

International
IRF Rectifier

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

STANDARD RECOVERY DIODES

Stud Version

Features

- Alloy diode
- High current carrying capability
- High surge current capabilities
- Stud cathode and stud anode version

150A

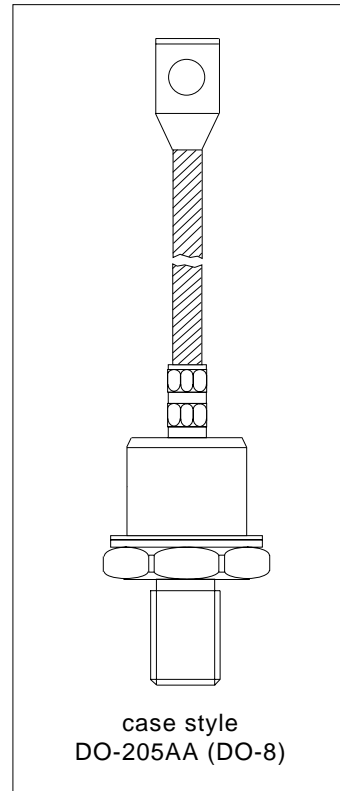
Typical Applications

- Battery charges
- Welders
- Machine tool controls
- High power drives
- Medium traction applications
- Freewheeling diodes

www.DataSheet4U.com

Major Ratings and Characteristics

Parameters	45L /150K	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	100 to 600	V
T_J	- 40 to 200	°C



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) 150KS(R)	10	100	200	35
	20	200	300	
	30	300	400	
	40	400	500	
	60	600	720	

Forward Conduction

Parameter	45L /150K	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 ² 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 ² √s	t = 0.1 to 10ms, no voltage reapplied
$V_{F(TO)1}$ Low level value of threshold voltage	0.67	V	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J \text{ max.}$
$V_{F(TO)2}$ High level value of threshold voltage	0.83		$(I > \pi \times I_{F(AV)})$, $T_J = T_J \text{ max.}$
r_{f1} Low level value of forward slope resistance	1.42	mΩ	$(16.7\% \times \pi \times I_{F(AV)} < I < \pi \times I_{F(AV)})$, $T_J = T_J \text{ max.}$
r_{f2} High level value of forward slope resistance	0.91		$(I > \pi \times I_{F(AV)})$, $T_J = T_J \text{ max.}$
V_{FM} Max. forward voltage drop	1.33	V	$I_{pk} = 471\text{A}$, $T_J = 25^\circ\text{C}$, $t_p = 10\text{ms}$ sinusoidal wave

Thermal and Mechanical Specifications

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

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	R	60
①	②	③	④

- 1** - 45 = Standard version
- 2** - L = Essential Part Number
- 3** - R = Stud Reverse Polarity (Anode to Stud)
None = Stud Normal Polarity (Cathode to Stud)
- 4** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)

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

Bulletin I2037 rev. B 03/03

International
IRF Rectifier

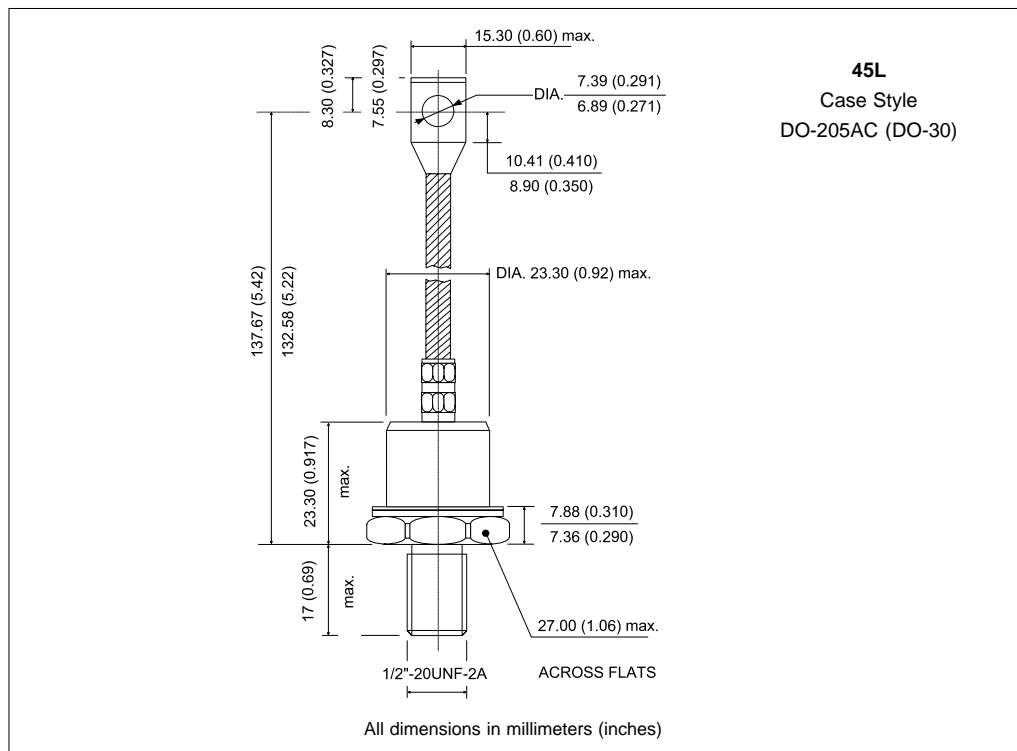
Ordering Information Table

Device Code					
1	2	3	4	5	6
15	0	K	R	60	A

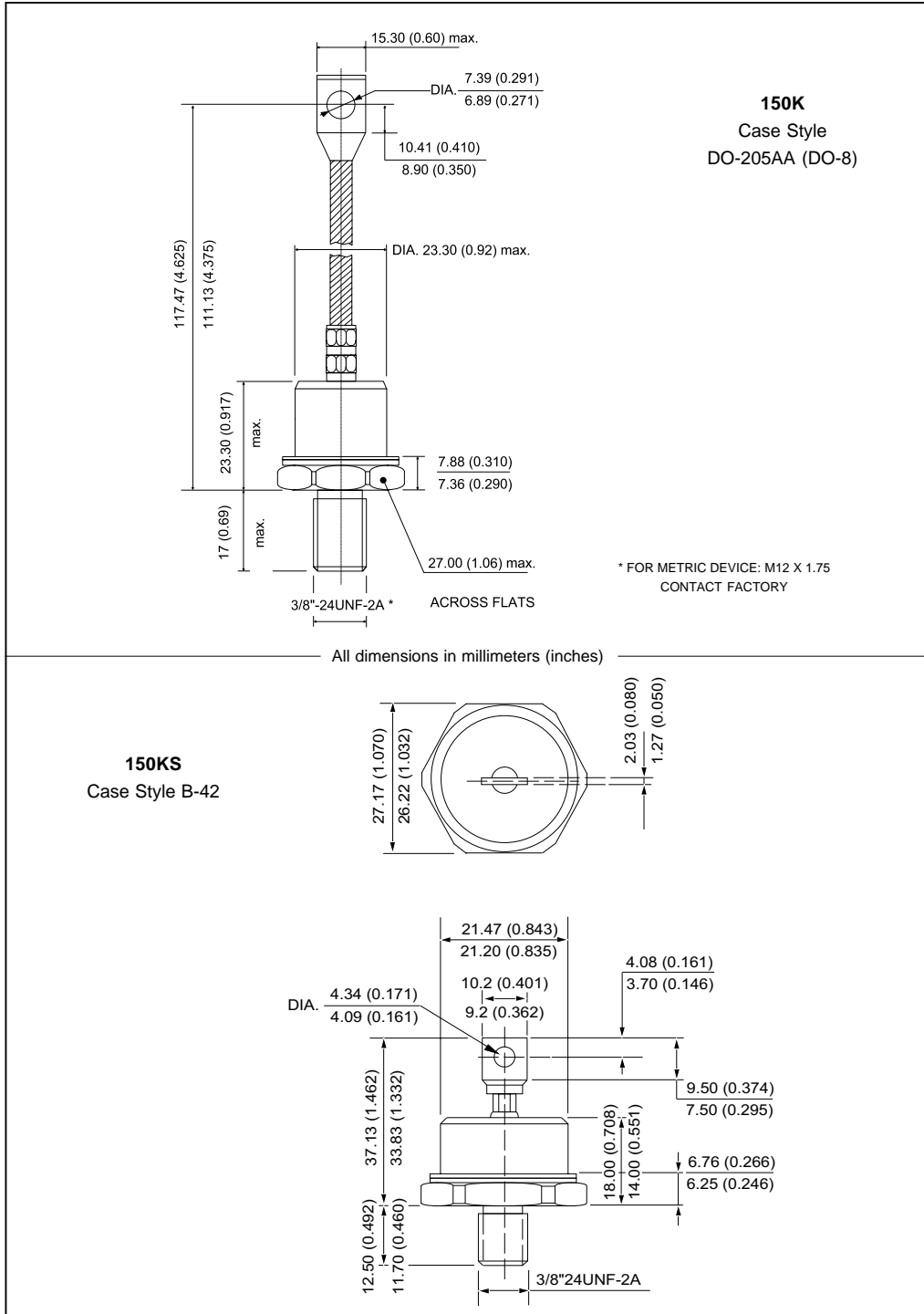
- 1** - 15 = Essential Part Number
- 2** - 0 = Standard Device
- 3** - Case Style
 K = DO205AA (DO-8)
 KS = B-42
- 4** - R = Stud Reverse Polarity (Anode to Stud)
 None = Stud Normal Polarity (Cathode to Stud)
- 5** - Voltage code: Code x 10 = V_{RRM} (See Voltage Ratings table)
- 6** - A = Essential Part Number for 150K (Omitted for 150KS)

NOTE: For Metric Device M12 x 1.75 Contact Factory

Outline Table



Outline Table



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

Bulletin I2037 rev. B 03/03

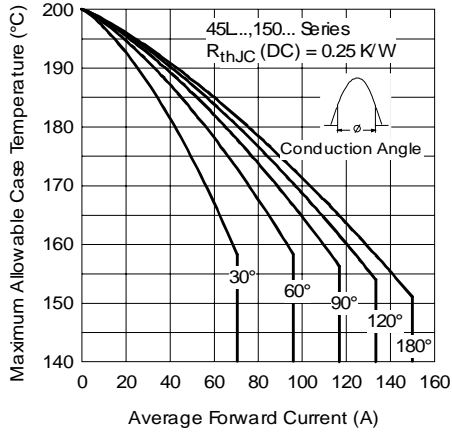


Fig. 1 - Current Ratings Characteristics

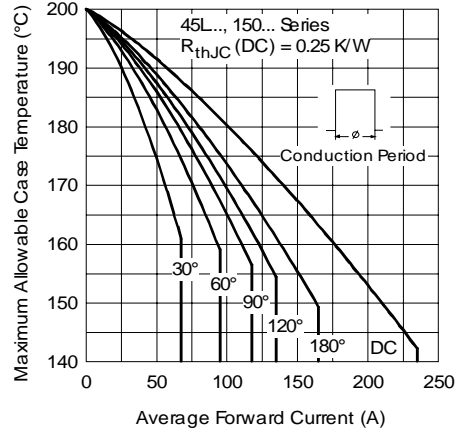


Fig. 2 - Current Ratings Characteristics

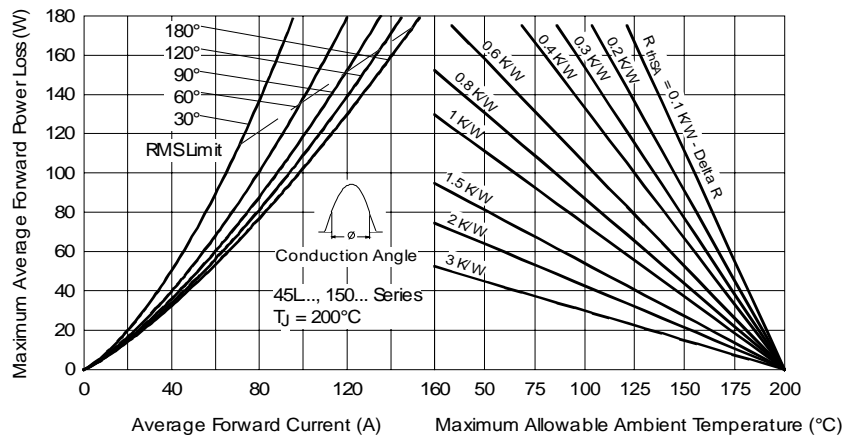


Fig. 3 - Forward Power Loss Characteristics

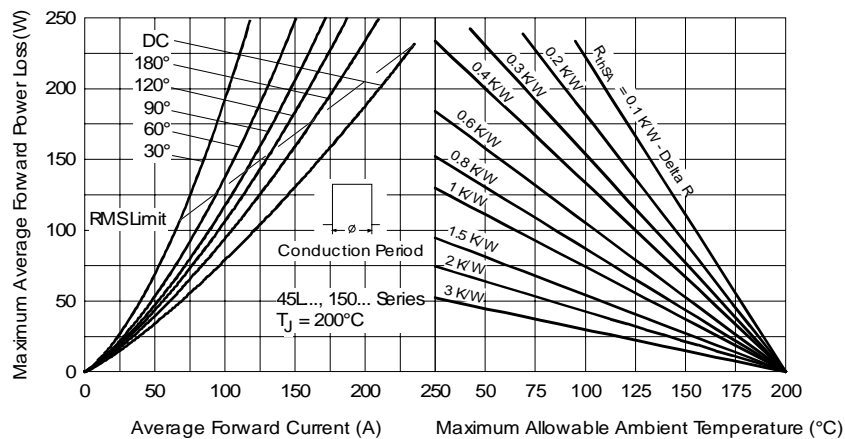


Fig. 4 - Forward Power Loss Characteristics

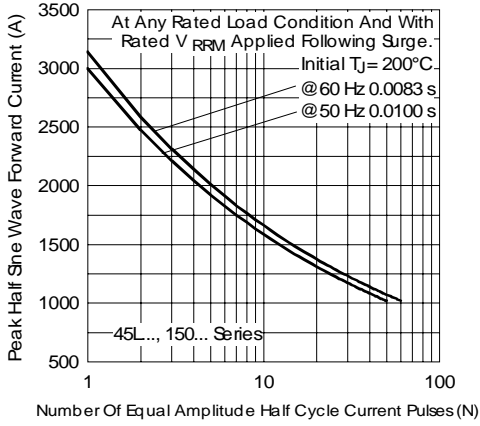


Fig. 5 - Maximum Non-Repetitive Surge Current

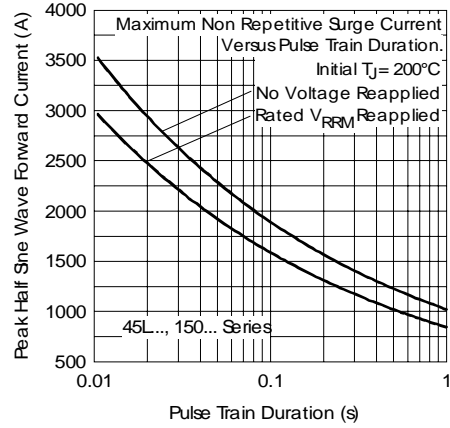


Fig. 6 - Maximum Non-Repetitive Surge Current

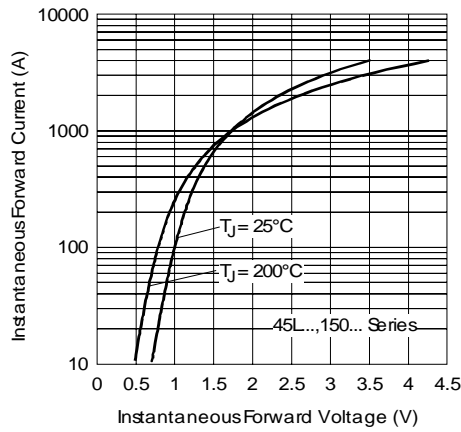


Fig. 7 - Forward Voltage Drop Characteristics

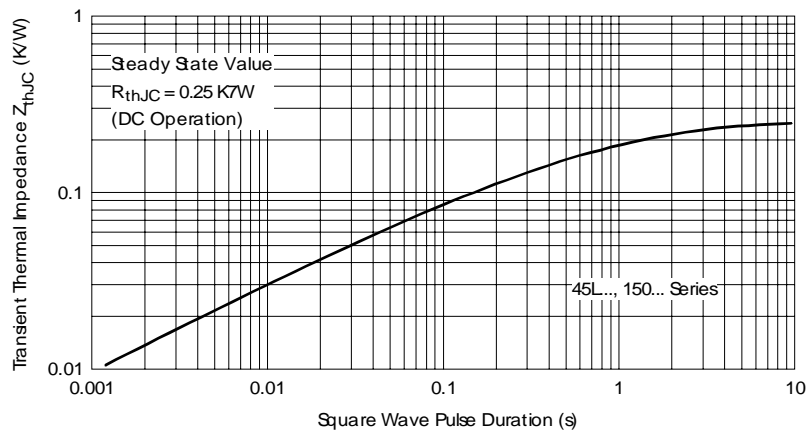


Fig. 8 - Thermal Impedance Z_{thJC} Characteristic

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

Bulletin I2037 rev. B 03/03

International
IOR Rectifier

Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level.
Qualification Standards can be found on IR's Web site.

International
IOR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 03/03