

# SERIES 45L(R), 150K /L /KS(R)

## STANDARD RECOVERY DIODES

Stud Version

### Features

- Alloy diode
- High current carrying capability
- High voltage ratings up to 1000V
- High surge current capabilities
- Stud cathode and stud anode version

### Typical Applications

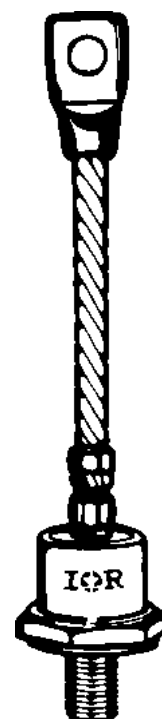
- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

### Major Ratings and Characteristics

Parameters	45L /150...	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 *	50 to 1000	V
$T_J$	- 40 to 200	°C

\* 45L available from 100V to 1000V

150A



case style  
DO-205AA (DO-8)

**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. @ $T_J = 175^\circ\text{C}$ mA
45L(R) * 150K(R) 150L(R) 150KS(R)	5	50	100	35
	10	100	200	35
	20	200	300	35
	30	300	400	35
	40	400	500	35
	60	600	720	35
	80	800	960	32
	100	1000	1200	24

\* 45L 50V and 300V  $V_{RRM}$  classes are not available.

\*\*Also available as JEDEC series 1N3288A through 1N3296A (DO-8 case style) and 1N3111 through 1N3092 (DO-30 case style)

**Forward Conduction**

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

## Thermal and Mechanical Specifications

Parameter			45L/150...	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	Mounting torque	Min.	14.1 (125)	Nm (lbf-in)	Not lubricated threads
	45L	Max.	17.0 (150)		
	150L	Min.	12.2 (108)		Lubricated threads
		Max.	15.0 (132)		
	150K	Min.	11.3 (100)	Nm (lbf-in)	Not lubricated threads
	150KS	Max.	14.1 (125)		
		Min.	9.5 (85)		Lubricated threads
		Max.	12.5 (110)		
wt	Approximate weight		100 (3.5)	g (oz)	
Case style		150K-A	DO205AA (DO-8)		See Outline Table
		150KS	B-42		
		150L-A/45L	DO-205AC (DO-30)		

## $\Delta R_{thJC}$ 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	$T_J = T_J \text{ max.}$
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

- 1** - 45 = Standard version  
47 = Version with Pinch Bolt (only flat base; available on request)
- 2** - L = Essential Part Number
- 3** - F = Flat Base  
None = Normal Stud 1/2" - 20UNF -2A
- 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)

NOTE: For longer lead Contact Factory

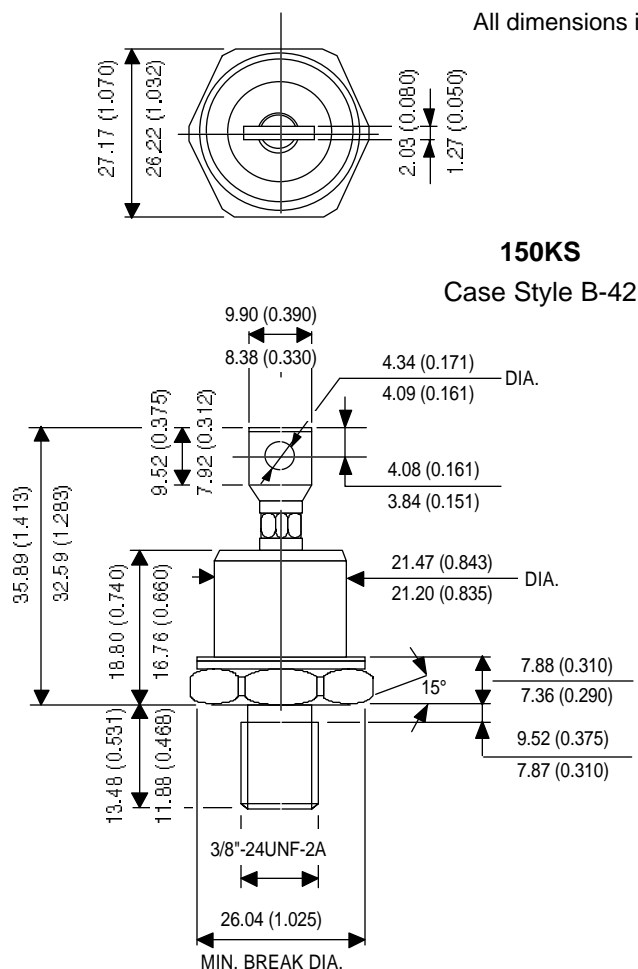
## Device Code

15	0	K	R	100	A	M
1	2	3	4	5	6	7

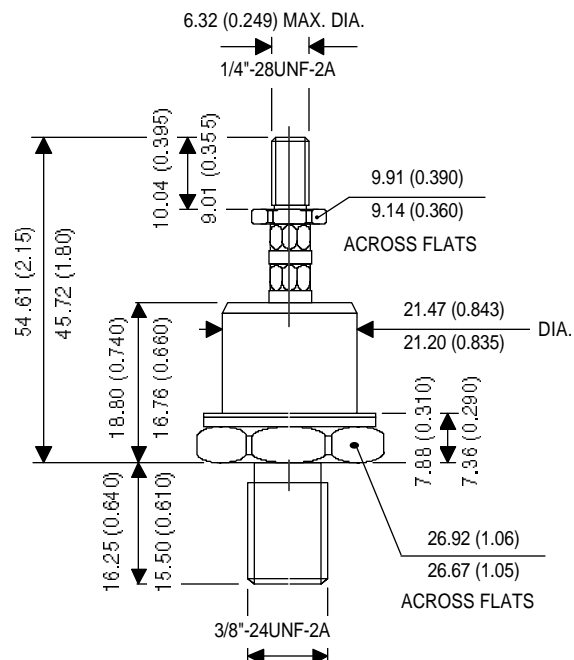
- 1** - Average Forward Current: Code x 10 =  $I_{FAV}$
- 2** - 0 = Standard Case  
2 = Stud Topped Case (152K-A only)
- 3** - Case Style  
K = DO205AA (DO-8)  
KS = B-42  
L = DO205AC (DO-30)
- 4** - R = Stud Reverse Polarity (Anode to Stud)  
None = Stud Normal Polarity (Cathode to Stud)
- 5** - Voltage code: Code x 10 =  $V_{RRM}$  (See Voltage Ratings table)
- 6** - A = Essential Part Number for 150K and 150L (Omitted for 150KS)
- 7** - None = Standard Base  
M = Metric Base M12 x 1.5

NOTE: For longer lead Contact Factory

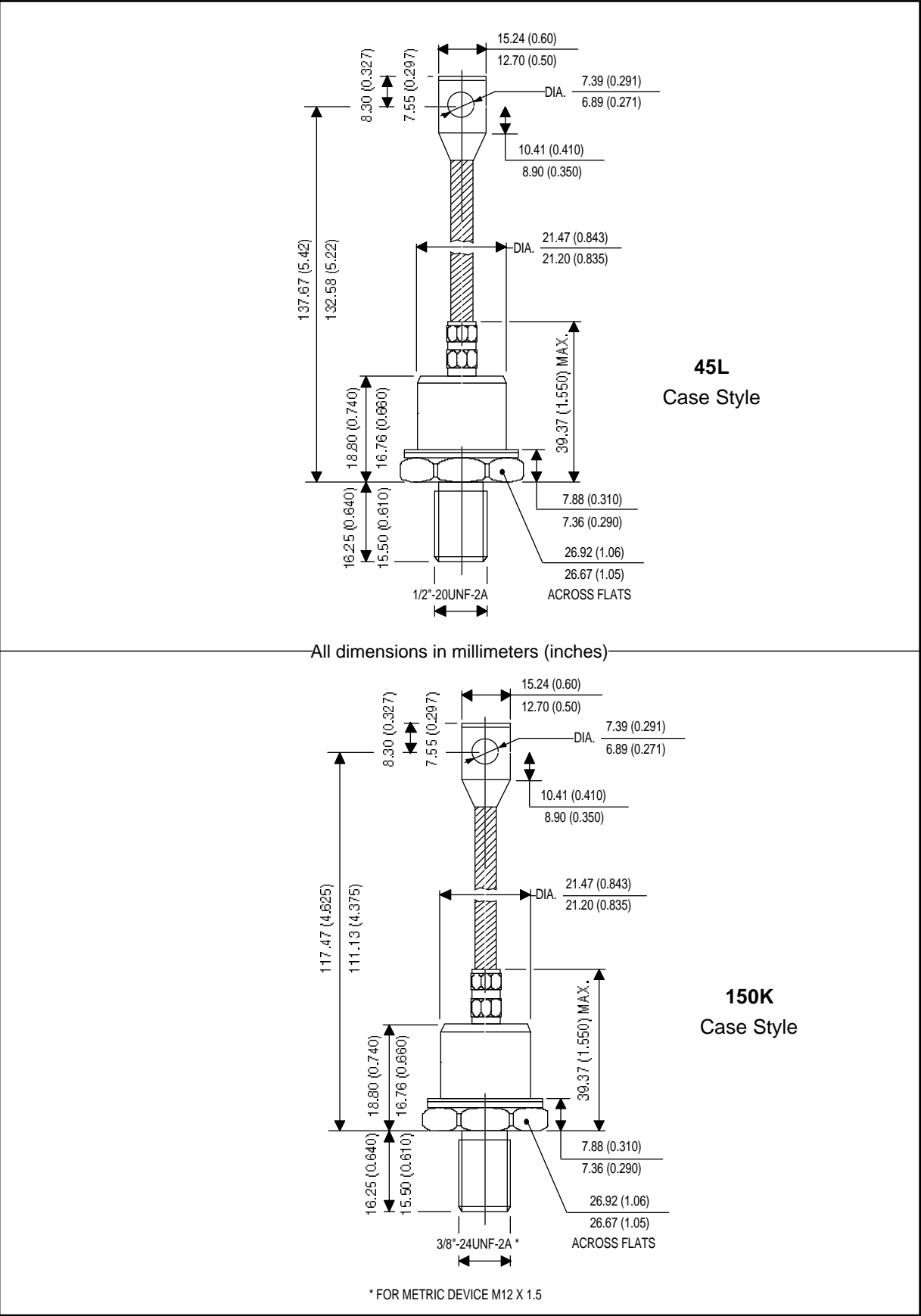
All dimensions in millimeters (inches)



**152K-A**  
IR Case Style B-28



Outline Table



Outline Table

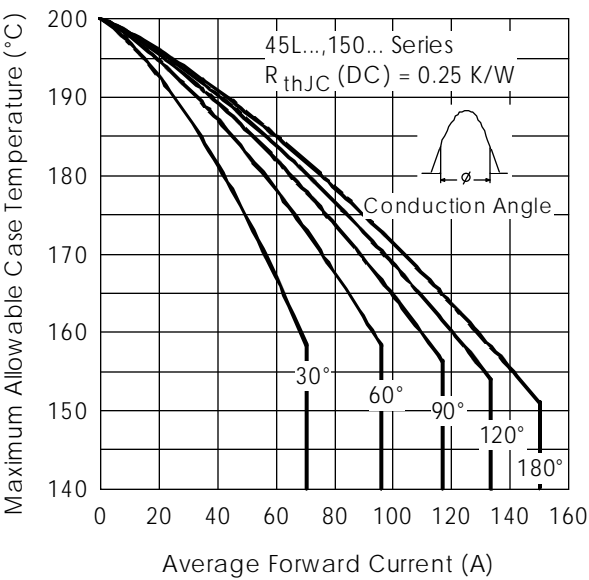
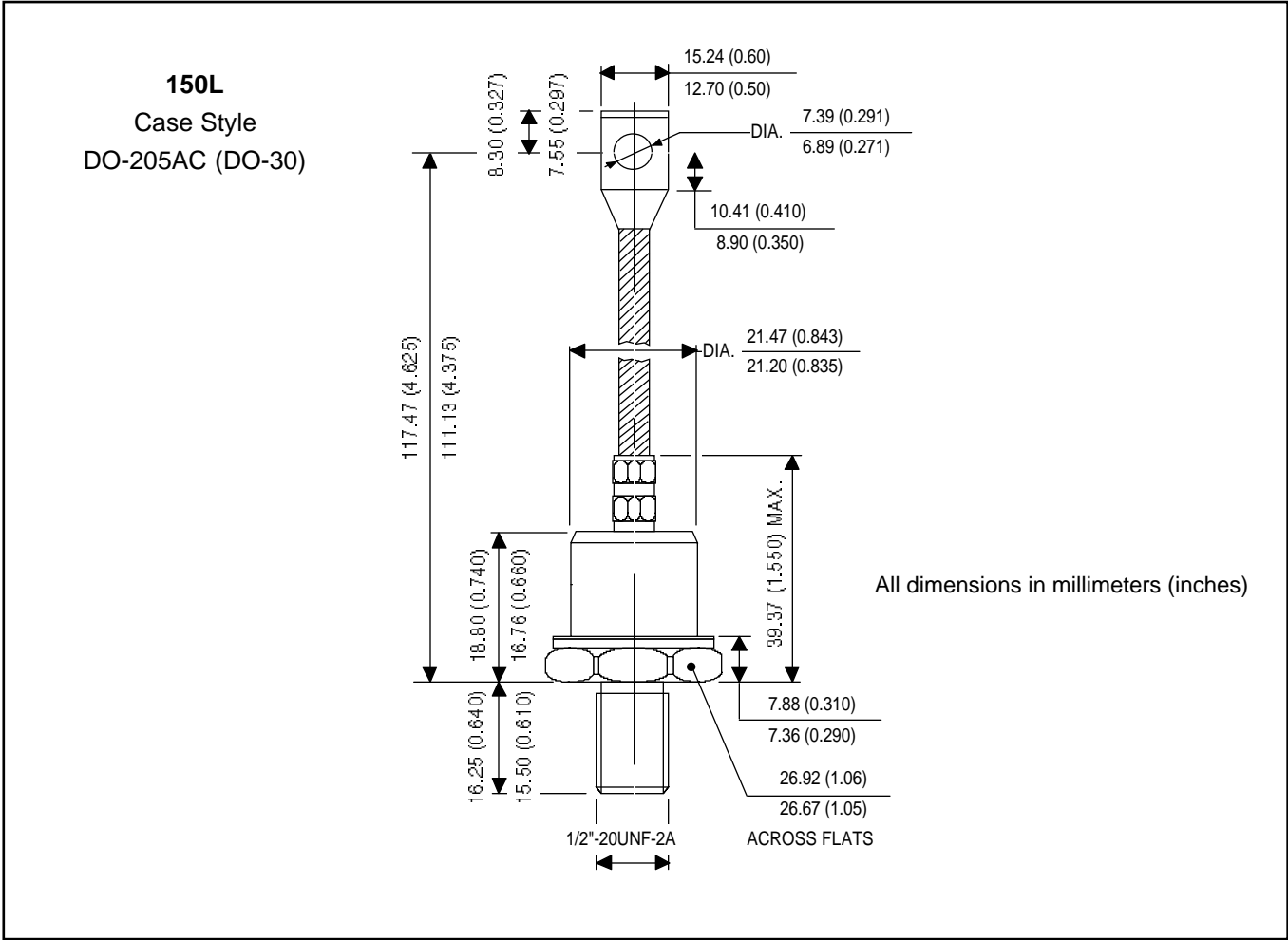


Fig. 1 - Current Ratings Characteristics

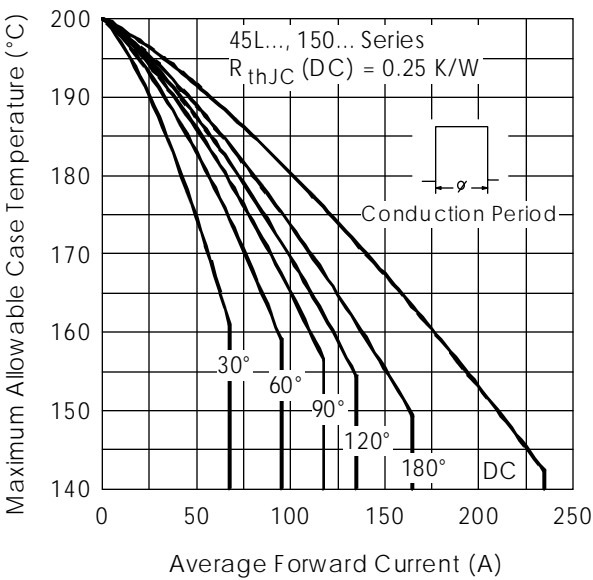


Fig. 2 - Current Ratings Characteristics

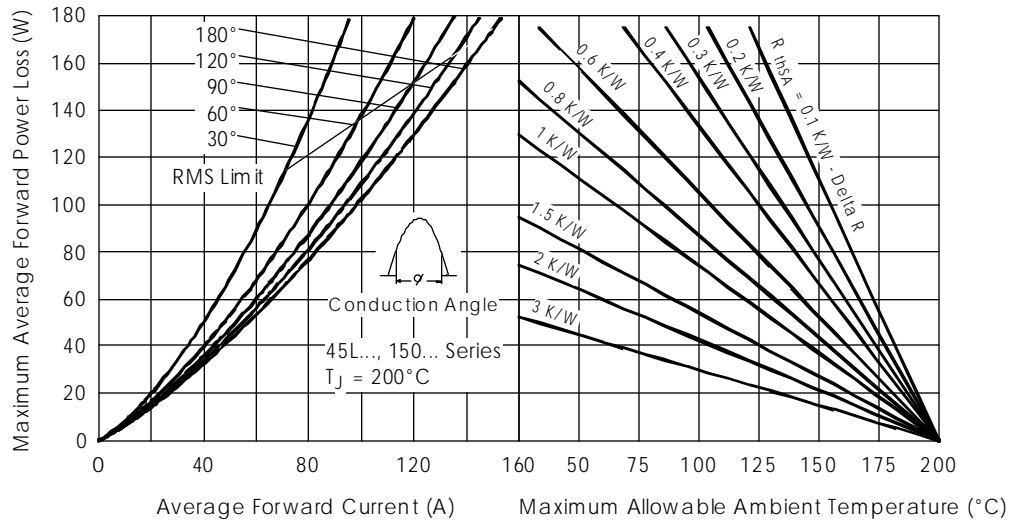


Fig. 3 - Forward Power Loss Characteristics

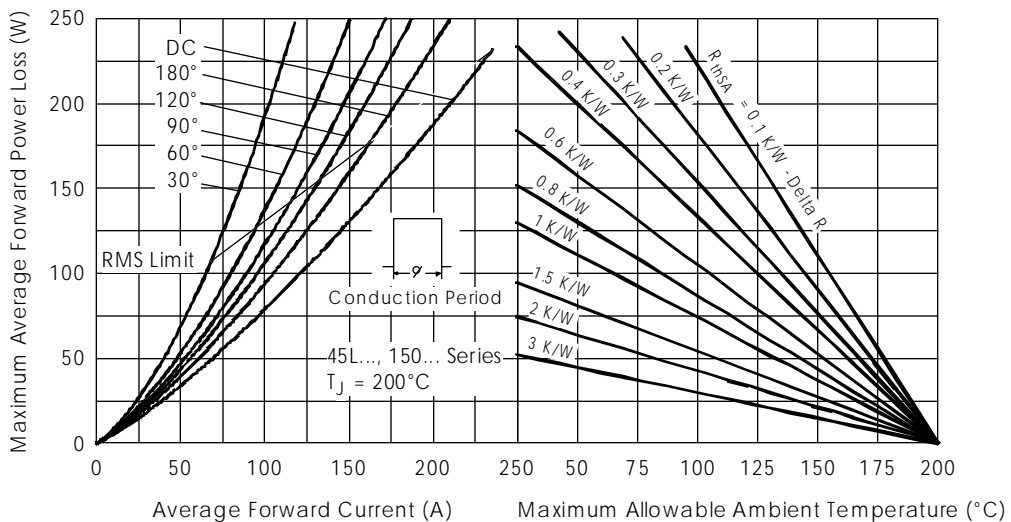


Fig. 4 - Forward Power Loss Characteristics

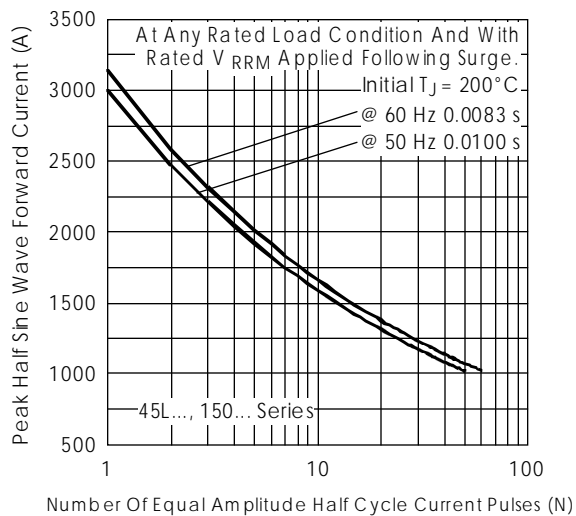


Fig. 5 - Maximum Non-Repetitive Surge Current

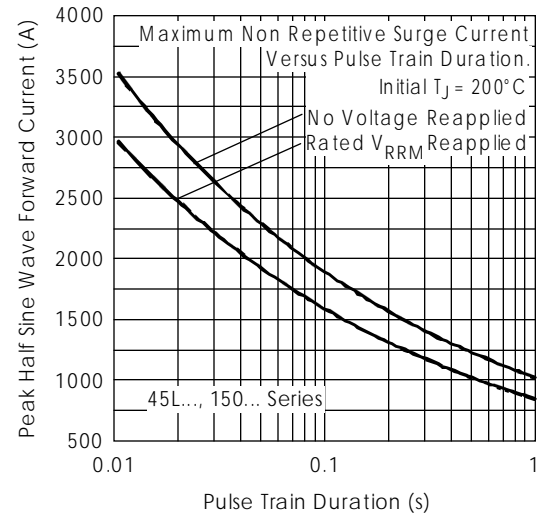


Fig. 6 - Maximum Non-Repetitive Surge Current

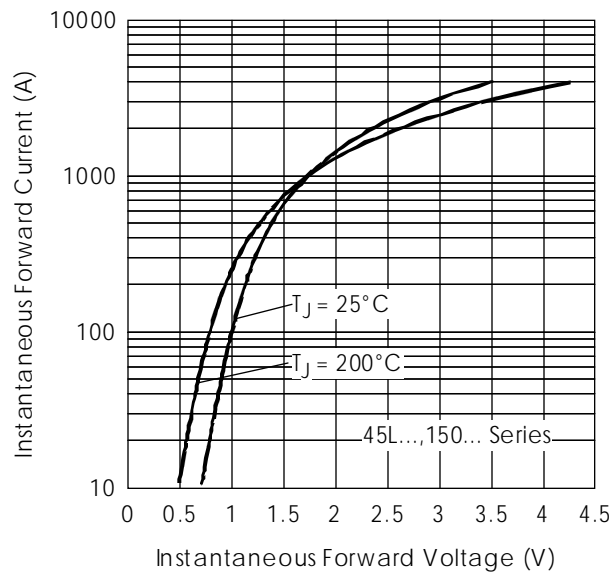


Fig. 7 - Forward Voltage Drop Characteristics

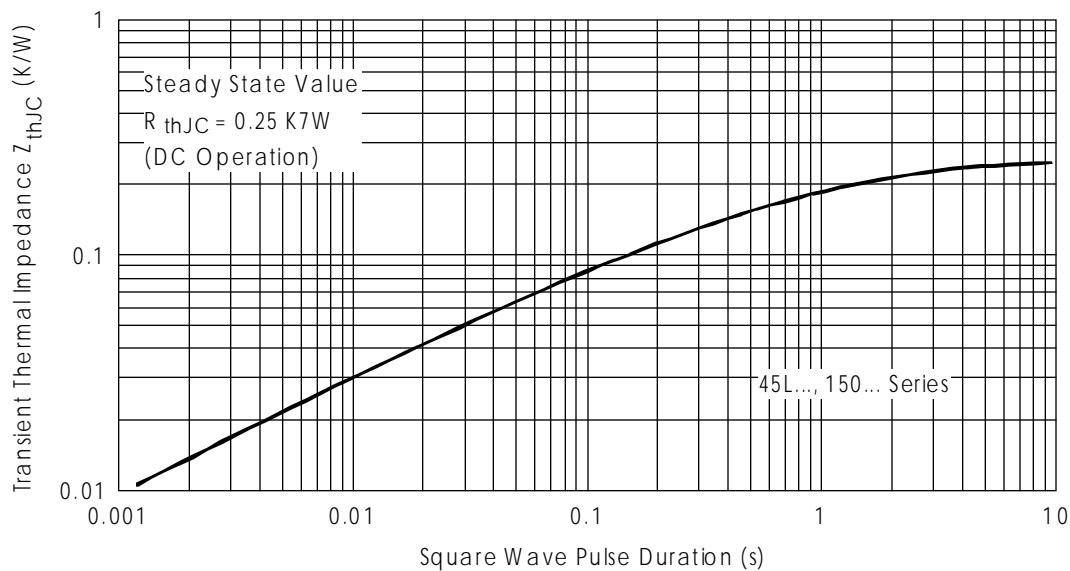


Fig. 8 - Thermal Impedance  $Z_{thJC}$  Characteristic