

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 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 $T_J = 175$ °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 ² 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 ² √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

ΔR_{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

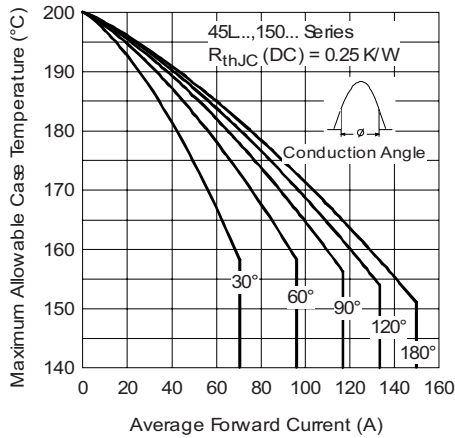


Fig. 1 - Current Ratings Characteristics

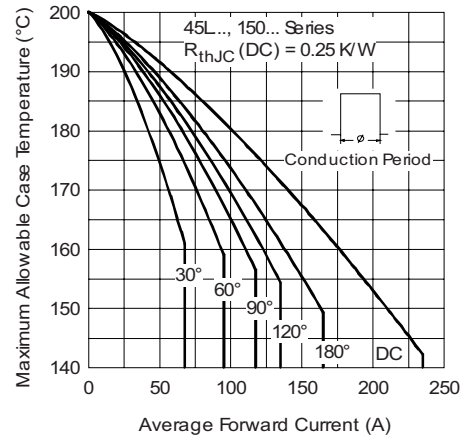


Fig. 2 - Current Ratings Characteristics

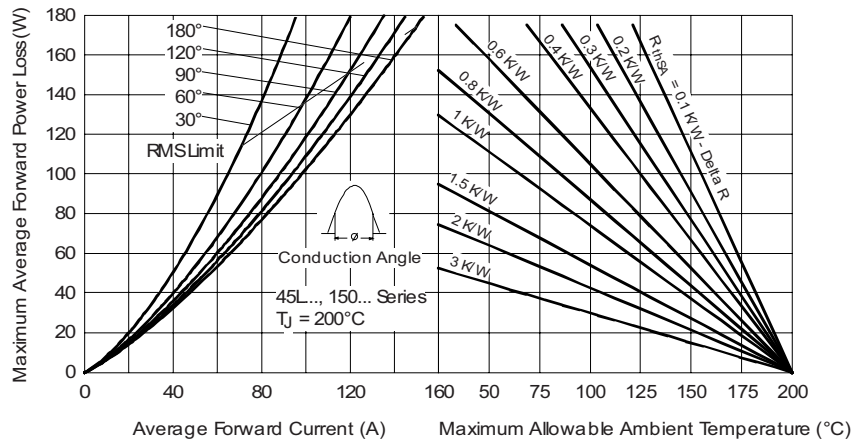


Fig. 3 - Forward Power Loss Characteristics

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



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

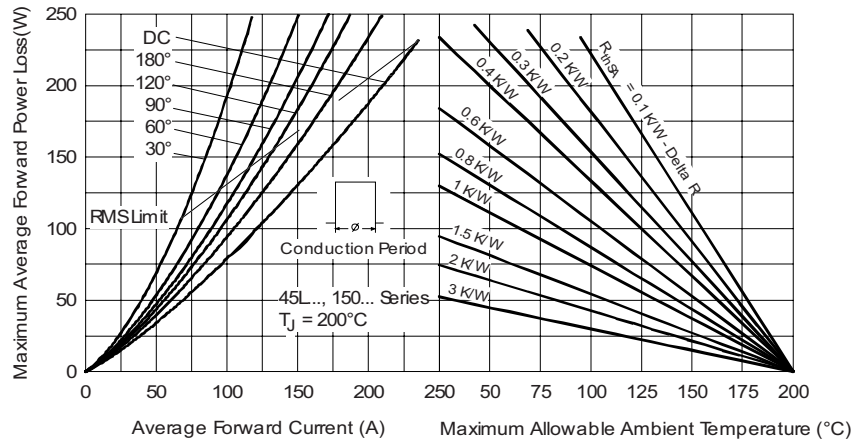


Fig. 4 - Forward Power Loss Characteristics

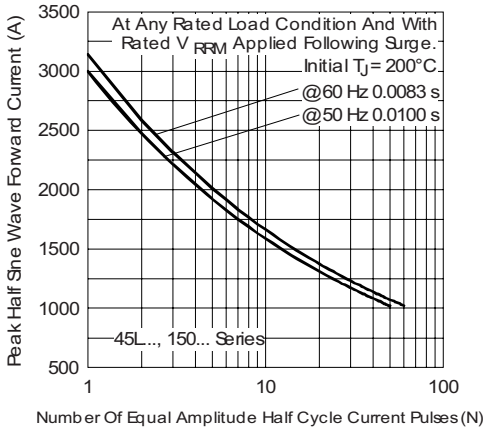


Fig. 5 - Maximum Non-Repetitive Surge Current

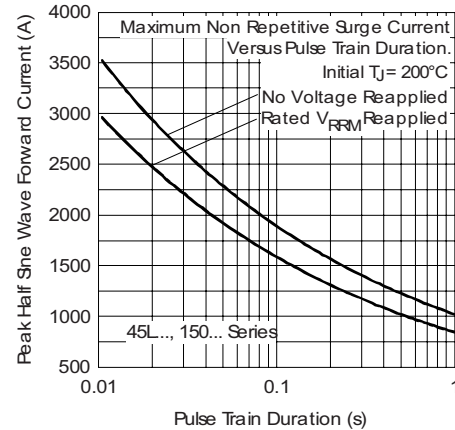


Fig. 6 - Maximum Non-Repetitive Surge Current

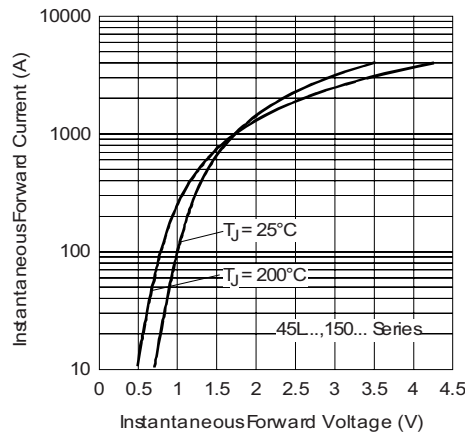


Fig. 7 - Forward Voltage Drop Characteristics



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

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

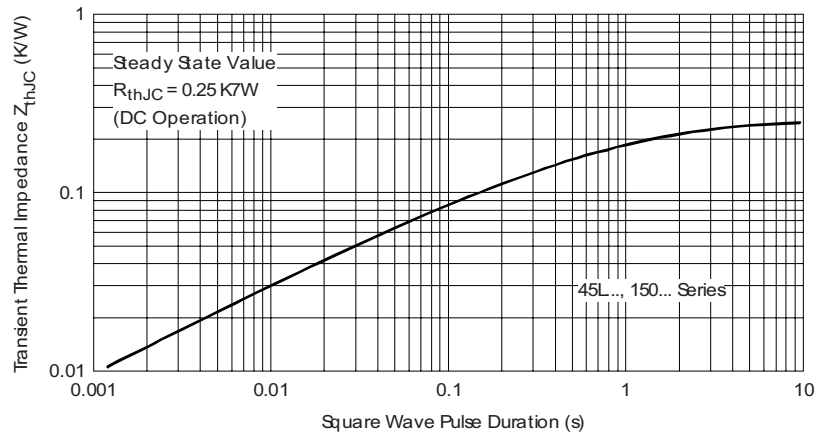


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLES

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

Device code	15	0	K	R	60	A
	①	②	③	④	⑤	⑥
①	- 15 = Essential part number					
②	- 0 = Standard device					
③	- Case style: K = DO-205AA (DO-8) KS = B-42					
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)					
⑥	- A = Essential part number for 150K (omitted for 150KS)					

Note: For metric device M12 x 1.75 contact factory

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



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.