

## Surface Mount Ultrafast Plastic Rectifier


**DO-214AB (SMC)**

### FEATURES

- Oxide planar chip junction
- Ultrafast recovery time
- Low forward voltage, low power losses
- 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**

### TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
$V_{RRM}$	100 V, 150 V, 200 V
$I_{FSM}$	100 A
$t_r$	20 ns
$V_F$ at $I_F = 3.0$ A	0.74 V
$T_J$ max.	150 °C
Package	DO-214AB (SMC)
Diode variations	Single die

### MECHANICAL DATA

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

Molding compound meets UL 94 V-0 flammability rating  
 Base P/N-M3 - RoHS-compliant, commercial grade

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

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	U3B	U3C	U3D	UNIT
Device marking code		U3B	U3C	U3D	
Maximum repetitive peak reverse voltage	$V_{RRM}$	100	150	200	V
Maximum average forward rectified current (fig. 1)	$T_M = 134$ °C	$I_{F(AV)}$ <sup>(1)</sup>	2.0		A
	$T_M = 125$ °C	$I_{F(AV)}$ <sup>(2)</sup>	3.0		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	100			A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +150			°C

#### Notes

- <sup>(1)</sup> Free air, mounted on recommended copper pad area  
<sup>(2)</sup> Units mounted on PCB with 0.47" x 0.47" (12 mm x 12 mm) copper pad areas



ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT		
Instantaneous forward voltage	I <sub>F</sub> = 3.0 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.85	0.90	V	
		T <sub>A</sub> = 100 °C		0.74			
Reverse current	Rated V <sub>R</sub>	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	10	μA	
		T <sub>A</sub> = 100 °C		250			500
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>A</sub> = 25 °C	t <sub>rr</sub>	-	20	ns	
		T <sub>A</sub> = 25 °C		25			30
		T <sub>A</sub> = 100 °C		35			50
Storage charge	I <sub>F</sub> = 3.0 A, dI/dt = 50 A/μs, V <sub>R</sub> = 30 V, I <sub>rr</sub> = 0.1 I <sub>RM</sub>	T <sub>A</sub> = 25 °C	Q <sub>rr</sub>	9	15	nC	
		T <sub>A</sub> = 100 °C		22			35
Typical junction capacitance	4.0 V, 1 MHz	C <sub>J</sub>	25	-	pF		

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	U3B	U3C	U3D	UNIT
Typical thermal resistance	R <sub>θJA</sub> <sup>(1)</sup>	92			°C/W
	R <sub>θJM</sub> <sup>(1)</sup>	10			

**Note**

- (1) Free air, mounted on recommended copper pad area. Thermal resistance R<sub>θJA</sub> - junction to ambient, R<sub>θJM</sub> - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
U3D-M3/57T	0.239	57T	850	7" diameter plastic tape and reel
U3D-M3/9AT	0.239	9AT	3500	13" diameter plastic tape and reel

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

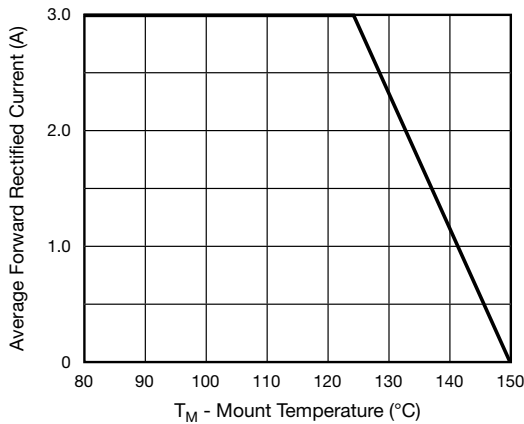


Fig. 1 - Maximum Forward Current Derating Curve

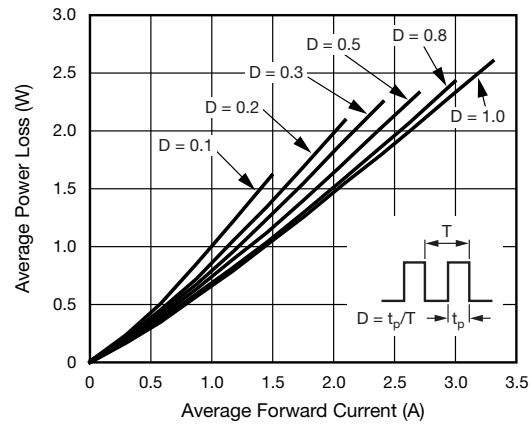


Fig. 2 - Forward Power Loss Characteristics

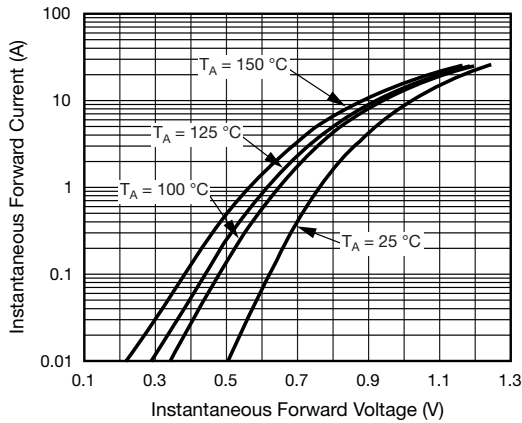


Fig. 3 - Typical Instantaneous Forward Characteristics

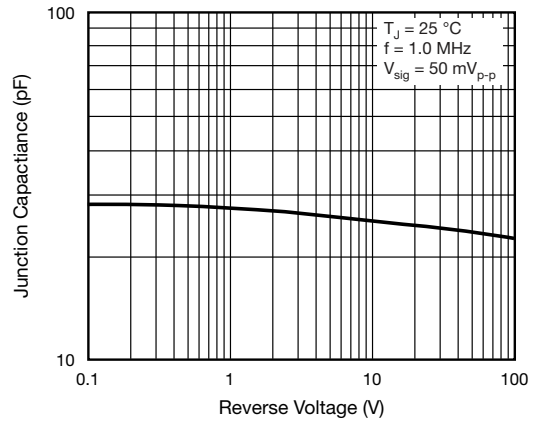


Fig. 5 - Typical Junction Capacitance

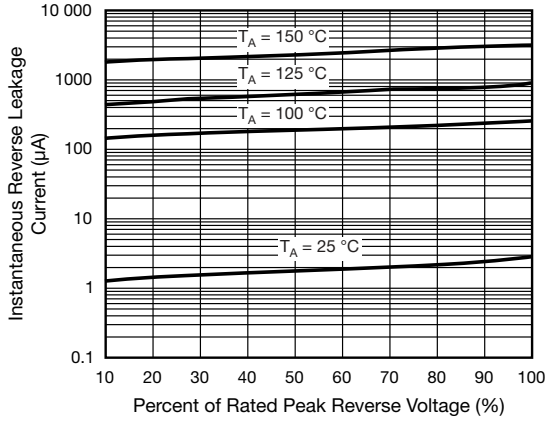


Fig. 4 - Typical Reverse Leakage Characteristics

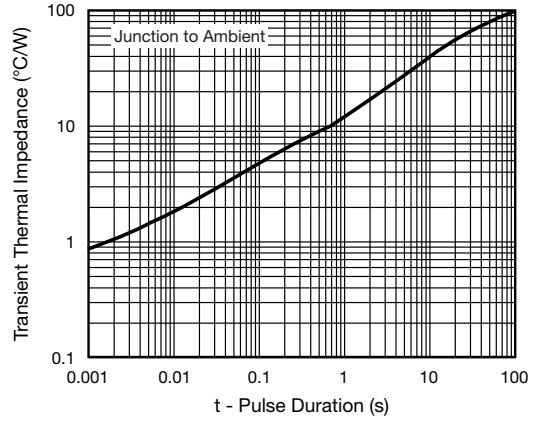
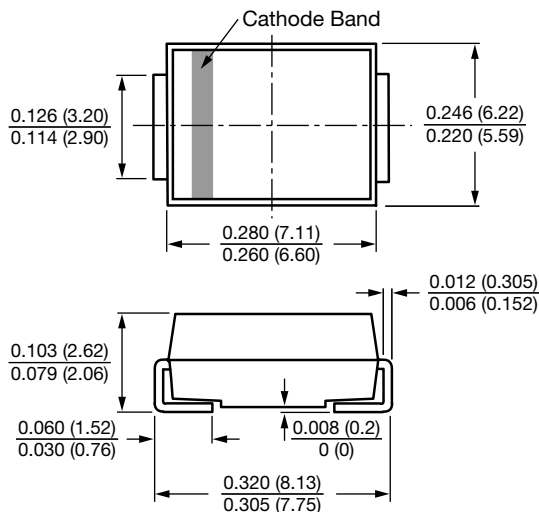


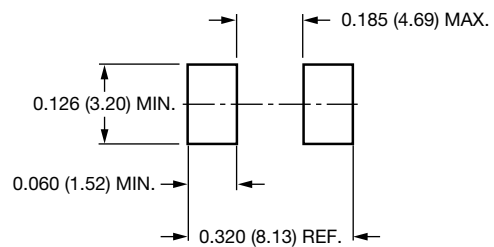
Fig. 6 - Typical Transient Thermal Impedance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### DO-214AB (SMC)



### Mounting Pad Layout





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