2 μ s; per diode		0.2		А
V_{ESD}	electrostatic discharge voltage	all pin; human body model; C = 250 pF; R = 1.5 k Ω	8		kV	
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Static ch	aracteristics					
V _F	forward voltage	$I_F = 20A$; $T_j = 25$ °C; per diode; Fig. 6	-	1.06	1.15	V
		I _F = 8 A; T _j = 150 °C; per diode; <u>Fig. 6</u>	-	0.76	0.85	V
Dynamic	characteristics					
t _{rr}	reverse recovery time	$I_F = 1 \text{ A; } V_R = 30 \text{ V; } dI_F/dt = 100 \text{ A/}\mu\text{s;}$ $T_j = 25 \text{ °C; per diode; } Fig. 7$	-	18	25	ns

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	Α	anode	mb	A1 A2
2	K	cathode		N. [21] 14]
3	Α	anode]	K sym125
mb	mb	mounting base; connected to cathod		

6. Ordering information

Table 3. Ordering information

Type number	Package				
	Name	Description	Version		
BYV32EB-200P	TO-263	plastic single-ended surface-mounted package (DPAK); 3-leads (one lead cropped)	DPAK		

7. Marking

Table 4. Marking codes

Type number	Marking codes
BYV32EB-200P	BYV32EB-200P

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	$δ$ = 0.5; square-wave pulse; $T_{mb} \le 143$ °C; both diodes conducting; Fig. 1; Fig. 2; Fig. 3	20	А
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{mb} ≤ 151 °C; square-wave pulse ; per diode	20	Α
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode; Fig. 4	125	Α
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; per diode	137	Α
I _{RRM}	repetitive peak reverse current	square-wave pulse; f = 1 kHz; t_p = 2 μ s; per diode	0.2	А
I _{RSM}	non-repetitive peak reverse current	square-wave pulse; t _p = 100 μs; per diode	0.2	А
T _{stg}	storage temperature		-65 to 175	°C
T _j	junction temperature		175	°C
V_{ESD}	electrostatic discharge voltage	all pin; human body model; C = 250 pF; R = 1.5 kΩ	8	8kV

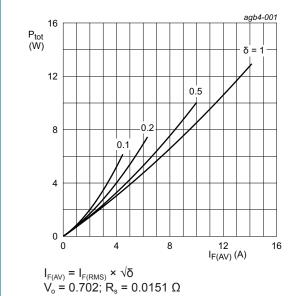
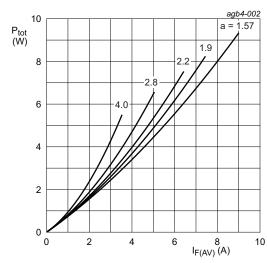


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values; per diode



a = form factor = $I_{F(RMS)}/I_{F(AV)}$ Vo = 0.702 V; Rs = 0.0151 Ω

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

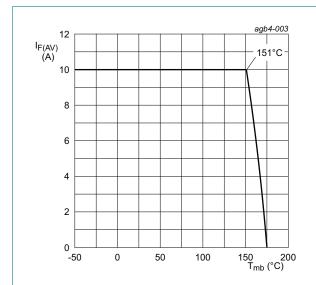


Fig. 3. Forward current as a function of mounting base temperature; maximum values; per diode

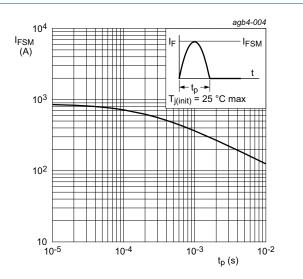
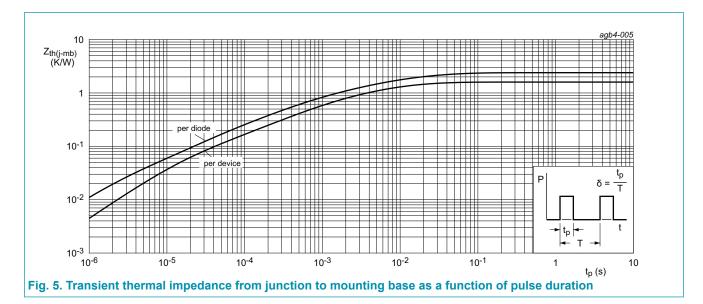


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values; per diode

9. Thermal characteristics

Table 6. Thermal characteristics

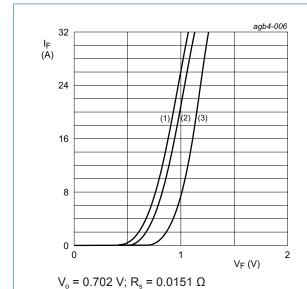
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R _{th(j-mb)}	thermal resistance	per diode; Fig. 5	-	-	2.4	K/W
	from junction to mounting base	both diodes conducting; Fig. 5	-	-	1.6	K/W
R _{th(j-a)}	thermal resistance from junction to ambient free air	in free air	-	50	-	K/W



10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Mir	т Тур	Max	Unit
Static cha	racteristics			'		
V _F	forward current	I _F = 20 A; T _j = 25 °C; per diode; <u>Fig. 6</u>	-	1.06	1.15	V
		I _F = 10 A; T _j = 25 °C; per diode; <u>Fig. 6</u>	-	0.95	-	V
		I _F = 8 A; T _j = 150 °C; per diode; <u>Fig. 6</u>	-	0.76	0.85	V
I _R	reverse current	V _R = 200 V; T _j = 25 °C; per diode	-	0.3	5	μA
		$V_R = 200 \text{ V}; T_j = 150 ^{\circ}\text{C}; \text{ per diode}$	-	70	250	μA
Dynamic	characteristics					
Q _r	reverse charge	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/µs};$ $T_j = 25 \text{ °C}; per diode; Fig. 7$	-	14.5	-	nC
		$I_F = 2 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 20 \text{ A/µs};$ $T_j = 25 ^{\circ}\text{C}; \text{ per diode}; \frac{\text{Fig. 7}}{\text{C}}$		13.5	-	nC
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/µs};$ $T_j = 25 ^{\circ}\text{C}; \text{ per diode}; Fig. 7$	-	18	25	ns
I _{RM}	peak reverse recovery current	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/µs};$ $T_j = 25 ^{\circ}\text{C}; \text{ per diode}; Fig. 7$	-	1.7	-	А



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

(3) T_i = 25 °C; maximum values

Fig. 6. Forward current as a function of forward voltage; per diode

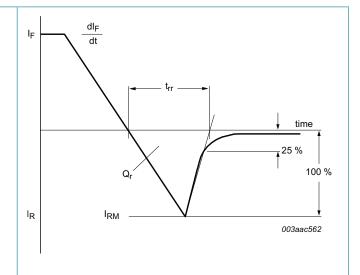
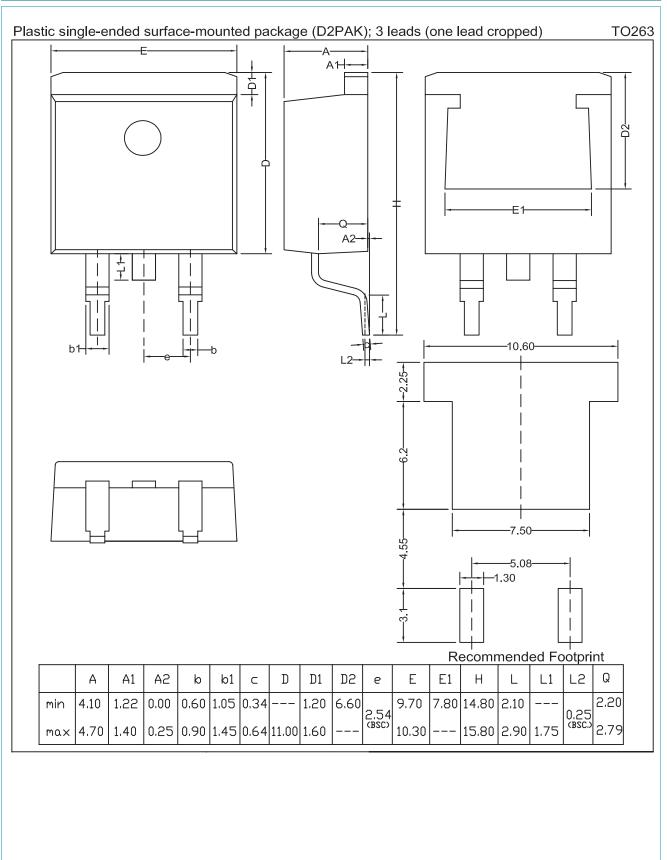


Fig. 7. Reverse recovery definitions; ramp recovery

11. Package outline



12. 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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