

45L(R)..D SERIES

STANDARD RECOVERY DIODES

Stud Version

150A

Features

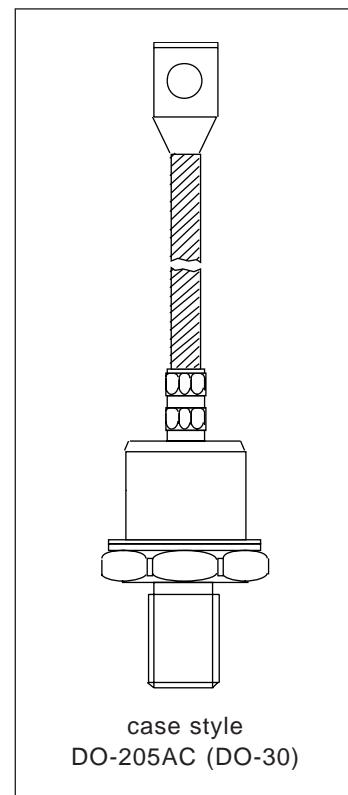
- Diffused diode
- High current carrying capability
- High voltage ratings up to 1600V
- High surge current capabilities
- Stud cathode and stud anode version

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}	3570	A
@ 60Hz	3740	A
I^2t	64	KA ² s
@ 60Hz	58	KA ² s
V_{RRM} range	1200 to 1600	V
T_j	- 40 to 200	°C



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								
$I_{F(AV)}$ @ Case temperature	150	A	180° conduction, half sine wave								
	150	°C									
$I_{F(RMS)}$	235	A	DC @ 142°C case temperature								
I_{FSM} Max. peak, one-cycle forward, non-repetitive surge current	3570	A	t = 10ms	No voltage reapplied	Sinusoidal half wave, Initial $T_J = T_{J\max}$.						
	3740		t = 8.3ms	100% V_{RRM} reapplied							
	3000		t = 10ms								
	3140		t = 8.3ms								
I^2t Maximum I^2t for fusing	64	KA ² s	t = 10ms	No voltage reapplied	Initial $T_J = T_{J\max}$.						
	58		t = 8.3ms	100% V_{RRM} reapplied							
	45		t = 10ms								
	41		t = 8.3ms								
$I^{2\sqrt{t}}$	640	KA ^{2\sqrt{t}} s	t = 0.1 to 10ms, no voltage reapplied								
$V_{F(TO)1}$ Low level value of threshold voltage	0.67	V	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_{J\max}$.								
$V_{F(TO)2}$ High level value of threshold voltage	0.83		$(I > \pi \times I_{F(AV)})$, $T_J = T_{J\max}$.								
r_{f1} Low level value of forward slope resistance	1.42	mΩ	(16.7% $\times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)}$), $T_J = T_{J\max}$.								
r_{f2} High level value of forward slope resistance	0.91		$(I > \pi \times I_{F(AV)})$, $T_J = T_{J\max}$.								
V_{FM}	1.33	V	$I_{pk} = 471A$, $T_J = 25^\circ C$, $t_p = 10ms$ sinusoidal wave								

Thermal and Mechanical Specifications

Parameter	45L(R)..D	Units	Conditions
T_J	Max. junction operating temperature	°C	
T_{stg}	Max. storage temperature range		
R_{thJC}	Max. thermal resistance, junction to case	K/W	DC operation
R_{thCS}	Max. thermal resistance, case to heatsink		Mounting surface, smooth, flat and greased
T	Max. allowed mounting torque +0 -20%	Nm	Not lubricated threads
			Lubricated threads
wt	Approximate weight	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	$T_J = T_{J\ max.}$
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

Ordering Information Table

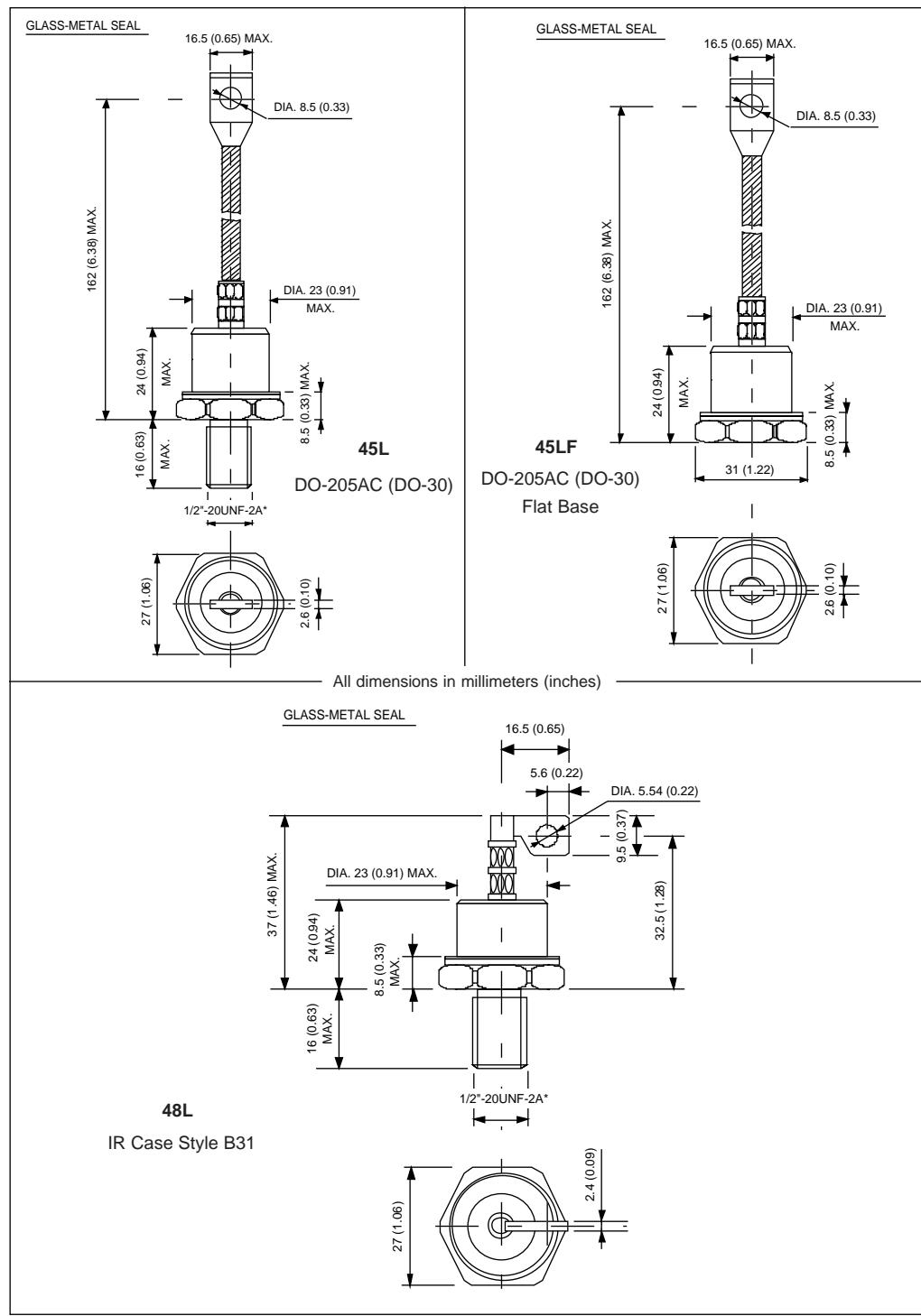
Device Code	45	L	F	R	160	D	1	2	3	4	5	6
1	- 45	= Standard version										
	47	= Version with Pinch Bolt (only flat base)										
	48	= Flag Top Terminal										
2	- L	= Essential Part Number										
3	- F	= Flat Base										
		None = Normal Stud										
4	- R	= Stud Reverse Polarity (Anode 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



Outline Table

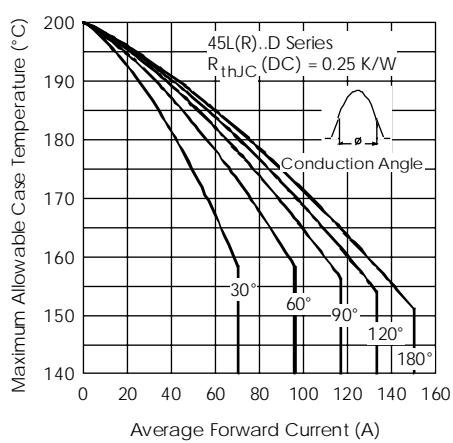
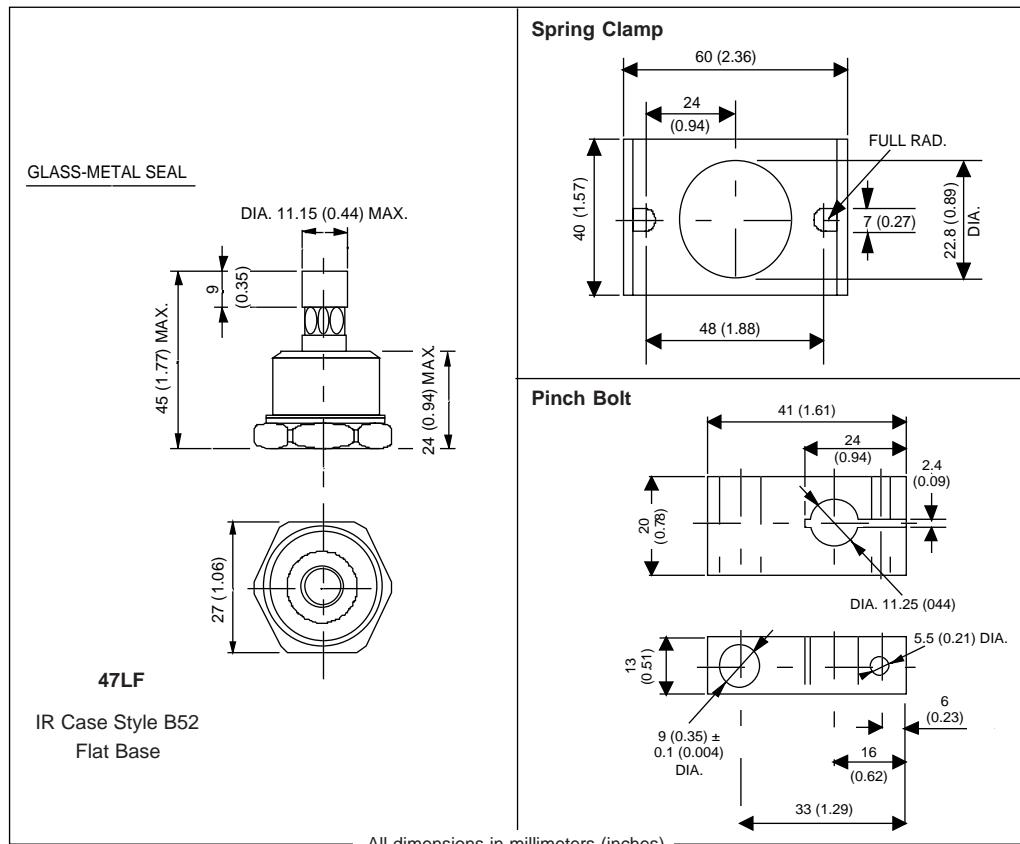


Fig. 1 - Current Ratings Characteristics

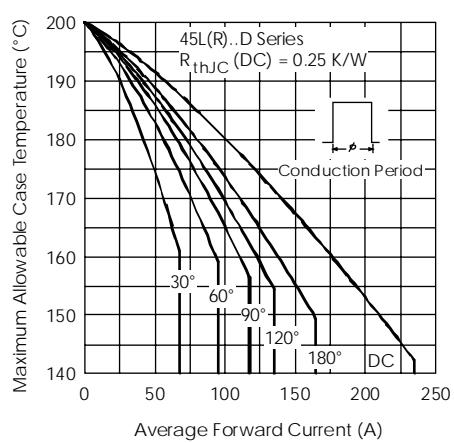


Fig. 2 - Current Ratings Characteristics

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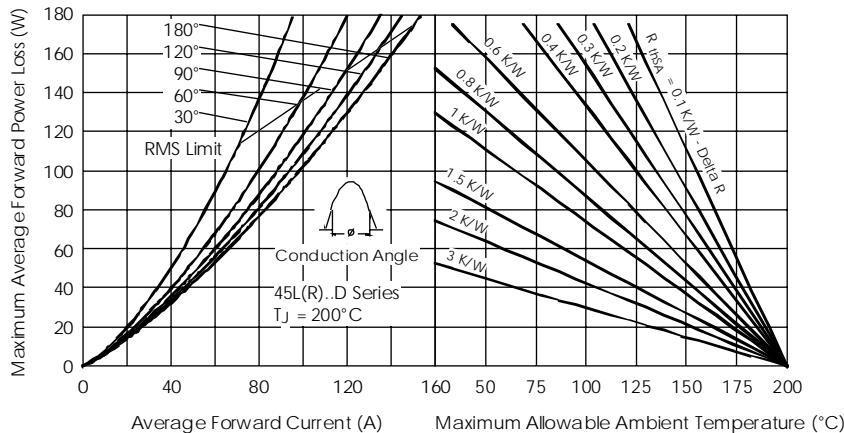


Fig. 3 - Forward Power Loss Characteristics

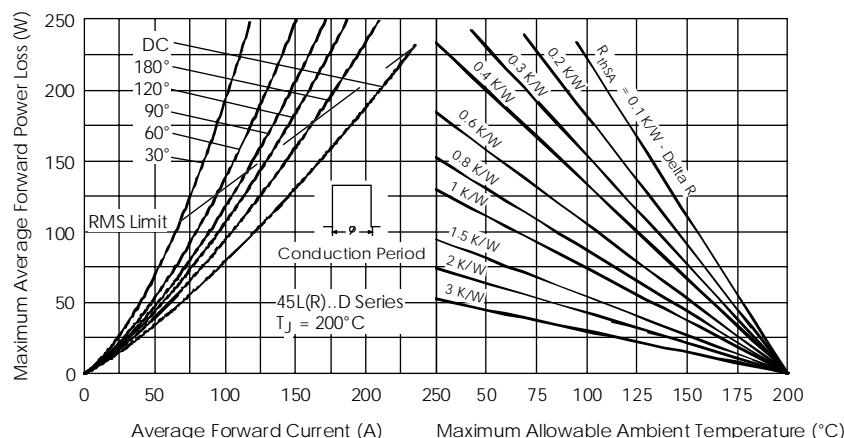


Fig. 4 - Forward Power Loss Characteristics

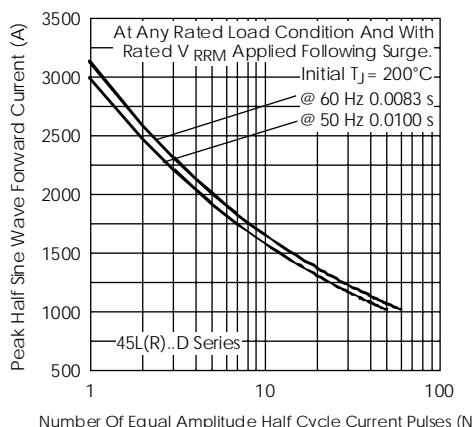


Fig. 5 - Maximum Non-Repetitive Surge Current

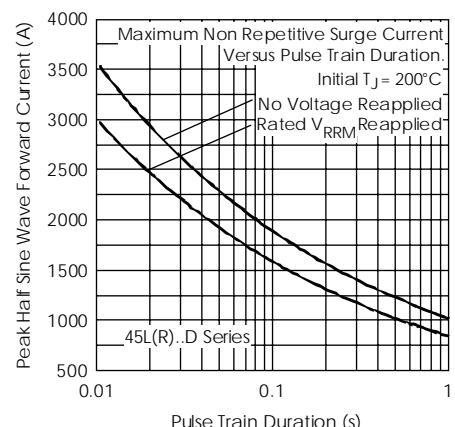


Fig. 6 - Maximum Non-Repetitive Surge Current

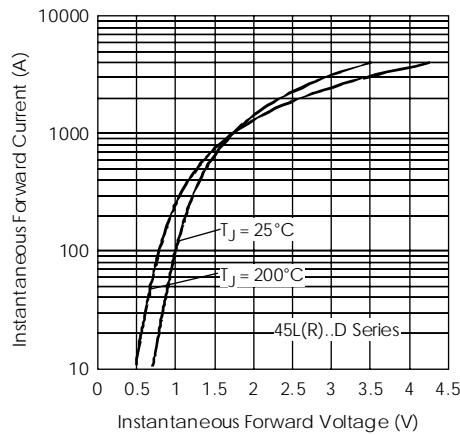


Fig. 7 - Forward Voltage Drop Characteristics

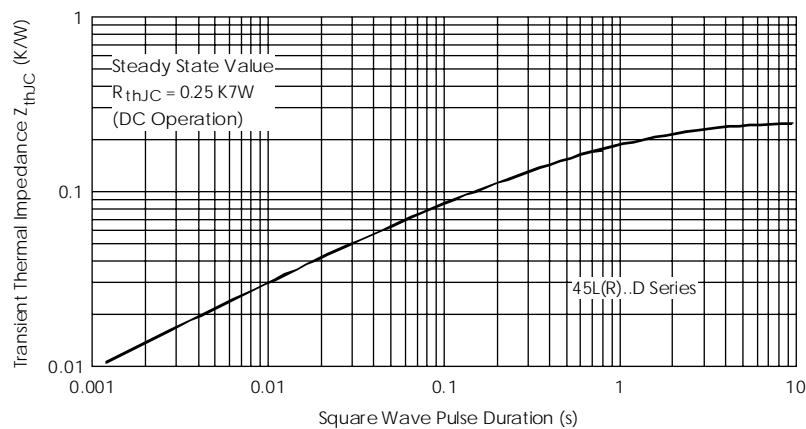


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic