



## Standard Recovery Diodes (Stud Version), 150 A



DO-205AA (DO-8)

### FEATURES

- Alloy diode
- High current carrying capability
- High surge current capabilities
- Stud cathode and stud anode version
- RoHS compliant
- Designed and qualified for industrial level



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

- Battery chargers
- Welders
- Machine tool controls
- High power drives
- Medium traction applications
- Freewheeling diodes

### PRODUCT SUMMARY

$I_{F(AV)}$	150 A
-------------	-------

### MAJOR RATINGS AND CHARACTERISTICS

PARAMETER	TEST CONDITIONS	VALUES	UNITS
$I_{F(AV)}$		150	A
	$T_C$	150	°C
$I_{F(RMS)}$		235	A
$I_{FSM}$	50 Hz	3570	A
	60 Hz	3740	
$I^2t$	50 Hz	64	kA <sup>2</sup> s
	60 Hz	58	
$V_{RRM}$	Range	100 to 600	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 $T_J = 175$ °C mA
45L(R) 150K(R) 150KS(R)	10	100	200	35
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	720	

# 45L(R), 150K(R), 150KS(R) Series



Vishay High Power Products Standard Recovery Diodes  
(Stud Version), 150 A

FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		150	A	
				150	°C	
Maximum RMS forward current	$I_{F(RMS)}$	DC at 142 °C case temperature		235	A	
Maximum peak, one cycle forward, non-repetitive surge current	$I_{FSM}$	t = 10 ms	No voltage reappplied	3570		
		t = 8.3 ms		3740		
		t = 10 ms	100 % $V_{RRM}$ reappplied	3000		
		t = 8.3 ms		3140		
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reappplied	64		kA <sup>2</sup> s
		t = 8.3 ms		58		
		t = 10 ms	100 % $V_{RRM}$ reappplied	45		
		t = 8.3 ms		41		
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reappplied		640	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		0.67	V	
High level value of threshold voltage	$V_{F(TO)2}$	(I > $\pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.83		
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		1.42	mΩ	
High level value of forward slope resistance	$r_{f2}$	(I > $\pi \times I_{F(AV)}$ ), $T_J = T_J$ maximum		0.91		
Maximum forward voltage drop	$V_{FM}$	$I_{pk} = 471$ A, $T_J = 25$ °C, $t_p = 10$ 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 200	°C
Maximum thermal resistance, junction to case	$R_{thJC}$	DC operation		0.25	K/W
Maximum thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth, flat and greased		0.10	
Mounting torque 45L	minimum	Not lubricated threads		14.1 (125)	N · m (lbf · in)
	maximum			17.0 (150)	
	minimum	Lubricated threads		12.2 (108)	
	maximum			15.0 (132)	
Mounting torque 150K 150KS	minimum	Not lubricated threads		11.3 (100)	N · m (lbf · in)
	maximum			14.1 (125)	
	minimum	Lubricated threads		9.5 (85)	
	maximum			12.5 (110)	
Approximate weight				100	g
				3.5	oz.
Case style	45L	See dimensions - link at the end of datasheet		DO-205AC (DO-30)	
	150K-A			DO-205AA (DO-8)	
	150KS			B-42	



# 45L(R), 150K(R), 150KS(R) Series

Standard Recovery Diodes Vishay High Power Products  
(Stud Version), 150 A

$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.031	0.023	$T_J = T_{J \text{ maximum}}$	K/W
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

**Note**

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

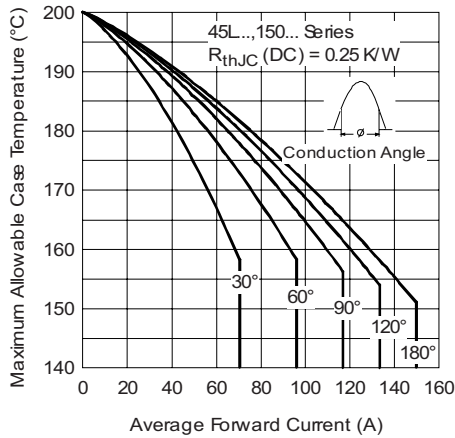


Fig. 1 - Current Ratings Characteristics

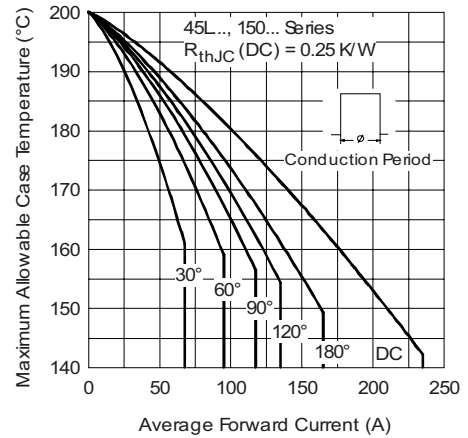


Fig. 2 - Current Ratings Characteristics

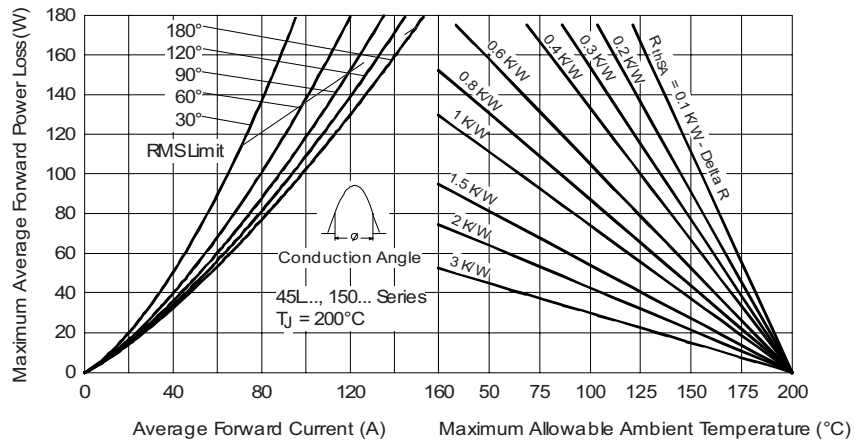


Fig. 3 - Forward Power Loss Characteristics

# 45L(R), 150K(R), 150KS(R) Series



Vishay High Power Products Standard Recovery Diodes  
(Stud Version), 150 A

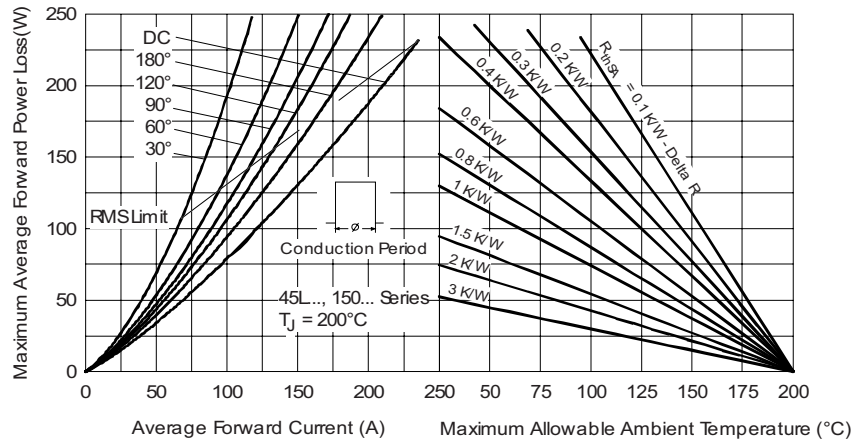


Fig. 4 - Forward Power Loss Characteristics

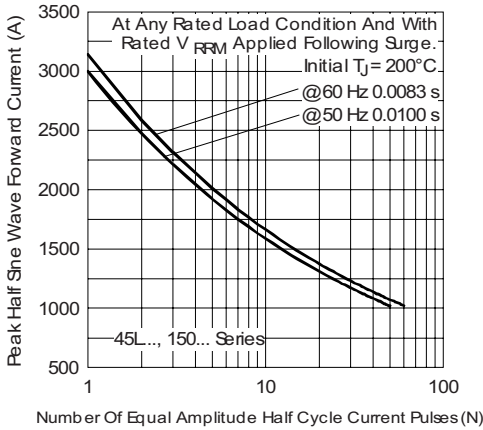


Fig. 5 - Maximum Non-Repetitive Surge Current

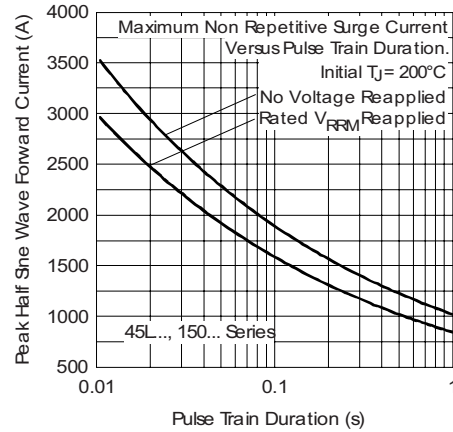


Fig. 6 - Maximum Non-Repetitive Surge Current

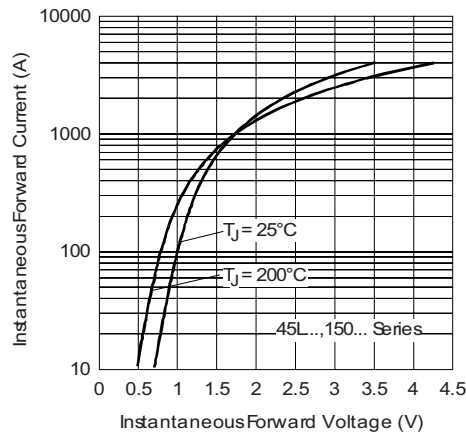


Fig. 7 - Forward Voltage Drop Characteristics



# 45L(R), 150K(R), 150KS(R) Series

Standard Recovery Diodes Vishay High Power Products  
(Stud Version), 150 A

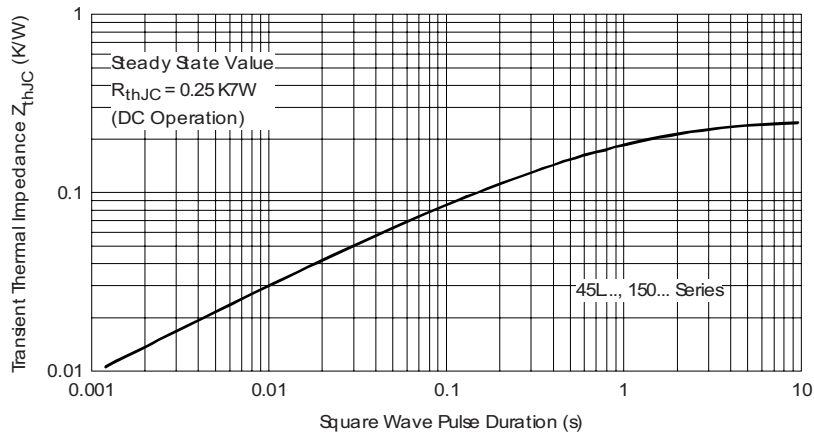


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

## ORDERING INFORMATION TABLES

Device code	<b>45</b>	<b>L</b>	<b>R</b>	<b>60</b>
	①	②	③	④
<b>1</b>	- 45 = Standard version			
<b>2</b>	- L = Essential part number			
<b>3</b>	- R = Stud reverse polarity (anode to stud) None = Stud normal polarity (cathode to stud)			
<b>4</b>	- Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)			

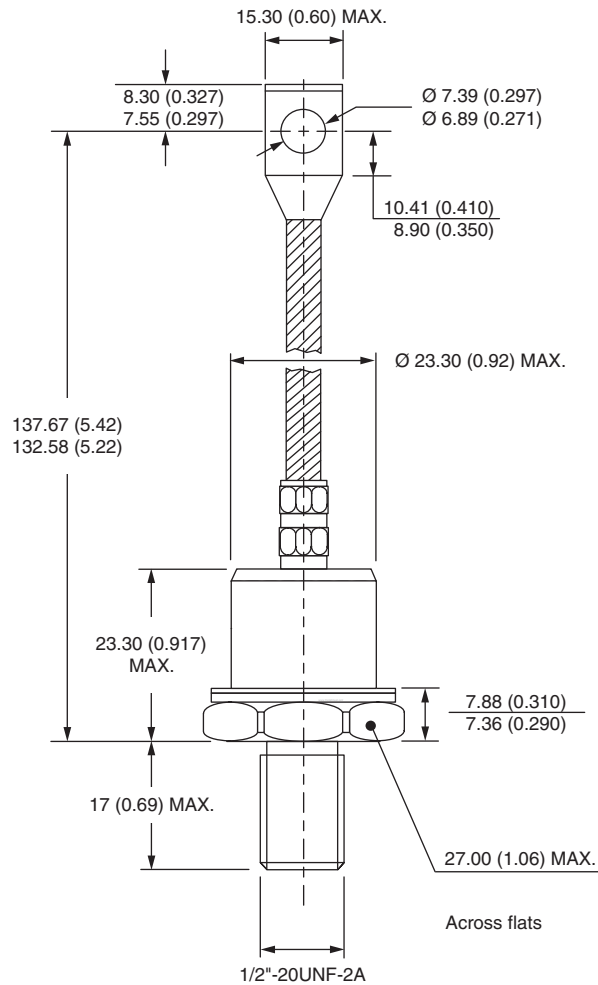
Device code	<b>15</b>	<b>0</b>	<b>K</b>	<b>R</b>	<b>60</b>	<b>A</b>
	①	②	③	④	⑤	⑥
<b>1</b>	- 15 = Essential part number					
<b>2</b>	- 0 = Standard device					
<b>3</b>	- Case style: K = DO-205AA (DO-8) KS = B-42					
<b>4</b>	- R = Stud reverse polarity (anode to stud) None = Stud normal polarity (cathode to stud)					
<b>5</b>	- Voltage code x 10 = $V_{RRM}$ (see Voltage Ratings table)					
<b>6</b>	- A = Essential part number for 150K (omitted for 150KS)					

Note: For metric device M12 x 1.75 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95314">http://www.vishay.com/doc?95314</a>

## DO-205AC (DO-30), DO-205AA (DO-8) and B-42 for 45L(R), 150K(R) and 150KS(R) Series

**DIMENSIONS FOR 45L(R) SERIES - DO-205AC (DO-30)** in millimeters (inches)



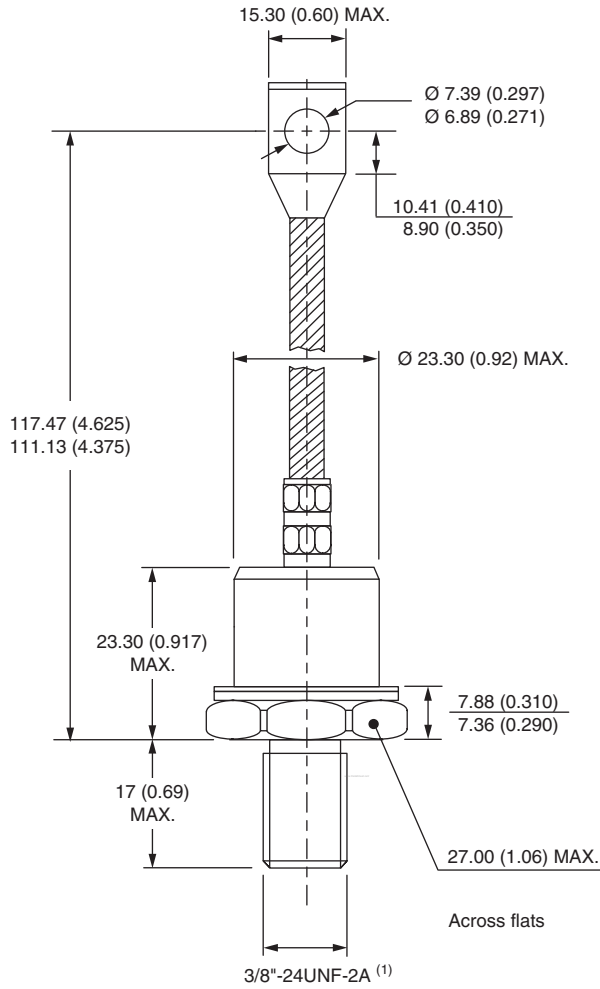
# Outline Dimensions



Vishay Semiconductors

DO-205AC (DO-30), DO-205AA (DO-8)  
and B-42 for 45L(R), 150K(R) and 150KS(R) Series

## DIMENSIONS FOR 150K(R) SERIES - DO-205AA (DO-8) in millimeters (inches)



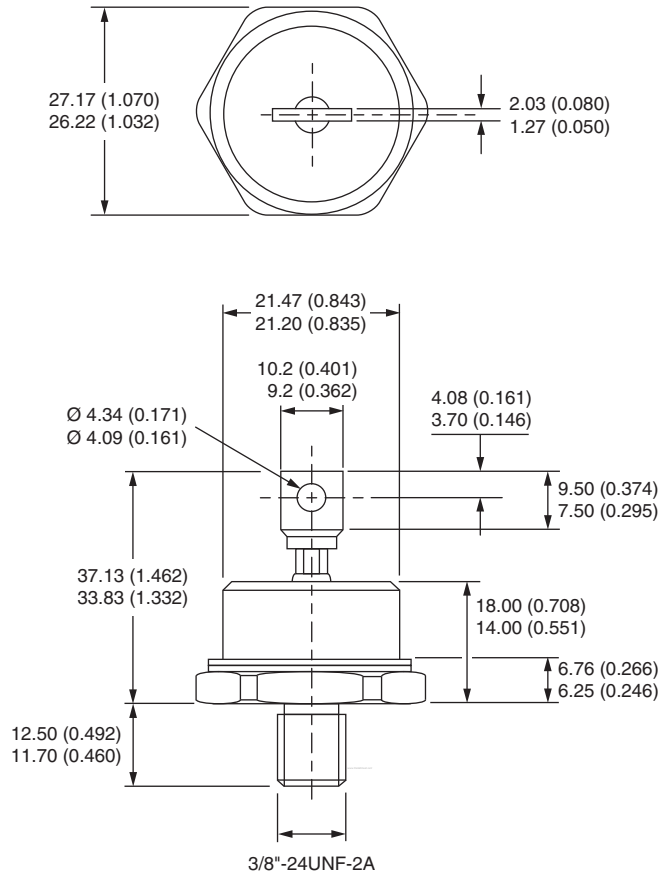
### Note

<sup>(1)</sup> For metric device M12 x 1.75 contact factory



DO-205AC (DO-30), DO-205AA (DO-8)  
and B-42 for 45L(R), 150K(R) and 150KS(R) Series

## DIMENSIONS FOR 150KS(R) SERIES - B-42 in millimeters (inches)







## **Disclaimer**

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

## **Material Category Policy**

**Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.**

**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**