

Standard Recovery Diodes, (Stud Version), 150 A



DO-8 (DO-205AA)

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


RoHS
COMPLIANT

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	150 A
Package	DO-8 (DO-205AA)
Circuit configuration	Single

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 ² 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 $T_J = 175^\circ\text{C}$ 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
Maximum average forward current at case temperature	$I_{F(AV)}$	180° conduction, half sine wave		150
				°C
Maximum RMS forward current	$I_{F(RMS)}$	DC at 142 °C case temperature		235
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
		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
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
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
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

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-30 (DO-205AC)	
	150K-A		DO-8 (DO-205AA)	
	150KS		B-42	

ΔR_{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

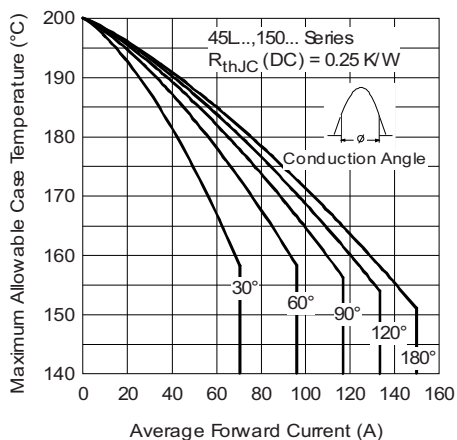


Fig. 1 - Current Ratings Characteristics

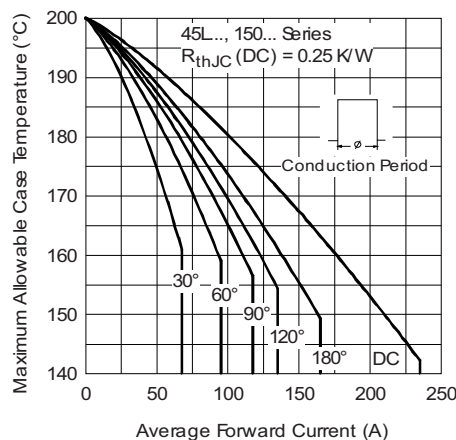


Fig. 2 - Current Ratings Characteristics

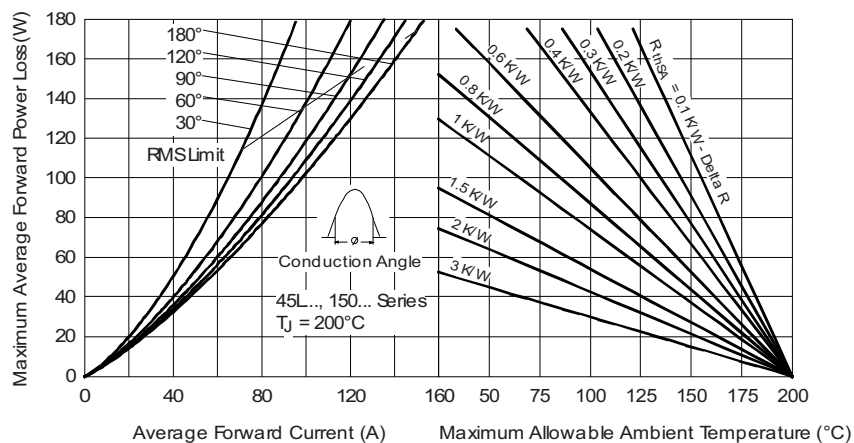


Fig. 3 - Forward Power Loss Characteristics

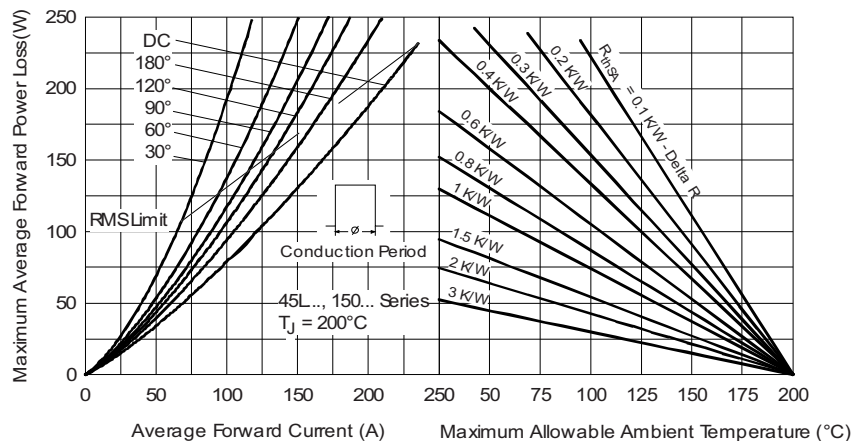


Fig. 4 - Forward Power Loss Characteristics

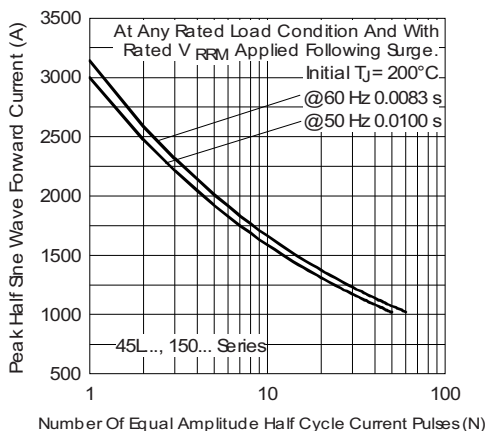


Fig. 5 - Maximum Non-Repetitive Surge Current

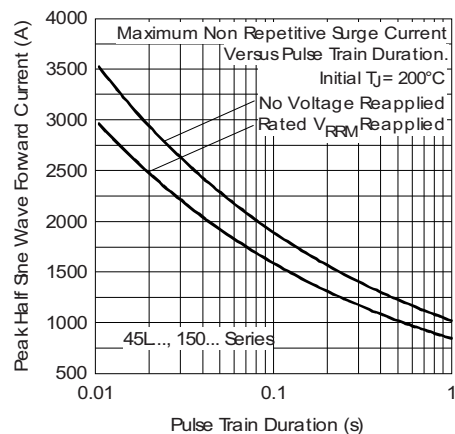


Fig. 6 - Maximum Non-Repetitive Surge Current

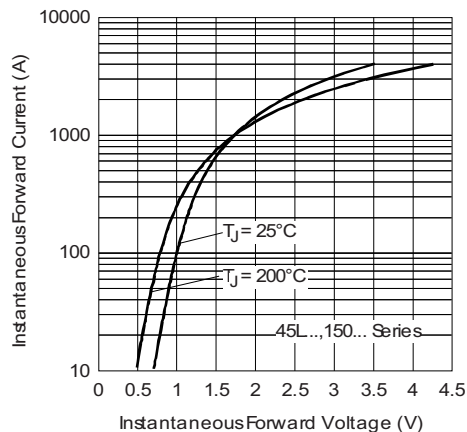


Fig. 7 - Forward Voltage Drop Characteristics

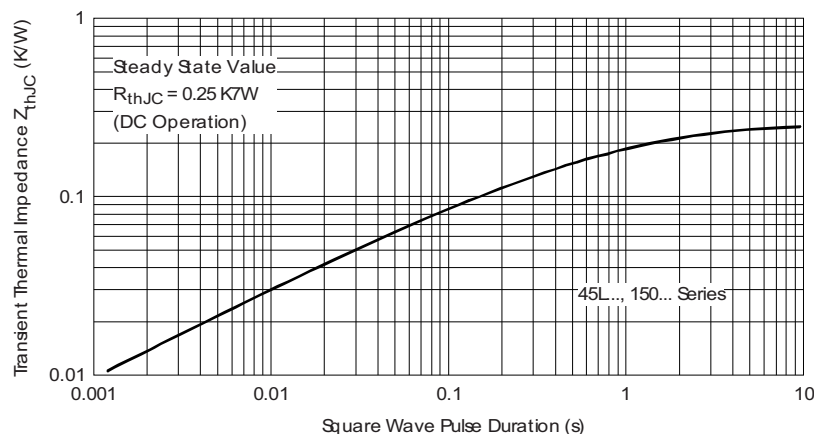


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE

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-8 (DO-205AA) 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

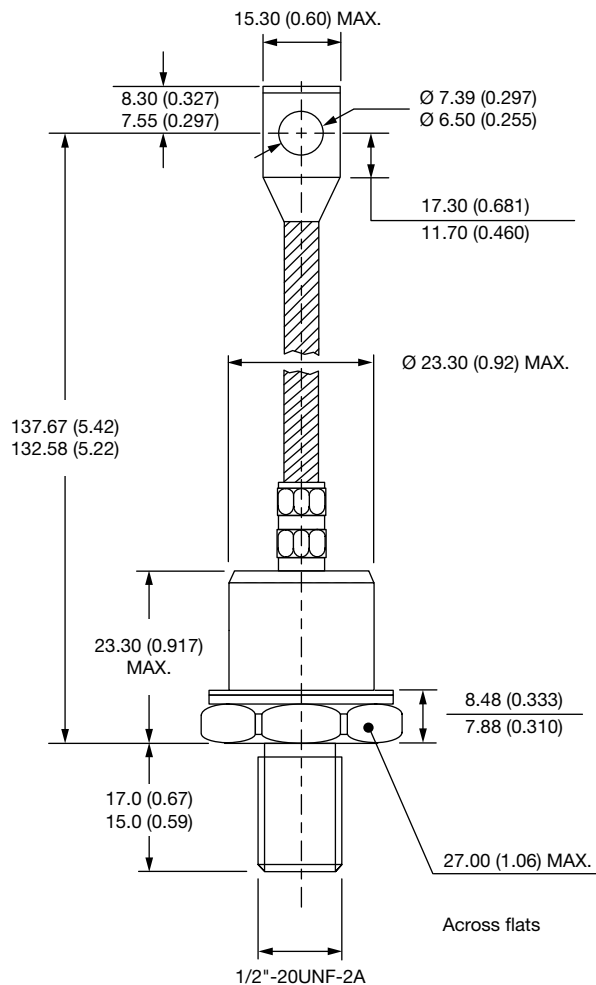
- For metric device M12 x 1.75 contact factory

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95314



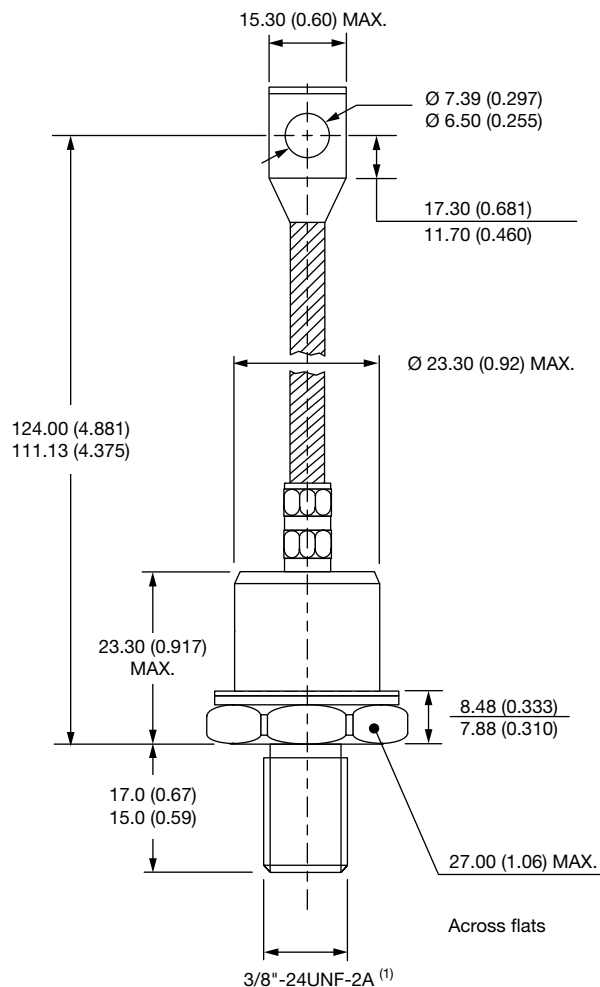
DO-205AC (DO-30), DO-205AA (DO-8) and B-42 for 45L(R), 150K(R) and 150KS(R) Series

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





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

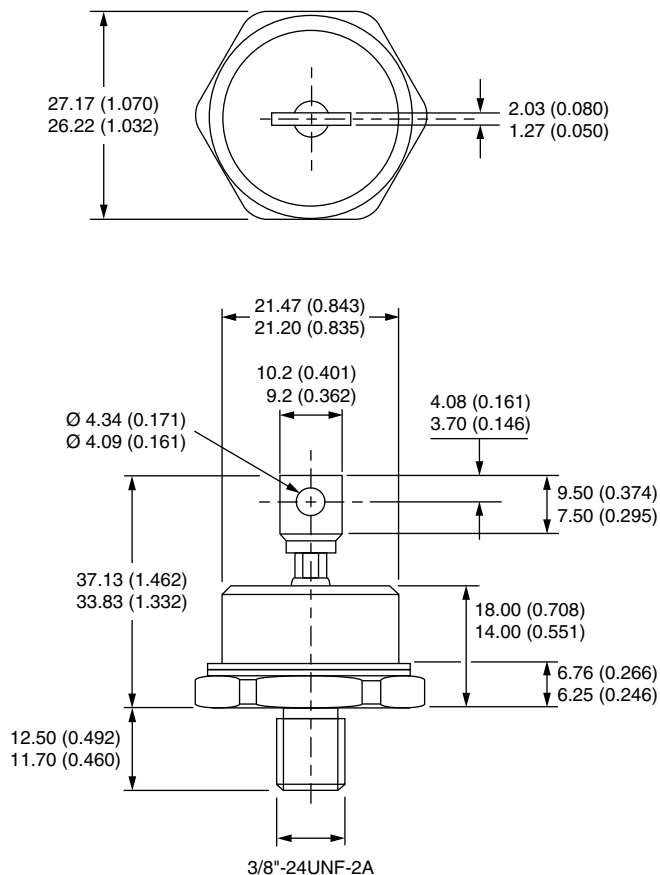


Note

⁽¹⁾ For metric device M12 x 1.75 contact factory



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





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