



# THE DATASHEET OF MUR560J



## 1. General description

Ultrafast power diode in a SMC package.

## 2. Features and benefits

- Fast switching
- SMC 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)
- High frequency switched-mode power supplies


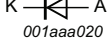
## 4. Quick reference data

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; $T_{lead} \leq 96$ °C; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	5			A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25$ $\mu$ s; $T_{lead} \leq 96$ °C; square-wave pulse	10			A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; <a href="#">Fig. 4</a>	130			A
		$t_p = 8.3$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse;	143			A
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 5$ A; $T_j = 25$ °C; <a href="#">Fig. 6</a>	-	1.10	1.35	V
		$I_F = 5$ A; $T_j = 150$ °C; <a href="#">Fig. 6</a>	-	0.9	1.15	V
<b>Dynamic characteristics</b>						
$t_{rr}$	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $di_F/dt = 50$ A/ $\mu$ s; $T_j = 25$ °C; <a href="#">Fig. 7</a>	-	45	-	ns

## 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	Description	Version
MUR560	SMC	Hermetically sealed plastic package; SMC; 2 leads	SMC

## 7. Marking

Table 4. Marking codes

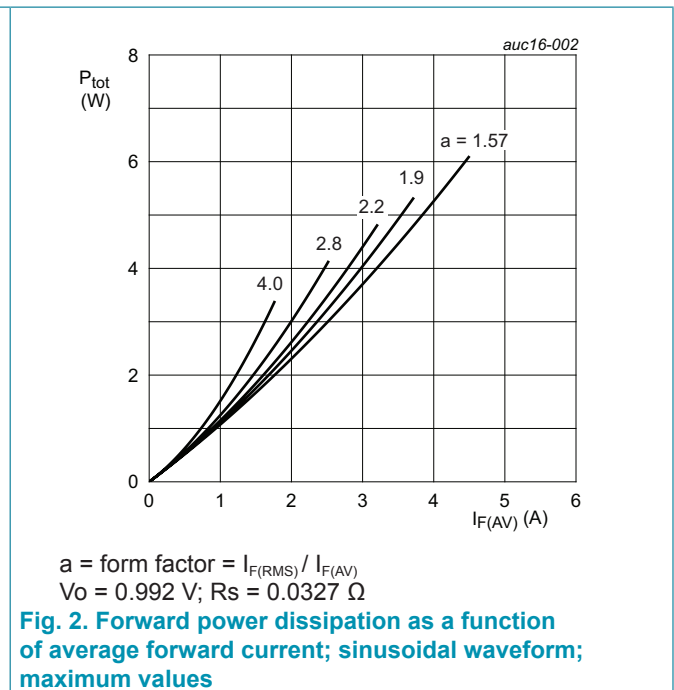
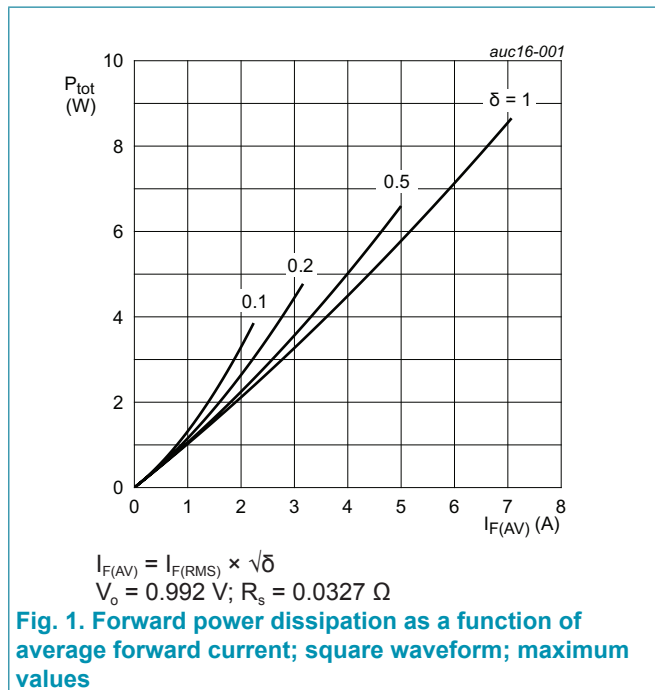
Type number	Marking codes
MUR560	560

## 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; $T_{lead} \leq 96\text{ }^\circ\text{C}$ ; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a> ; <a href="#">Fig. 3</a>	5	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25\text{ }\mu\text{s}$ ; $T_{lead} \leq 96\text{ }^\circ\text{C}$ ; square-wave pulse	10	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>	130	A
		$t_p = 8.3\text{ ms}$ ; $T_{j(init)} = 25\text{ }^\circ\text{C}$ ; sine-wave pulse;	143	A
$T_{stg}$	storage temperature		-65 to 175	$^\circ\text{C}$
$T_j$	junction temperature		175	$^\circ\text{C}$



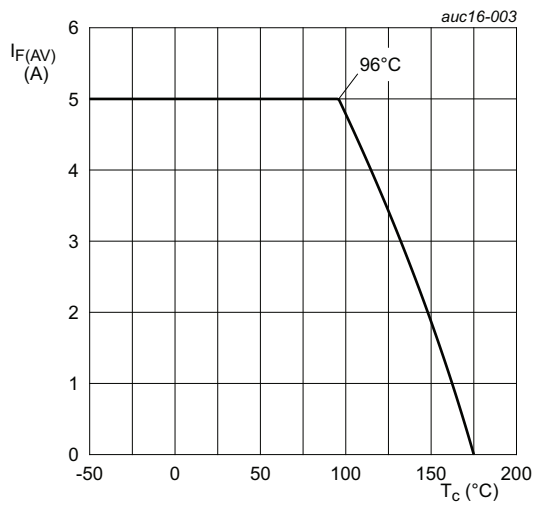


Fig. 3. Forward current as a function of case temperature; maximum values

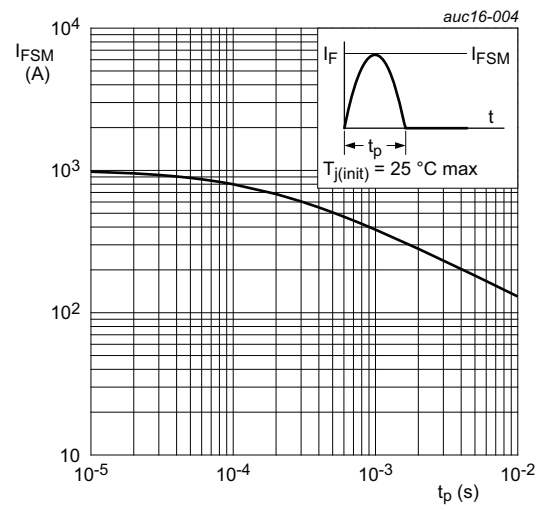


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

## 9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-c)}$	thermal resistance from junction to case	mounted on a minimum footprint printed-circuit board (FR4); <a href="#">Fig. 5</a>	-	-	12	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

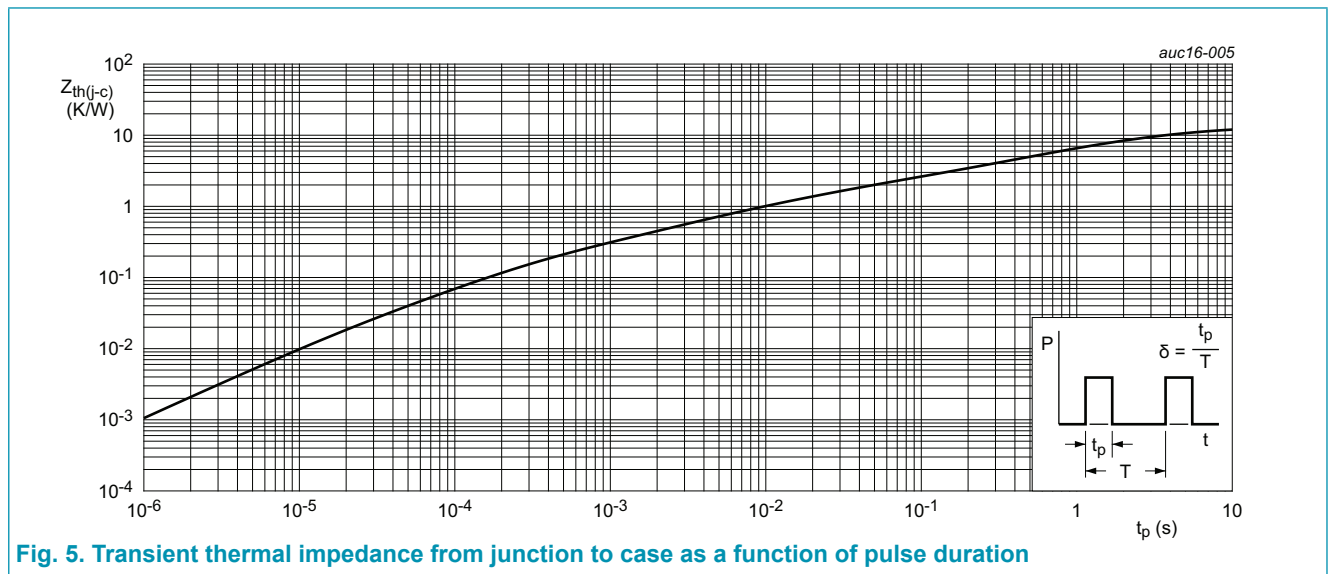
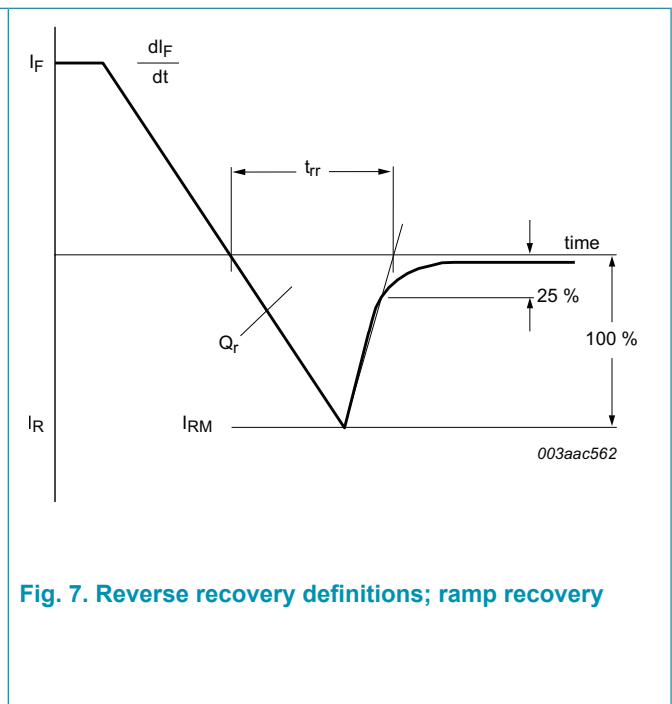
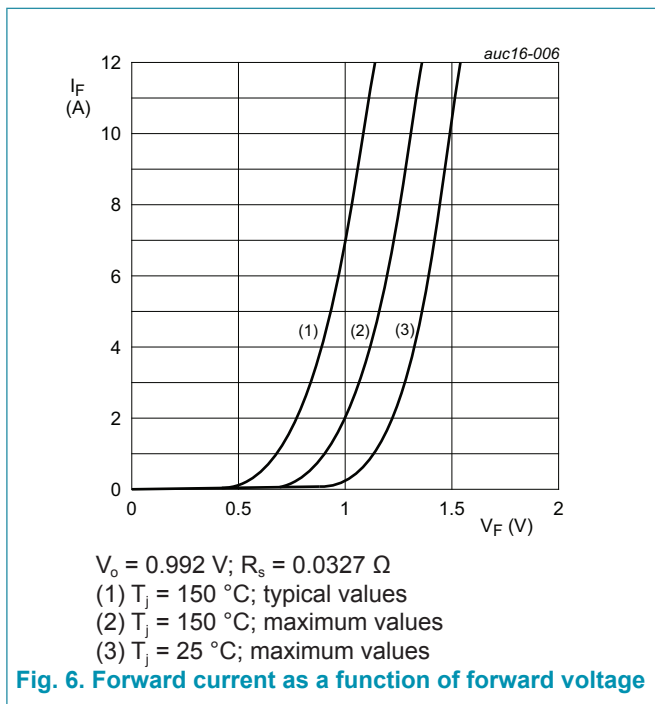


Fig. 5. Transient thermal impedance from junction to case as a function of pulse duration

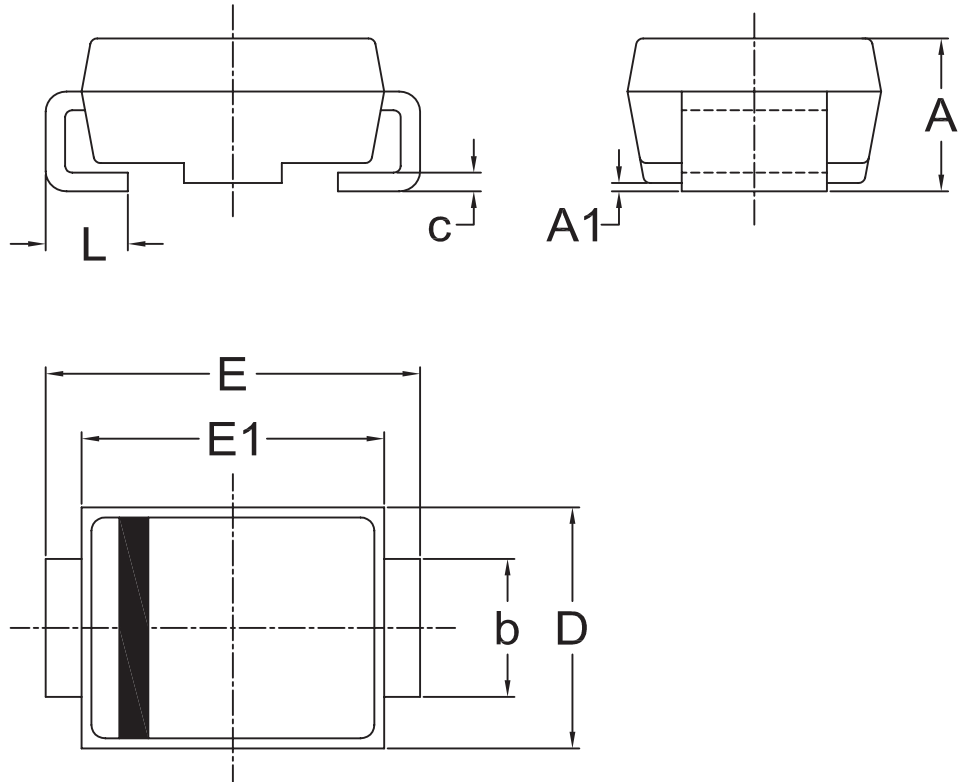
### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
V <sub>F</sub>	forward current	I <sub>F</sub> = 5 A; T <sub>j</sub> = 25 °C; Fig. 6	-	1.10	1.35	V
		I <sub>F</sub> = 5 A; T <sub>j</sub> = 150 °C; Fig. 6	-	0.9	1.15	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 600 V; T <sub>j</sub> = 25 °C	-	-	3	µA
		V <sub>R</sub> = 600 V; T <sub>j</sub> = 150 °C	-	-	250	µA
<b>Dynamic characteristics</b>						
Q <sub>r</sub>	reverse charge	I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 25 °C; Fig. 7	-	216	-	nC
		I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 125 °C; Fig. 7	-	420	-	nC
t <sub>rr</sub>	reverse recovery time	I <sub>F</sub> = 1 A; V <sub>R</sub> = 30 V; dI <sub>F</sub> /dt = 50 A/µs; T <sub>j</sub> = 25 °C; Fig. 7	-	45	-	ns
		I <sub>F</sub> = 0.5 A; I <sub>R</sub> = 1 A; I <sub>R(meas)</sub> = 0.25 A; T <sub>j</sub> = 25 °C; Step recovery	-	-	65	ns
		I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 25 °C; Fig. 7	-	64	-	ns
		I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 125 °C; Fig. 7	-	88	-	ns
I <sub>RM</sub>	peak reverse recovery current	I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 25 °C; Fig. 7	-	6.7	-	A
		I <sub>F</sub> = 5 A; V <sub>R</sub> = 400 V; dI <sub>F</sub> /dt = 100 A/µs; T <sub>j</sub> = 125 °C; Fig. 7	-	9.5	-	A
E <sub>as</sub>	non-repetitive avalanche energy	I <sub>R</sub> = 1.2 A; T <sub>j(init)</sub> = 25 °C; L = 15 mH	10.8	-	-	mJ



### 11. Package outline



UNIT		A	A1	b	c	D	E	E1	L
mm	Max	2.40	0.22	3.18	0.31	6.22	8.13	7.11	1.52
	Min	2.01	0.05	2.92	0.15	5.59	7.70	6.60	0.76

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

## 12. Legal information

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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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## 13. Contents

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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. Characteristics.....	6
11. Package outline .....	7
12. Legal information .....	8
13. Contents .....	10

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