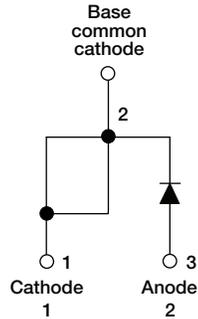


# High Voltage Input Rectifier Diode, 60 A



TO-247AC modified



## FEATURES

- Designed and qualified according to JEDEC-JESD47
- Compliant to RoHS Directive 2002/95/EC


**RoHS**  
COMPLIANT

## APPLICATIONS

- Typical applications are in input rectification and these products are designed to be used with Vishay HPP switches and output rectifiers which are available in identical package outlines.

## PRODUCT SUMMARY

Package	TO-247AC modified
$I_{F(AV)}$	60 A
$V_R$	800 V to 1200 V
$V_F$ at $I_F$	1.09 V
$I_{FSM}$	950 A
$T_J$ max.	150 °C
Diode variation	Single die

## DESCRIPTION

The VS-60EPS..PbF rectifier high voltage series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150 °C junction temperature.

## MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	60	A
$V_{RRM}$		800/1200	V
$I_{FSM}$		950	A
$V_F$	60 A, $T_J = 25$ °C	1.09	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-60EPS08PbF	800	900	1
VS-60EPS12PbF	1200	1300	

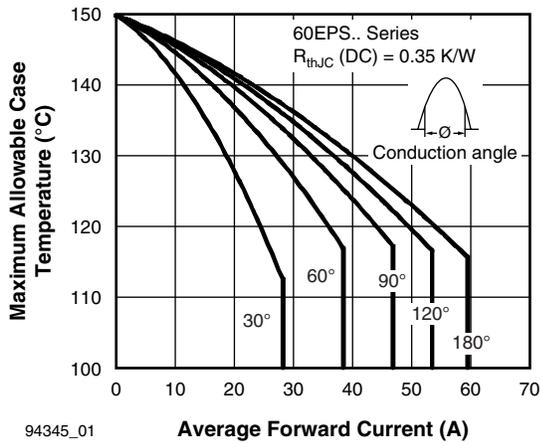
## ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 118$ °C, 180° conduction half sine wave	60	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	10 ms sine pulse, rated $V_{RRM}$ applied	950	
		10 ms sine pulse, no voltage reapplied	1100	
Maximum $I^2t$ for fusing	$I^2t$	10 ms sine pulse, rated $V_{RRM}$ applied	4512	A <sup>2</sup> s
		10 ms sine pulse, no voltage reapplied	6300	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ ms to 10 ms, no voltage reapplied	63 000	A <sup>2</sup> √s



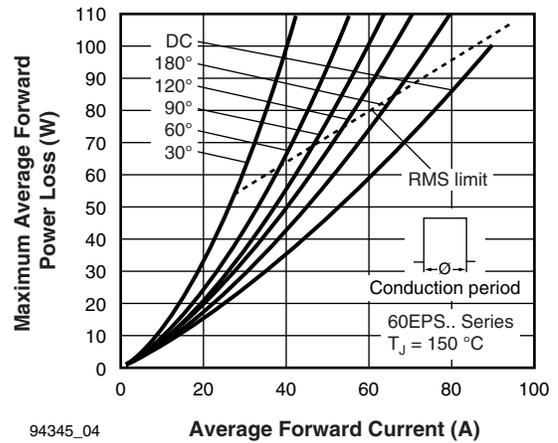
ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V <sub>FM</sub>	30 A, T <sub>J</sub> = 25 °C		1.0	V
		60 A, T <sub>J</sub> = 25 °C		1.09	V
Forward slope resistance	r <sub>t</sub>	T <sub>J</sub> = 150 °C		3.96	mΩ
Threshold voltage	V <sub>F(TO)</sub>			0.74	V
Maximum reverse leakage current	I <sub>RM</sub>	T <sub>J</sub> = 25 °C	V <sub>R</sub> = Rated V <sub>RRM</sub>	0.1	mA
		T <sub>J</sub> = 150 °C		1.0	

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	T <sub>J</sub> , T <sub>Stg</sub>			- 40 to 150	°C
Maximum thermal resistance, junction to case	R <sub>thJC</sub>	DC operation		0.35	°C/W
Maximum thermal resistance, junction to ambient	R <sub>thJA</sub>			40	
Typical thermal resistance, case to heatsink	R <sub>thCS</sub>	Mounting surface, smooth and greased		0.2	
Approximate weight				6	g
				0.21	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style TO-247AC modified (JEDEC)	60EPS08	
				60EPS12	



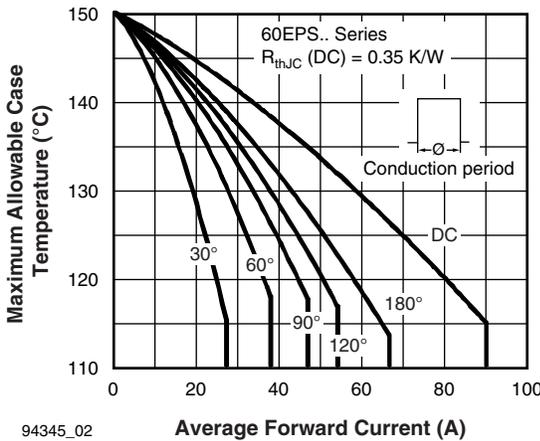
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Fig. 1 - Current Rating Characteristics



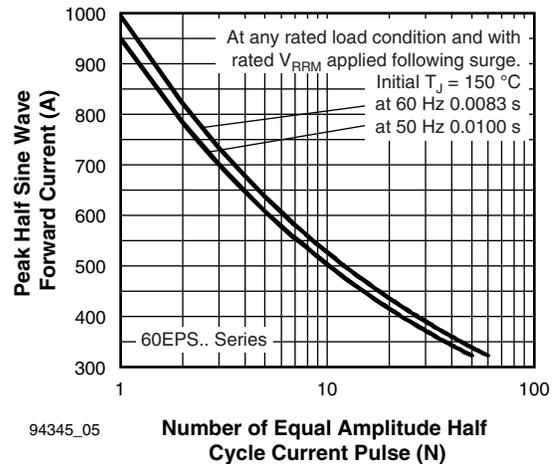
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Fig. 4 - Forward Power Loss Characteristics



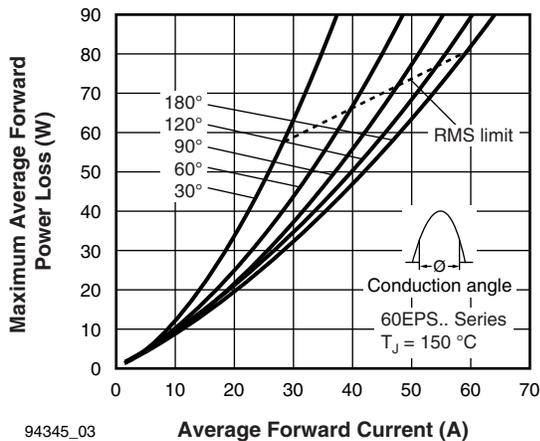
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Fig. 2 - Current Rating Characteristics



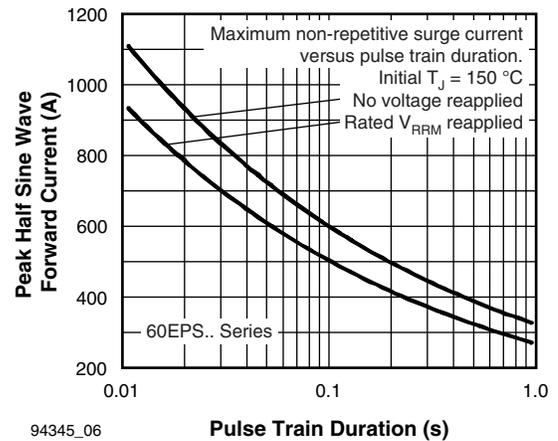
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Fig. 5 - Maximum Non-Repetitive Surge Current



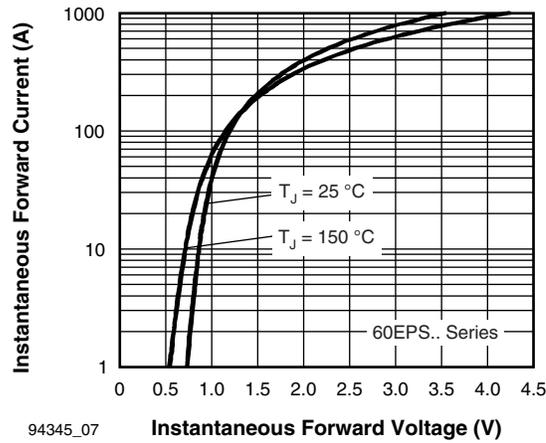
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Fig. 3 - Forward Power Loss Characteristics



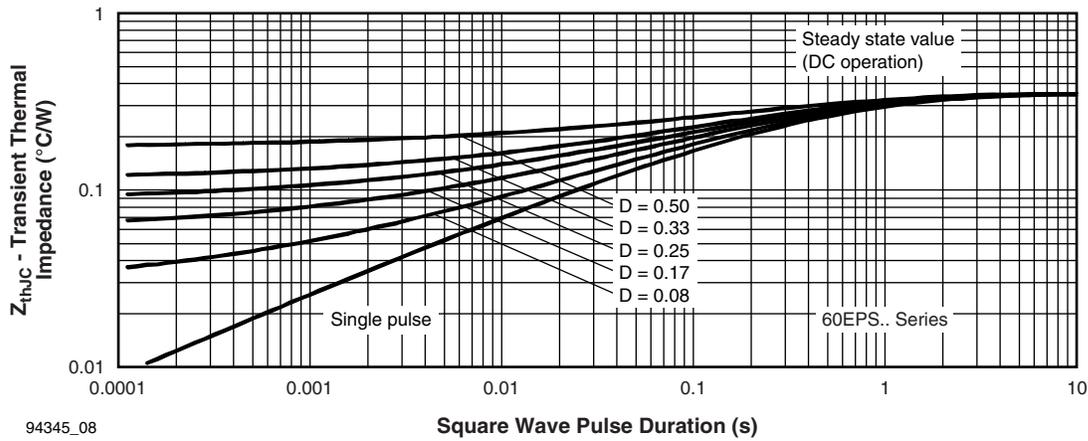
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Fig. 6 - Maximum Non-Repetitive Surge Current



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Fig. 7 - Forward Voltage Drop Characteristics

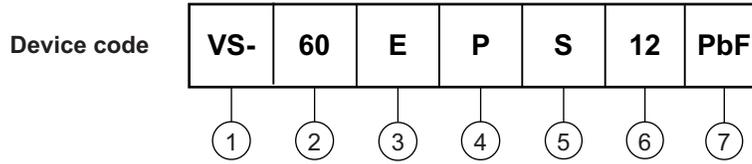


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Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics



ORDERING INFORMATION TABLE



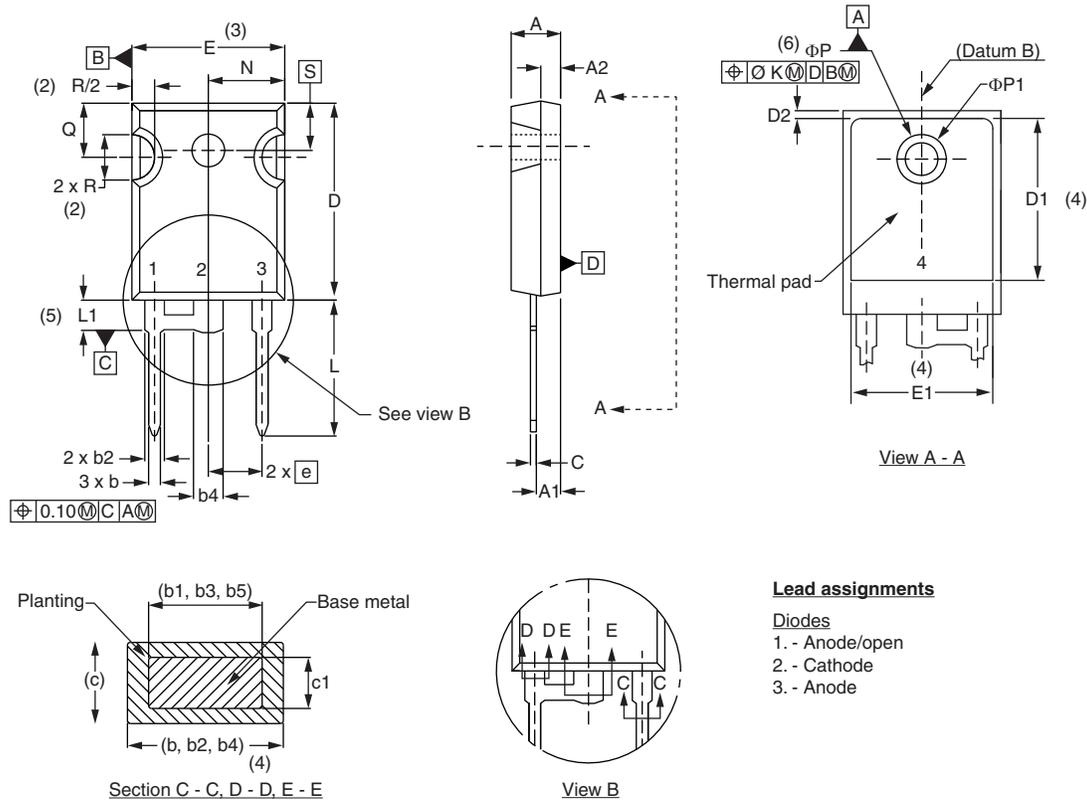
- 1** - Vishay Semiconductors product
- 2** - Current rating (60 = 60 A)
- 3** - Circuit configuration:  
E = Single diode
- 4** - Package:  
P = TO-247AC modified
- 5** - Type of silicon:  
S = Standard recovery rectifier
- 6** - Voltage code x 100 =  $V_{RRM}$
- 7** - PbF = Lead (Pb)-free

08 = 800 V 12 = 1200 V
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LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95253">www.vishay.com/doc?95253</a>
Part marking information	<a href="http://www.vishay.com/doc?95255">www.vishay.com/doc?95255</a>



**DIMENSIONS** in millimeters and inches



### Lead assignments

- Diodes**
1. - Anode/open
  2. - Cathode
  3. - Anode

SYMBOL	MILLIMETERS		INCHES		NOTES
	MIN.	MAX.	MIN.	MAX.	
A	4.65	5.31	0.183	0.209	
A1	2.21	2.59	0.087	0.102	
A2	1.50	2.49	0.059	0.098	
b	0.99	1.40	0.039	0.055	
b1	0.99	1.35	0.039	0.053	
b2	1.65	2.39	0.065	0.094	
b3	1.65	2.37	0.065	0.094	
b4	2.59	3.43	0.102	0.135	
b5	2.59	3.38	0.102	0.133	
c	0.38	0.86	0.015	0.034	
c1	0.38	0.76	0.015	0.030	
D	19.71	20.70	0.776	0.815	3
D1	13.08	-	0.515	-	4
D2	0.51	1.30	0.020	0.051	
E	15.29	15.87	0.602	0.625	3
E1	13.72	-	0.540	-	
e	5.46 BSC		0.215 BSC		
ΦK	2.54		0.010		
L	14.20	16.10	0.559	0.634	
L1	3.71	4.29	0.146	0.169	
N	7.62 BSC		0.3		
ΦP	3.56	3.66	0.14	0.144	
ΦP1	-	6.98	-	0.275	
Q	5.31	5.69	0.209	0.224	
R	4.52	5.49	1.78	0.216	
S	5.51 BSC		0.217 BSC		

### 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) ΦP 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



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