

## Surface-Mount Ultrafast Plastic Rectifier


**SMC (DO-214AB)**

Cathode  Anode

### LINKS TO ADDITIONAL RESOURCES


[3D Models](#)

#### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	4.0 A
$V_{RRM}$	600 V
$I_{FSM}$	110 A
$t_{rr}$	50 ns
$V_F$ at $I_F = 4.0$ A ( $T_A = 25$ °C)	1.28 V
$T_J$ max.	175 °C
Package	SMC (DO-214AB)
Circuit configuration	Single

### FEATURES

- Glass passivated pellet chip junction
- Ideal for automated placement
- Ultrafast reverse recovery time
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

### TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converters and inverters for consumer, computer, and telecommunication.

### MECHANICAL DATA

**Case:** SMC (DO-214AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 and M3 suffix meets JESD 201 class 2 whisker test

**Polarity:** color band denotes cathode end

#### MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	MURS460	UNIT
Device marking code		4MJ	
Maximum repetitive peak reverse voltage	$V_{RRM}$	600	V
Working peak reverse voltage	$V_{RWM}$	600	V
Maximum DC blocking voltage	$V_{DC}$	600	V
Maximum average forward rectified current	$I_{F(AV)}^{(1)}$	2.4	A
	$I_{F(AV)}^{(2)}$	4.0	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	110	A
Peak forward surge current 1 ms single half sine-wave superimposed on rated load	$I_{FSM}$	220	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C

#### Notes

<sup>(1)</sup> Free air, mounted on recommended copper pad area

<sup>(2)</sup> Mounted on 25 mm x 25 mm pad area



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	MURS460	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 3.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	1.25	V
	I <sub>F</sub> = 4.0 A			1.28	
	I <sub>F</sub> = 3.0 A	T <sub>A</sub> = 150 °C		1.05	
Maximum instantaneous reverse current at rated DC blocking voltage	V <sub>R</sub> = 600 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	10	μA
		T <sub>A</sub> = 150 °C		250	
Maximum reverse recovery time	I <sub>F</sub> = 0.5 A, I <sub>R</sub> = 1.0 A, I <sub>rr</sub> = 0.25 A		t <sub>rr</sub>	50	ns
	I <sub>F</sub> = 1.0 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 10 % I <sub>RM</sub>			75	

**Notes**(1) Pulse test:  $t_p = 300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$ (2) Pulse test: pulse width  $\leq 40\text{ ms}$ 

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	MURS460	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	85	$^{\circ}\text{C}/\text{W}$
	$R_{\theta JM}^{(1)(2)(3)}$	12	

**Notes**(1) The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ (2) Free air, mounted on recommended copper pad area; thermal resistance  $R_{\theta JA}$  – junction to ambient and  $R_{\theta JM}$  – junction to mount

(3) Mounted on 25 mm x 25 mm pad area

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MURS460-E3/H	0.211	H	850	7" diameter plastic tape and reel
MURS460-E3/I	0.211	I	3500	13" diameter plastic tape and reel
MURS460-M3/H	0.211	H	850	7" diameter plastic tape and reel
MURS460-M3/I	0.211	I	3500	13" diameter plastic tape and reel

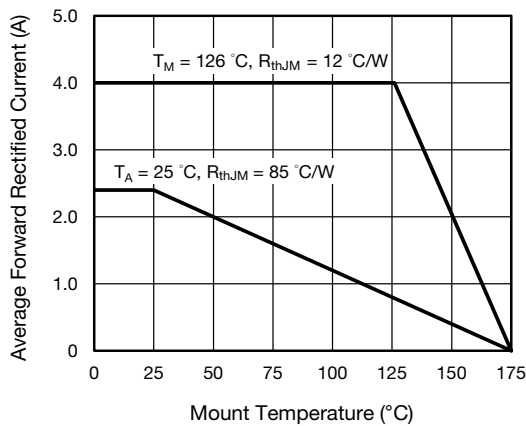
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Forward Current Derating Curve

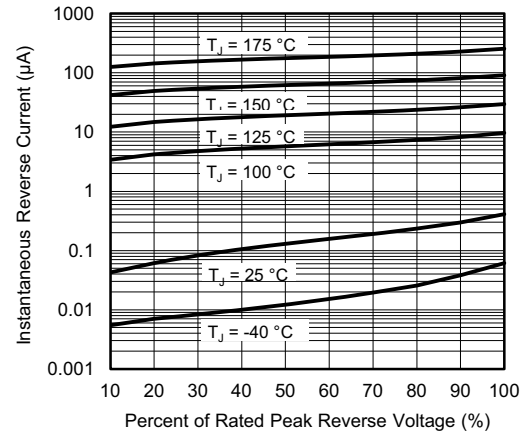


Fig. 4 - Typical Reverse Characteristics

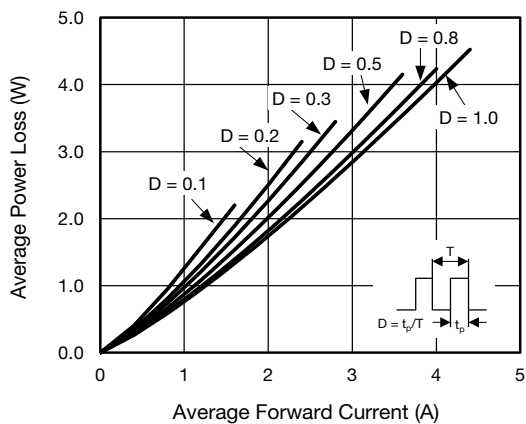


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

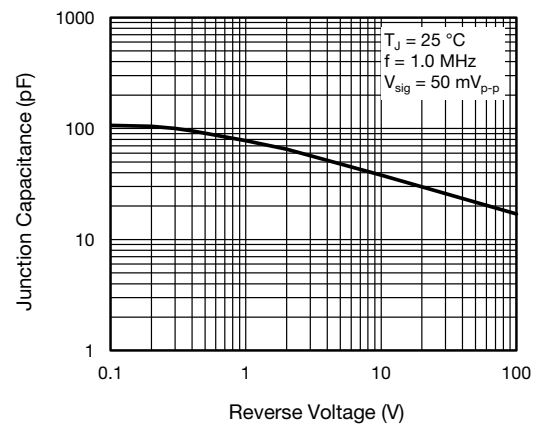


Fig. 5 - Typical Junction Capacitance

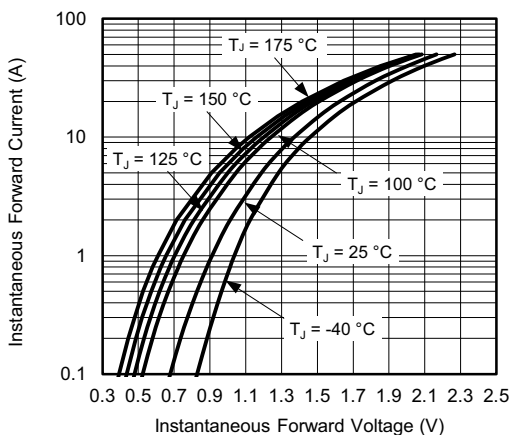


Fig. 3 - Typical Instantaneous Forward Characteristics

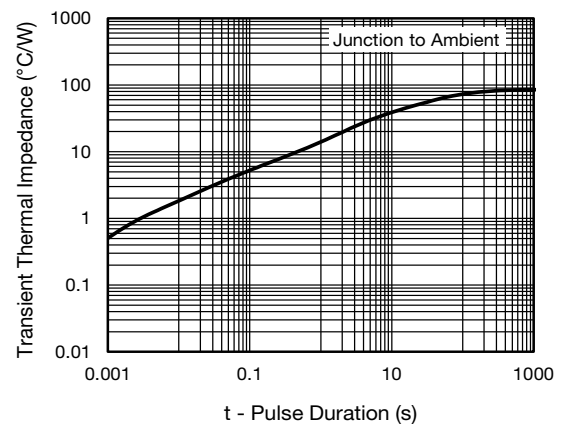


Fig. 6 - Transient Thermal Impedance

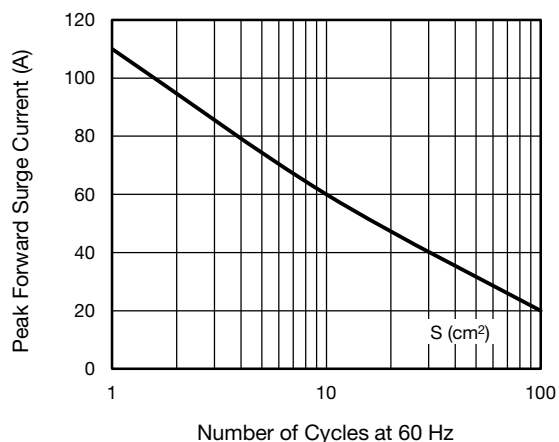
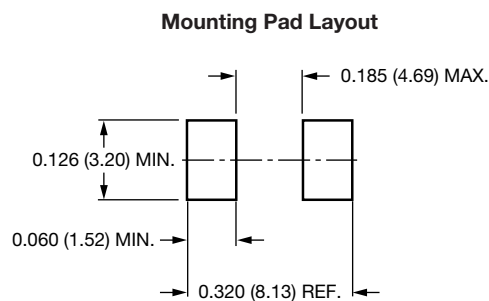
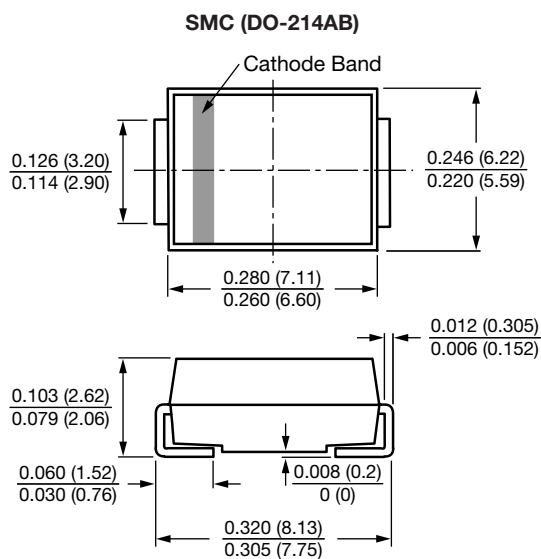


Fig. 7 - Peak Forward Surge Current

# **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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