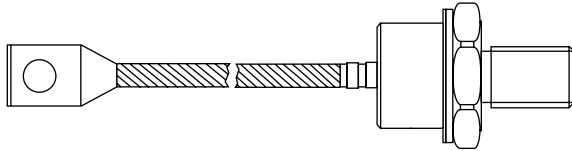




### Standard Recovery Diodes (Stud Version), 400 A



DO-205AB (DO-9)

#### FEATURES

- Wide current range
- High surge current capabilities
- Stud cathode and stud anode version
- Standard JEDEC types
- RoHS compliant
- Designed and qualified for industrial level



RoHS  
COMPLIANT

#### PRODUCT SUMMARY

$I_{F(AV)}$	400 A
-------------	-------

#### TYPICAL APPLICATIONS

- Converters
- Power supplies
- Machine tool controls
- High power drives

#### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		400	A
	$T_C$	120	°C
$I_{F(RMS)}$		630	A
$I_{FSM}$	50 Hz	8250	A
	60 Hz	8640	
$I^2t$	50 Hz	340	kA <sup>2</sup> s
	60 Hz	311	
$V_{RRM}$	Range	800 to 1600	V
$T_J$		- 40 to 200	°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
400U(R)	80	800	900	15
	120	1200	1300	
	160	1600	1700	

# 400U(R) Series



## Vishay High Power Products Standard Recovery Diodes (Stud Version), 400 A

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		400	A
				120	°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 110 °C case temperature		630	A
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reapplied	8250	A
		t = 8.3 ms		8640	
		t = 10 ms	100 % $V_{RRM}$ reapplied	6940	
		t = 8.3 ms		7270	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	340	kA <sup>2</sup> s
		t = 8.3 ms		311	
		t = 10 ms	100 % $V_{RRM}$ reapplied	241	
		t = 8.3 ms		220	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		3400	kA <sup>2</sup> √s
Low level value of threshold voltage	$V_{F(TO)1}$	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.77	V
High level value of threshold voltage	$V_{F(TO)2}$	(I > $\pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.85	
Low level value of forward slope resistance	$r_{f1}$	(16.7 % $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.49	mΩ
High level value of forward slope resistance	$r_{f2}$	(I > $\pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.49	
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 1500$ A, $T_J = T_J$ maximum, $t_p = 10$ ms sinusoidal wave		1.62	V

THERMAL AND MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction operating and storage temperature range	$T_J, T_{Stg}$			- 40 to 200	°C
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation		0.15	K/W
Maximum thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased		0.04	
Maximum allowed mounting torque ± 10 %		Not lubricated threads		27	N · m
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°	0.020	0.013	$T_J = T_J$ maximum	K/W
120°	0.023	0.023		
90°	0.029	0.031		
60°	0.042	0.044		
30°	0.073	0.074		

### Note

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



# 400U(R) Series

## Standard Recovery Diodes Vishay High Power Products (Stud Version), 400 A

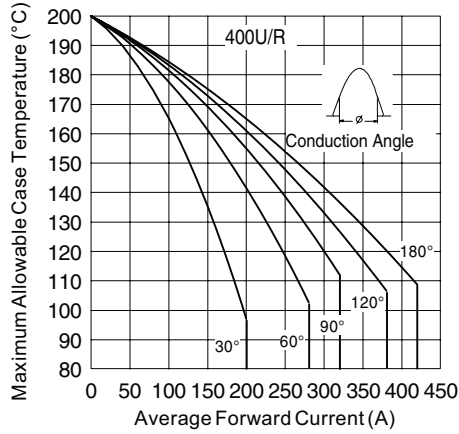


Fig. 1 - Current Ratings Characteristics

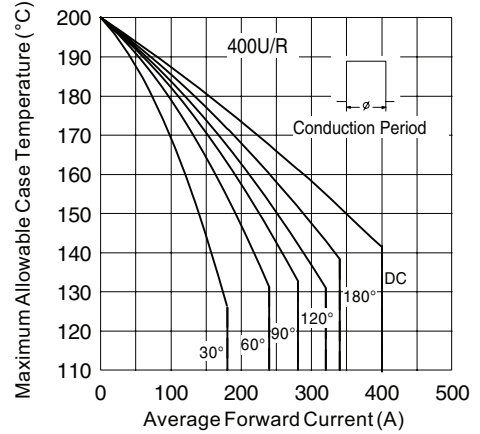


Fig. 2 - Current Ratings Characteristics

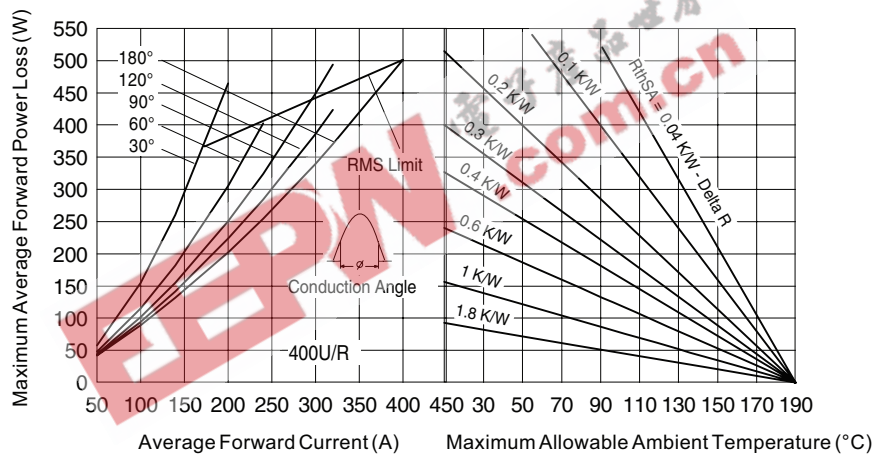


Fig. 3 - Forward Power Loss Characteristics

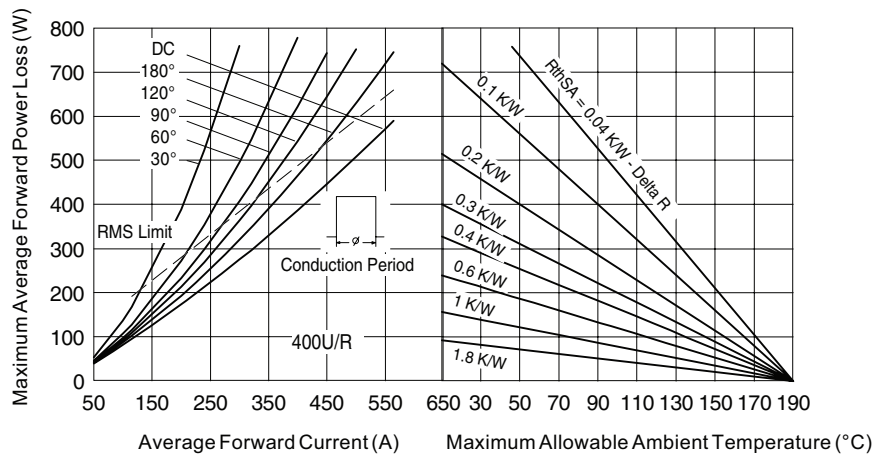


Fig. 4 - Forward Power Loss Characteristics

# 400U(R) Series



## Vishay High Power Products Standard Recovery Diodes (Stud Version), 400 A

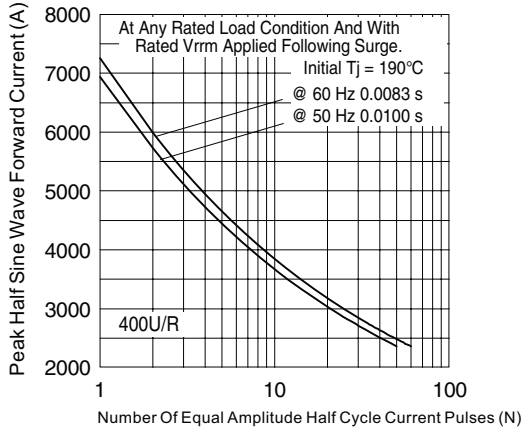


Fig. 5 - Maximum Non-Repetitive Surge Current

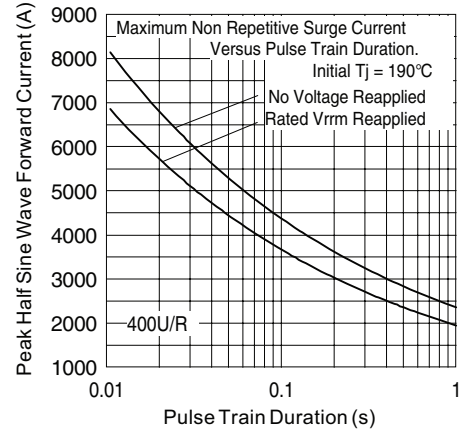


Fig. 6 - Maximum Non-Repetitive Surge Current

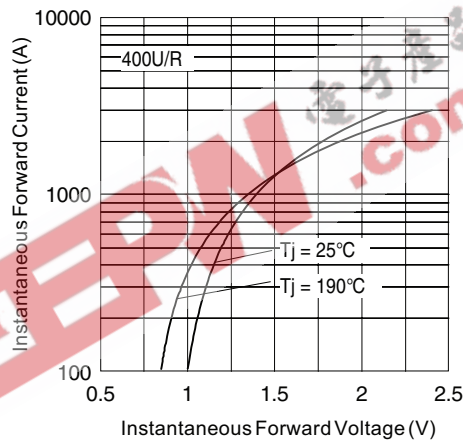


Fig. 7 - Forward Voltage Drop Characteristics

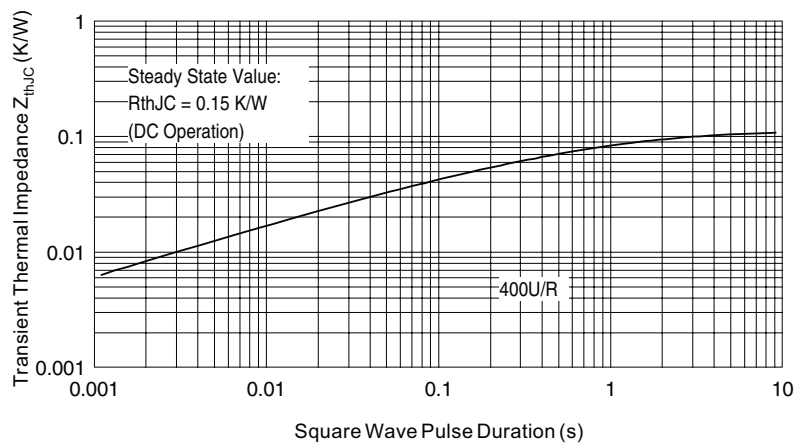


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic



## 400U(R) Series

Standard Recovery Diodes Vishay High Power Products  
(Stud Version), 400 A

### ORDERING INFORMATION TABLE

Device code	40	0	U	R	160	D
	①	②	③	④	⑤	⑥

- ① - 40 = Essential part number
- ② - 0 = Standard recovery 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?95339">http://www.vishay.com/doc?95339</a>



### Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.