

### 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

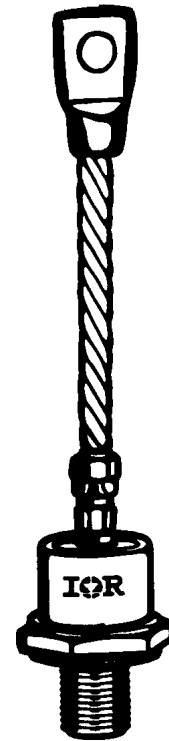
150A

#### 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 <sup>2</sup> s
@ 60Hz	58	KA <sup>2</sup> s
$V_{RRM}$ range	1200 to 1600	V
$T_J$	- 40 to 200	°C



case style  
DO-205AC (DO-30)

# 45L(R)..D Series

## 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
	3740		t = 8.3ms reapplied
	3000		t = 10ms 100% $V_{RRM}$
	3140		t = 8.3ms reapplied
$I^2t$ Maximum $I^2t$ for fusing	64	KA <sup>2</sup> s	t = 10ms No voltage
	58		t = 8.3ms reapplied
	45		t = 10ms 100% $V_{RRM}$
	41		t = 8.3ms reapplied
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	640	KA <sup>2</sup> /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.
$V_{FM}$ Max. forward voltage drop	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 <sub>J</sub> Max. junction operating temperature	-40 to 200	°C	
T <sub>stg</sub> Max. storage temperature range	-40 to 200		
R <sub>thJC</sub> Max. thermal resistance, junction to case	0.25	K/W	DC operation
R <sub>thCS</sub> 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

 $\Delta R_{thJC}$  Conduction

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

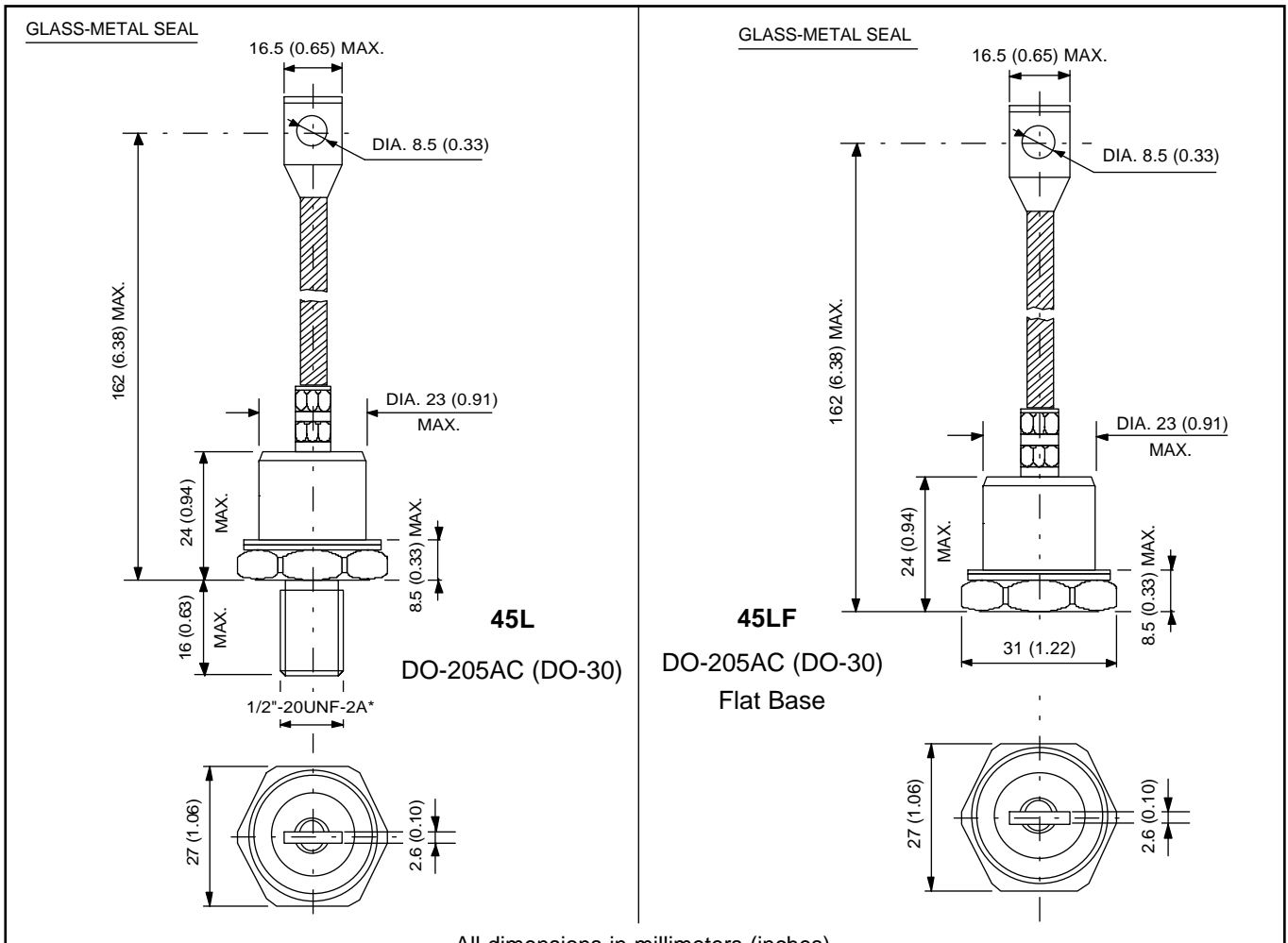
Conduction angle	Sinusoidal conduction	Rectangular conduction	Units	Conditions
180°	0.031	0.023	K/W	T <sub>J</sub> = T <sub>J</sub> max.
120°	0.038	0.040		
90°	0.048	0.053		
60°	0.071	0.075		
30°	0.120	0.121		

## Ordering Information Table

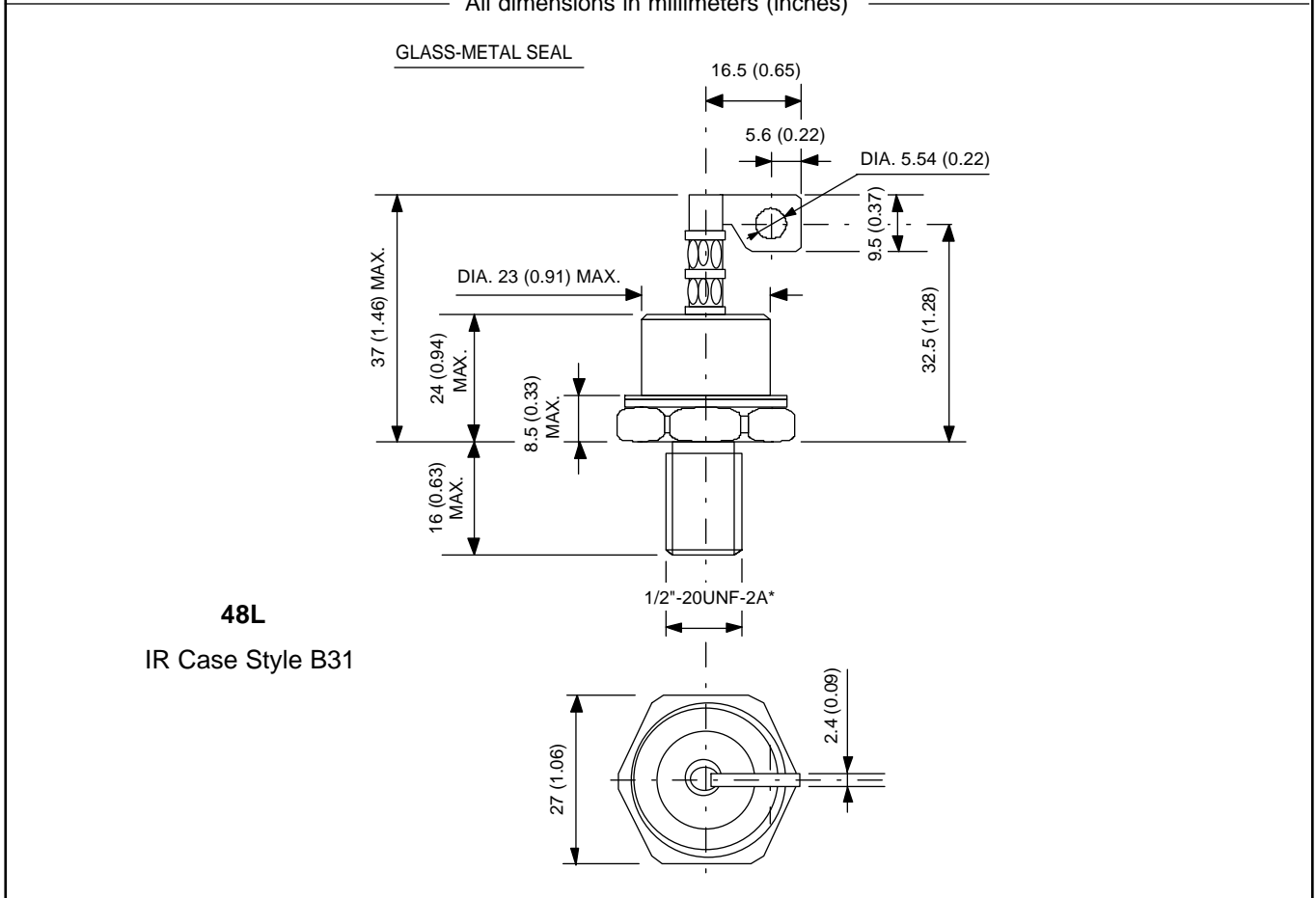
Device Code	
<b>1</b>	- 45 = Standard version 47 = Version with Pinch Bolt (only flat base) 48 = Flag Top Terminal
<b>2</b>	- L = Essential Part Number
<b>3</b>	- F = Flat Base None = Normal Stud
<b>4</b>	- R = Stud Reverse Polarity (Anode to Stud) None = Stud Normal Polarity (Cathode to Stud)
<b>5</b>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

# 45L(R)..D Series

## Outline Table



All dimensions in millimeters (inches)



Outline Table

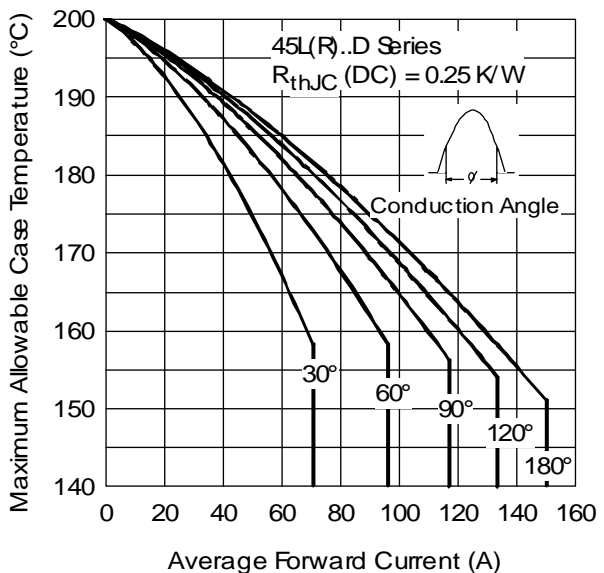
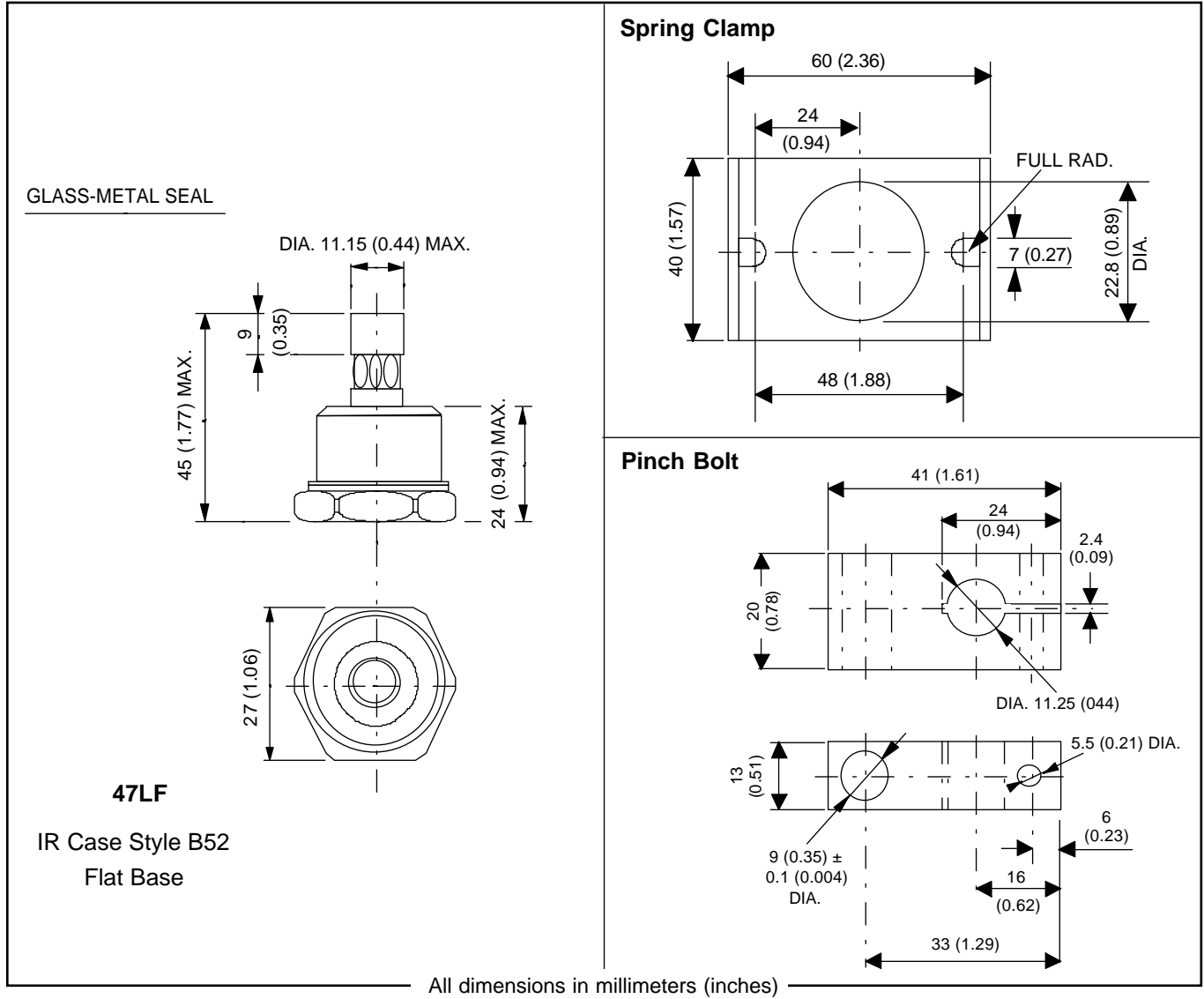


Fig. 1 - Current Ratings Characteristics

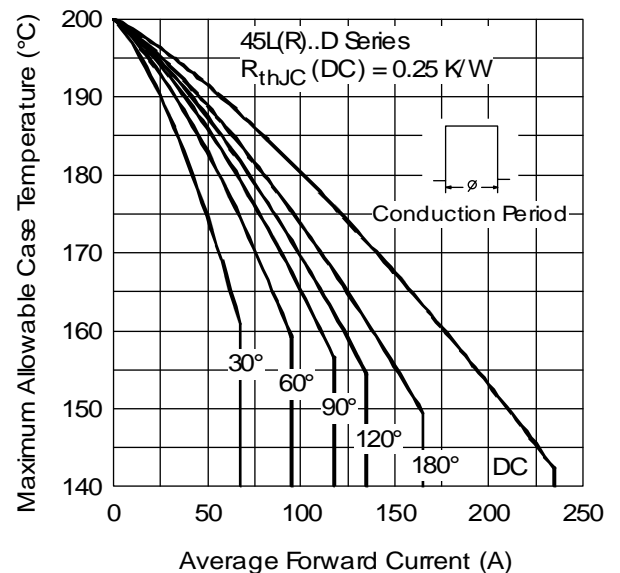


Fig. 2 - Current Ratings Characteristics

# 45L(R)..D Series

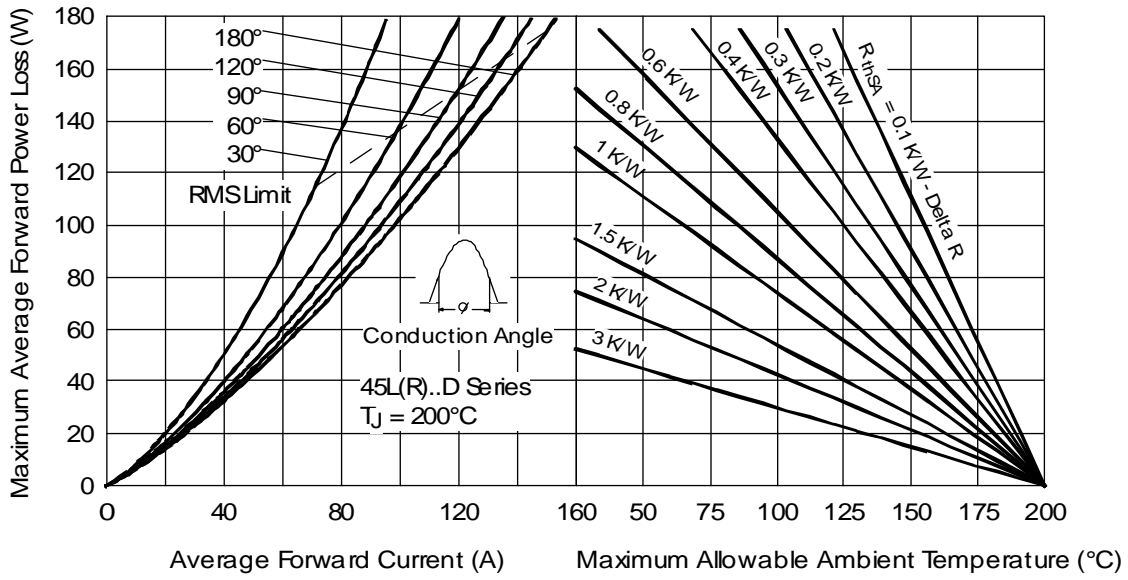


Fig. 3 - Forward Power Loss Characteristics

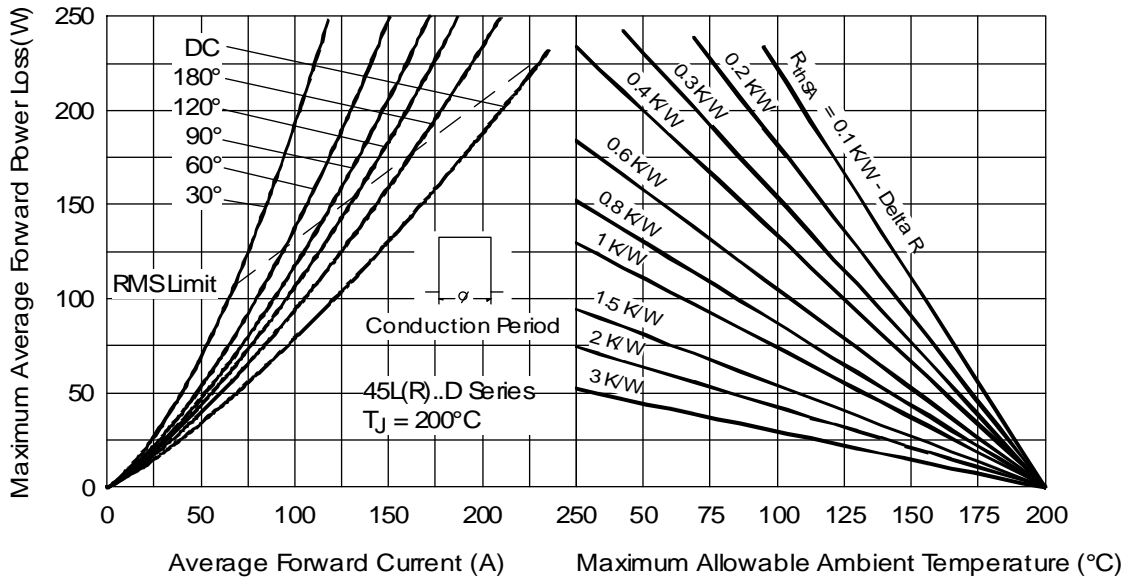


Fig. 4 - Forward Power Loss Characteristics

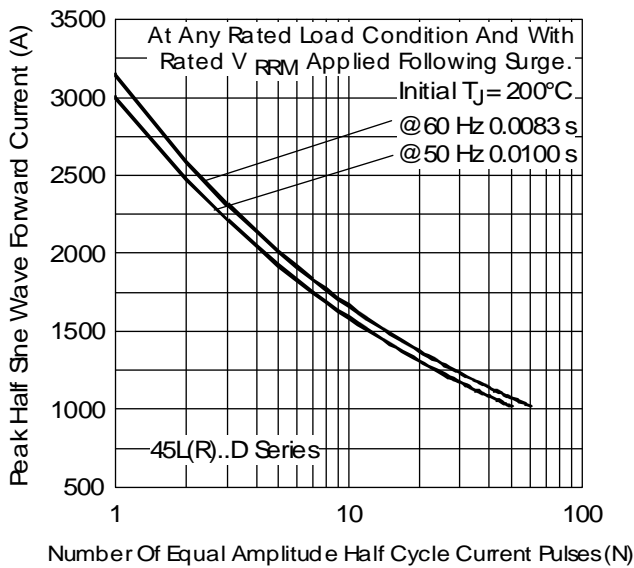


Fig. 5 - Maximum Non-Repetitive Surge Current

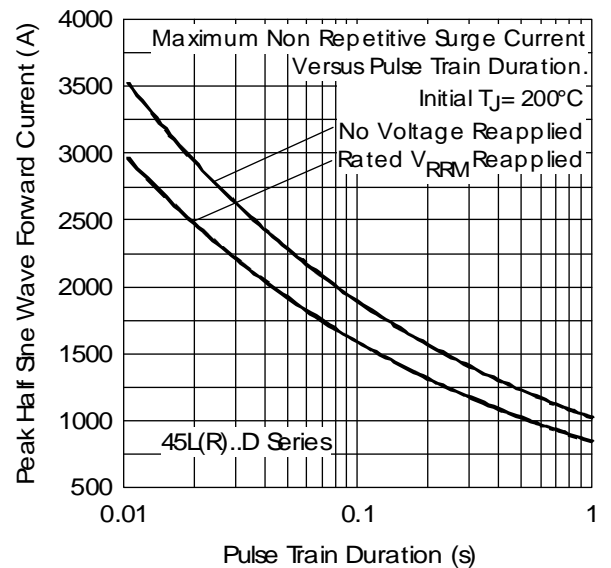


Fig. 6 - Maximum Non-Repetitive Surge Current

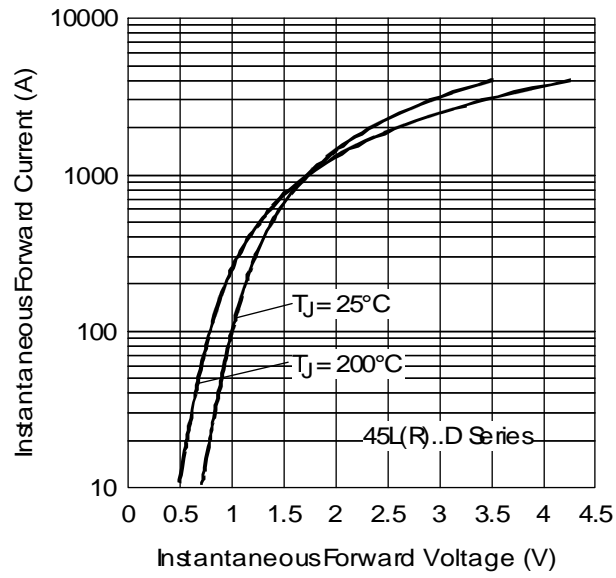


Fig. 7 - Forward Voltage Drop Characteristics

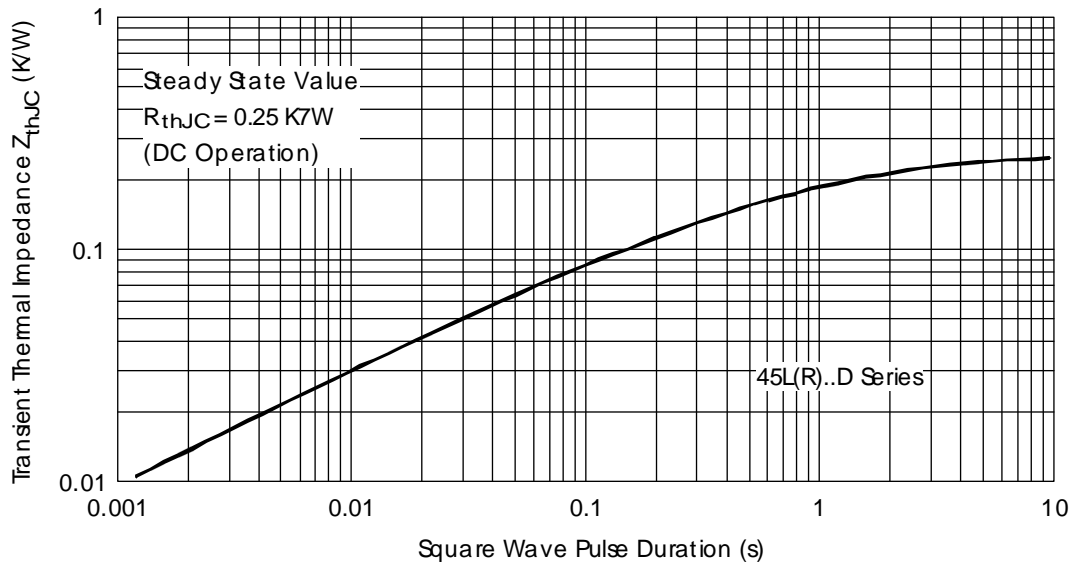


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic