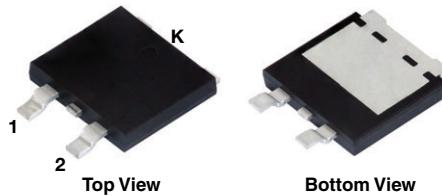
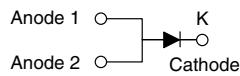


Surface-Mount ESD Capability Rectifiers

eSMP® Series SMPD (TO-263AC)



SE10DX



ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	100 V, 200 V, 400 V, 600 V
I_{FSM}	110 A
V_F at $I_F = 10$ A ($T_A = 125$ °C)	0.96 V
I_R	15 μ A
T_J max.	175 °C
Package	SMPD (TO-263AC)
Circuit configuration	Single



FEATURES

- Very low profile - typical height of 1.7 mm
- Ideal for automated placement
- Oxide planar chip junction
- Low forward voltage drop
- ESD capability
- AEC-Q101 qualified
- 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

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 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	SE10DB	SE10DD	SE10DG	SE10DJ	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum DC forward current	I_F ⁽¹⁾	10				A
	I_F ⁽²⁾	3.0				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	110				A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175				°C

Notes

(1) With heatsink

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

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

PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 5 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.95	-	V	
	$I_F = 10 \text{ A}$			1.04	1.15		
	$I_F = 5 \text{ A}$	$T_A = 125^\circ\text{C}$		0.85	-		
	$I_F = 10 \text{ A}$			0.96	1.10		
	Reverse current	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	-	15	μA	
		$T_A = 125^\circ\text{C}$		22	150		
Typical reverse recovery time	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		t_{rr}	3000	-	ns	
Typical junction capacitance	4.0 V, 1 MHz		C_J	67	-	pF	

Notes
⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle

⁽²⁾ Pulse test: Pulse width $\leq 40 \text{ ms}$
 THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	SE10DB	SE10DD	SE10DG	SE10DJ	UNIT
Typical thermal resistance	$R_{\theta JA}$ ⁽¹⁾⁽²⁾	60				$^\circ\text{C/W}$
	$R_{\theta JC}$ ⁽³⁾	1.6				

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⁾ With infinite heatsink

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS

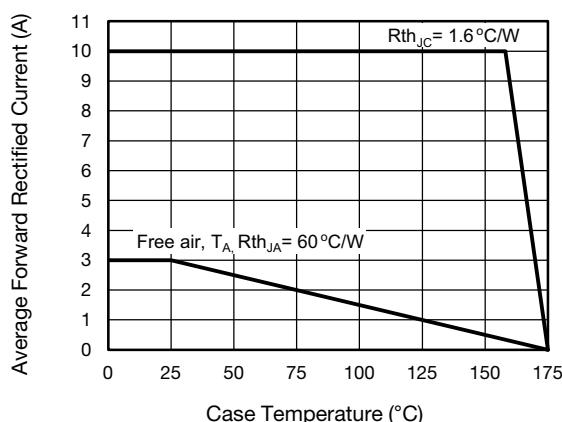
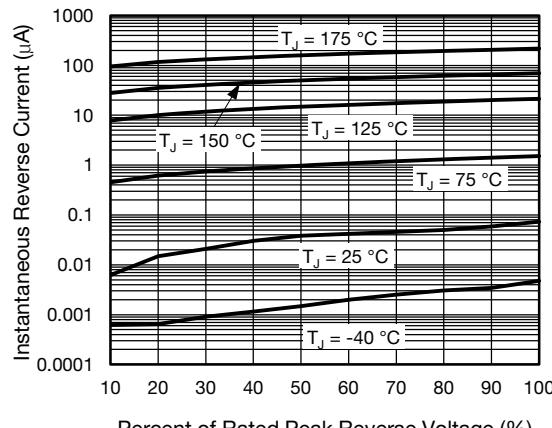
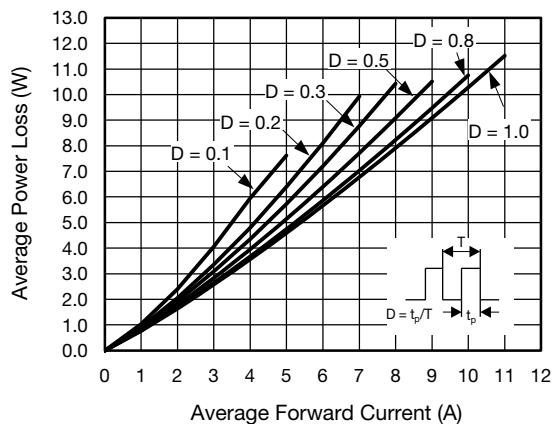
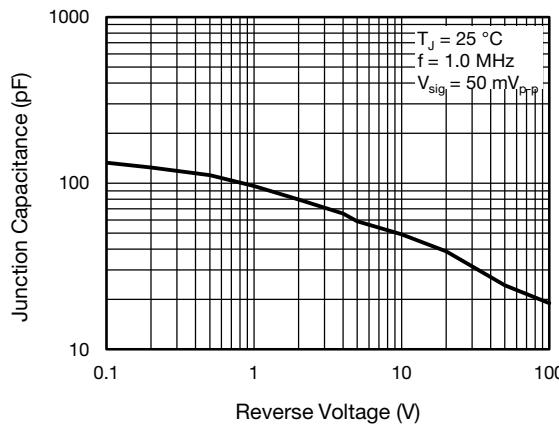
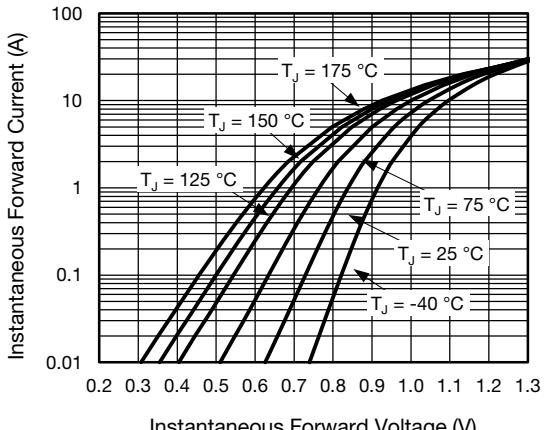
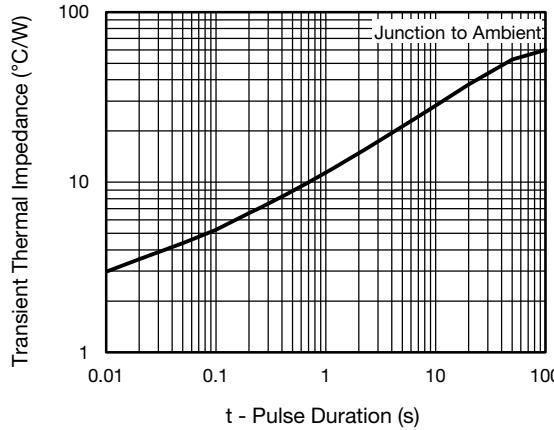
($T_A = 25^\circ\text{C}$ unless otherwise noted)

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 kV

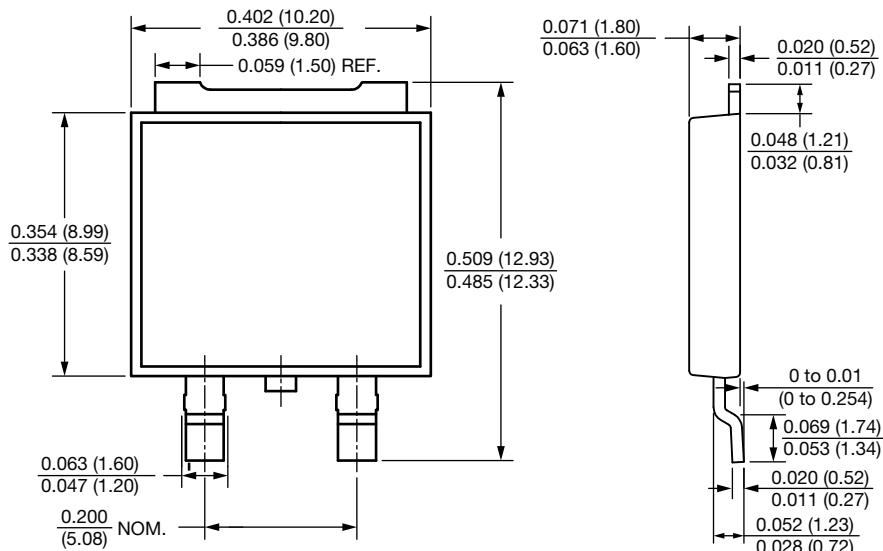
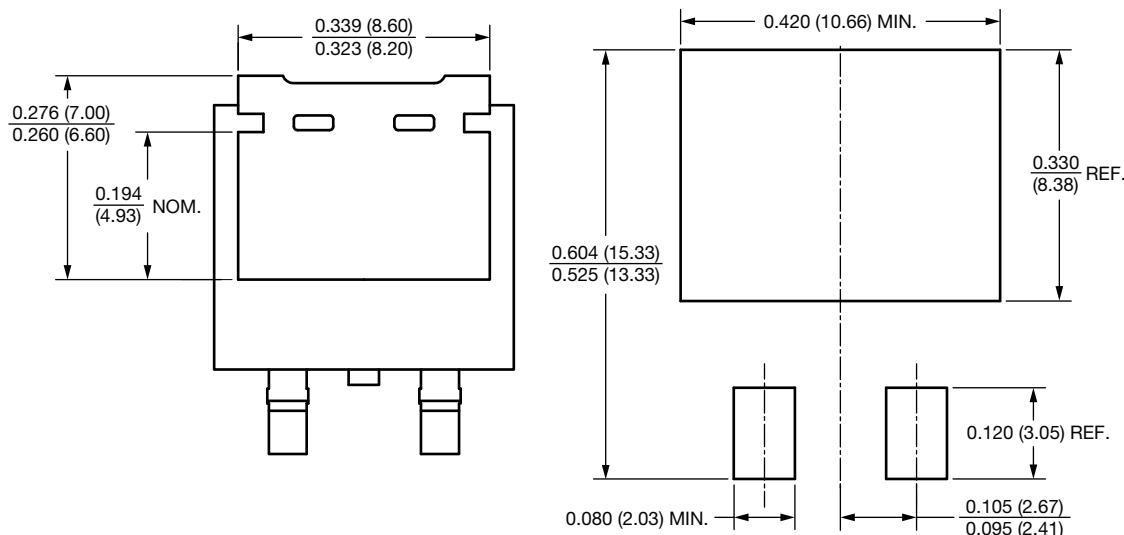
ORDERING INFORMATION (Example)

STANDARD	PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SMPD (TO-263AC)	SE10DJ-M3/I	0.54	I	2000/reel	13" diameter plastic tape and reel
SMPD (TO-263AC)	SE10DJHM3/I ⁽¹⁾	0.54	I	2000/reel	13" diameter plastic tape and reel

Note
⁽¹⁾ AEC-Q101 qualified

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