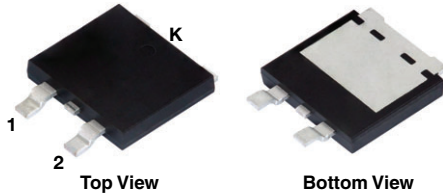
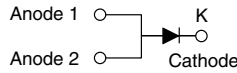


Surface-Mount Low V_F Standard Rectifiers

eSMP® Series SMPD (TO-263AC)



SE12DX



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	12 A
V_{RRM}	400 V, 600 V
I_{FSM}	165 A
V_F at $I_F = 12$ A ($T_A = 125$ °C)	0.83 V
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Single

FEATURES

- Very low profile - typical height of 1.7 mm
- Low forward voltage drop
- AEC-Q101 qualified available
- 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



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

General purpose, power line polarity protection, in both consumer and automotive applications.

MECHANICAL DATA

Case: SMPD (TO-263AC)

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 and HM3 suffix meet JESD 201 class 2 whisker test

Polarity: as marked

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	SE12DLG	SE12DLJ	UNIT
Device marking code		SE12DLG	SE12DLJ	
Maximum repetitive peak reverse voltage	V_{RRM}	400	600	V
Maximum DC forward current	$I_F^{(1)}$	12		A
	$I_F^{(2)}$	3.7		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	165		A
Operating junction and storage temperature range	$T_J, T_{STG}^{(3)}$	-55 to +175		°C

Notes

- (1) Mounted on infinite heatsink
- (2) Free air, mounted on recommended copper pad area
- (3) The heat generated must be less than the thermal conductivity from junction to ambient $dP_D/dT_J < R_{thJA}$



ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 6\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.86	-	V
	$I_F = 12\text{ A}$			0.93	1	
	$I_F = 6\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.72	-	
	$I_F = 12\text{ A}$			0.83	0.9	
Reverse current	Rated V_R	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	-	5	μA
		$T_A = 125\text{ }^\circ\text{C}$		12	70	
Typical reverse recovery time	$I_F = 0.5\text{ A}$, $I_R = 1.0\text{ A}$, $I_{rr} = 0.25\text{ A}$		t_{rr}	300	-	ns
Typical junction capacitance	4.0 V, 1 MHz		C_J	96	-	pF

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	SE12DLG	SE12DLJ	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)(2)}$	55		$^\circ\text{C/W}$
	$R_{\theta JM}^{(3)}$	1.5		

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 to follow JEDEC® 51-2A
(3) Mounted on infinite heatsink thermal resistance $R_{\theta JM}$ - junction to mount to follow JEDEC® 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SE12DLJ-M3/I	0.54	I	2000/reel	13" diameter plastic tape and reel
SE12DLJHM3/I ⁽¹⁾	0.54	I	2000/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)

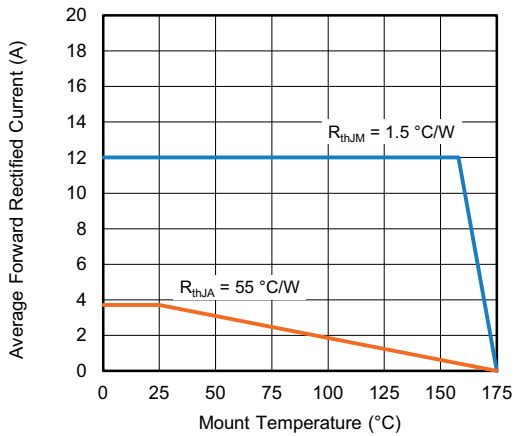


Fig. 1 - Forward Current Derating Curve

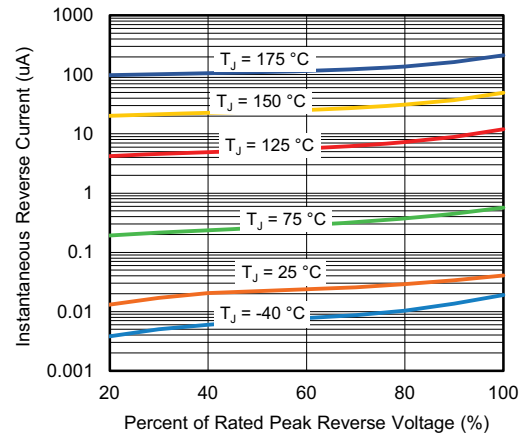


Fig. 4 - Typical Reverse Leakage Characteristics

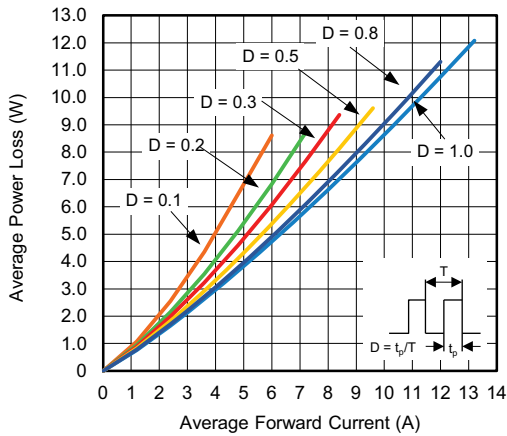


Fig. 2 - Forward Power Loss Characteristics

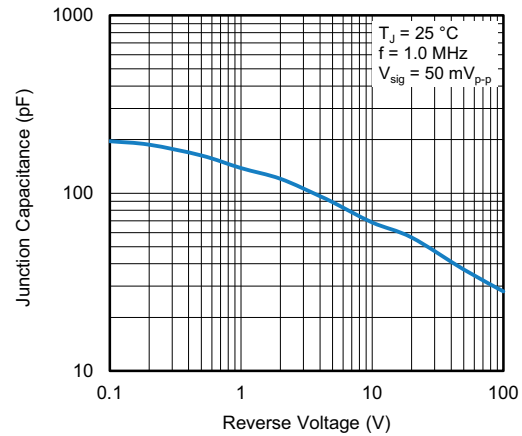


Fig. 5 - Typical Junction Capacitance

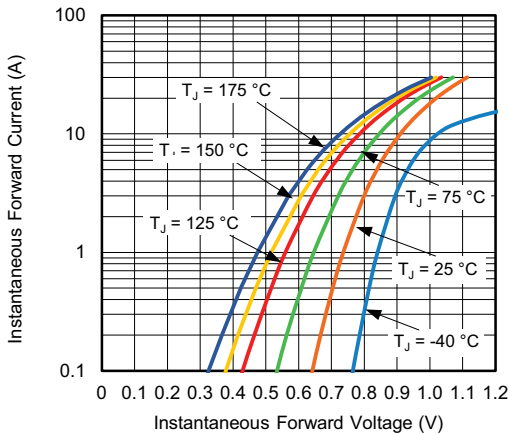


Fig. 3 - Typical Instantaneous Forward Characteristics

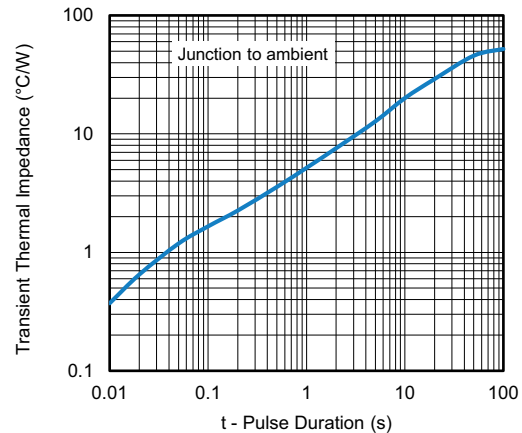
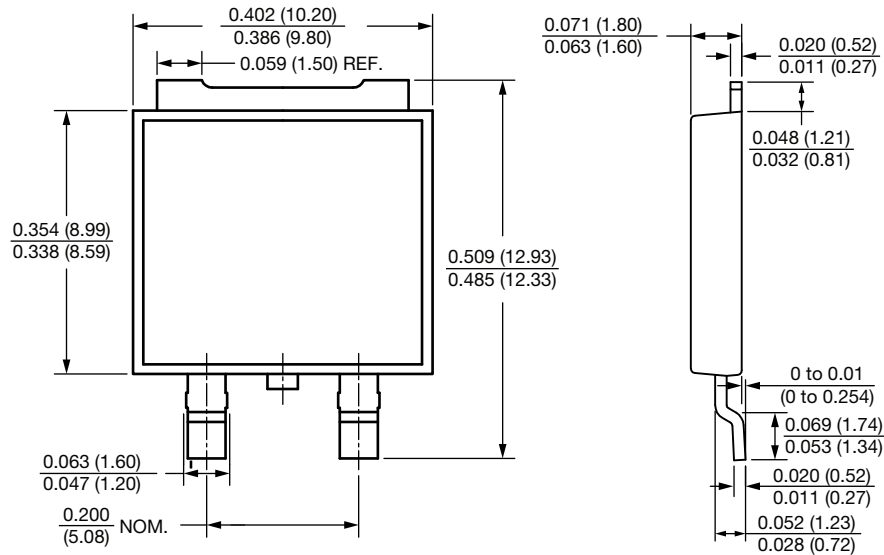


Fig. 6 - Typical Transient Thermal Impedance

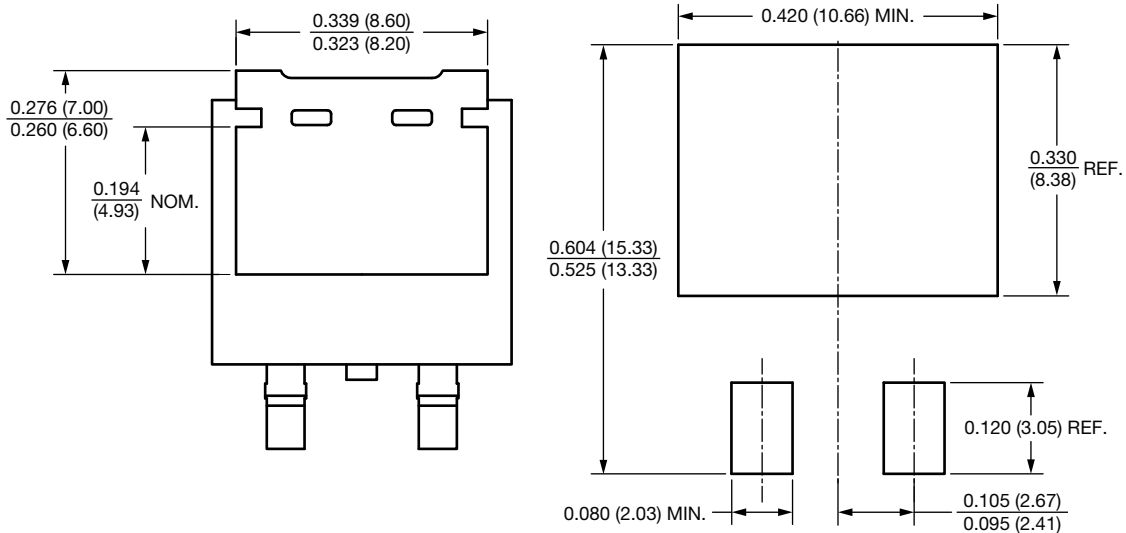


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPD (TO-263AC)



Mounting Pad Layout





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