Product data sheet

1. General description

Ultrafast power diode in a SMB surface-mountable plastic package.

2. Features and benefits

- Low on-state loss
- Low leakage current
- Low thermal resistance
- Surface-mountable package
- Reduces switching losses in associated MOSFET or IGBT

3. Applications

- Buck and Boost converter
- Discontinuous Current Mode (DCM) Power Factor Correction (PFC)
- Inverter freewheeling and protection diode

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit	
Absolute	maximum rating						
V_{RRM}	repetitive peak reverse voltage		600			V	
$I_{F(AV)}$	average forward current	δ = 0.5 ; square-wave pulse; $T_{lead} \le 86$ °C; Fig. 1; Fig. 2; Fig. 3	3			А	
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t_p = 25 μ s; $T_{lead} \le 86$ °C; square-wave pulse	6			А	
I _{FSM}	non-repetitive peak $t_p = 10 \text{ ms}; T_{j(init)} = 25 \text{ °C}; \text{ sine-wave pulse};$ forward current $\frac{\text{Fig. 4}}{\text{Fig. 4}}$			100			А
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse;	110			А	
Symbol	Parameter	Conditions	Min Typ Max		Max	Unit	
Static ch	aracteristics						
V _F	forward voltage	I _F = 3 A; T _j = 25 °C; <u>Fig. 6</u>		-	-	1.3	V
		I _F = 3 A; T _j = 150 °C; <u>Fig. 6</u>		-	0.88	1.05	V
Dynamic	characteristics						
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 50 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 7$		-	50	-	ns

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5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol		
1	K	cathode		K — <mark>↓</mark> A 001aaa020		
2	Α	anode	1 2	001aaa020		

6. Ordering information

Table 3. Ordering information

Type number	Package	ge				
	Name	Description	Version			
MURS360B	SMB	Hermetically sealed plastic package; SMB; 2 leads	SMB			

7. Marking

Table 4. Marking codes

Type number	Marking codes
MURS360B	360B

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; $T_{lead} \le 86$ °C; Fig. 1; Fig. 2; Fig. 3	3	Α
I _{FRM}	repetitive peak forward current	$δ = 0.5$; $t_p = 25 \mu s$; $T_{lead} \le 86 °C$; square-wave pulse	6	Α
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	100	Α
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse;	110	А
T _{stg}	storage temperature		-65 to 175	°C
T _j	junction temperature		175	°C

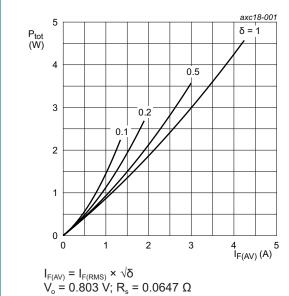
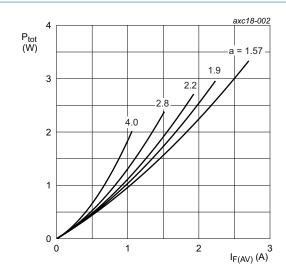


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values



a = form factor = $I_{F(RMS)}/I_{F(AV)}$ Vo = 0.803 V; Rs = 0.0647 Ω

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

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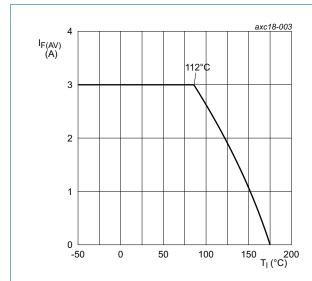


Fig. 3. Forward current as a function of lead temperature; maximum values

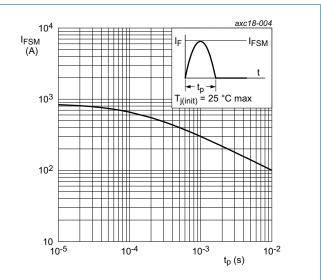


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

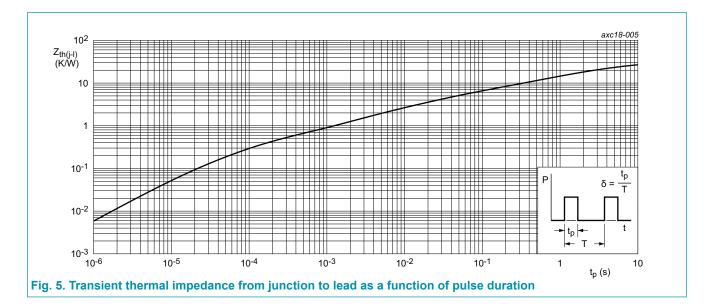
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9. Thermal characteristics

Table 6. Thermal characteristics

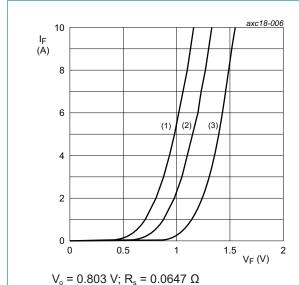
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
$R_{\text{th(j-lead)}}$	thermal resistance from junction to lead	mounted on a minimum footprint printed-circuit board (FR4); Fig. 5	-	-	25	K/W
R _{th(j-a)}	thermal resistance from junction to ambient free air	mounted on a minimum footprint printed-circuit board (FR4)	-	75	-	K/W



10. Characteristics

Table 7. Characteristics

	Parameter	Conditions	Min	Tun	Max	Unit
Symbol		Conditions	IVIIII	Тур	IVIAX	Unit
Static cha	aracteristics	,				
V_{F}	forward current	I _F = 3 A; T _j = 25 °C; <u>Fig. 6</u>	-	-	1.3	V
		I _F = 3 A; T _j = 150 °C; <u>Fig. 6</u>	-	0.88	1.05	V
I_R	reverse current	$V_R = 600 \text{ V}; T_j = 25 ^{\circ}\text{C}$	-	-	3	μA
		V _R = 600 V; T _j = 150 °C	-	-	1	mA
Dynamic	characteristics					
Q _r	reverse charge	$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 7$	-	122	-	nC
		$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 125 \text{ °C}; Fig. 7$	-	199	-	nC
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 50 \text{ A/}\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 7$	-	50	-	ns
		$I_F = 0.5 \text{ A}$; $I_R = 1 \text{ A}$; $I_{R(meas)} = 0.25 \text{ A}$; $T_j = 25 ^{\circ}\text{C}$; Step recovery	-	-	50	ns
		$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 7$	-	52	-	ns
		$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 125 \text{ °C}; Fig. 7$	-	65	-	ns
I _{RM}	peak reverse recovery current	$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 7$	-	4.7	-	А
		$I_F = 3 \text{ A}; V_R = 400 \text{ V}; dI_F/dt = 200 \text{ A/}\mu\text{s};$ $T_j = 125 \text{ °C}; Fig. 7$	-	6.1	-	А
E _{as}	non-repetitive avalanche energy	$I_R = 1.2 \text{ A}; T_{j(init)} = 25 \text{ °C}; L = 15 \text{ mH}$	10.8	-	-	mJ



(1) T_i = 150 °C; typical values

(2) T_i = 150 °C; maximum values

(3) T_j = 25 °C; maximum values Fig. 6. Forward current as a function of forward voltage

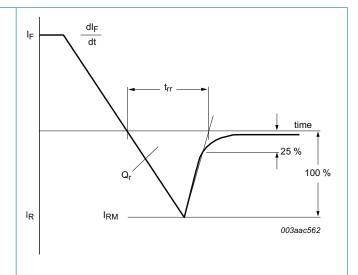
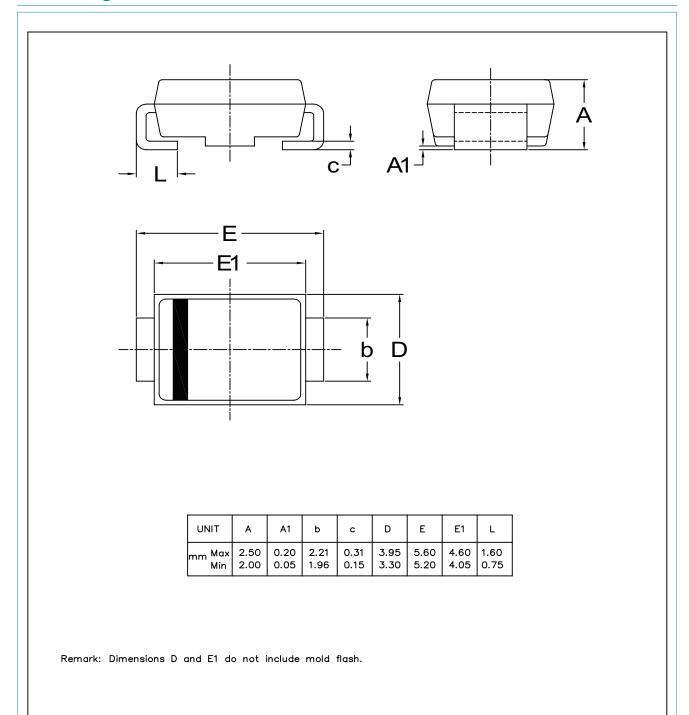


Fig. 7. Reverse recovery definitions; ramp recovery

11. Package outline



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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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