

## 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 <sub>F(AV)</sub>	180° conduction, half sine wave			150	A
					150	°C
Maximum RMS forward current	I <sub>F(RMS)</sub>	DC at 142 °C case temperature			235	
Maximum peak, one cycle forward, non-repetitive surge current	I <sub>FSM</sub>	t = 10 ms	No voltage reapplied	Sinusoidal half wave, initial T <sub>J</sub> = T <sub>J</sub> maximum	3570	A
		t = 8.3 ms			3740	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		3000	
		t = 8.3 ms			3140	
Maximum I <sup>2</sup> t for fusing	I <sup>2</sup> t	t = 10 ms	No voltage reapplied		64	kA <sup>2</sup> s
		t = 8.3 ms			58	
		t = 10 ms	100 % V <sub>RRM</sub> reapplied		45	
		t = 8.3 ms			41	
Maximum I <sup>2</sup> √t for fusing	I <sup>2</sup> √t	t = 0.1 to 10 ms, no voltage reapplied			640	kA <sup>2</sup> √s
Low level value of threshold voltage	V <sub>F(TO)1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			0.67	V
High level value of threshold voltage	V <sub>F(TO)2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum			0.83	
Low level value of forward slope resistance	r <sub>f1</sub>	(16.7 % × π × I <sub>F(AV)</sub> ) < I < π × I <sub>F(AV)</sub> , T <sub>J</sub> = T <sub>J</sub> maximum			1.42	mW
High level value of forward slope resistance	r <sub>f2</sub>	(I > π × I <sub>F(AV)</sub> ), T <sub>J</sub> = T <sub>J</sub> maximum			0.91	
Maximum forward voltage drop	V <sub>FM</sub>	I <sub>pk</sub> = 471 A, T <sub>J</sub> = 25 °C, t <sub>p</sub> = 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 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	$T_J = T_J$ 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

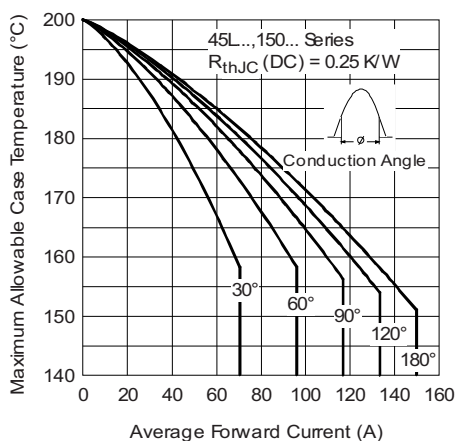


Fig. 1 - Current Ratings Characteristics

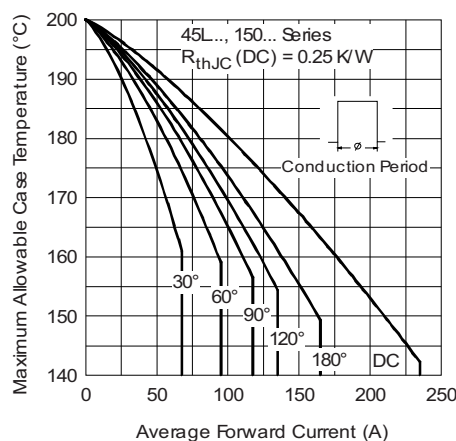


Fig. 2 - Current Ratings Characteristics

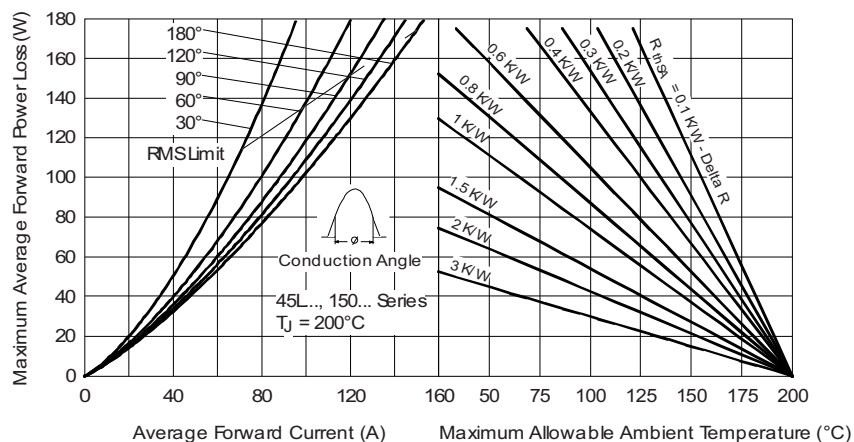


Fig. 3 - Forward Power Loss Characteristics

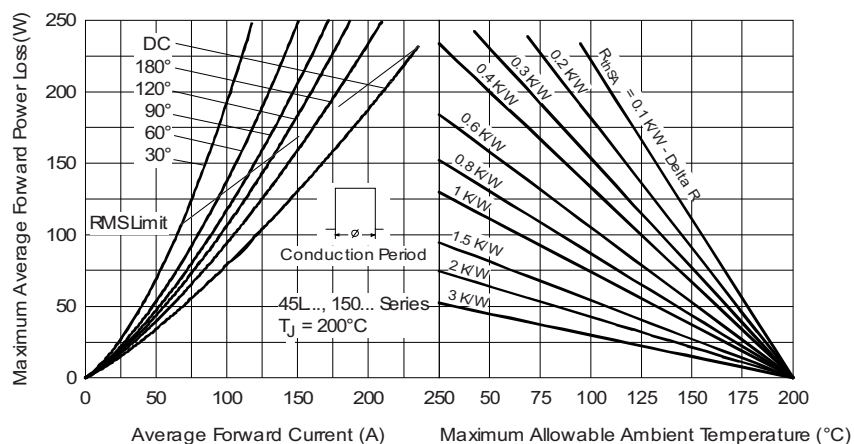


Fig. 4 - Forward Power Loss Characteristics

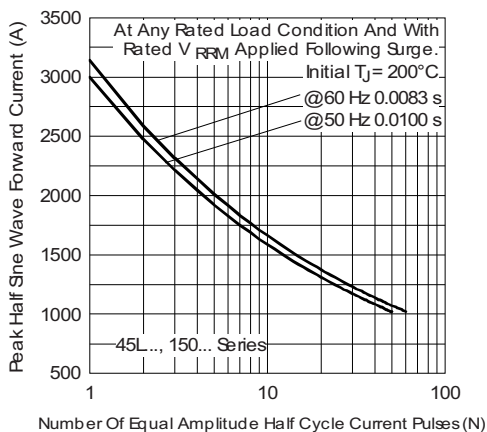


Fig. 5 - Maximum Non-Repetitive Surge Current

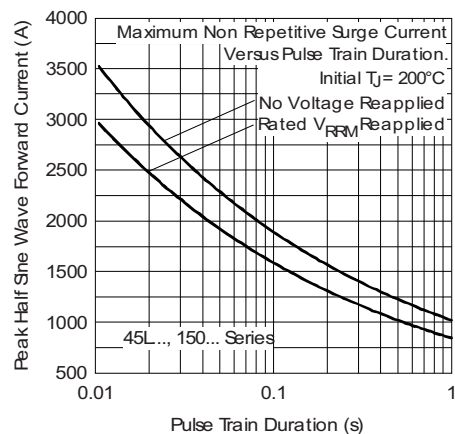


Fig. 6 - Maximum Non-Repetitive Surge Current

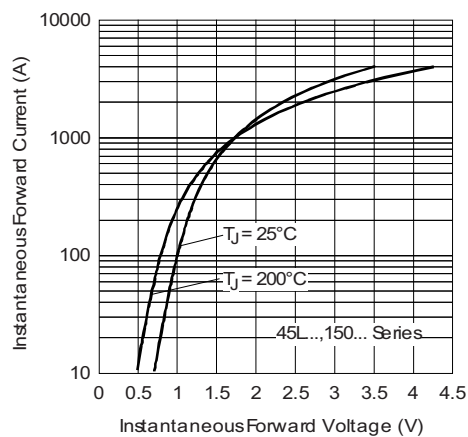
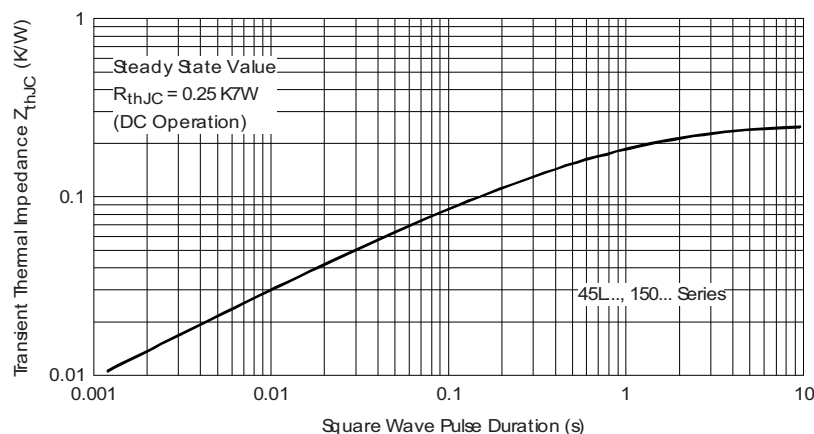


Fig. 7 - Forward Voltage Drop Characteristics

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

## ORDERING INFORMATION TABLES

Device code	VS-	45	L	R	60
	1	2	3	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
	1	2	3	4	5	6	7
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)						

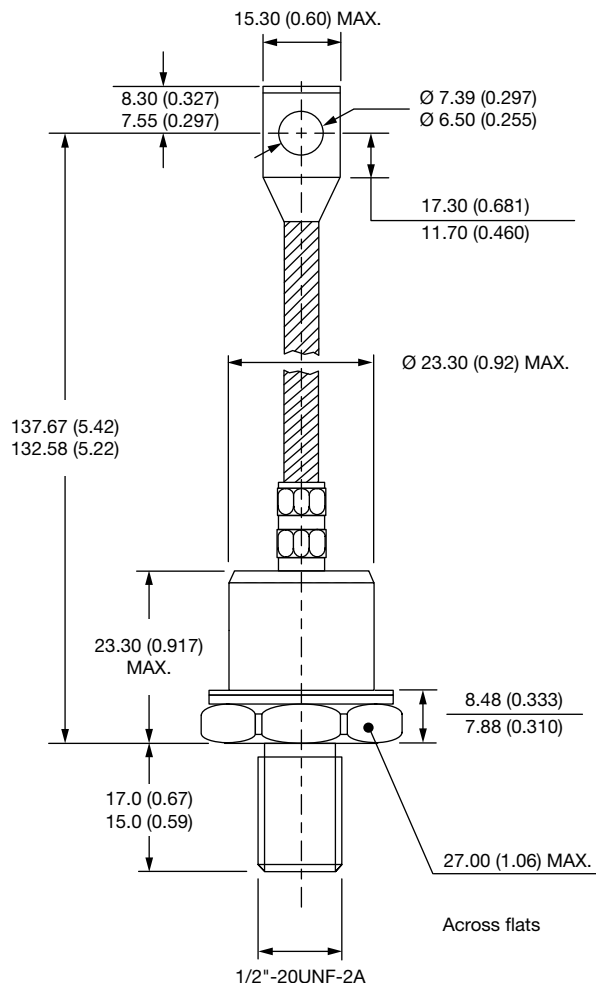
Note: For metric device M12 x 1.75 contact factory

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



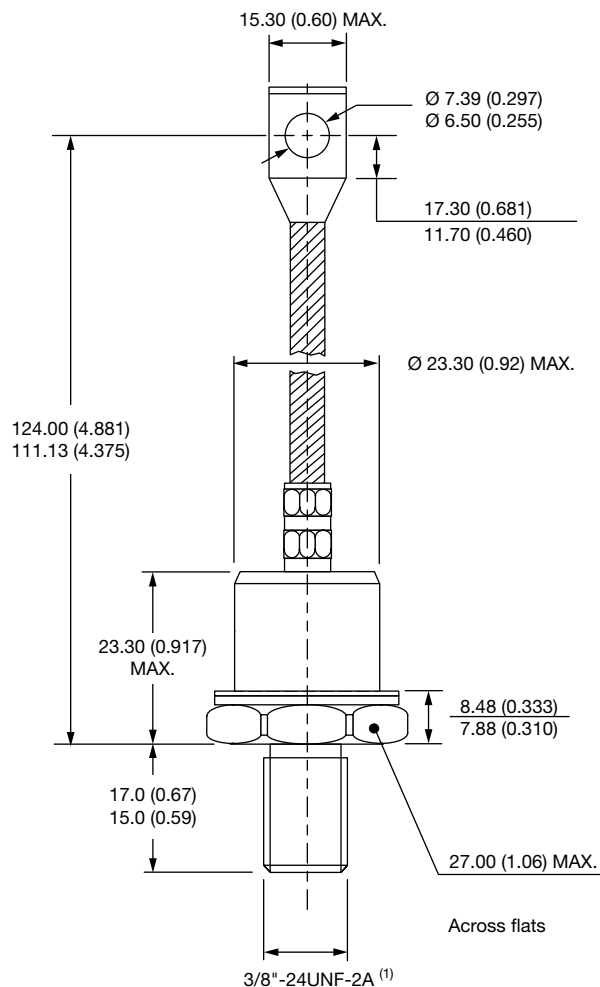
## DO-205AC (DO-30), DO-205AA (DO-8) and B-42 for 45L(R), 150K(R) and 150KS(R) Series

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





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

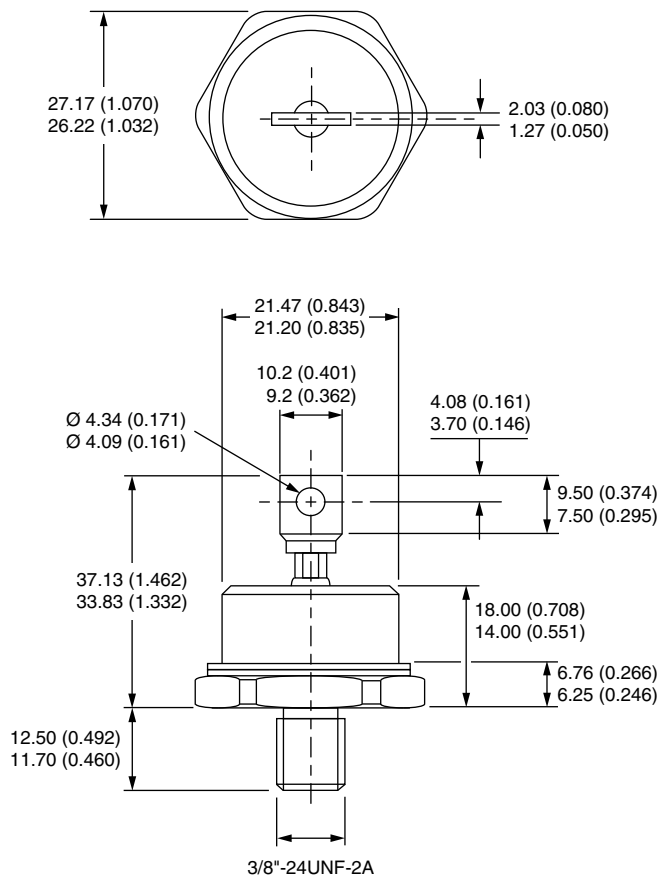


### Note

<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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