

INTERNATIONAL RECTIFIER

60HFU... SERIES

SUPER FAST RECTIFIER DIODE 60 Amp 60ns

Major ratings and characteristics

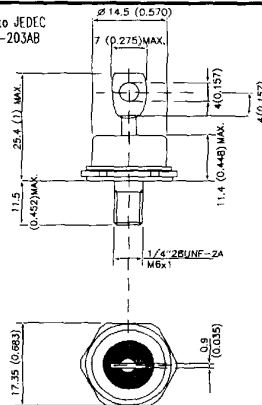
	60HFU	Units
$V_{(AVG)}$	60	A
T_c	82	°C
I_{RMS}	94	A
I_{FSM} @ 10ms	830	A
I_{FSM} @ 8.3ms	870	A
V_{RRM}	100 to 600	V
T_j	-40 to 125	°C

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_{REG} reapplied
	730	A	$t = 8.3\text{ms}$
PI Maximum PI (for fusing) Initial $T_j = T_j \text{ max.}$	3460	A ² s	$t = 10\text{ms}$ No voltage reapplied
	3160	A ² s	$t = 8.3\text{ms}$
	2450	A ² s	$t = 10\text{ms}$ 100% V_{REG} reapplied
	2240	A ² s	$t = 8.3\text{ms}$
I^2t Maximum I^2t for fusing	34600	A ² √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_{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_{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_{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	$I_{\text{RSM Max}} @ 100^\circ\text{C}$	$I_{\text{RSM Max}} @ 150^\circ\text{C}$	$I_{\text{RSM Typ.}} @ 25^\circ\text{C}$
	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

ΔR 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

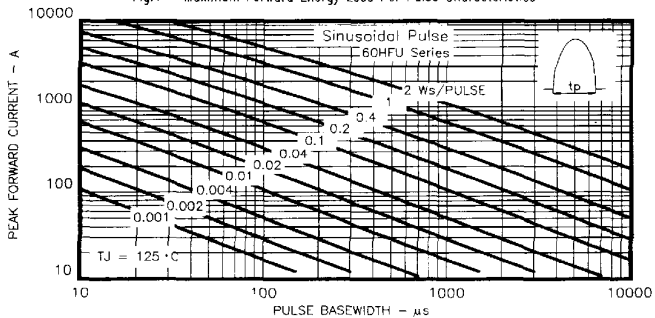


Fig.2 - Maximum Forward Energy Loss Per Pulse Characteristics

