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# INTERNATIONAL RECTIFIER

## 1N3085, 1N3111, 1N5162 SERIES 150 Amp Avg Silicon Rectifier Diodes

### Major Ratings and Characteristics

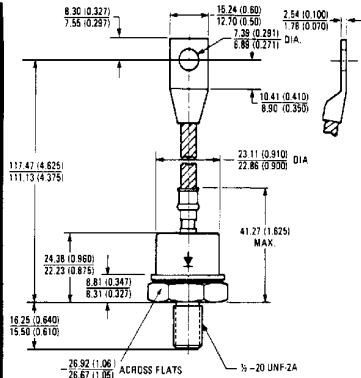
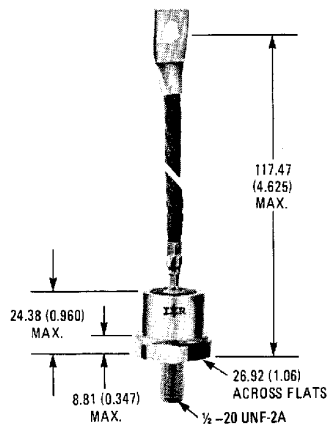
	1N3111	1N3085	1N5162	Units
$I_{F(AV)}$		150*		A
@ Max. $T_C$		150*		°C
$I_{FSM}$ @ 50 Hz		2,850		A
@ 60 Hz		3,000*		
$t^2_t$ @ 50 Hz		41,000		A <sup>2</sup> s
@ 60 Hz		37,500		
$I_{V}^2/t$		580,000		A <sup>2</sup> V <sup>2</sup> /s
$V_{RRM}$ Range	50	100 - 1000	1200	V

\*JEDEC registered value

### Description and Features

- Alloy junction for soft recovery characteristics
- Rugged device for duty cycle applications
- Reverse voltage ratings up to 1200 volts
- Applications include power rectification in extreme environmental conditions

### CASE STYLE AND DIMENSIONS



Conforms to JEDEC Outline DO-295AC IDO-30  
All dimensions in Millimeters and (Inches)

## VOLTAGE RATINGS

① Part Number	$V_{RRM}$ Max. Repetitive Peak Reverse Voltage (V)	$V_R$ Max. Direct Reverse Voltage (V)	$I_{R(AV)}$ Max. Average Reverse Current at Max. Rated $I_{F(AV)}$ and $V_{RRM}$ . $T_C = 150^\circ\text{C}$ 1 Phase Operation (mA)
	$T_C = -65^\circ\text{C}$ to $200^\circ\text{C}$	$T_C = -65^\circ\text{C}$ to $200^\circ\text{C}$	
1N3111	50*	40*	25*
1N3085	100*	80*	25*
1N3086	200*	160*	17*
1N3087	300*	240*	17*
1N3088	400*	320*	17*
1N3089	500*	400*	17*
1N3090	600*	480*	17*
1N3091	800*	640*	16*
1N3092	1000*	800*	12*
1N5162	1200*	960*	10*

## ELECTRICAL SPECIFICATIONS

		1N3111, 1N3085, 1N5162 Series	Units	Conditions
$I_{F(AV)}$	Max. average forward current	150*	A	180° sinusoidal conduction Max. $T_C = 150^\circ\text{C}$
$I_{FSM}$	Max. peak one-cycle non-repetitive surge current	2,850	A	Half cycle 50 Hz sine wave or 6 ms rectangular pulse
		3,000*		Following any rated load condition and with rated $V_{RRM}$ applied
		3,400		Half cycle 60 Hz sine wave or 5 ms rectangular pulse
		3,550		Half cycle 50 Hz sine wave or 5 ms rectangular pulse
$I^2t$	Max. $I^2t$ for fusing	41,000	A <sup>2</sup> s	Half cycle 60 Hz sine wave or 5 ms rectangular pulse
		37,500		Following any rated load condition and with $V_{RRM}$ applied following surge = 0
	Max. $I^2t$ for individual device fusing	58,000		$t = 10$ ms With rated $V_{RRM}$ applied following surge = 0
		53,000		$t = 8.3$ ms initial $T = 200^\circ\text{C}$
$I^2t$	Max. $I^2t$ for individual device fusing ①	580,000	A <sup>2</sup> /s	$t = 0.1$ to $10$ ms, $V_{RRM} = 0$ following surge.
$V_{FM}$	Max. peak forward voltage	1.2*	V	$I_{F(AV)} = 150$ A (471 A peak), $T_C = 150^\circ\text{C}$

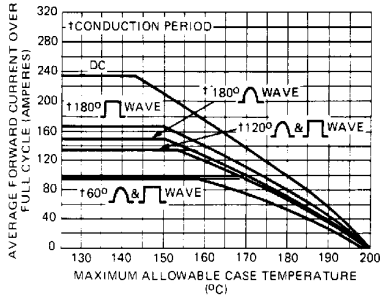
## THERMAL-MECHANICAL SPECIFICATIONS

$T_C$	Max. operating case temperature range	$-65^\circ$ to $200^\circ$	$^\circ\text{C}$
$T_{stg}$	Max. storage temperature range	$-65^\circ$ to $200^\circ$	$^\circ\text{C}$
$R_{thJC}$	Max. internal thermal resistance, junction-to-case	0.25*	deg C/W DC operation
$R_{thCS}$	Thermal resistance, case-to-sink	0.10	deg C/W Mounting surface flat, smooth, and greased
T	Mounting torque	Min. 14.1 (125)	Nm (lbf-in)
		Max. 17.0 (150)	
wt	Approximate weight	91 (3.2)	g (oz)
*	Case style	DO-205AC (DO-30)	JEDEC

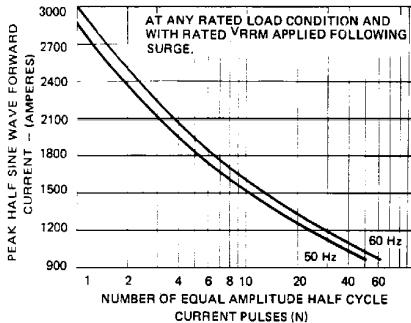
① Basic part number indicates cathode-to-case. For anode-to-case, add "R" to part number, e.g. 1N3086R.

\*JEDEC registered values.

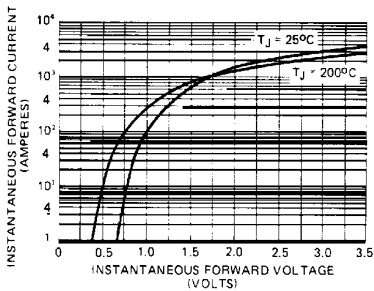
①  $I^2t$  for time  $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$



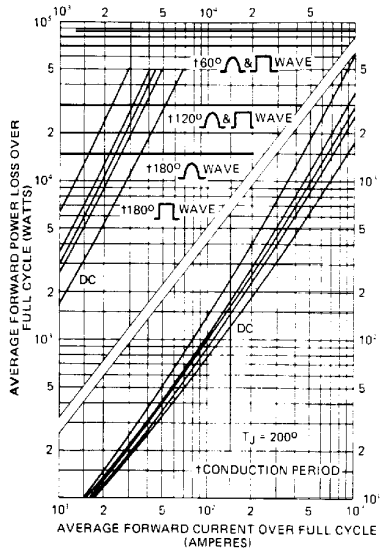
**Fig. 1 – Average Forward Current Vs. Maximum Allowable Case Temperature**



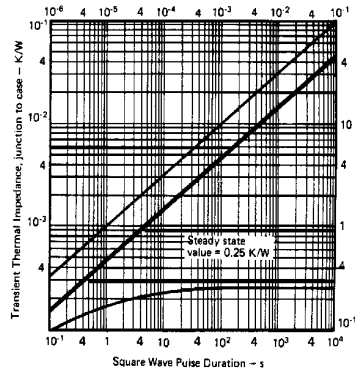
**Fig. 3 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses**



**Fig. 4 – Maximum Forward Voltage Vs. Forward Current**



**Fig. 2 – Maximum Forward Power Loss Vs. Average Forward Current**



**Fig. 5 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration**