Vishay Semiconductors

VS-240U(R).. Series



Standard Recovery Diodes, (Stud Version), 320 A



FEATURES

- Diffused diode
- · Wide current range
- High voltage ratings up to 1200 V
- High surge current capabilities
- · Stud cathode and stud anode version
- Hermetic metal case
- · Designed and qualified for industrial level
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

TYPICAL APPLICATIONS

- Welders
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications
- · Battery charges
- Freewheeling diodes

MAJOR RATINGS AND CHARACTERISTICS					
PARAMETER	TEST CONDITIONS	VALUES	UNITS		
		320	А		
I _{F(AV)}	T _C	100	°C		
I _{F(RMS)}		500	А		
1	50 Hz	4500	А		
IFSM	60 Hz	4700	A		
l ² t	50 Hz	101	kA ² s		
	60 Hz	92	KA-S		
V _{RRM}	Range	600 to 1200	V		
TJ		-40 to +180	°C		

ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS								
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J = T _J MAXIMUM mA				
	60	600	700					
VS 240LI(B) 80		800	900	15				
VS-240U(R)	100	1000	1100	15				
	120	1200	1300					

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PRIMARY CHARACTERISTICS 320 A I_{F(AV)} Package DO-9 (DO-205AB) Circuit configuration Single







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FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current		180° conduction, half sine wave			320	А
at case temperature	IF(AV)				100	°C
Maximum RMS forward current	I _{F(RMS)}	DC at 80 °	C case tempera	ature	500	
		t = 10 ms	No voltage	Sinusoidal half wave, initial T _J = T _J maximum	4500	А
Maximum peak, one cycle forward,		t = 8.3 ms	reapplied		4700	
non-repetitive surge current	IFSM	t = 10 ms	100 % V _{RRM} reapplied		3800	
		t = 8.3 ms			4000	
		t = 10 ms	No voltage reapplied 100 % V _{BBM}		101	kA ² s
Maximum I ² t for fusing	l ² t	t = 8.3 ms			92	
Maximum i-t for fusing	1-1	t = 10 ms			72	
		t = 8.3 ms	reapplied		66	
Maximum I ² √t for fusing	l²√t	t = 0.1 to 10 ms, no voltage reapplied			1010	kA²√s
Slope resistance r _f		$T_J = T_J$ maximum			0.6	mΩ
Threshold voltage					0.83	v
Maximum forward voltage drop	V _{FM}	$I_{pk} = 750 \text{ A}, T_J = 25 \text{ °C}, t_p = 10 \text{ ms sinusoidal wave}$ 1.33			V	

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction operating and storage temperature range	T _J , T _{Stg}		-40 to 180	°C	
Maximum thermal resistance, junction to case RthJC		DC operation 0.18		K/W	
Maximum thermal resistance, case to heatsink R _{thCS}		Mounting surface, smooth, flat and greased	0.08	10.00	
Maximum allowable mounting targue 10, 20, 0/		Not lubricated threads	37 (330)	N⋅m	
Maximum allowable mounting torque +0 -20 %		Lubricated threads	28 (250)	(lbf ∙ in)	
Approximate weight			250	g	
Case style		See dimensions - link at the end of datasheet	DO-9 (DC	-205AB)	

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS		
180°	0.019	0.015				
120°	0.023	0.025				
90°	0.030	0.034	$T_J = T_J maximum$	K/W		
60°	0.045	0.047				
30°	0.076	0.076				

Note

• The table above shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC

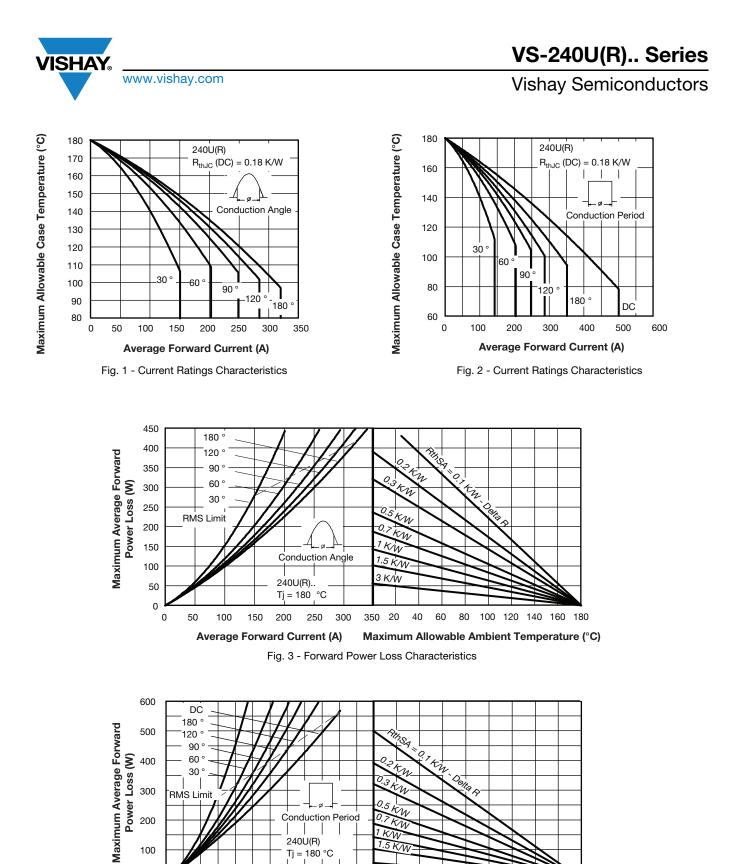


Fig. 4 - Forward Power Loss Characteristics

K/W

40 60 80 100 120 140 160 180

Maximum Allowable Ambient Temperature (°C)

3 K/W

600 20

Ti = 180 °C

400

500

100

0 0

100

200

300

Average Forward Current (A)



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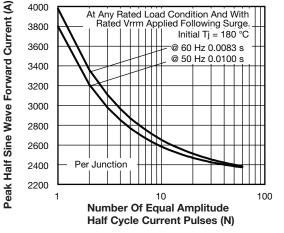


Fig. 5 - Maximum Non-Repetitive Surge Current

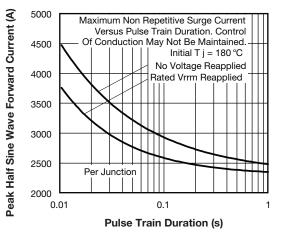


Fig. 6 - Maximum Non-Repetitive Surge Current

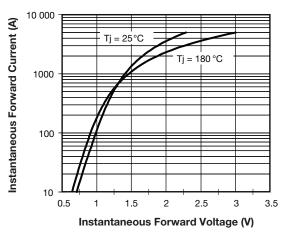
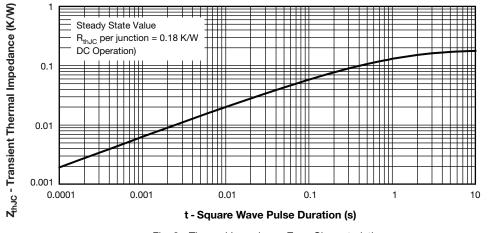
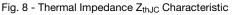


Fig. 7 - Forward Voltage Drop Characteristics





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ORDERING INFORMATION TABLE

Device code	VS-	24	0	U	R	60	D		
	1	2	3	4	5	6	7		
	1 - 2 - 3 -	24 = 6	Vishay Semiconductors product 24 = essential part number 0 = standard device						
	4 - 5 -	 U = stud normal polarity (cathode to stud) None = stud normal polarity (cathode to stud) R = stud reverse polarity (anode to stud) Voltage code x 10 = V_{RRM} (see Voltage Ratings table) Diffused diode 							
	6 - 7 -								
	Note	atria davias M16 v 1 5 contact factory							

• For metric device M16 x 1.5 contact factory

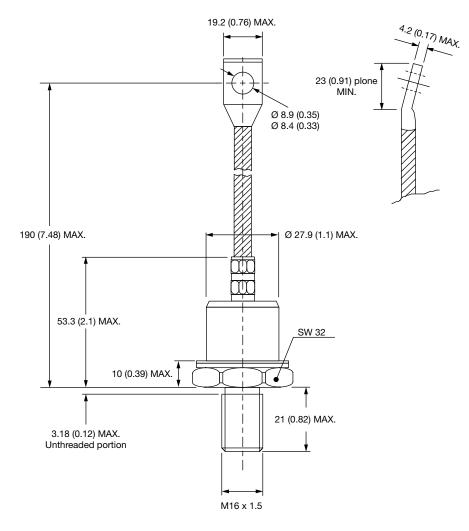
LINKS TO RELATED DOCUMENTS					
Dimensions	www.vishay.com/doc?95317				





DO-205AB (DO-9) for 240U(R)

DIMENSIONS in millimeters (inches)





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