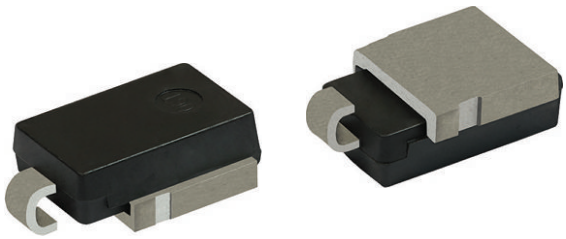
Surface-Mount High Voltage Rectifiers



DO-218AB

Cathode ○—|◀—○ Anode

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

AUTOMOTIVE GRADE Available

RoHS COMPLIANT

HALOGEN FREE

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 µA
E_{AS}	20 mJ
T_J max.	175 °C
Package	DO-218AB
Circuit configurations	Single

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

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 µs wave form by 10 surge pulses in 10 minutes	I_{FSM}	3500	A
Typical Non-repetitive Avalanche energy at I_{AS} = 1A, T_J = 25 °C	E_{AS}	20	mJ
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	°C

Notes

(1) Mounted on aluminum PCB 30 mm x 30 mm with aluminum heatsink

(2) Free air, mounted on recommended copper pad area

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

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

THERMAL CHARACTERISTICS (T_A = 25 °c unless otherwise noted)			
PARAMETER	SYMBOL	SE30124	UNIT
Typical thermal resistance	$R_{\theta JA}$ (1)(2)	57	°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® 51-14 transient dual interface test method (TDIM)

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 °C unless otherwise noted)					
STANDARD	TEST TYPE	TEST CONDITIONS	SYMBOL	CLASS	VALUE
AEC-Q101-001	Human body model (contact mode)	C = 100 pF, R = 1.5 kΩ	V_C	H3B	> 8 kV
IEC 61000-4-2 (2)	Human body model (air discharge mode) (1)	C = 150 pF, R = 330 Ω		4	> 30 kV

Notes
(1) Immerse to IEC 61000-4-2 air discharge mode has a typical performance > 30 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 (1)	2.56	I	750/reel	13" diameter plastic tape and reel

Note
(1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

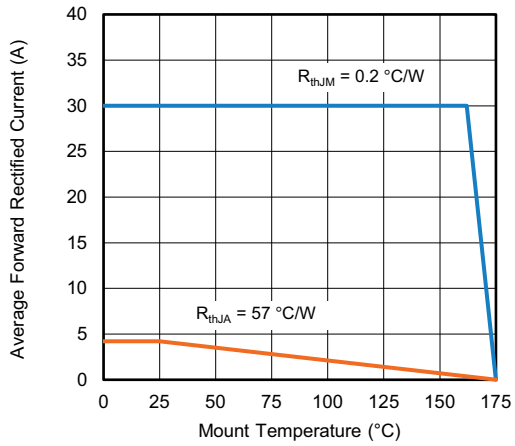


Fig. 1 - Forward Current Derating Curve

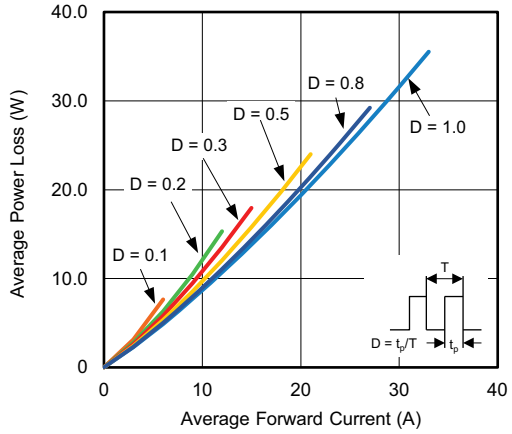


Fig. 2 - Forward Power Loss Characteristics

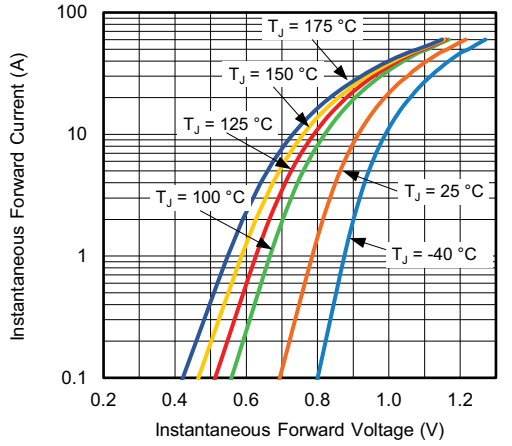


Fig. 3 - Typical Instantaneous Forward Characteristics

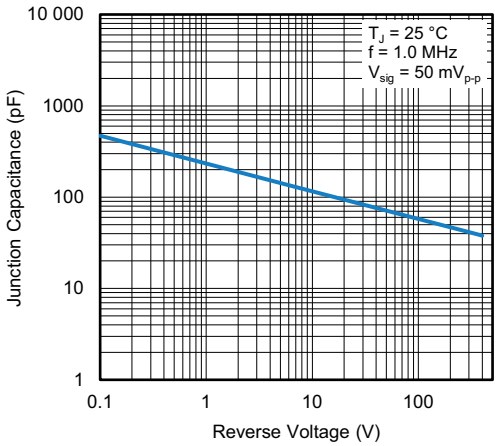


Fig. 4 - Typical Junction Capacitance

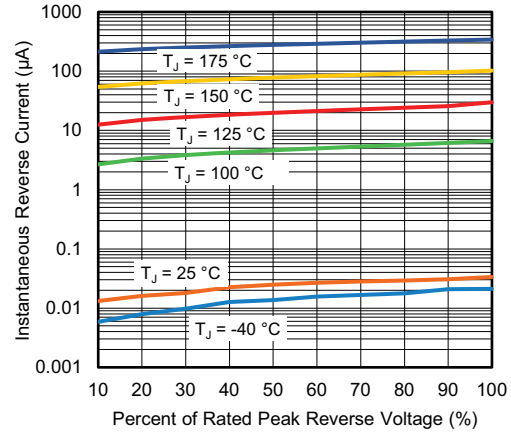


Fig. 5 - Typical Reverse Leakage Characteristics

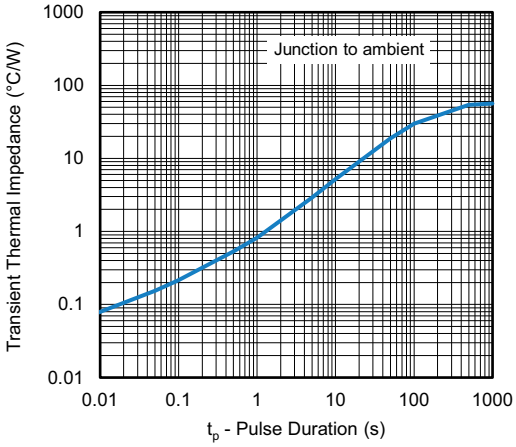
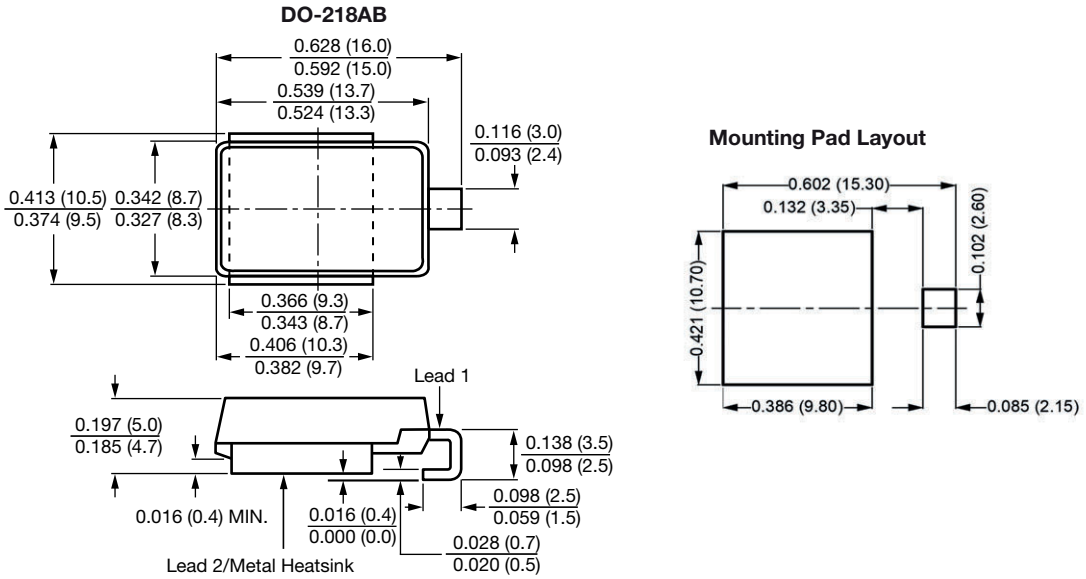


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



Note

- Footprint in accordance with IPC 7351 standard

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