

Product data sheet

1. General description

Ultrafast power diode in a SMC package.

2. Features and benefits

- Low on-state loss
- Low leakage current
- Low thermal resistance
- Surface-mountable package

3. Applications

- Switching mode power supply
- · High frequency rectifiers in buck and fly-back circuits
- Discontinuous Current Mode (DCM) Power Factor Correction (PFC)
- Terminal Adapter
- · Inverter freewheeling and protection diode
- TV Power and LED Power

4. Quick reference data

Table 1. Qu	uick reference data			
Symbol	Parameter	Conditions	Values	Unit
Absolute	maximum rating			
V_{RRM}	repetitive peak reverse voltage		200	V
I _{F(AV)}	average forward current	δ = 0.5; square-wave pulse; T _{lead} ≤ 148 °C; Fig. 1; Fig. 2; Fig. 3	3	A
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{lead} ≤ 148 °C; square-wave pulse	6	A
I _{FSM}	non-repetitive peak forward current	$t_{\rm p}$ = 10 ms; $T_{j(\text{init})}$ = 25 °C; sine-wave pulse; <u>Fig. 4</u>	160	A
		$t_{\rm p}$ = 8.3 ms; $T_{j(\text{init})}$ = 25 °C; sine-wave pulse	176	А

5. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	К	cathode		
2	A	anode		K — — A 001aaa020

6. Ordering information

Table 3. Ordering information							
Type number	Package	Orderable part number	Packing	Small packing	Package	Package	
	Name		method	quantity	version	issue date	
MUR320	SMC	MUR320J	Reel	3000	SMCS	16-Aug-2017	

7. Marking

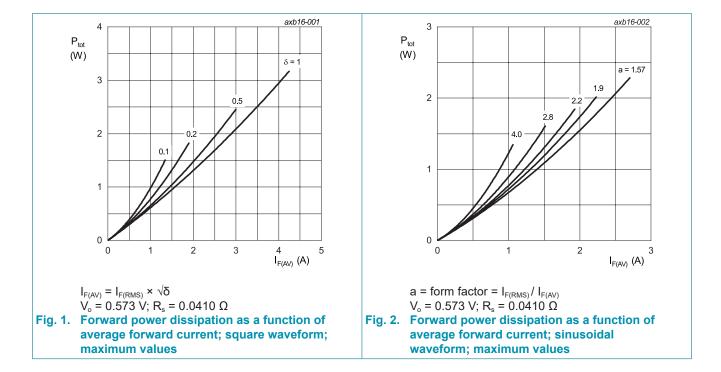
Table 4. Marking codes					
Type number	Marking codes				
MUR320	320				

8. Limiting values

Table 5. Limiting values

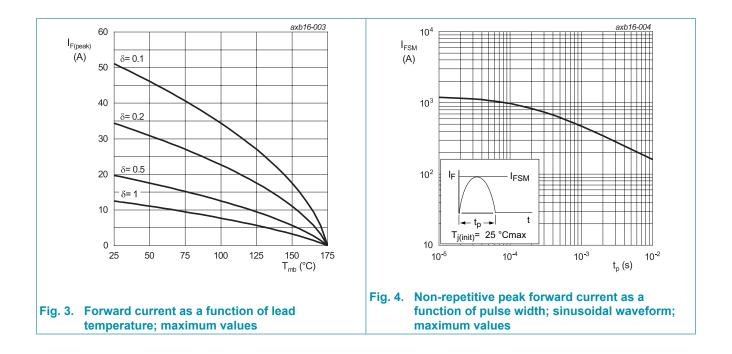
In accordance with the Absolute Maximum Rating System (IEC 60134).

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 _{F(AV)}	average forward current	δ = 0.5; square-wave pulse; T _{lead} ≤ 148 °C; Fig. 1; Fig. 2; Fig. 3	3	A
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{lead} ≤ 148 °C; square-wave pulse	6	A
I _{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	160	A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	176	А
T _{stg}	storage temperature		-65 to 175	°C
Tj	junction temperature		175	°C



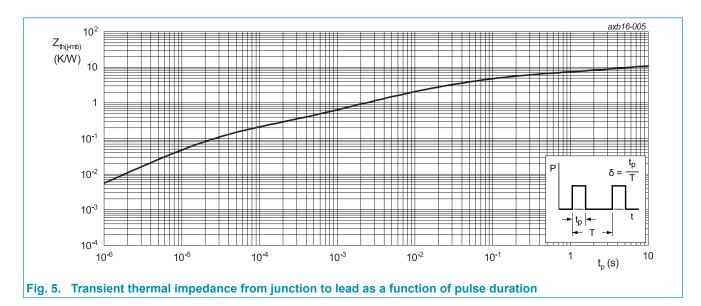
Ultrafast power diode

MUR320



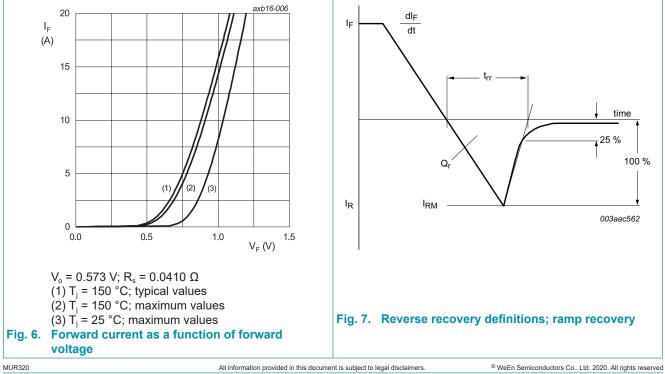
9. Thermal characteristics

Table 6. Th	ermal characteristics					
Symbol	Parameter	Conditions	Min	Тур	Max	Unit
$R_{\text{th(j-lead)}}$	thermal resistance from junction to lead	<u>Fig. 5</u>	-	-	11	K/W
$R_{\text{th(j-a)}}$	thermal resistance from junction to ambient free air	in free air	-	70	-	K/W

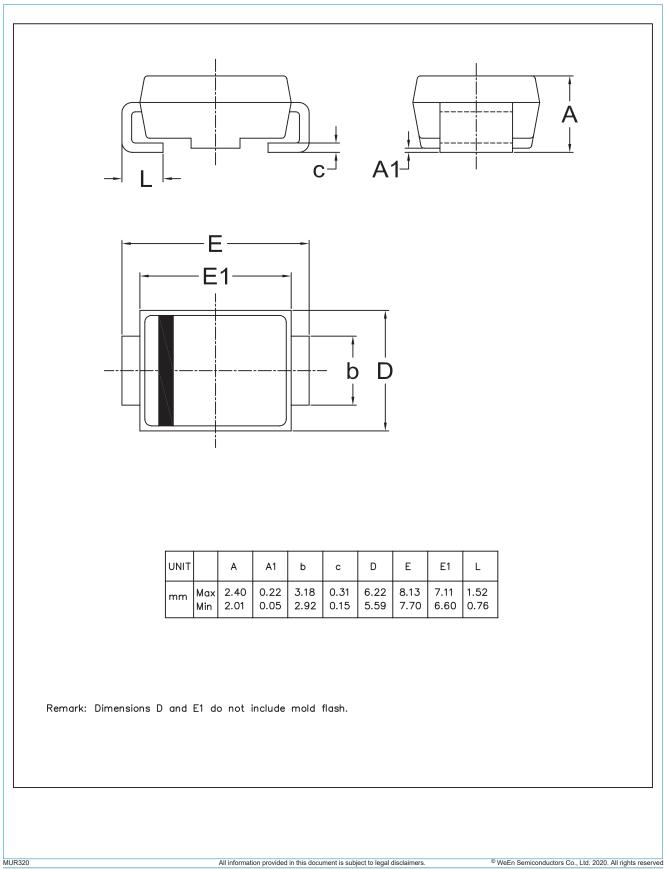


10. Characteristics

Symbol	Parameter	Conditions	Mii	ו Тур	Max	Unit
Static ch	aracteristics					
V _F	forward voltage	I _F = 3 A; T _j = 25 °C; <u>Fig. 6</u>	-	-	0.875	V
		I _F = 3 A; T _j = 150 °C; <u>Fig. 6</u>	-	-	0.71	V
R	reverse current	V _R = 200 V; T _j = 25 °C	-	-	10	μA
		V _R = 200 V; T _j = 150 °C	-	-	400	μA
Dynamic	characteristics	1	<u> </u>		_	
Q _r	reverse charge	I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 25 °C; <u>Fig. 7</u>	-	32	-	nC
		I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 125 °C; <u>Fig. 7</u>	-	77	-	nC
t _{rr}	reverse recovery time	I _F = 1 A; V _R = 30 V; dI _F /dt= 50 A/us; T _j = 25 °C; <u>Fig. 7</u>	-	-	35	ns
		$I_F = 0.5 \text{ A}; I_R = 1 \text{ A}; I_{R(meas)} = 0.25 \text{ A};$ $T_j = 25 \text{ °C}; \text{ Step Recovery}$	-	-	28	ns
		I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 25 °C; <u>Fig. 7</u>	-	27	-	ns
		I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 125 °C; <u>Fig. 7</u>	-	41	-	ns
I _{RM}	peak reverse recovery current	I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 25 °C; <u>Fig. 7</u>	-	2.4	-	A
		I _F = 3 A; V _R = 100 V; dI _F /dt = 100 A/us; T _j = 125 °C; <u>Fig. 7</u>	-	3.8	-	A
E _{as}	non-repetitive avalanche energy	I _R = 1.2 A; T _{j(init)} = 25 °C; L = 15 mH	10.	8 -	-	mJ



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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