

## 1. General description

Ultrafast power diode in a SMB package.

## 2. Features and benefits

- Fast switching
- SMB package
- High voltage capability
- Low forward voltage drop
- Low leakage current
- Low thermal resistance
- Soft recovery characteristic

## 3. Applications

- Discontinuous Current Mode (DCM) Power Factor Correction (PFC)
- use in switching power supplies, inverters and as free wheeling diodes
- High frequency switched-mode power supplies

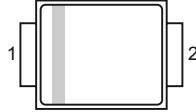

## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$V_{RRM}$	repetitive peak reverse voltage		600	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; $T_{lead} \leq 158 \text{ }^\circ\text{C}$ ; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	1	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25 \text{ } \mu\text{s}$ ; $T_{lead} \leq 158 \text{ }^\circ\text{C}$ ; square-wave pulse	2	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10 \text{ ms}$ ; $T_{j(init)} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse; <a href="#">Fig. 4</a>	35	A
		$t_p = 8.3 \text{ ms}$ ; $T_{j(init)} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	38	A

## 5. Pinning information

**Table 2. Pinning information**

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
2	A	anode		

## 6. Ordering information

**Table 3. Ordering information**

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
MURS160B	SMB	MURS160BJ	Reel	3000	SMBS	25-May-2017

## 7. Marking

**Table 4. Marking codes**

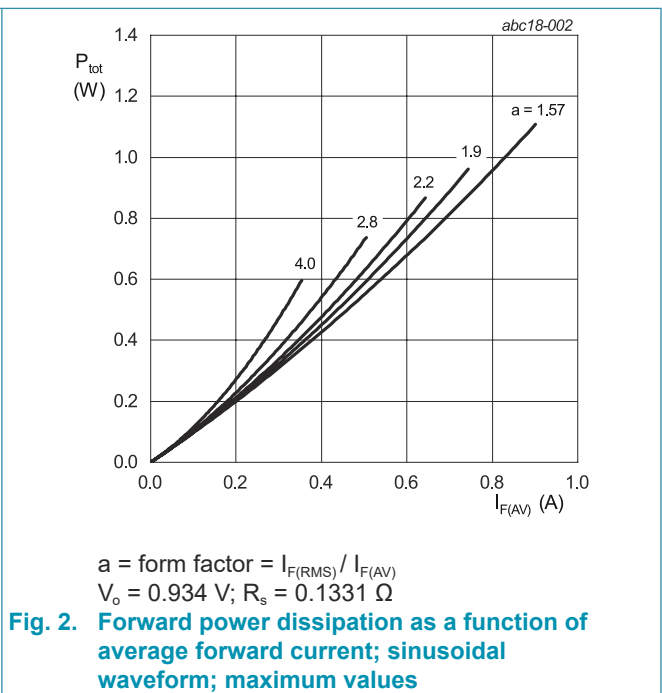
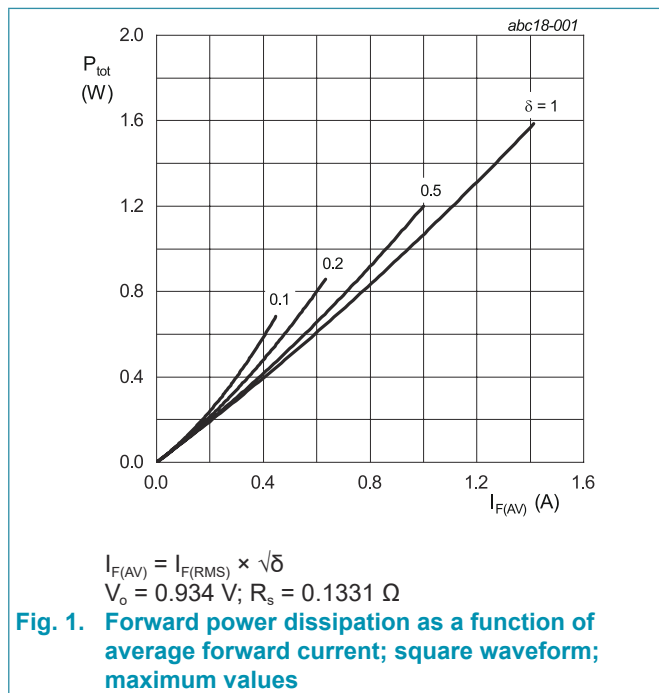
Type number	Marking codes
MURS160B	160B

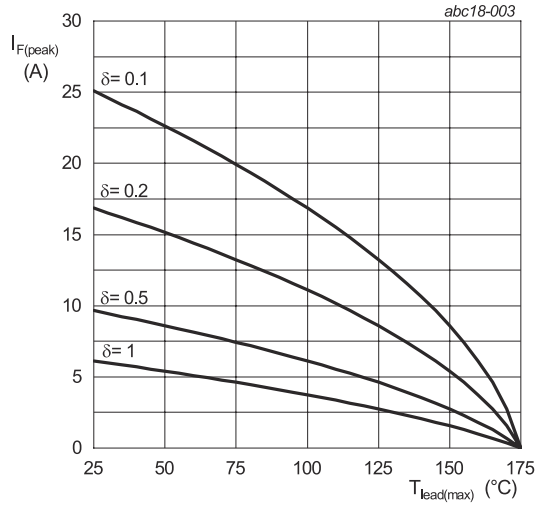
## 8. Limiting values

**Table 5. Limiting values**

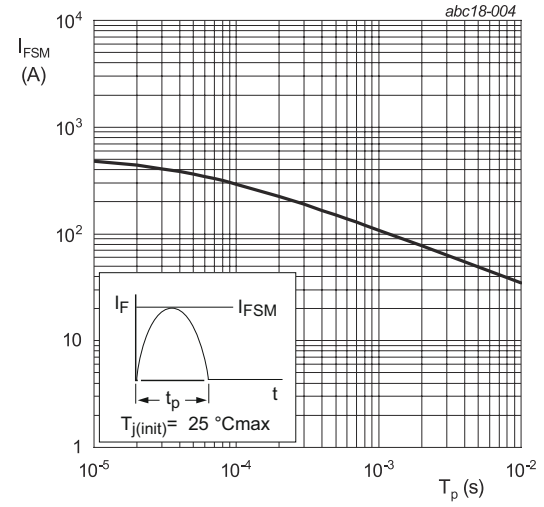
In accordance with the Absolute Maximum Rating System (IEC 60134).

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	$\delta = 0.5$ ; square-wave pulse; $T_{lead} \leq 158 \text{ }^\circ\text{C}$ ; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	1	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25 \text{ } \mu\text{s}$ ; $T_{lead} \leq 158 \text{ }^\circ\text{C}$ ; square-wave pulse	2	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse; <a href="#">Fig. 4</a>	35	A
		$t_p = 8.3 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$ ; sine-wave pulse	38	A
$T_{stg}$	storage temperature		-65 to 175	$^\circ\text{C}$
$T_j$	junction temperature		175	$^\circ\text{C}$





**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**

## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-lead)}$	thermal resistance from junction to lead	<a href="#">Fig. 5</a>	-	-	14	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	115	-	K/W

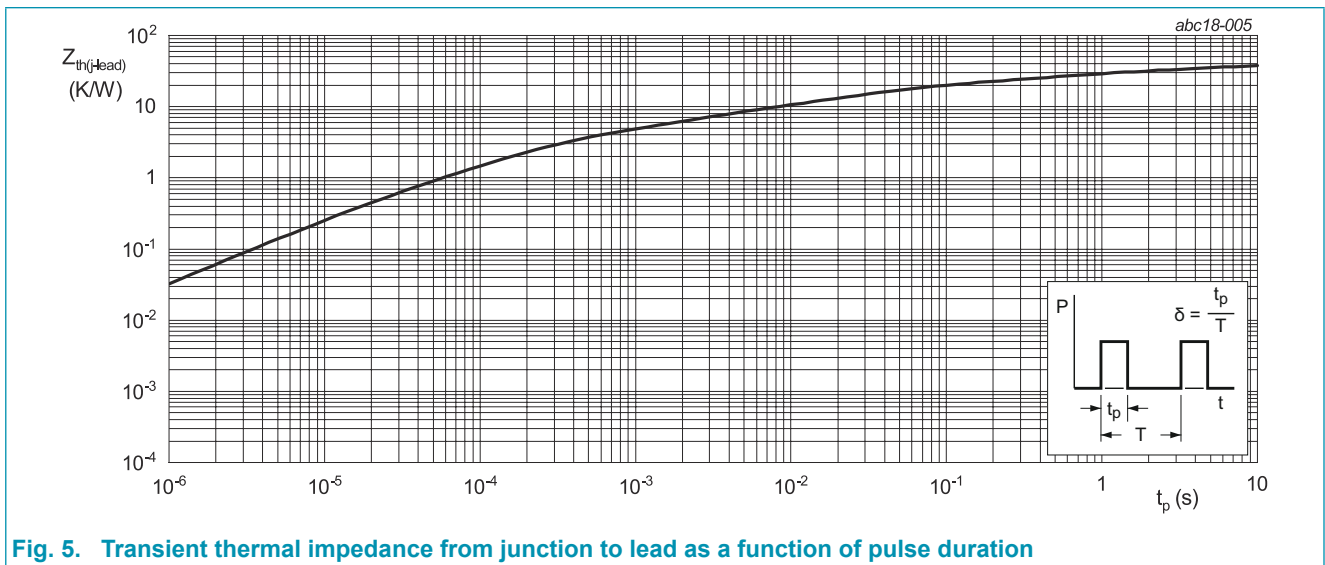
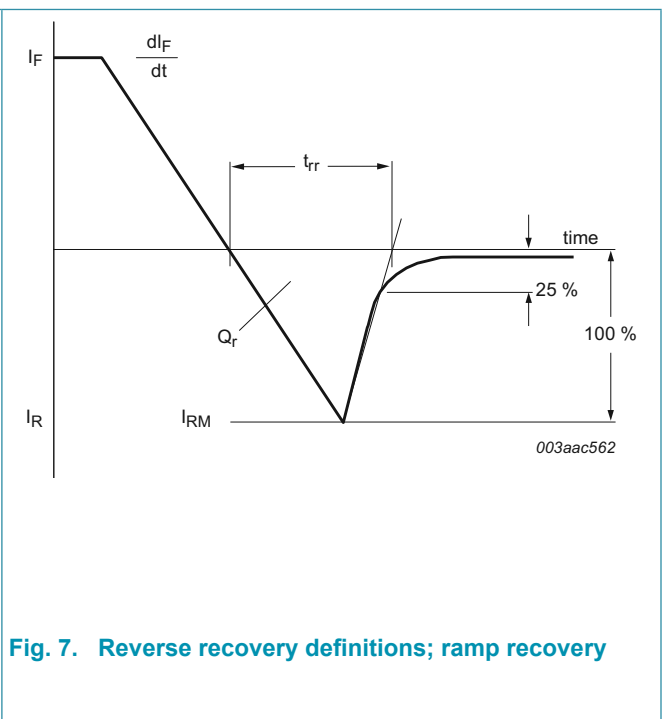
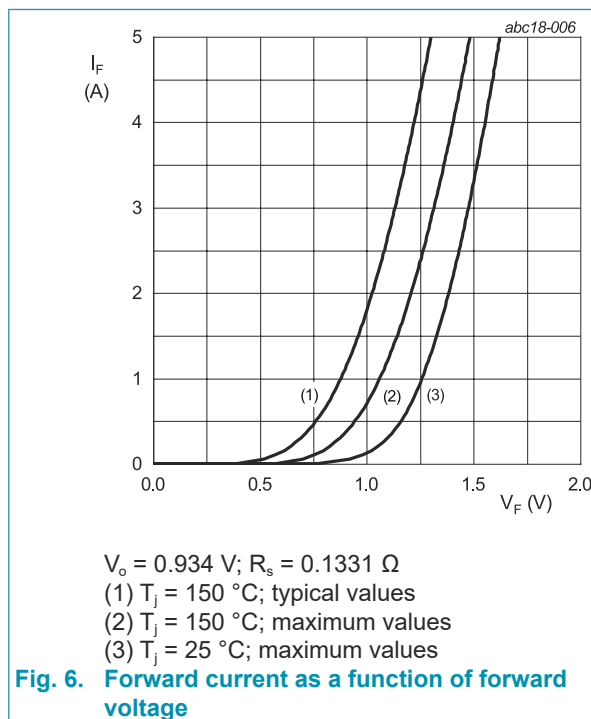


Fig. 5. Transient thermal impedance from junction to lead as a function of pulse duration

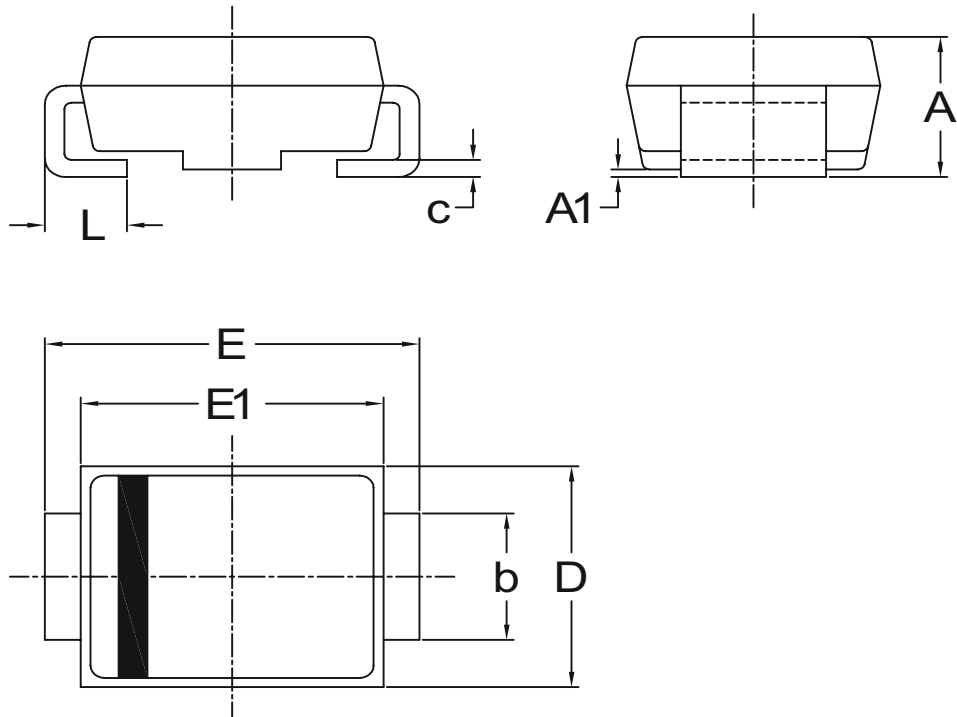
## 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 1\text{ A}; T_J = 25\text{ °C}$	-	-	1.25	V
		$I_F = 1\text{ A}; T_J = 150\text{ °C}$	-	-	1.05	V
$I_R$	reverse current	$V_R = 600\text{ V}; T_J = 25\text{ °C}$	-	-	5	$\mu\text{A}$
		$V_R = 600\text{ V}; T_J = 150\text{ °C}$	-	-	150	$\mu\text{A}$
<b>Dynamic characteristics</b>						
$Q_r$	reverse charge	$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 25\text{ °C}; \text{Fig. 7}$	-	45	-	nC
		$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 125\text{ °C}; \text{Fig. 7}$	-	81	-	nC
$t_{rr}$	reverse recovery time	$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 50\text{ A/us}; T_J = 25\text{ °C}; \text{Fig. 7}$	-	40	75	ns
		$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 25\text{ °C}; \text{Fig. 7}$	-	31	-	ns
		$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 125\text{ °C}; \text{Fig. 7}$	-	46	-	ns
		$I_F = 0.5\text{ A}; I_R = 1\text{ A}; I_{R(max)} = 0.25\text{ A}; T_J = 25\text{ °C}; \text{Step recovery}$	-	-	40	ns
$I_{RM}$	peak reverse recovery current	$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 25\text{ °C}; \text{Fig. 7}$	-	2.9	-	A
		$I_F = 1\text{ A}; V_R = 400\text{ V}; dI_F/dt = 200\text{ A/us}; T_J = 125\text{ °C}; \text{Fig. 7}$	-	3.5	-	A



### 11. Package outline



UNIT	A	A1	b	c	D	E	E1	L	
mm	Max	2.50	0.20	2.21	0.31	3.95	5.60	4.60	1.60
	Min	2.00	0.05	1.96	0.15	3.30	5.20	4.05	0.75

Remark: Dimensions D and E1 do not include mold flash.

## 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.
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