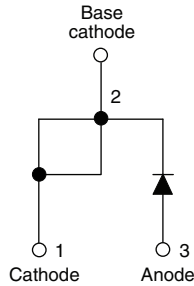


High Voltage, Input Rectifier Diode, 40 A


TO-247AC modified


FEATURES

- Very low forward voltage drop
- 150 °C max. operating junction temperature
- Glass passivated pellet chip junction
- Designed and qualified according to JEDEC®-JESD 47
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE
 Available

PRODUCT SUMMARY	
Package	TO-247AC modified (2 pins)
$I_{F(AV)}$	40 A
V_R	800 V to 1200 V
V_F at I_F	1.1 V
I_{FSM}	475 A
T_J max.	150 °C
Diode variation	Single die

APPLICATIONS

- Input rectification
- Vishay Semiconductors switches and output rectifiers which are available in identical package outlines

DESCRIPTION

High voltage rectifiers optimized for very low forward voltage drop with moderate leakage.

These devices are intended for use in main rectification (single or three phase bridge).

MAJOR RATINGS AND CHARACTERISTICS			
SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	40	A
V_{RRM}	Range	800/1200	V
I_{FSM}		475	A
V_F	40 A, $T_J = 25\text{ °C}$	1.1	V
T_J		-40 to +150	°C

VOLTAGE RATINGS			
PART NUMBER	V_{RRM} , MAXIMUM PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} AT 150 °C mA
VS-40EPS08PbF, VS-40EPS08-M3	800	900	1
VS-40EPS12PbF, VS-40EPS12-M3	1200	1300	

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 105\text{ °C}$, 180° conduction half sine wave	40	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	400	
		10 ms sine pulse, no voltage reapplied	475	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	800	A ² s
		10 ms sine pulse, no voltage reapplied	1131	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1\text{ ms to }10\text{ ms}$, no voltage reapplied	11 310	A ² √s



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM}	20 A, $T_J = 25\text{ }^\circ\text{C}$		1.0	V
		40 A, $T_J = 25\text{ }^\circ\text{C}$		1.1	
Forward slope resistance	r_t	$T_J = 150\text{ }^\circ\text{C}$		7.16	$m\Omega$
Threshold voltage	$V_{F(TO)}$			0.74	V
Maximum reverse leakage current	I_{RM}	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		1.0	

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}			-40 to +150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	R_{thJC}	DC operation		0.6	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}			40	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, flat, smooth and greased		0.2	
Approximate weight				6	g
				0.21	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lb · in)
	maximum			12 (10)	
Marking device			Case style TO-247AC modified (JEDEC)	40EPS08	
				40EPS12	

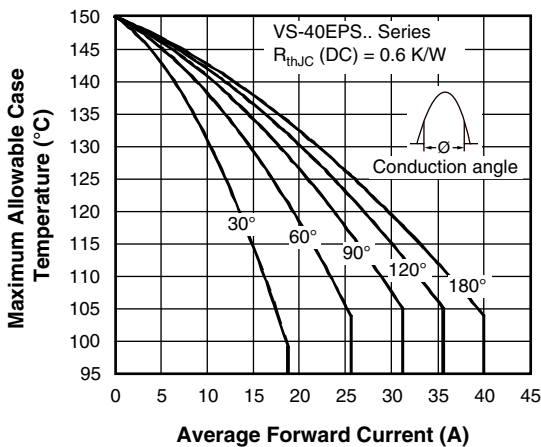


Fig. 1 - Current Rating Characteristics

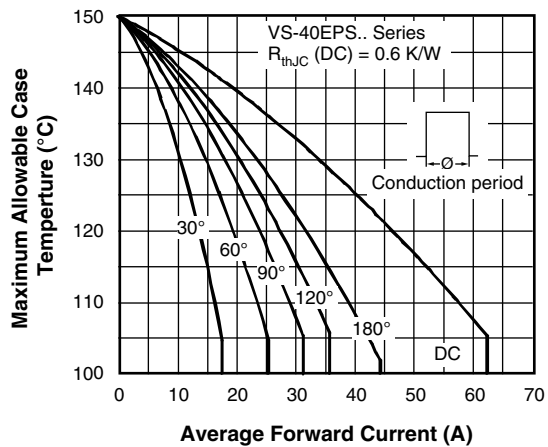


Fig. 2 - Current Rating Characteristics

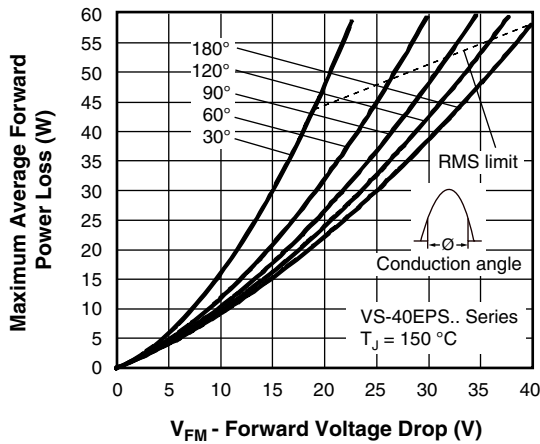


Fig. 3 - Forward Power Loss Characteristics

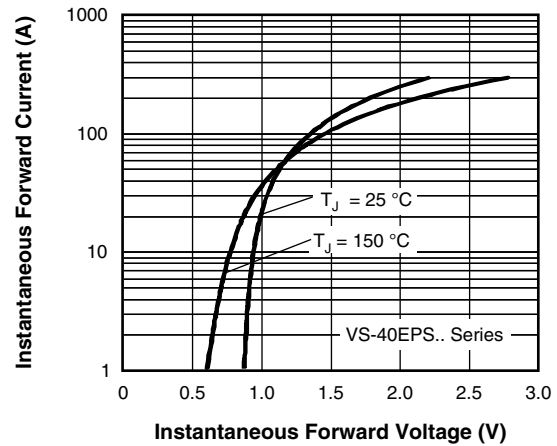


Fig. 5 - Forward Voltage Drop Characteristics

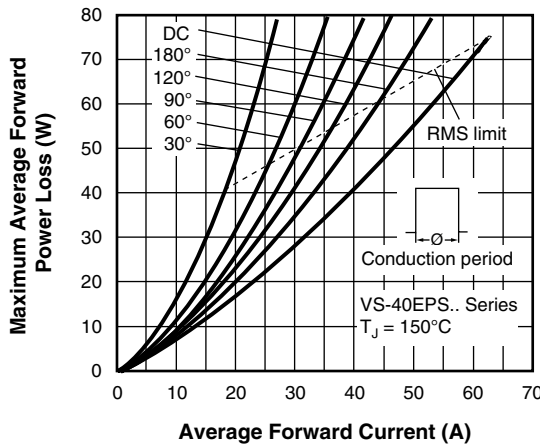


Fig. 4 - Forward Power Loss Characteristics

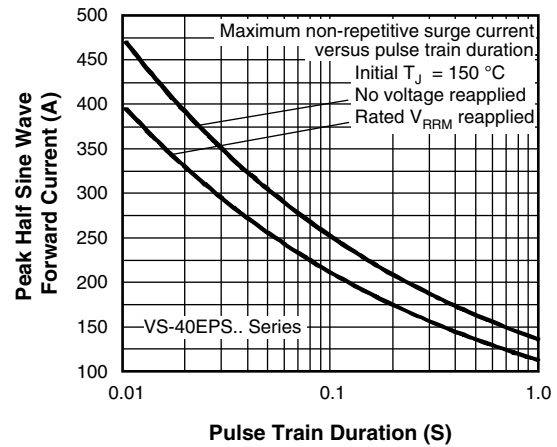


Fig. 6 - Maximum Non-Repetitive Surge Current

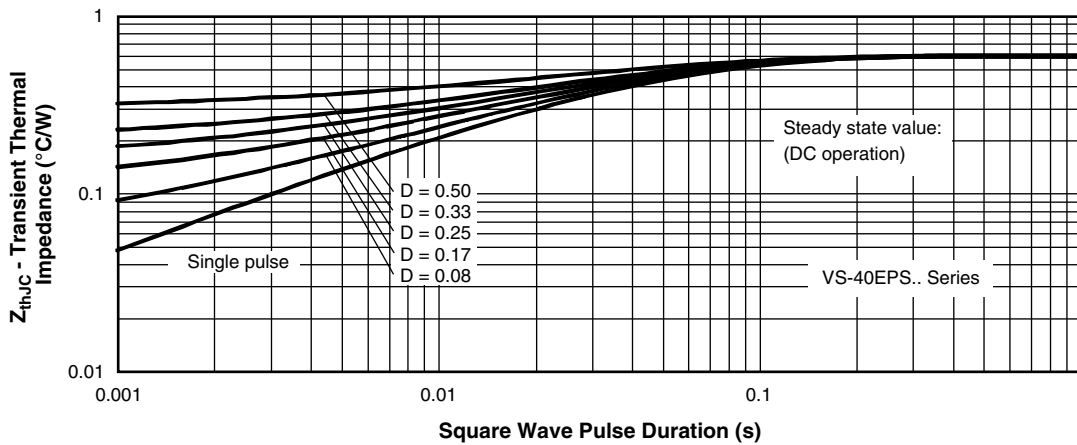
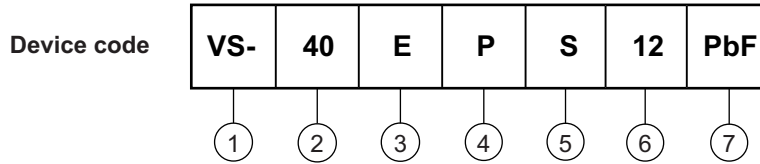


Fig. 7 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE



- 1** - Vishay Semiconductors product
- 2** - Current rating (40 = 40 A)
- 3** - Circuit configuration:
E = single diode
- 4** - Package:
P = TO-247AC modified
- 5** - Type of silicon:
S = standard recovery rectifier
- 6** - Voltage rating

08 = 800 V
12 = 1200 V
- 7** - Environmental digit:
PbF = lead (Pb)-free and RoHS-compliant
-M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free

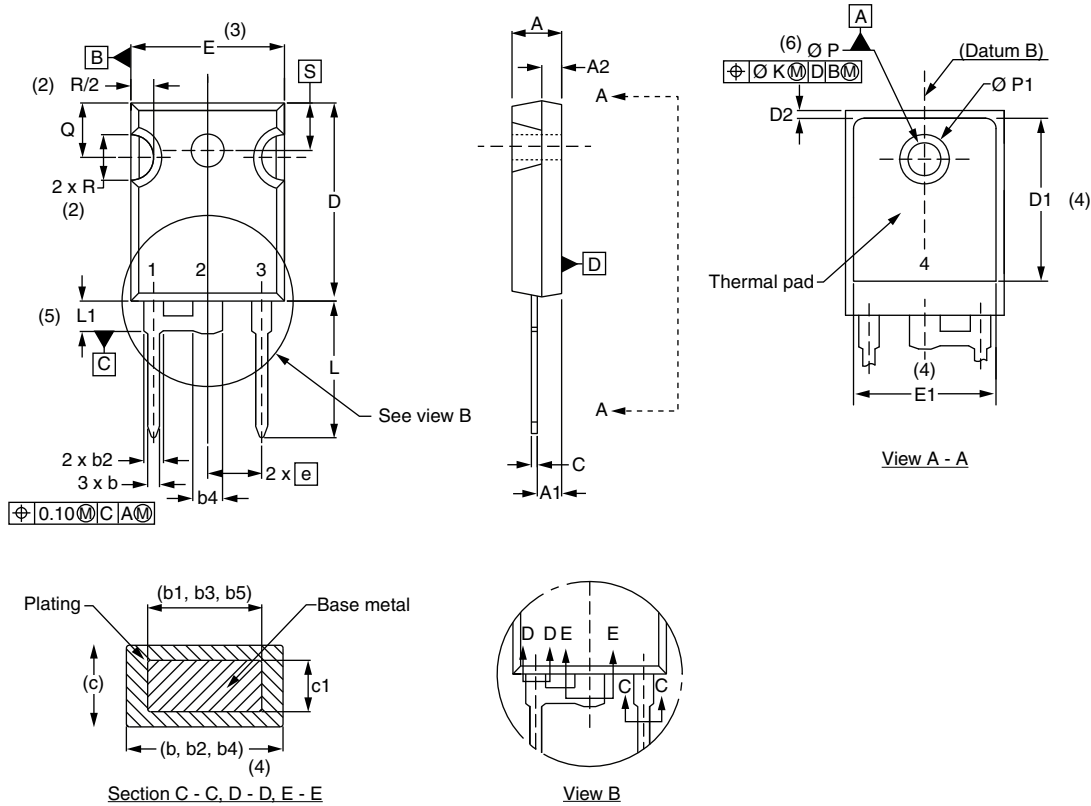
ORDERING INFORMATION (Example)			
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-40EPS08PbF	25	500	Antistatic plastic tubes
VS-40EPS08-M3	25	500	Antistatic plastic tubes
VS-40EPS12PbF	25	500	Antistatic plastic tubes
VS-40EPS12-M3	25	500	Antistatic plastic tubes

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95541
Part marking information	TO-247AC modified PbF www.vishay.com/doc?95255
	TO-247AC modified -M3 www.vishay.com/doc?95442
SPIICE model	www.vishay.com/doc?96047



TO-247AC modified - 50 mils L/F

DIMENSIONS in millimeters and inches



SYMBOL	MILLIMETERS		INCHES		NOTES	SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.			MIN.	MAX.	MIN.	MAX.	
A	4.65	5.31	0.183	0.209		D2	0.51	1.35	0.020	0.053	
A1	2.21	2.59	0.087	0.102		E	15.29	15.87	0.602	0.625	3
A2	1.17	1.37	0.046	0.054		E1	13.46	-	0.53	-	
b	0.99	1.40	0.039	0.055		e	5.46 BSC		0.215 BSC		
b1	0.99	1.35	0.039	0.053		Φ K	0.254		0.010		
b2	1.65	2.39	0.065	0.094		L	14.20	16.10	0.559	0.634	
b3	1.65	2.34	0.065	0.092		L1	3.71	4.29	0.146	0.169	
b4	2.59	3.43	0.102	0.135		Φ P	3.56	3.66	0.14	0.144	
b5	2.59	3.38	0.102	0.133		Φ P1	-	7.39	-	0.291	
c	0.38	0.89	0.015	0.035		Q	5.31	5.69	0.209	0.224	
c1	0.38	0.84	0.015	0.033		R	4.52	5.49	0.178	0.216	
D	19.71	20.70	0.776	0.815	3	S	5.51 BSC		0.217 BSC		
D1	13.08	-	0.515	-	4						

Notes

- (1) Dimensioning and tolerance per ASME Y14.5M-1994
- (2) Contour of slot optional
- (3) Dimension D and E do not include mold flash. Mold flash shall not exceed 0.127 mm (0.005") per side. These dimensions are measured at the outermost extremes of the plastic body
- (4) Thermal pad contour optional with dimensions D1 and E1
- (5) Lead finish uncontrolled in L1
- (6) Φ P to have a maximum draft angle of 1.5 to the top of the part with a maximum hole diameter of 3.91 mm (0.154")
- (7) Outline conforms to JEDEC® outline TO-247 with exception of dimension c and Q



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