



## 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
- Designed and qualified for industrial level
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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
Package	DO-205AA (DO-8)
Circuit configuration	Single diode

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 $T_J = 175\text{ °C}$ mA
VS-45L(R) VS-150K(R) VS-150KS(R)	10	100	200	35
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	720	



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 reapplied	3570	
		t = 8.3 ms	No voltage reapplied	3740	
		t = 10 ms	100 % $V_{RRM}$ reapplied	3000	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	3140	
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	64	kA <sup>2</sup> s
		t = 8.3 ms	No voltage reapplied	58	
		t = 10 ms	100 % $V_{RRM}$ reapplied	45	
		t = 8.3 ms	100 % $V_{RRM}$ reapplied	41	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	t = 0.1 to 10 ms, no voltage reapplied		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	mW
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	



$\Delta R_{thJC}$ CONDUCTION				
CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS
180°	0.031	0.023	T <sub>J</sub> = T <sub>J</sub> 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<sub>thJC</sub> when devices operate at different conduction angles than DC

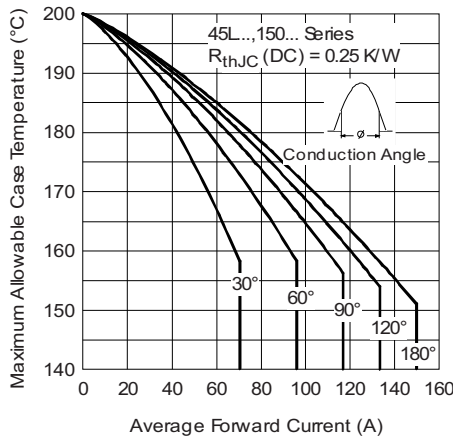


Fig. 1 - Current Ratings Characteristics

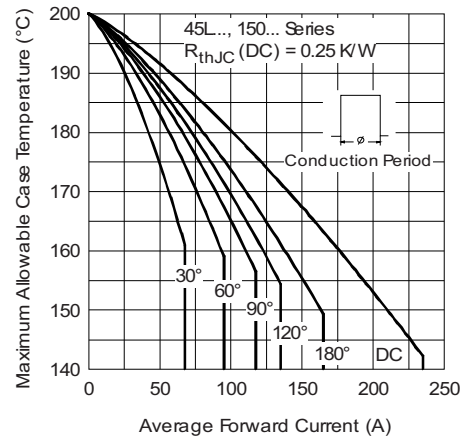


Fig. 2 - Current Ratings Characteristics

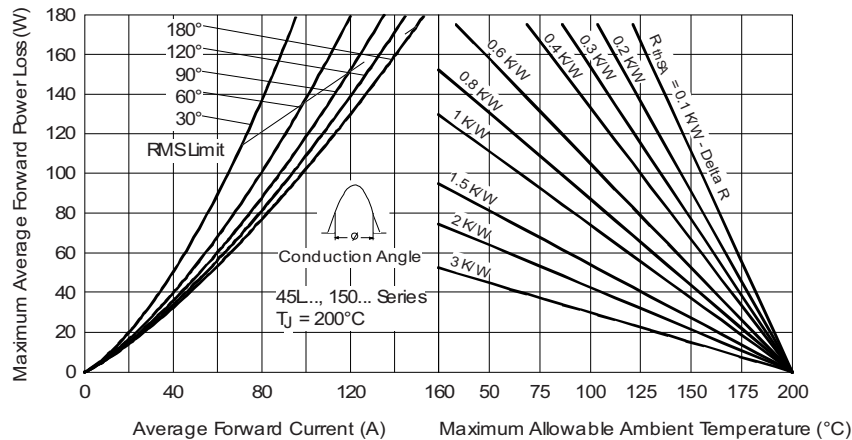


Fig. 3 - Forward Power Loss Characteristics

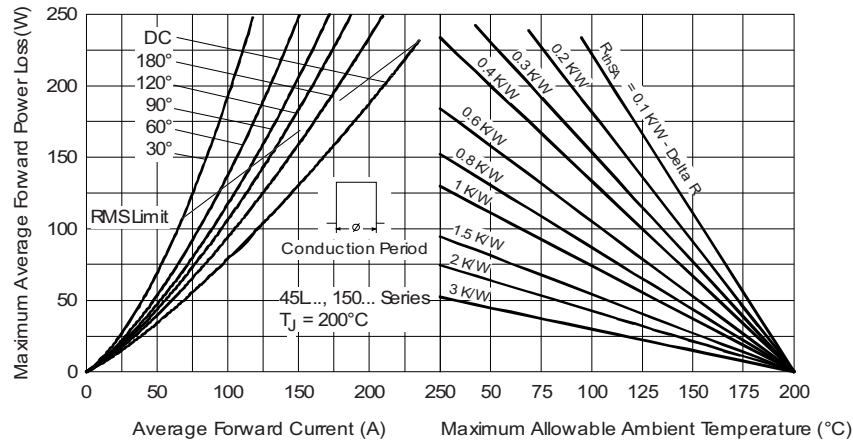


Fig. 4 - Forward Power Loss Characteristics

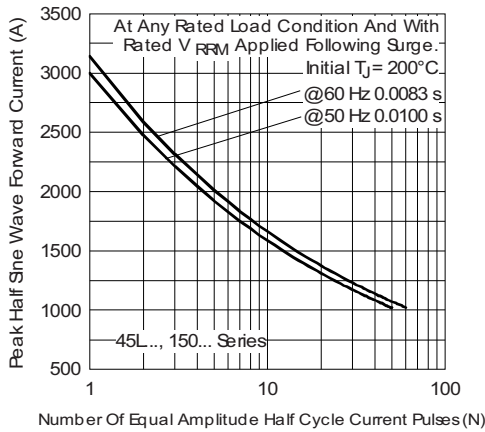


Fig. 5 - Maximum Non-Repetitive Surge Current

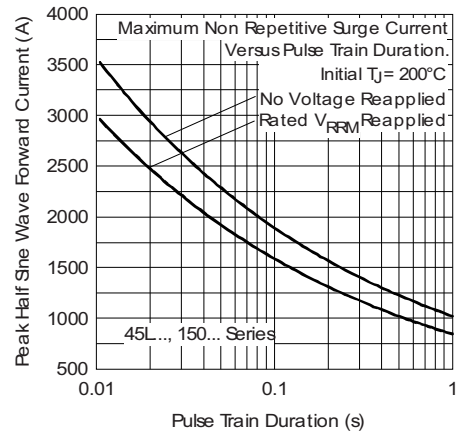


Fig. 6 - Maximum Non-Repetitive Surge Current

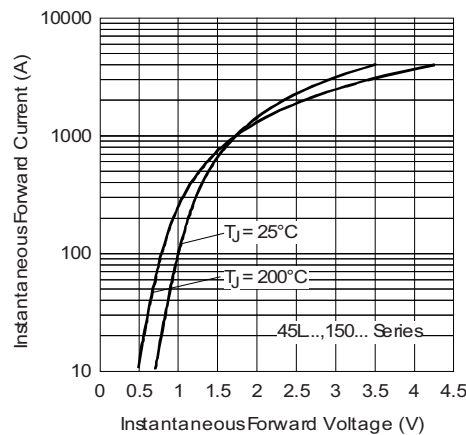


Fig. 7 - Forward Voltage Drop Characteristics

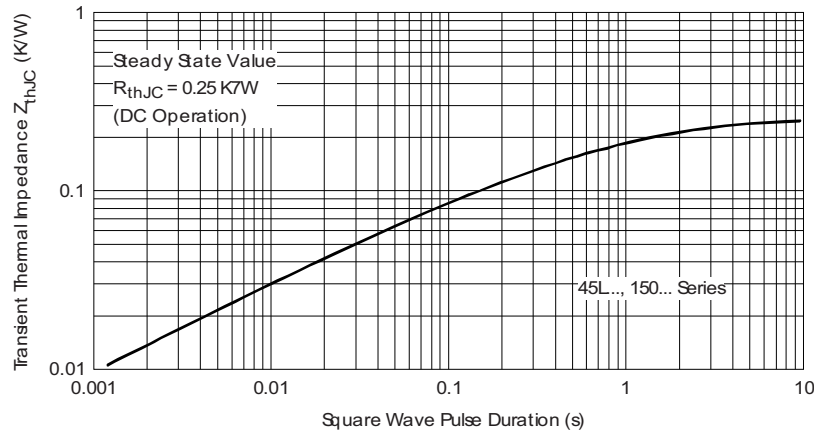


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristics

## ORDERING INFORMATION TABLES

Device code

VS-	45	L	R	60
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④

⑤

- ① - Vishay Semiconductors product
- ② - 45 = Standard version
- ③ - L = Essential part number
- ④ - R = Stud reverse polarity (anode to stud)  
None = Stud normal polarity (cathode to stud)
- ⑤ - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)

Device code

VS-	15	0	K	R	60	A
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- ① - Vishay Semiconductors product
- ② - 15 = Essential part number
- ③ - 0 = Standard device
- ④ - Case style:  
K = DO-205AA (DO-8)  
KS = B-42
- ⑤ - R = Stud reverse polarity (anode to stud)  
None = Stud normal polarity (cathode to stud)
- ⑥ - Voltage code x 10 =  $V_{RRM}$  (see Voltage Ratings table)
- ⑦ - A = Essential part number for 150K (omitted for 150KS)

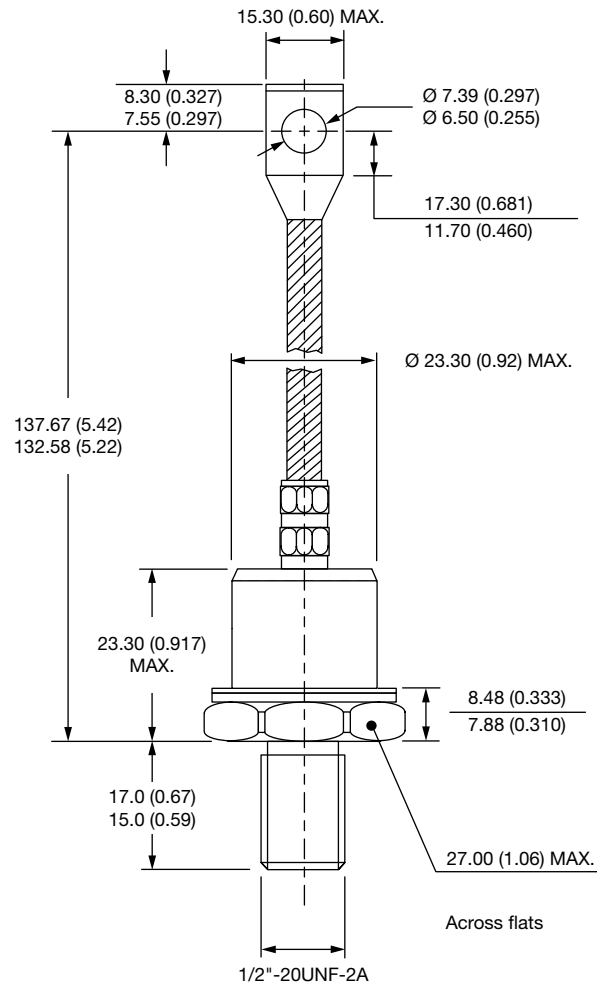
Note: For metric device M12 x 1.75 contact factory

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



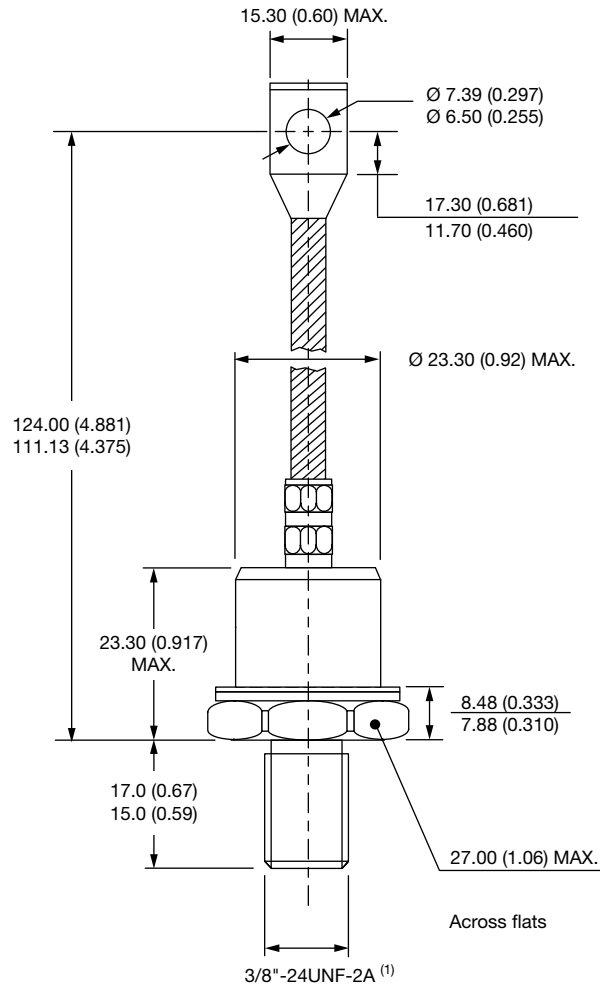
## DO-205AC (DO-30), DO-205AA (DO-8) and B-42 for 45L(R), 150K(R) and 150KS(R) Series

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





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

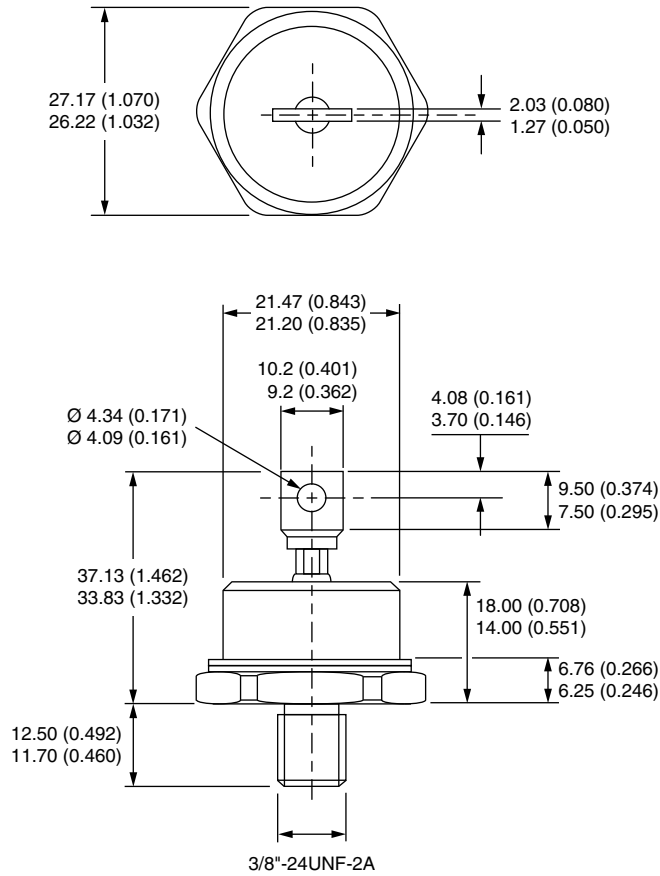


#### Note

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



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







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