

INTERNATIONAL RECTIFIER 

## 60HFU... SERIES

### SUPER FAST RECTIFIER DIODE 60 Amp 60ns

#### Major ratings and characteristics

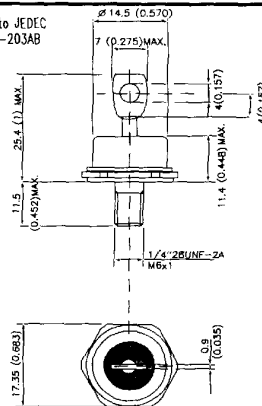
	60HFU	Units
$I_{F(AVG)}$	60	A
$T_c$	82	°C
$I_{RMS}$	94	A
$I_{FSM}$ @ 10ms	830	A
$I_{FSM}$ @ 8.3ms	870	A
$V_{RRM}$	100 to 600	V
$T_j$	-40 to 125	°C

#### Description and Features

- Very low reverse recovery time
- Reduced switching losses
- Soft recovery characteristics
- High surge current capability
- No voltage derating up to 150°C
- Stud cathode and stud anode versions
- Designed for switching applications:  
Free wheeling diode in converters and control circuits  
Rectifier in S.M.P.S.



Conforms to JEDEC  
Outline DO-203AB  
(00-5)



All dimensions in millimetres (inches)

**ELECTRICAL SPECIFICATIONS**
**Forward Conduction**

Parameters	Value	Units	Conditions
$I_{(RM)}$ Maximum average forward current	60	A	180° conduction, half sine cond @ Case temperature = 82°C
	67	A	180° conduction, rect cond @ Case temperature = 82°C
$I_{(RMS)}$ Maximum RMS current	94	A	
$I_{(FSM)}$ Maximum peak, one-cycle non-repetitive forward current Initial $T_j = T_j \text{ max.}$	830	A	$t = 10\text{ms}$ No voltage reapplied
	870	A	$t = 8.3\text{ms}$
	700	A	$t = 10\text{ms}$ 100% $V_{\text{rev}}$ reapplied
	730	A	$t = 8.3\text{ms}$
PI Maximum PI (for fusing) Initial $T_j = T_j \text{ max.}$	3460	A <sup>2</sup> s	$t = 10\text{ms}$ No voltage reapplied
	3160	A <sup>2</sup> s	$t = 8.3\text{ms}$
	2450	A <sup>2</sup> s	$t = 10\text{ms}$ 100% $V_{\text{rev}}$ reapplied
	2240	A <sup>2</sup> s	$t = 8.3\text{ms}$
$I^2t$ Maximum $I^2t$ for fusing	34600	A <sup>2</sup> √s	$t = 0$ to 10ms, no voltage reapplied
$V_{\text{th}}(T)$ Maximum value of threshold voltage	1.08	V	$T_j = 125^\circ\text{C}$
$r_f$ Maximum value of forward slope resistance	3.40	mΩ	$T_j = 125^\circ\text{C}$
$V_{\text{FM}}$ Maximum forward voltage drop	1.50	V	$I_{\text{FM}} = 60 \text{ Apk}$ $T_j = 25^\circ\text{C}$
	1.30	V	$I_{\text{FM}} = 60 \text{ Apk}$ $T_j = 125^\circ\text{C}$

**Thermal and Mechanical Specifications**

$T_j$ Junction temperature range	-40 to 125	°C	
$T_{\text{stg}}$ Storage temperature range	-40 to 150	°C	
$R_{\text{th(j-c)}}$ Maximum thermal resistance junction to case	0.36	K/W	DC operation per junction
$R_{\text{th(j-h)}}$ Maximum thermal resistance, case to heatsink	0.25	K/W	Mounting surface, smooth and greased
T Mounting torque, base to heatsink $\pm 10\%$	2.5	Nm	A mounting compound is recommended and the torque should be rechecked after a period of about 3 hours to allow for the spread of the compound
wl Approximate weight	25	g	

**Recovery Characteristics**

Parameters	Typ.	Max.	Units	Conditions
$t_{\text{tr}}$ Recovery time	60	80	ns	$T_j = 25^\circ\text{C}$ $I_F = 1\text{A}$ , $dI_F/dt = -100 \text{ A}/\mu\text{s}$ , $V_r = -30\text{V}$
$Q_{\text{tr}}$ Recovered charge	250	300	nC	$T_j = 25^\circ\text{C}$ $I_F = 1\text{A}$ , $dI_F/dt = -100 \text{ A}/\mu\text{s}$ , $V_r = -30\text{V}$

**Voltage ratings ( $T_j = T_j \text{ max.}$ )**

Type number	$V_{\text{RRM}}$ - maximum repetitive peak reverse voltage	$V_{\text{RSM}}$ - maximum non-repetitive peak reverse voltage	$I_{\text{RSM Max}}$ @ 100°C	$I_{\text{RSM Max}}$ @ 150°C	$I_{\text{RSM Typ.}}$ @ 25°C
	V	V	mA	mA	μA
60HFU(R)-100	100	110	5	15	50
60HFU(R)-200	200	220	5	15	50
60HFU(R)-300	300	330	5	15	50
60HFU(R)-400	400	440	5	15	50
60HFU(R)-500	500	550	5	25	50
60HFU(R)-600	600	660	5	25	50

**$\Delta R$  Conduction (per junction)**

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

Conduction angle	Sinusoidal Conduction	Rectangular Conduction	Units	Conditions
180°	0.06	0.05	K/W	
120°	0.08	0.09	K/W	
90°	0.10	0.12	K/W	
60°	0.15	0.16	K/W	
30°	0.24	0.24	K/W	

Fig.1 - Maximum Forward Energy Loss Per Pulse Characteristics

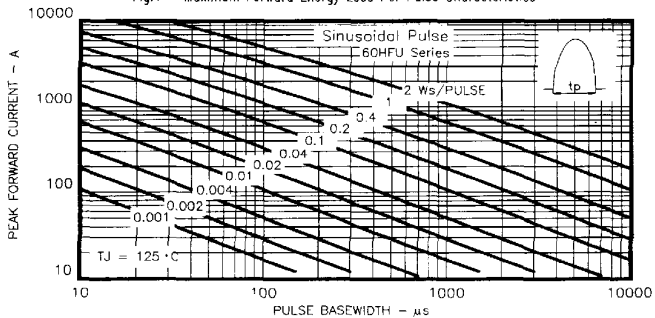


Fig.2 - Maximum Forward Energy Loss Per Pulse Characteristics

