

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

Vishay Semiconductors

Standard Recovery Diodes, (Stud Version), 150 A



PRIMARY CHARACTERISTICS				
I _{F(AV)} 150 A				
Package	DO-8 (DO-205AA)			
Circuit configuration	Single			

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

TYPICAL APPLICATIONS

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

MAJOR RATINGS AND CHARACTERISTICS					
PARAMETER	TEST CONDITIONS	VALUES	UNITS		
		150	А		
I _{F(AV)}	T _C	150	C°		
I _{F(RMS)}		235	A		
1	50 Hz	3570	0		
IFSM	60 Hz	3740	A		
l ² t	50 Hz	64	kA ² s		
1-1	60 Hz	58	KA-S		
V _{RRM}	Range	100 to 600	V		
TJ		-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			
	10	100	200				
VS-45L(R) VS-150K(R) VS-150KS(R)	20	200	300				
	30	300	400	35			
	40	400	500				
	60	600	720				

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FORWARD CONDUCTION						
PARAMETER	SYMBOL	TEST CONDITIONS			VALUES	UNITS
Maximum average forward current	I _{F(AV)}	180° conducti	ion, half sine wa	150	A	
at case temperature	. ()		-		150	°C
Maximum RMS forward current	I _{F(RMS)}	DC at 142 °C	case temperatur	re	235	
		t = 10 ms	No voltage		3570	A kA ² s
Maximum peak, one cycle forward,		t = 8.3 ms	reapplied		3740	
non-repetitive surge current	I _{FSM}	t = 10 ms	100 % V _{BBM}	Sinusoidal half wave, initial T _J = T _J maximum	3000	
		t = 8.3 ms	reapplied		3140	
	l ² t	t = 10 ms	No voltage reapplied 100 % V _{RRM} reapplied		64	
		t = 8.3 ms			58	
Maximum I ² t for fusing		t = 10 ms			45	
		t = 8.3 ms			41	
Maximum I ² \sqrt{t} for fusing	l²√t	t = 0.1 to 10 n	ns, no voltage re	640	kA²√s	
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % x π x	$I_{F(AV)} < I < \pi \times I_{F(AV)}$	0.67	v	
High level value of threshold voltage	V _{F(TO)2}	$(I > \pi x I_{F(AV)}), T_J = T_J maximum$			0.83	v
Low level value of forward slope resistance	r _{f1}	(16.7 % x π x $I_{F(AV)}$ < I < π x $I_{F(AV)}$), 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 maximur	0.91	11174	
Maximum forward voltage drop	V _{FM}	$I_{pk} = 471 \text{ A}, T_J = 25 \text{ °C}, t_p = 10 \text{ ms}$ sinusoidal wave			1.33	V

THERMAL AND MECHANICAL SPECIFICATIONS						
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum junction oper and storage temperatur		T _J , T _{Stg}		-40 to 200	°C	
Maximum thermal resist junction to case	ance,	R _{thJC}	DC operation	0.25	K/W	
Maximum thermal resist case to heatsink	ance,	R _{thCS}	Mounting surface, smooth, flat and greased	0.10		
	minimum		Not lubricated threads	14.1 (125)	N · m (lbf · in)	
Mounting torque	maximum		Not lubricated threads	17.0 (150)		
45L	minimum		Lubricated threads	12.2 (108)		
	maximum		Lubricated threads	15.0 (132)		
	minimum		Not lubricated threads	11.3 (100)		
Mounting torque 150K	maximum		Not lubricated threads	14.1 (125)	N⋅m	
150KS	minimum		Lubricated threads	9.5 (85)	(lbf · in)	
maximum			Lubricated threads	12.5 (110)	1	
Approximate weight				100	g	
				3.5	oz.	
45L				DO-30 (DO-205AC)		
Case style	150K-A		See dimensions - link at the end of datasheet	is - link at the end of datasheet DO-8 (DO-205AA)		
	150KS			B-42		

CONDUCTION ANGLE	SINUSOIDAL CONDUCTION	RECTANGULAR CONDUCTION	TEST CONDITIONS	UNITS			
180°	0.031	0.023					
120°	0.038	0.040					
90°	0.048	0.053	$T_J = T_J maximum$	K/W			
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

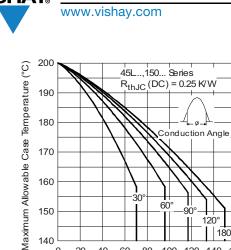
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140

0 20 40 60

80 Average Forward Current (A)

100

180°

120 140 160

Fig. 1 - Current Ratings Characteristics

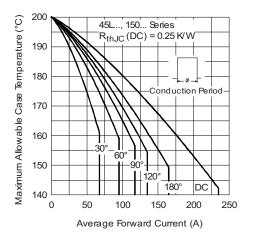


Fig. 2 - Current Ratings Characteristics

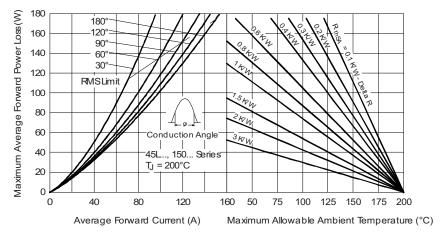


Fig. 3 - Forward Power Loss Characteristics

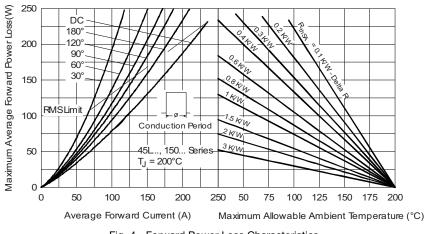


Fig. 4 - Forward Power Loss Characteristics

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

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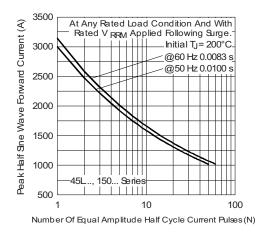


Fig. 5 - Maximum Non-Repetitive Surge Current

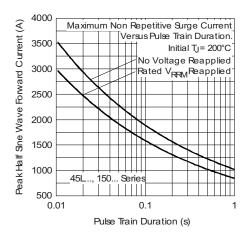


Fig. 6 - Maximum Non-Repetitive Surge Current

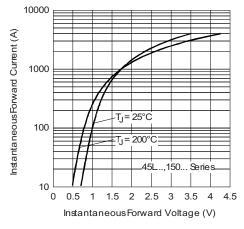
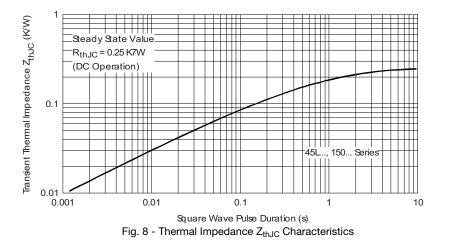


Fig. 7 - Forward Voltage Drop Characteristics



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ORDERING INFORMATION TABLE

Device co	de	vs-	45	L	R	60		
		1	2	3	4	5	1	
1 2 3 4 5	- - -	None =	andard ential p d rever stud n	version part nur se pola ormal p	n mber arity (ar polarity	node to (cathoo	le to st	ud) atings table)
Device coo	de	vs-	15	0	к	R	60	Α
			2	3	4	5	6	7
1	-	Vishay				luct		
2	-	15 = es			Imber			
3	-	0 = star		evice				
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 r	netric	device M	12 x 1.7	5 conta	ct facto	ry		

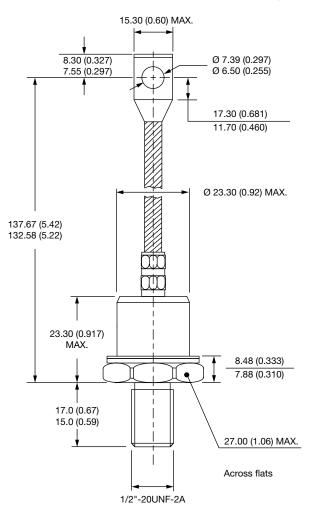
LINKS TO RELATED DOCUMENTS				
Dimensions	www.vishay.com/doc?95314			





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

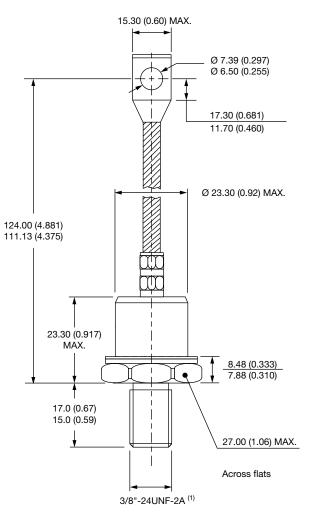
DIMENSIONS FOR 45L(R) SERIES - DO-205AC (DO-30) in millimeters (inches)





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



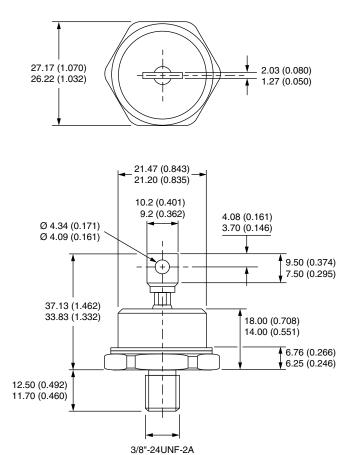
Note

⁽¹⁾ For metric device M12 x 1.75 contact factory





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



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