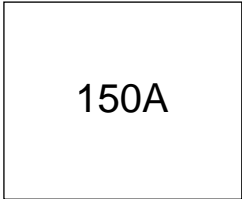


STANDARD RECOVERY DIODES

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



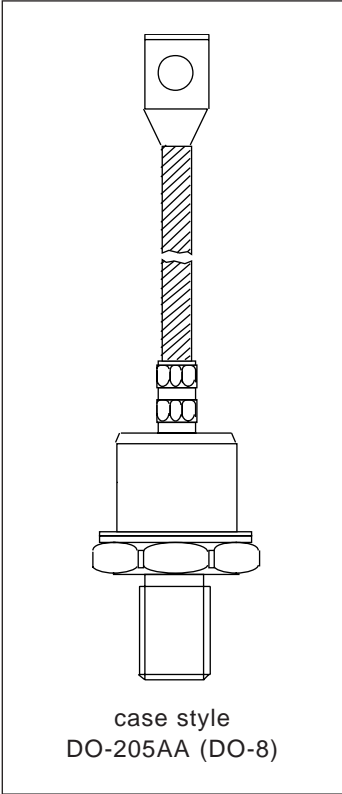
Typical Applications

- 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 ² s
@ 60Hz	58	KA ² s
V_{RRM} range *	50 to 1000	V
T_J	- 40 to 200	°C

* 45L available from 100V to 1000V



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°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 _{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 reappplied
	3740		t = 8.3ms reappplied
	3000		t = 10ms 100% V _{RRM} reappplied
	3140		t = 8.3ms reappplied
I ² t Maximum I ² t for fusing	64	KA ² s	t = 10ms No voltage reappplied
	58		t = 8.3ms reappplied
	45		t = 10ms 100% V _{RRM} reappplied
	41		t = 8.3ms reappplied
I ² √t Maximum I ² √t for fusing	640	KA ² √s	t = 0.1 to 10ms, no voltage reappplied
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	V	(I > 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 > 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/150...	Units	Conditions	
T _J Max. junction operating temperature range	-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 Mounting torque	Min.	14.1 (125)	Nm (lbf-in)	Not lubricated threads
	45L Max.	17.0 (150)		
	150L Min.	12.2 (108)	Nm (lbf-in)	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)		

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											
<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">45</td> <td style="padding: 5px;">L</td> <td style="padding: 5px;">F</td> <td style="padding: 5px;">R</td> <td style="padding: 5px;">100</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> </tr> </table>	45	L	F	R	100	①	②	③	④	⑤	<p>1 - 45 = Standard version 47 = Version with Pinch Bolt (only flat base; available on request)</p> <p>2 - L = Essential Part Number</p> <p>3 - F = Flat Base None = Normal Stud 1/2" - 20UNF -2A</p> <p>4 - R = Stud Reverse Polarity (Anode to Stud) None = Stud Normal Polarity (Cathode to Stud)</p> <p>5 - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)</p> <p>NOTE: For longer lead Contact Factory</p>
45	L	F	R	100							
①	②	③	④	⑤							

45L(R), 150K/ L/ KS(R) Series

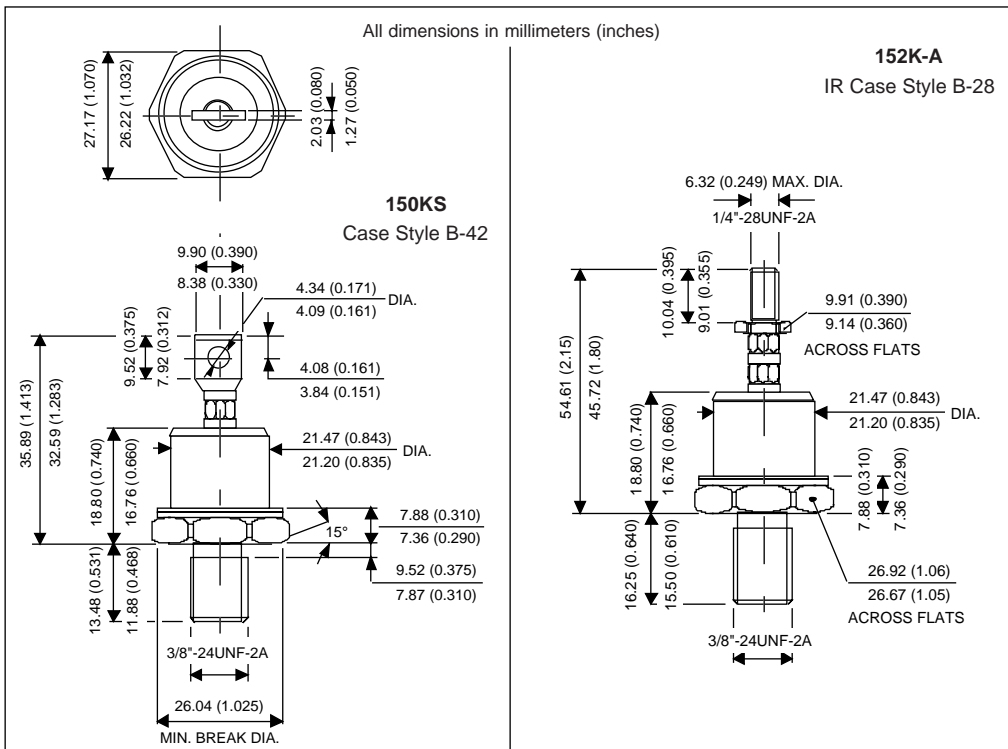
Bulletin I2037 11/94

Ordering Information Table

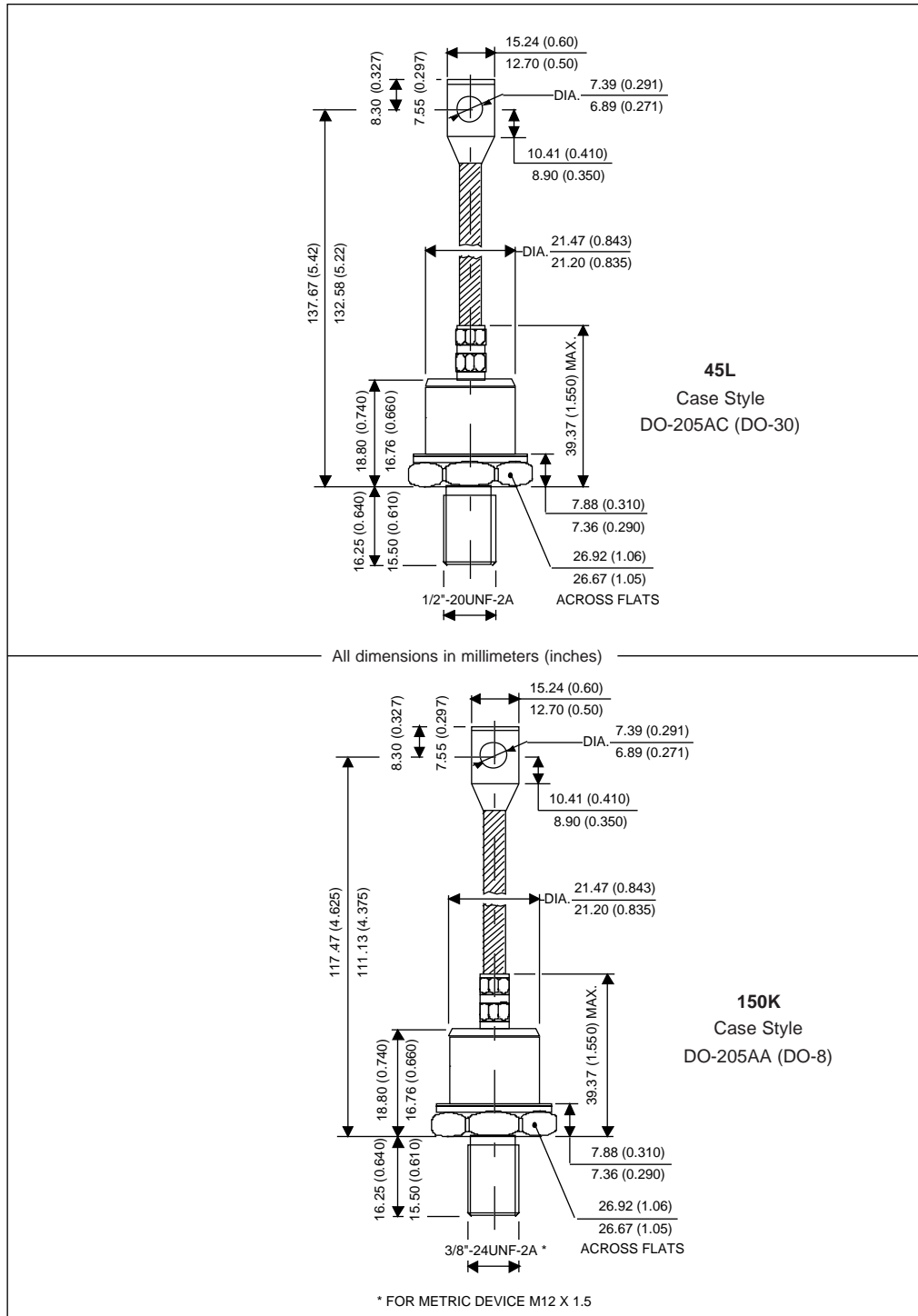
Device Code						
15	0	K	R	100	A	M
①	②	③	④	⑤	⑥	⑦

- 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



Outline Table



45L(R), 150K/ L/ KS(R) Series

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Outline Table

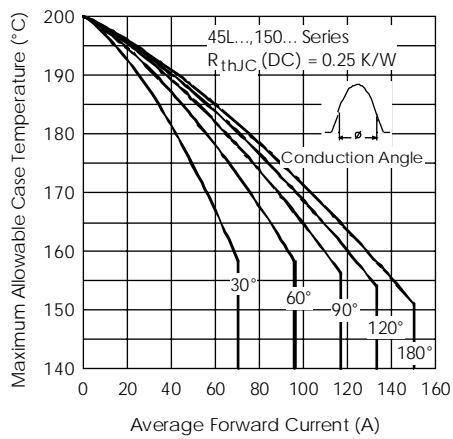
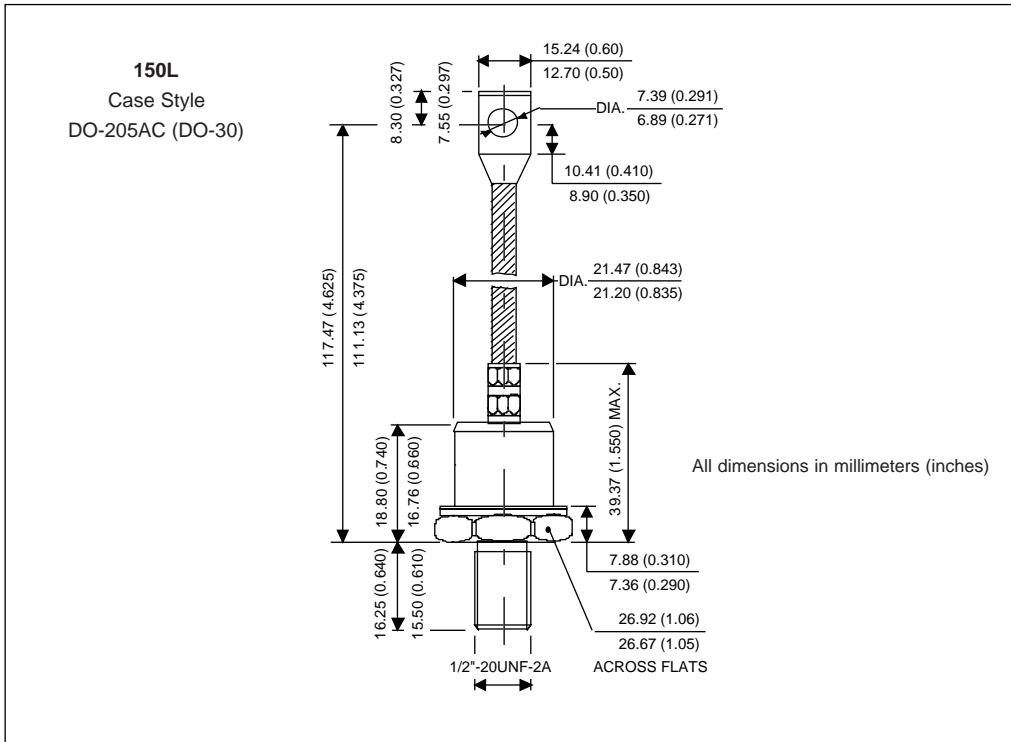


Fig. 1 - Current Ratings Characteristics

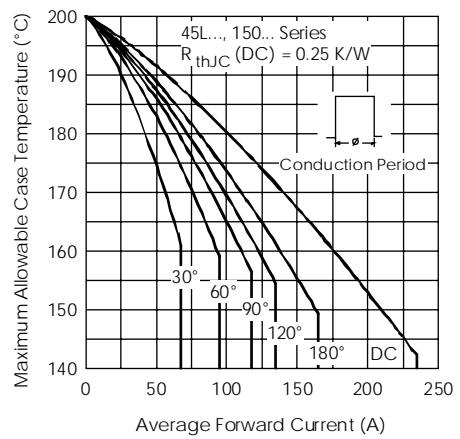


Fig. 2 - Current Ratings Characteristics

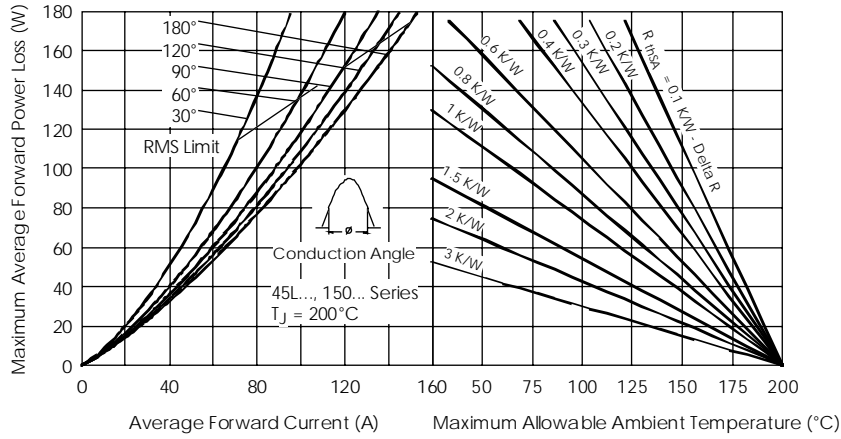


Fig. 3 - Forward Power Loss Characteristics

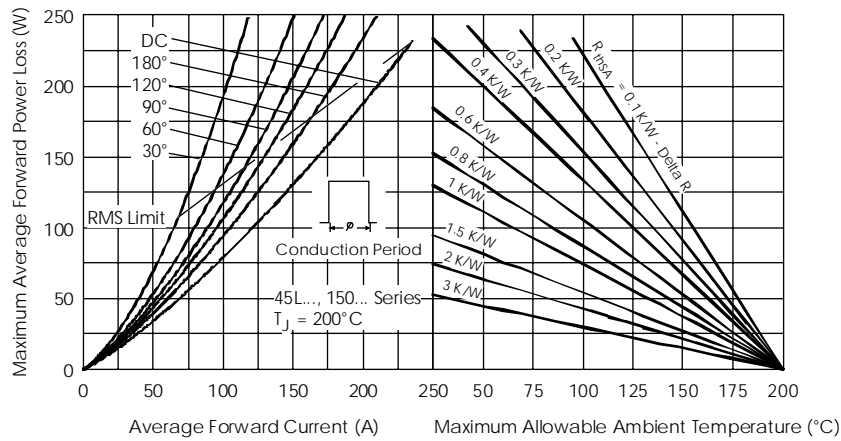


Fig. 4 - Forward Power Loss Characteristics

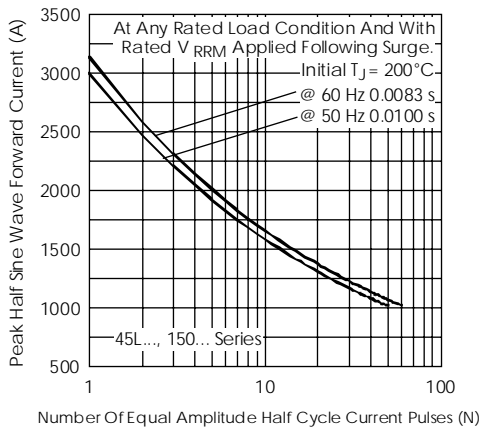


Fig. 5 - Maximum Non-Repetitive Surge Current

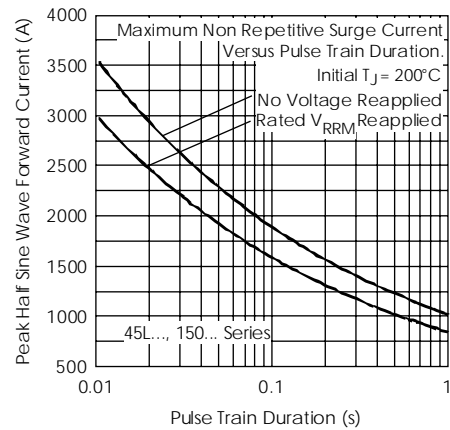


Fig. 6 - Maximum Non-Repetitive Surge Current

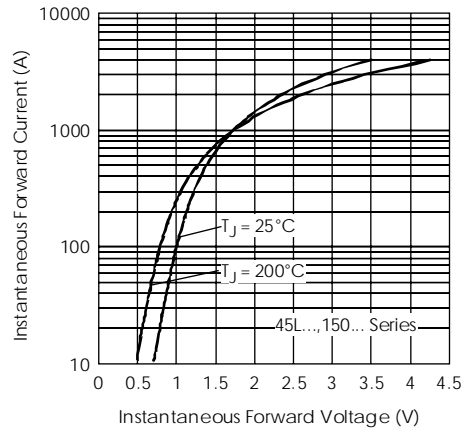


Fig. 7 - Forward Voltage Drop Characteristics

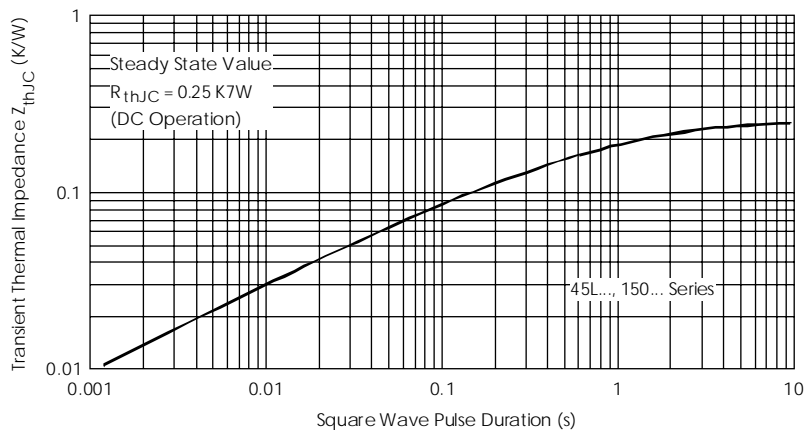


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic