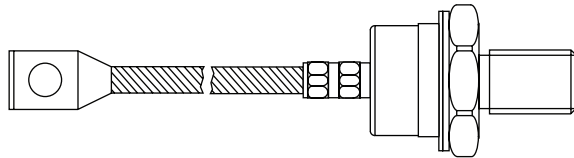


## Standard Recovery Diodes (Stud Version), 320 A



DO-205AB (DO-9)

**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
- RoHS compliant
- Designed and qualified for industrial level


**RoHS  
COMPLIANT**
**PRODUCT SUMMARY**

$I_{F(AV)}$	320 A
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**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
$I_{F(AV)}$		320	A
	$T_C$	100	°C
$I_{F(RMS)}$		500	A
$I_{FSM}$	50 Hz	4500	A
	60 Hz	4700	
$I^2t$	50 Hz	101	kA <sup>2</sup> s
	60 Hz	92	
$V_{RRM}$	Range	600 to 1200	V
$T_J$		- 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
240U(R)..	60	600	700	15
	80	800	900	
	100	1000	1100	
	120	1200	1300	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		320	A
				100	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 80 °C case temperature		500	A
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	4500	
		t = 8.3 ms		4700	
		t = 10 ms	100 % $V_{RRM}$ reapplied	3800	
		t = 8.3 ms		4000	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	101	kA <sup>2</sup> s
		t = 8.3 ms		92	
		t = 10 ms	100 % $V_{RRM}$ reapplied	72	
		t = 8.3 ms		66	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		1010	kA <sup>2</sup> /s
Slope resistance	$r_f$	$T_J = T_J$ maximum		0.6	mΩ
Threshold voltage	$V_{F(T0)}$			0.83	V
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 750$ A, $T_J = 25$ °C, $t_p = 10$ ms sinusoidal wave		1.33	

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	$R_{thJC}$	DC operation		0.18	K/W
Maximum thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased		0.8	
Maximum allowed mounting torque + 0 - 20 %		Not lubricated threads		37 (330)	N · m (lbf · in)
		Lubricated threads		28 (250)	
Approximate weight				250	g
Case style		See dimensions - link at the end of datasheet		DO-205AB (DO-9)	

$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.019	0.015	$T_J = T_J$ maximum	K/W
120°	0.023	0.025		
90°	0.030	0.034		
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

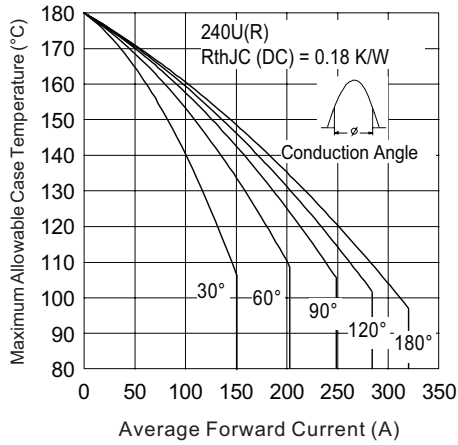


Fig. 1 - Current Ratings Characteristics

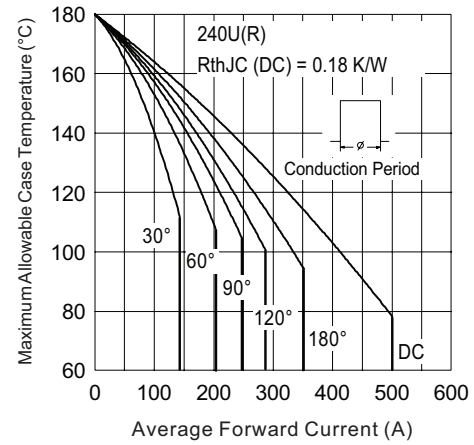


Fig. 2 - Current Ratings Characteristics

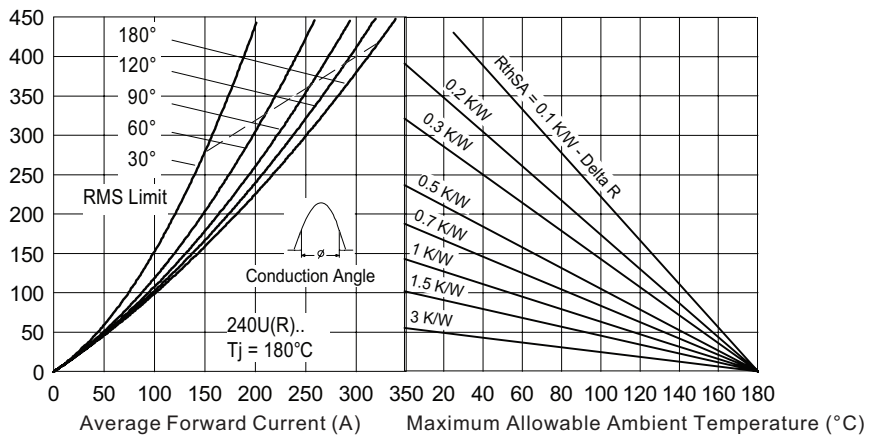


Fig. 3 - Forward Power Loss Characteristics

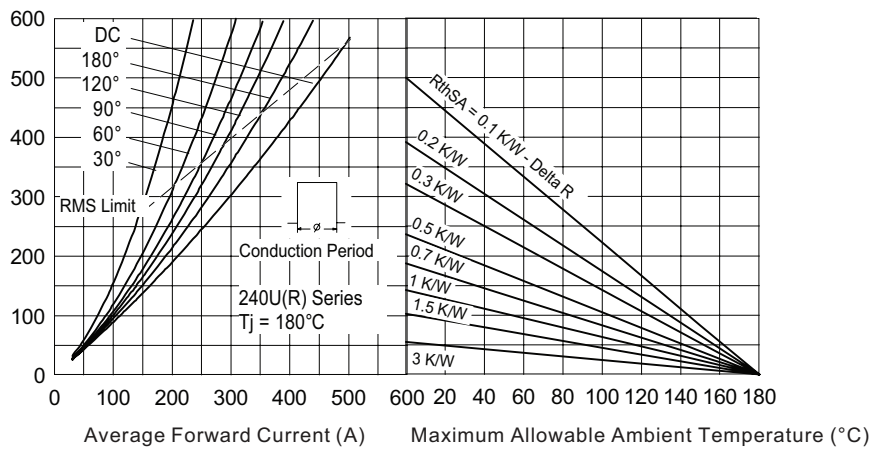
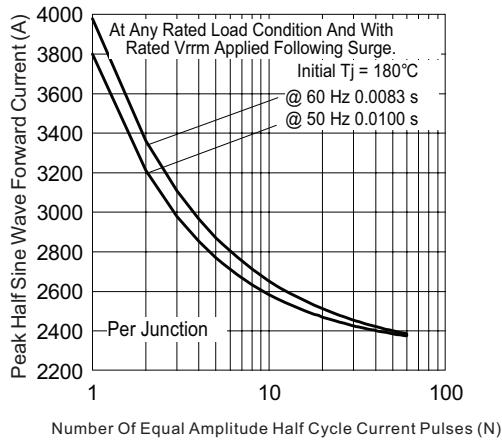
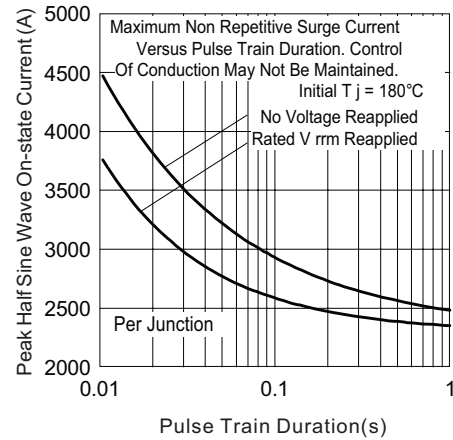


Fig. 4 - Forward Power Loss Characteristics



Number Of Equal Amplitude Half Cycle Current Pulses (N)  
Fig. 5 - Maximum Non-Repetitive Surge Current



Pulse Train Duration(s)  
Fig. 6 - Maximum Non-Repetitive Surge Current

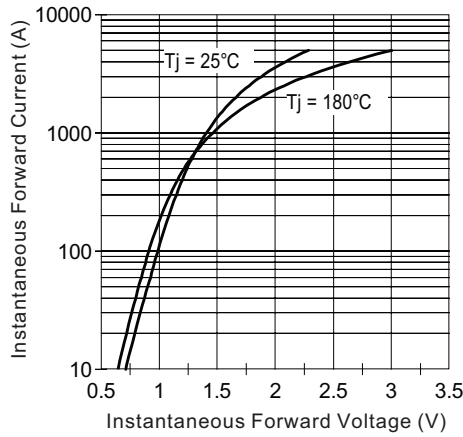


Fig. 7 - Forward Voltage Drop Characteristics

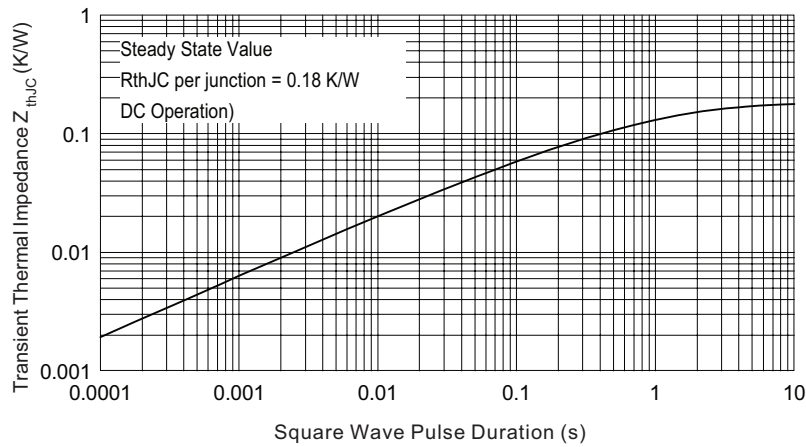
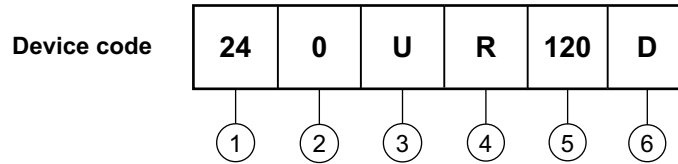


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



## ORDERING INFORMATION TABLE



- 1** - 24 = Essential part number
- 2** - 0 = Standard device
- 3** - U = Stud normal polarity (cathode to stud)
- 4** -
  - None = Stud normal polarity (cathode to stud)
  - R = Stud reverse polarity (anode to stud)
- 5** - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)
- 6** - Diffused diode

Note = For metric device M16 x 1.5 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95317">http://www.vishay.com/doc?95317</a>



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