

Surface Mount Ultrafast Plastic Rectifier



DO-214AA (SMB)

FEATURES

- Glass passivated pallet 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
- AEC-Q101 qualified available
- Automotive ordering code: base P/NHE3
- Material categorization: for definitions of compliance please see www.vishay.com/doc299912



RoHS
COMPLIANT

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: DO-214AA (SMB)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Base P/NHE3_X - RoHS-compliant, AEC-Q101 qualified ("X" denotes revision code e.g. A, B,....)

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

E3 suffix meets JESD 201 class 2 whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	1.0 A
V_{RRM}	400 V, 600 V
I_{FSM}	35 A
t_{rr}	50 ns
V_F	1.05 V
$T_J \text{ max.}$	175 °C
Package	DO-214AA (SMB)
Diode variation	Single die

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MURS140	MURS160	UNIT
Device marking code		MG	MJ	
Maximum repetitive peak reverse voltage	V _{RRM}	400	600	V
Working peak reverse voltage	V _{RWM}	400	600	
Maximum DC blocking voltage	V _{DC}	400	600	
Maximum average forward rectified current at (Fig. 1)	$\frac{T_L = 150\text{ }^{\circ}\text{C}}{T_L = 125\text{ }^{\circ}\text{C}}$	1.0		A
		2.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	35		
Operating junction and storage temperature range	T _J , T _{STG}	-65 to +175		°C



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS		MURS140	MURS160	UNIT
Maximum instantaneous forward voltage	V _F ⁽¹⁾	I _F = 1.0 A	T _J = 25 °C	1.25		V
			T _J = 150 °C	1.05		
Maximum instantaneous reverse current at DC blocking voltage	I _R ⁽²⁾	Rated V _R	T _J = 25 °C	5.0		μA
			T _J = 150 °C	150		
Maximum reverse recovery time	t _{rr}	I _F = 0.5 A, I _R = 1.0 A, I _{rr} = 0.25 A			50	ns
		I _F = 1.0 A, dI/dt = 50 A/μs, V _R = 30 V, I _{rr} = 10 % I _{RM}			75	
Maximum forward recovery time	t _{fr}	I _F = 1.0 A, dI/dt = 100 A/μs, recovery to 1.0 V			50	

Notes(1) Pulse test: 300 μs pulse width, 1 % duty cycle(2) Pulse test: Pulse width $\leq 40\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	SYMBOL	MURS140	MURS160	UNIT
Typical thermal resistance, junction to lead	$R_{\theta JL}$	13		$^{\circ}\text{C}/\text{W}$

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
MURS160-E3/52T	0.096	52T	750	7" diameter plastic tape and reel
MURS160-E3/5BT	0.096	5BT	3200	13" diameter plastic tape and reel
MURS160HE3/52T ⁽¹⁾	0.096	52T	750	7" diameter plastic tape and reel
MURS160HE3/5BT ⁽¹⁾	0.096	5BT	3200	13" diameter plastic tape and reel
MURS160HE3_A/H ⁽¹⁾	0.096	H	750	7" diameter plastic tape and reel
MURS160HE3_A/I ⁽¹⁾	0.096	I	3200	13" diameter plastic tape and reel

Note

(1) AEC-Q101 qualified



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

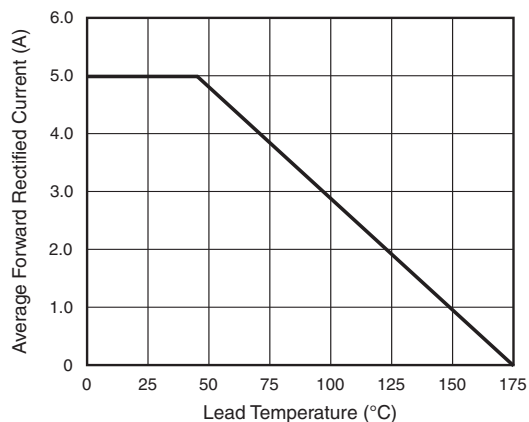


Fig. 1 - Forward Current Derating Curve

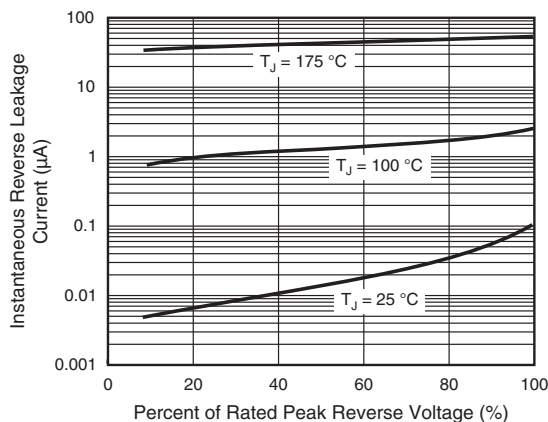


Fig. 4 - Typical Reverse Leakage Characteristics

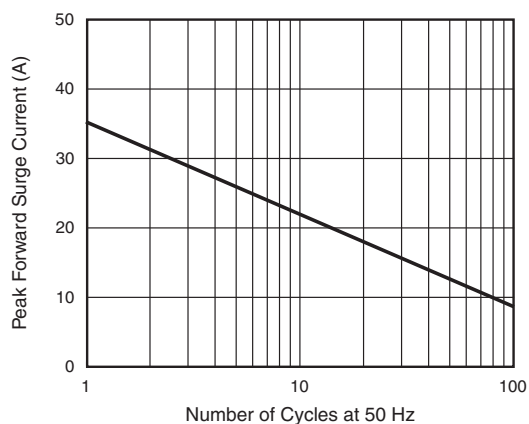


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

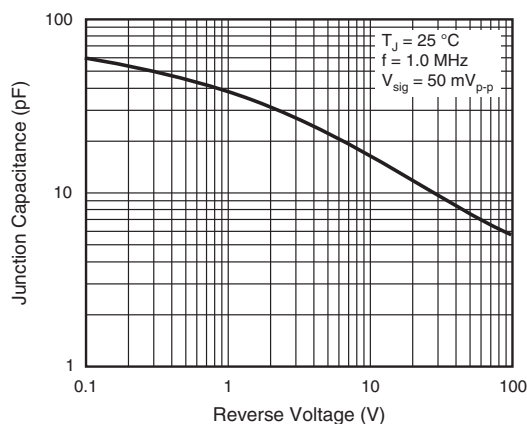


Fig. 5 - Typical Junction Capacitance

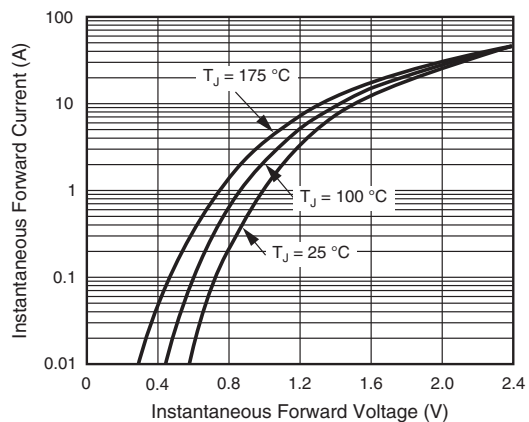
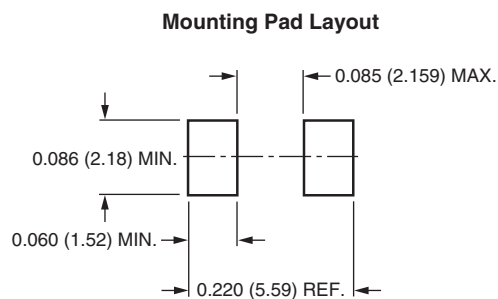
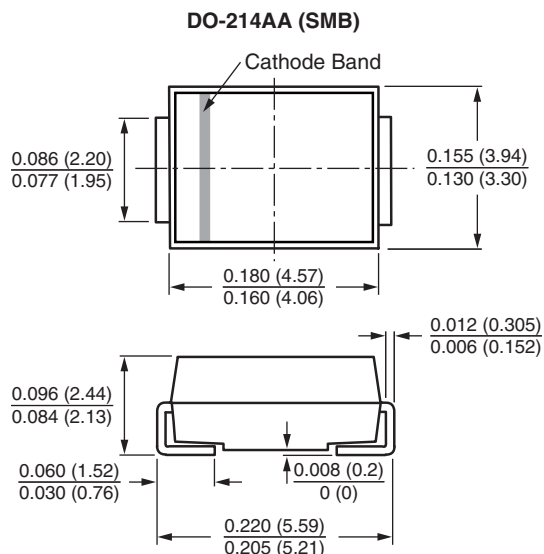


Fig. 3 - Typical Instantaneous Forward Characteristics



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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