

45L(R)..D SERIES

STANDARD RECOVERY DIODES

Stud Version

Features

- Diffused diode
- High current carrying capability
- High voltage ratings up to 1600V
- High surge current capabilities
- Stud cathode and stud anode version

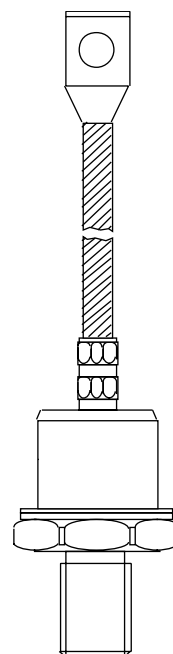
150A

Typical Applications

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

Major Ratings and Characteristics

Parameters	45L(R)..D	Units
$I_{F(AV)}$	150	A
@ T_C	150	°C
$I_{F(RMS)}$	235	A
I_{FSM} @ 50Hz	3570	A
@ 60Hz	3740	A
I^2t @ 50Hz	64	KA ² s
@ 60Hz	58	KA ² s
V_{RRM} range	1200 to 1600	V
T_J	- 40 to 200	°C



case style
DO-205AC (DO-30)

45L(R)..D Series

Bulletin I2030 rev. A 11/94

International
IR Rectifier

ELECTRICAL SPECIFICATIONS

Voltage Ratings

Type number	Voltage Code	V_{RRM} , maximum repetitive peak reverse voltage V	V_{RSM} , maximum non-repetitive peak rev. voltage V	I_{RRM} max. @ $T_J = T_J$ max. mA
45L(R)..D	120	1200	1440	40
	160	1600	1920	

Forward Conduction

Parameter		45L(R)..D	Units	Conditions			
I _{F(AV)}	Max. average forward current @ Case temperature	150	A	180° conduction, half sine wave			
		150	°C				
I _{F(RMS)}	Max. RMS forward current	235	A	DC @ 142°C case temperature			
I _{FSM}	Max. peak, one-cycle forward, non-repetitive surge current	3570	A	t = 10ms	No voltage	Sinusoidal half wave, Initial T _J = T _J max.	
		3740		t = 8.3ms	reapplied		
		3000		t = 10ms	100% V _{RRM}		
		3140		t = 8.3ms	reapplied		
I ² t	Maximum I ² t for fusing	64	KA ² s	t = 10ms	No voltage		
		58		t = 8.3ms	reapplied		
		45		t = 10ms	100% V _{RRM}		
		41		t = 8.3ms	reapplied		
I ² √t	Maximum I ² √t for fusing	640	KA ² √s	t = 0.1 to 10ms, no voltage reapplied			
V _{F(TO)1}	Low level value of threshold voltage	0.67	V	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
V _{F(TO)2}	High level value of threshold voltage	0.83		(I > x π × I _{F(AV)}), T _J = T _J max.			
r _{f1}	Low level value of forward slope resistance	1.42	mΩ	(16.7% × π × I _{F(AV)}) < I < π × I _{F(AV)} , T _J = T _J max.			
r _{f2}	High level value of forward slope resistance	0.91		(I > x π × I _{F(AV)}), T _J = T _J max.			
V _{FM}	Max. forward voltage drop	1.33	V	I _{pk} = 471A, T _J = 25°C, t _p = 10ms sinusoidal wave			

Thermal and Mechanical Specifications

Parameter	45L(R)..D	Units	Conditions
T_J Max. junction operating temperature	-40 to 200	°C	
T_{stg} Max. storage temperature range	-40 to 200		
R_{thJC} Max. thermal resistance, junction to case	0.25	K/W	DC operation
R_{thCS} Max. thermal resistance, case to heatsink	0.10		Mounting surface, smooth, flat and greased
T Max. allowed mounting torque +0 -20%	17	Nm	Not lubricated threads
	14.5		Lubricated threads
wt Approximate weight	130	g	
Case style	DO-205AC (DO-30)		See Outline Table

ΔR_{thJC} Conduction

(The following table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC)

Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.031	0.023	K/W	$T_J = T_{J \text{ max.}}$
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

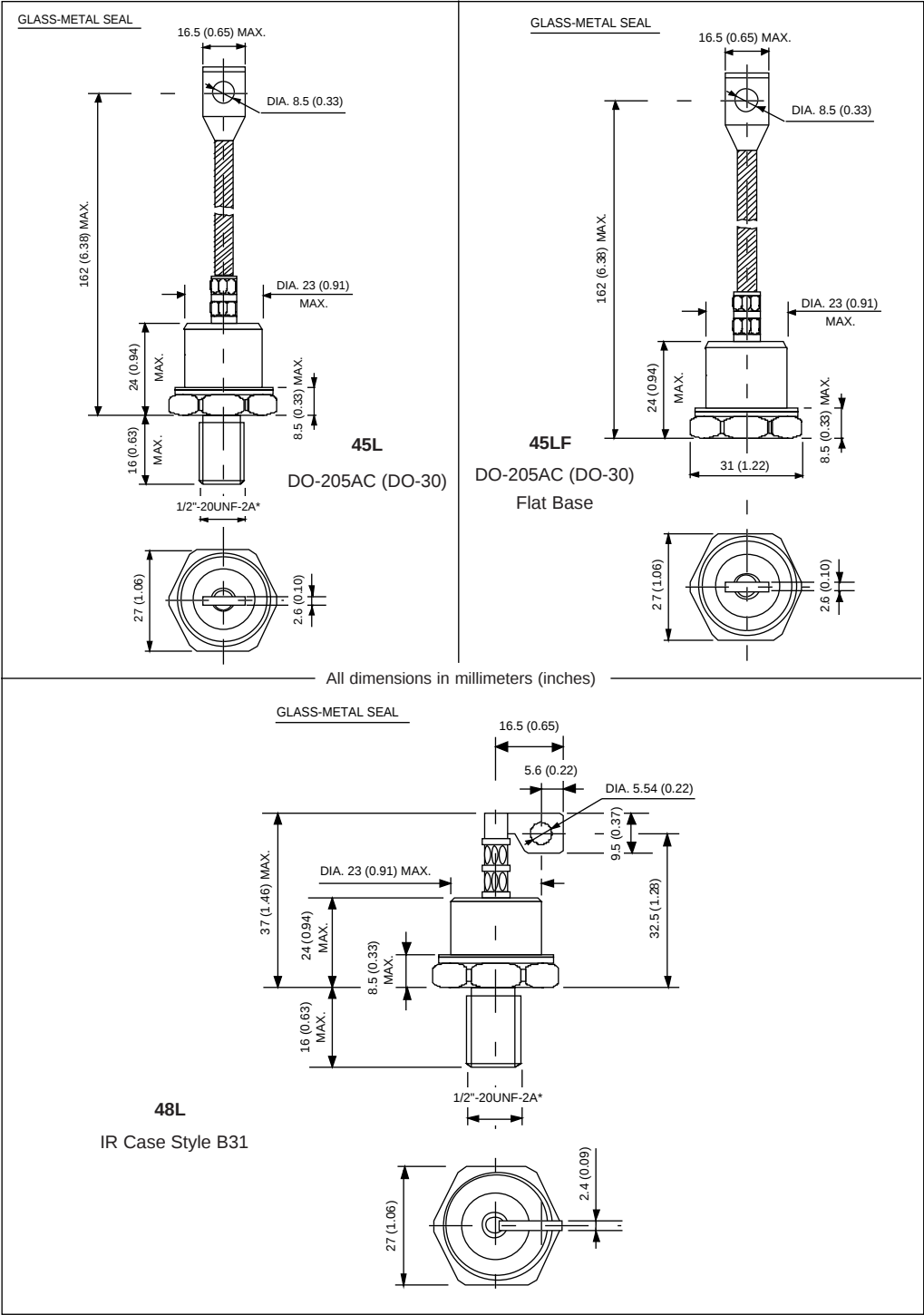
Ordering Information Table

Device Code					
	45	L	F	R	160 D
	1	2	3	4	5 6
1	- 45 = Standard version - 47 = Version with Pinch Bolt (only flat base) - 48 = Flag Top Terminal				
2	- L = Essential Part Number				
3	- F = Flat Base - None = Normal Stud				
4	- R = Stud Reverse Polarity (Anode to Stud) - None = Stud Normal Polarity (Cathode to Stud)				
5	- Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)				
6	- D = Diffused diode				

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Outline Table



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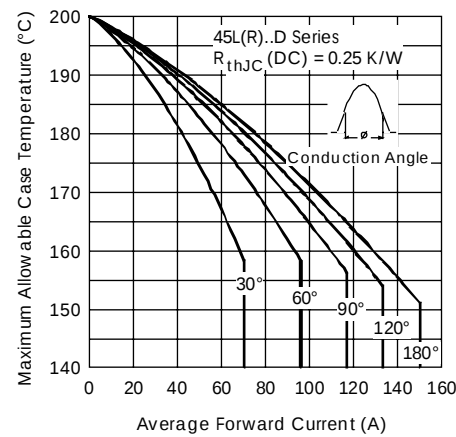
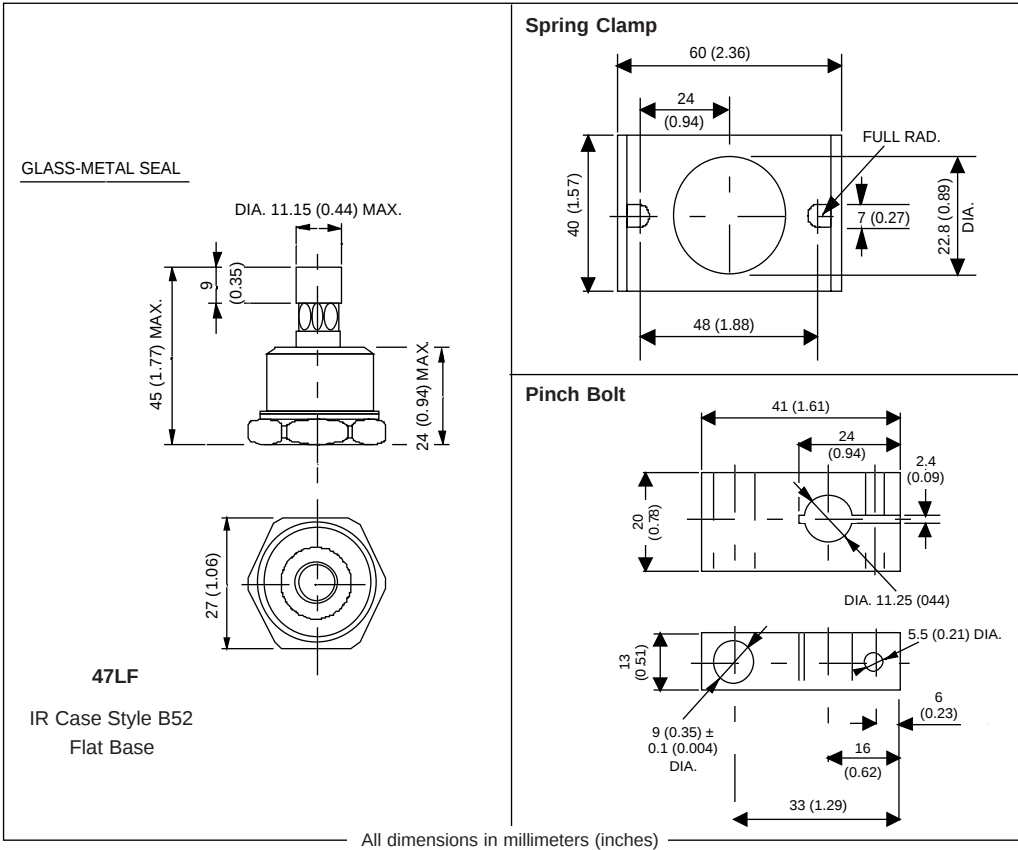


Fig. 1 - Current Ratings Characteristics

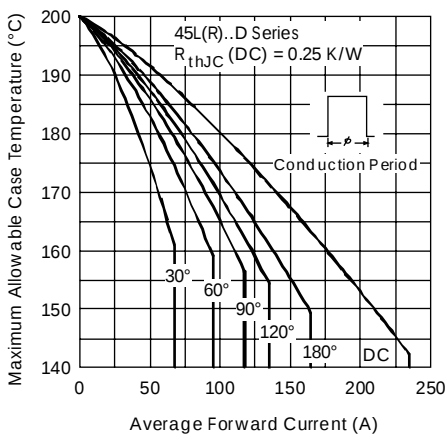


Fig. 2 - Current Ratings Characteristics

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International
IOR Rectifier

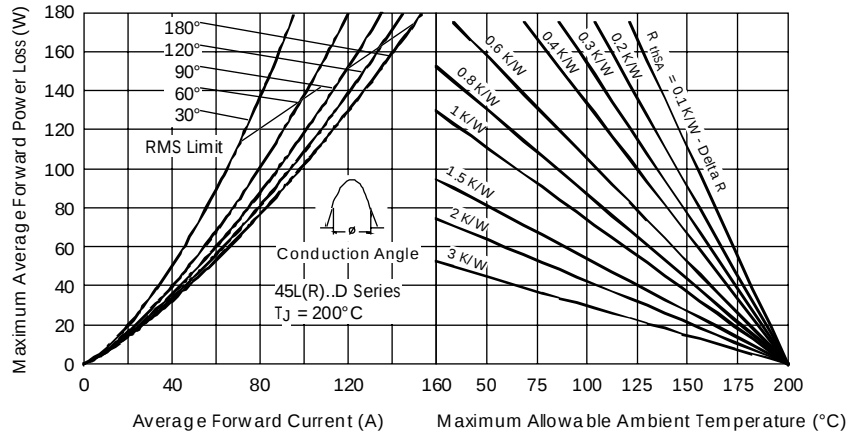


Fig. 3 - Forward Power Loss Characteristics

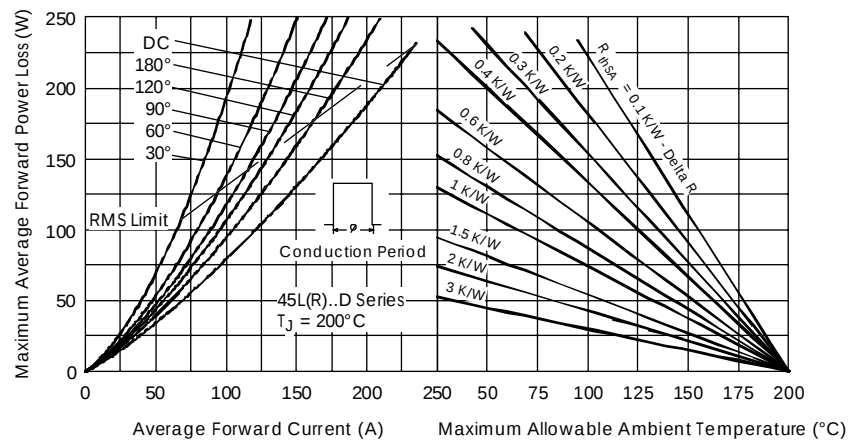


Fig. 4 - Forward Power Loss Characteristics

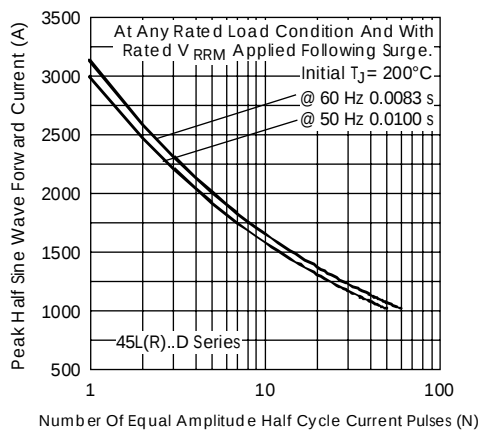


Fig. 5 - Maximum Non-Repetitive Surge Current

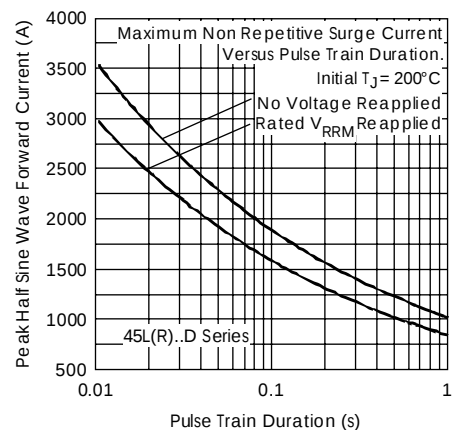


Fig. 6 - Maximum Non-Repetitive Surge Current

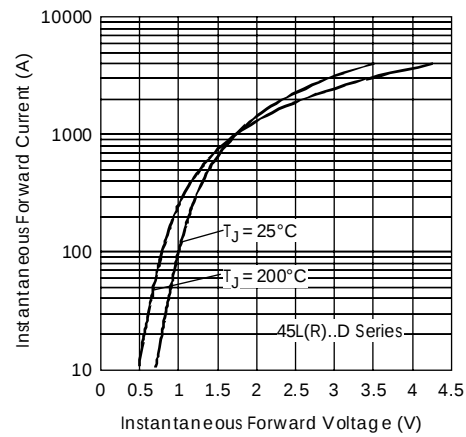


Fig. 7 - Forward Voltage Drop Characteristics

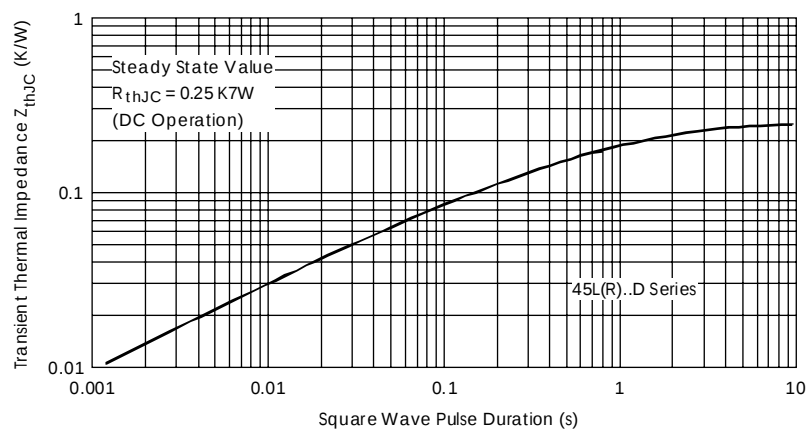


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic