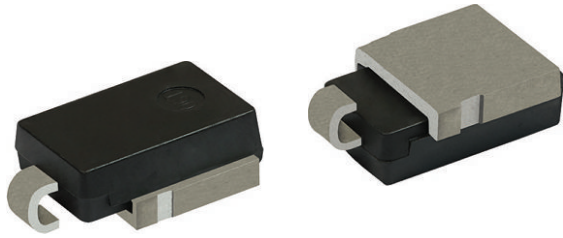


## Surface-Mount High Voltage Rectifiers


**DO-218AB**

 Cathode  Anode

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

### FEATURES

- Excellent heat dissipation
- Oxide planar chip junction
- High surge current capability
- Ultra-low forward conduction
- High junction temperature capability
- High ESD capability
- High avalanche capability
- Meets MSL level 1, per J-STD-02, LF maximum peak of 245 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### TYPICAL APPLICATIONS

- Fly-wheeling diode for big power motor in EV/HEV
- Single or three phase bridge rectification circuit
- High voltage block diode

### MECHANICAL DATA

**Case:** DO-218AB

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** as marked

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	30 A
$V_{RRM}$	1200 V
$I_{FSM}$	700 A
$V_F$ at $I_F = 30$ A ( $T_A = 125$ °C)	0.97
$I_R$	10 $\mu$ A
$E_{AS}$	20 mJ
$T_J$ max.	175 °C
Package	DO-218AB
Circuit configurations	Single

MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	SE30124	UNIT
Device marking code		SE30124	
Maximum repetitive peak reverse voltage	$V_{RRM}$	1200	V
Maximum DC forward current	$I_F^{(1)}$	30	A
	$I_F^{(2)}$	4.2	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	$I_{FSM}$	700	A
8 x 20 $\mu$ s wave form by 10 surge pulses in 10 minutes	$I_{FSM}$	3500	A
Typical Non-repetitive Avalanche energy at $I_{AS} = 1$ A, $T_J = 25$ °C	$E_{AS}$	20	mJ
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C

#### Notes

<sup>(1)</sup> Mounted on aluminum PCB 30 mm x 30 mm with aluminum heatsink

<sup>(2)</sup> Free air, mounted on recommended copper pad area



ELECTRICAL CHARACTERISTICS ( $T_J = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 15\text{ A}$	$T_J = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.96	-	V
	$I_F = 30\text{ A}$			1.06	1.2	
	$I_F = 15\text{ A}$	$T_J = 125\text{ }^\circ\text{C}$		0.84	-	
	$I_F = 30\text{ A}$			0.96	-	
Reverse current	Rated $V_R$	$T_J = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	10	$\mu\text{A}$
		$T_J = 125\text{ }^\circ\text{C}$		30	-	
Typical junction capacitance	400 V, 1 MHz		$C_J$	35	-	pF

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  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	SE30124	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	57	$^\circ\text{C/W}$
	$R_{\theta JM}^{(3)}$	0.2	

**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 PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient  
(3) Thermal resistance junction-to-mount to follow JEDEC<sup>®</sup> 51-14 transient dual interface test method (TDIM)

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	$C = 100\text{ pF}$ , $R = 1.5\text{ k}\Omega$	$V_C$	H3B	$> 8\text{ kV}$
IEC 61000-4-2 <sup>(2)</sup>	Human body model (air discharge mode) <sup>(1)</sup>	$C = 150\text{ pF}$ , $R = 330\text{ }\Omega$		4	$> 30\text{ kV}$

**Notes**

- (1) Immerse to IEC 61000-4-2 air discharge mode has a typical performance  $> 30\text{ kV}$   
(2) System ESD standard

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE30124-M3/I	2.56	I	750/reel	13" diameter plastic tape and reel
SE30124HM3/I <sup>(1)</sup>	2.56	I	750/reel	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)

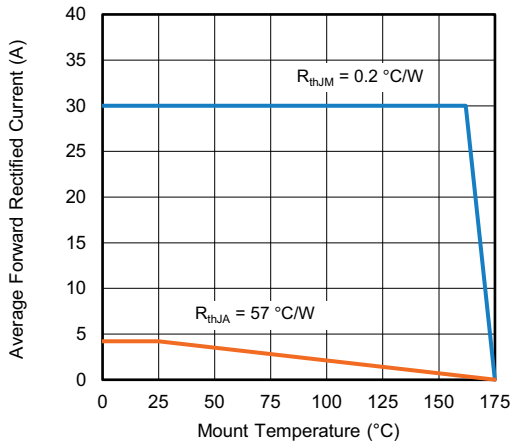


Fig. 1 - Forward Current Derating Curve

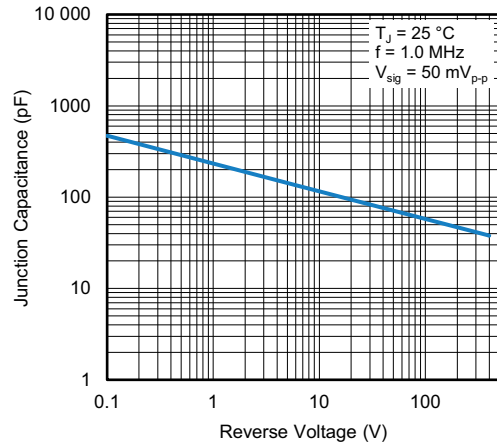


Fig. 4 - Typical Junction Capacitance

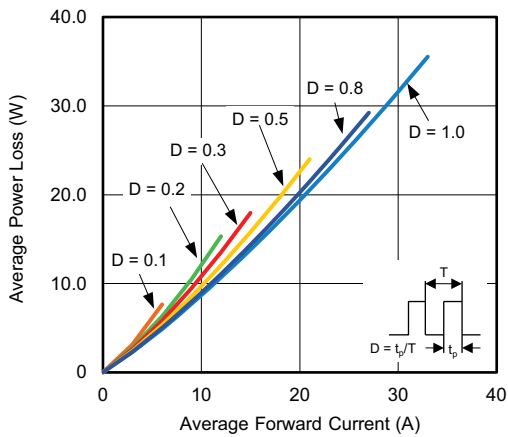


Fig. 2 - Forward Power Loss Characteristics

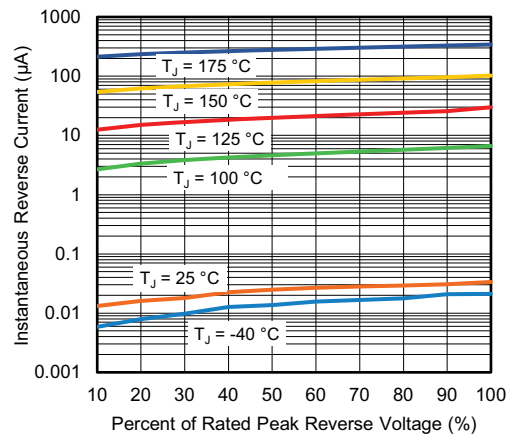


Fig. 5 - Typical Reverse Leakage Characteristics

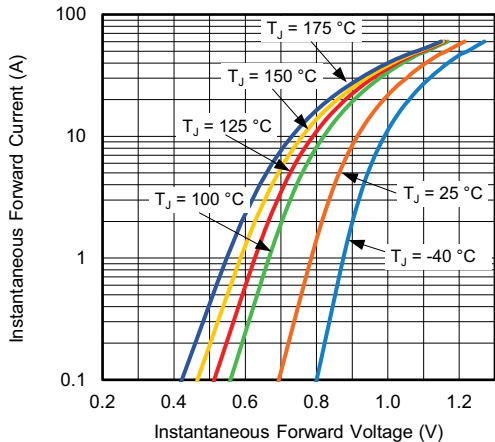


Fig. 3 - Typical Instantaneous Forward Characteristics

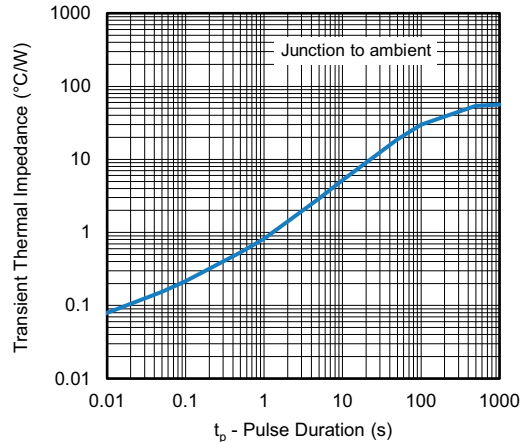
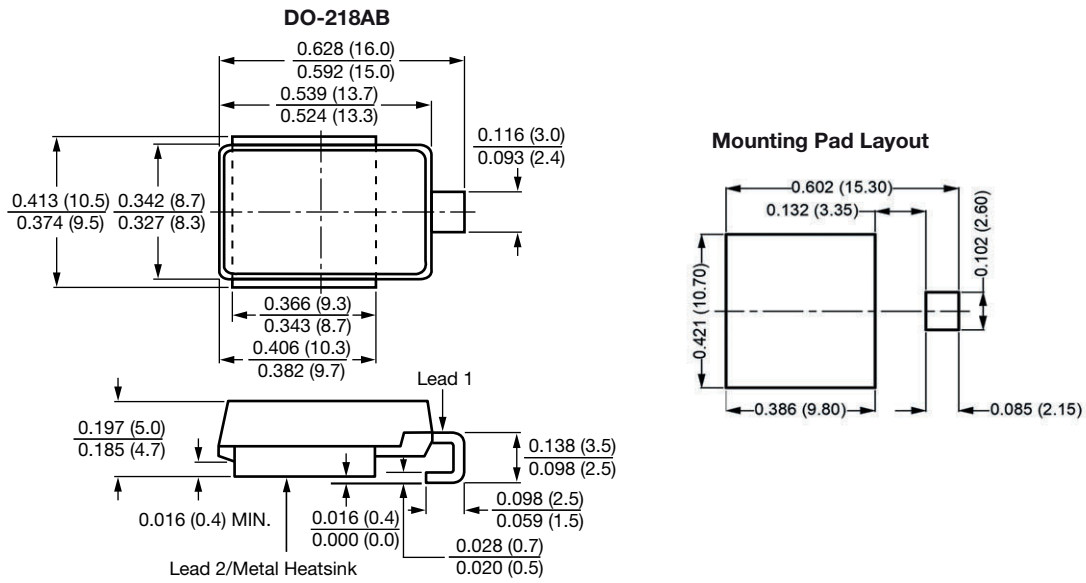


Fig. 6 - Typical Transient Thermal Impedance

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



**Note**

- Footprint in accordance with IPC 7351 standard



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