

SE40PB, SE40PD, SE40PG, SE40PJ

Vishay General Semiconductor

AUTOMOTIVE GRADE

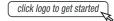
COMPLIANT

HALOGEN FREE

Surface-Mount ESD Capability Rectifiers

eSMP® Series K SMPC (TO-277A) Cathoda Control 2

DESIGN SUPPORT TOOLS





PRIMARY CHARACTERISTICS					
I _{F(AV)}	4.0 A				
V _{RRM}	100 V, 200 V, 400 V, 600 V				
I _{FSM}	60 A				
I _R	10 μΑ				
V _F at I _F = 4.0 A, (125 °C)	0.91 V				
T _J max.	175 °C				
Package	SMPC (TO-277A)				
Circuit configuration	Single				

FEATURES

- Very low profile typical height of 1.1 mm
- · Ideal for automated placement
- · Oxid planar chip junction
- · Low forward voltage drop
- ESD capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMPC (TO-277A)

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

Base P/NHM3_X - halogen-free, RoHS-compliant and AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	SE40PB	SE40PD	SE40PG	SE40PJ	UNIT
Device marking code		40B	40D	40G	40J	
Maximum repetitive peak reverse voltage	V_{RRM}	100	200	400	600	V
Maximum DC forward current	I _F ⁽¹⁾	4.0				A
Maximum DC forward current	I _F ⁽²⁾	2.4				
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	60			А	
Operating junction and storage temperature range	T _J , T _{STG}	-55 to +175			°C	

Notes

- (1) Mounted on 14 mm x 14 mm pad areas, 2 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST C	TEST CONDITIONS		TYP.	MAX.	UNIT
	I _F = 2.0 A	— T _A = 25 °C	V _F ⁽¹⁾	0.92	-	V
Instantaneous forward voltage	$I_F = 4.0 A$			1.00	1.05	
	I _F = 2.0 A	T _A = 125 °C		0.82	-	
	I _F = 4.0 A			0.91	0.96	
Reverse current rate	rated V _R	T _A = 25 °C	I _R ⁽²⁾	0.1	10	- μΑ
	rated v _R	T _A = 125 °C		19	150	
Typical reverse recovery time	I _F = 0.5 A, I _R	$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{rr} = 0.25 \text{ A}$		2.2	-	μs
Typical junction capacitance	4.0 V, 1 MHz	4.0 V, 1 MHz		28	-	pF

Notes

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

 $^{(2)}$ Pulse test: Pulse width \leq 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	SYMBOL SE40PB SE40PD SE40PG SE40PJ UNIT				UNIT
Typical thormal registance	R _{0JA} (1)	70			°C/W	
Typical thermal resistance	R _{0JM} (2)	6.6				C/VV

Notes

 $^{(1)}$ Free air, mounted on recommended PCB 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient

(2) Units mounted on PCB with 14 mm x 14 mm pad areas, 2 oz. FR4 PCB; R_{0JM} - junction to mount

IMMUNITY TO ELECTRICAL STATIC DISCHARGE TO THE FOLLOWING STANDARDS (T_A = 25 $^{\circ}\text{C}$, unless otherwise noted						
STANDARD	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	НЗВ	> 8 kV	

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
SE40PJ-M3/86A	0.10	86A	1500	7" diameter plastic tape and reel		
SE40PJ-M3/87A	0.10	87A	6500	13" diameter plastic tape and reel		
SE40PJHM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel		
SE40PJHM3_A/I (1)	0.10	I	6500	13" diameter plastic tape and reel		

Note

(1) AEC-Q101 qualified

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

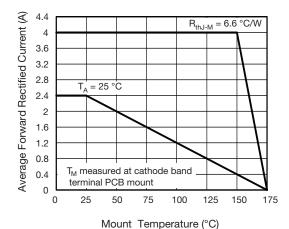


Fig. 1 - Maximum Forward Current Derating Curve

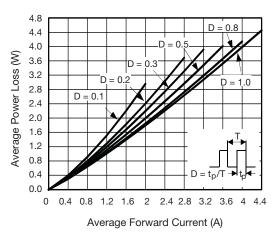


Fig. 2 - Forward Power Loss Characteristics

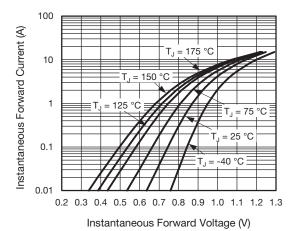


Fig. 3 - Typical Instantaneous Forward Characteristics

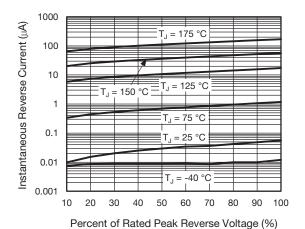


Fig. 4 - Typical Reverse Leakage Characteristics

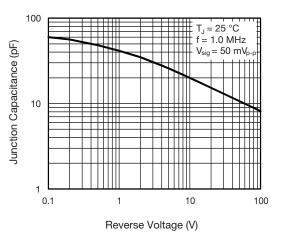


Fig. 5 - Typical Junction Capacitance

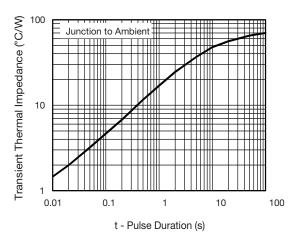
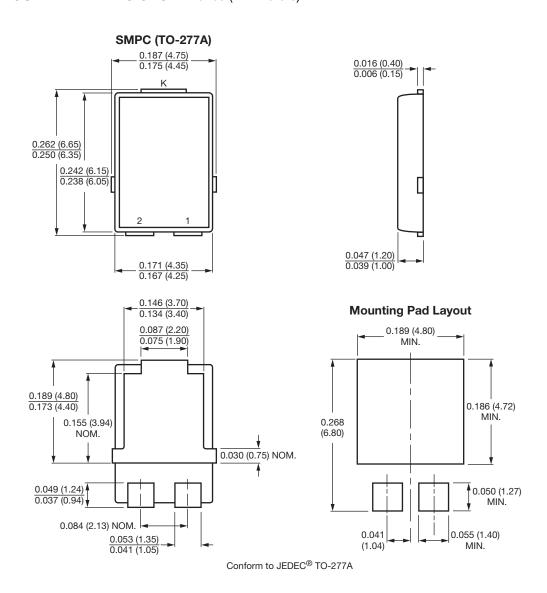


Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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