

INTERNATIONAL RECTIFIER 

## 60HFU... SERIES

### SUPER FAST RECTIFIER DIODE 60 Amp 60ns

#### Major ratings and characteristics

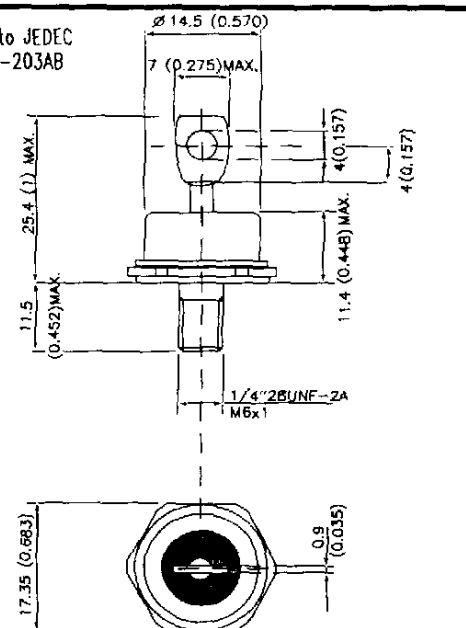
	60HFU	Units
$I_{F(AVG)}$	60	A
$T_c$	82	°C
$I_{RMS}$	94	A
$I_{FSM}$ @ 10ms	830	A
$I_{FSM}$ @ 8.3ms	870	A
$V_{RRM}$	100 to 600	V
$T_j$	-40 to 125	°C

#### 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  
(DO-5)



All dimensions in millimetres (inches)

**ELECTRICAL SPECIFICATIONS**

**Forward Conduction**

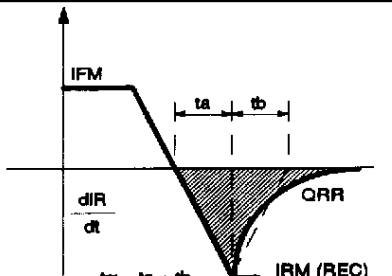
Parameters	Value	Units	Conditions
$I_{F(AV)}$ Maximum average forward current	60	A	180° conduction, half sine cond @ Case temperature = 82°C
	67	A	180° conduction, rect cond @ Case temperature = 82°C
$I_{RMS}$ Maximum RMS current	94	A	
$I_{FSM}$ Maximum peak, one-cycle non-repetitive forward current 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% $V_{RRM}$ 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% $V_{RRM}$ reapplied
	2240	A <sup>2</sup> s	$t = 8.3\text{ms}$
$I^2\sqrt{t}$ Maximum $I^2\sqrt{t}$ for fusing	34600	A <sup>2</sup> $\sqrt{s}$	$t = 0$ to 10ms, no voltage reapplied
$V_{F(10)}$ Maximum value of threshold voltage	1.08	V	$T_J = 125^\circ\text{C}$
$r_l$ Maximum value of forward slope resistance	3.40	m $\Omega$	$T_J = 125^\circ\text{C}$
$V_{FU}$ Maximum forward voltage drop	1.50	V	$I_{FM} = 60 \text{ Apk } T_J = 25^\circ\text{C}$
	1.30	V	$I_{FM} = 60 \text{ Apk } T_J = 125^\circ\text{C}$

**Thermal and Mechanical Specifications**

$T_J$ Junction temperature range	-40 to 125	°C	
$T_{stg}$ Storage temperature range	-40 to 150	°C	
$R_{thJC}$ Maximum thermal resistance junction to case	0.36	K/W	DC operation per junction
$R_{thCS}$ 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
$t_{rr}$ Recovery time	60	80	ns	$T_J = 25^\circ\text{C}$ $I_F = 1\text{A}$ , $dI_F/dt = -100 \text{ A}/\mu\text{s}$ , $V_r = -30\text{V}$
$Q_{rr}$ 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	$V_{RRM}$ , maximum repetitive peak reverse voltage	$V_{RSM}$ , maximum non-repetitive peak reverse voltage	$I_{RRM \text{ Max}}$ @ 100°C	$I_{RRM \text{ Max}}$ @ 150°C	$I_{RRM \text{ Typ.}}$ @ 25°C
	V	V	mA	mA	$\mu\text{A}$
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

**ΔR Conduction (per junction)**

(The following table shows the increment of thermal resistance  $R_{thJ-C}$  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

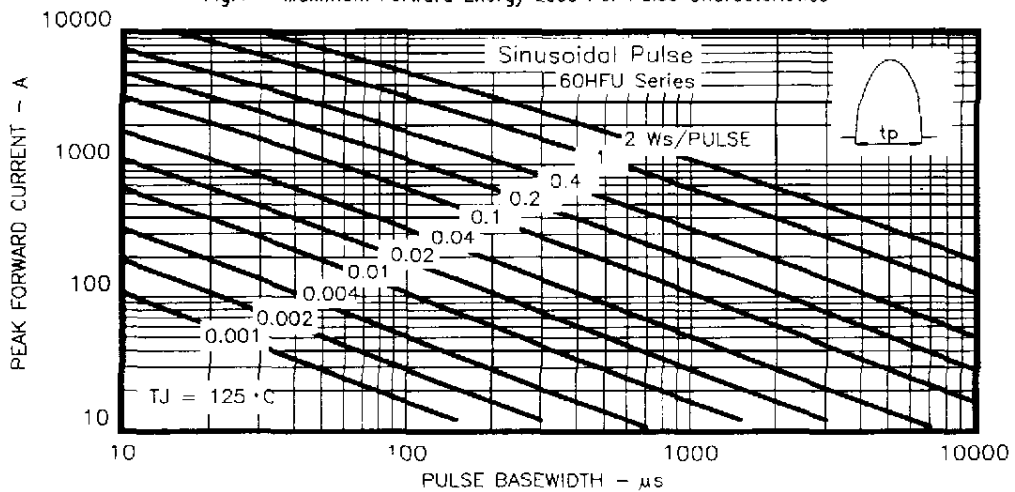


Fig.2 - Maximum Forward Energy Loss Per Pulse Characteristics

