

## 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
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### 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



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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		3740		
		t = 10 ms	100 % $V_{RRM}$ reapplied	3000		
		t = 8.3 ms		3140		
Maximum $I^2t$ for fusing	$I^2t$	t = 10 ms	No voltage reapplied	64		kA <sup>2</sup> s
		t = 8.3 ms		58		
		t = 10 ms	100 % $V_{RRM}$ reapplied	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 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	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	



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$\Delta R_{thJC}$ 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  $R_{thJC}$  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

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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



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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>



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