INTERNATIONAL RECTIFIER IOR

60HFU... SERIES

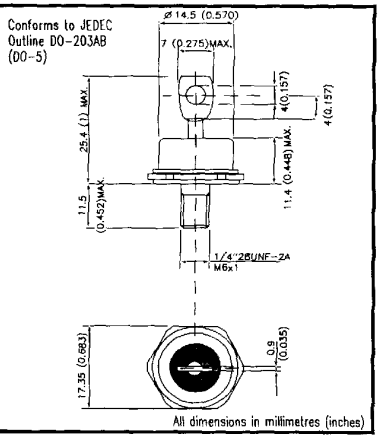
SUPER FAST RECTIFIER DIODE 60 Amp 60ns

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.



ELECTRICAL SPECIFICATIONS

Forward Conduction

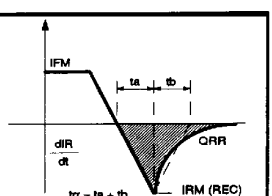
	Parameters	Value	Units	Conditions	
$I_{F(AV)}$	Maximum average forward current	60	A	180° conduction, half sine cond @ Case temperature = 82°C	
		67	A	180° conduction, rect cond @ Case temperature = 82°C	
I_{RMS}	Maximum RMS current	94	A		
I_{FSM}	Maximum peak, one-cycle non-repetitive forward current Initial $T_J = T_J$ max.	830	A	t = 10ms	No voltage reapplied
		870	A	t = 8.3ms	
		700	A	t = 10ms	100% V_{RRM} reapplied
		730	A	t = 8.3ms	
I^2t	Maximum I²t for fusing Initial $T_J = T_J$ max.	3460	A^2s	t = 10ms	No voltage reapplied
		3160	A^2s	t = 8.3ms	
		2450	A^2s	t = 10ms	100% V_{RRM} reapplied
		2240	A^2s	t = 8.3ms	
$I^2\sqrt{t}$	Maximum I²√t for fusing	34600	$A^2\sqrt{s}$	t = 0 to 10ms, no voltage reapplied	
$V_{F(TO)}$	Maximum value of threshold voltage	1.08	V	T_J=125°C	
r_t	Maximum value of forward slope resistance	3.40	mΩ	T_J=125°C	
V_{FM}	Maximum forward voltage drop	1.50	V	I_{FM} = 60 Apk T_J = 25°C	
		1.30	V	I_{FM} = 60 Apk T_J = 125°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 ±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
wt	Approximate weight	25	g	

Recovery Characteristics

	Parameters	Typ.	Max.	Units	Conditions
t_{rr}	Recovery time	60	80	ns	T_J = 25 °C IF = 1A, dIF/dt = -100 A/µs, Vr = -30V
Q_{rr}	Recovered charge	250	300	nC	T_J = 25 °C IF = 1A, dIF/dt = -100 A/µs, Vr = -30V



Voltage ratings ($T_J = T_J$ max.)

Type number	V_{RRM}, maximum repetitive peak reverse voltage	V_{RSM}, maximum non-repetitive peak reverse voltage	I_{RRM} Max @ 100°C	I_{RRM} Max @ 150°C	I_{RRM} 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

ΔR Conduction (per junction)

(The following table shows the increment of thermal resistance Rth_{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

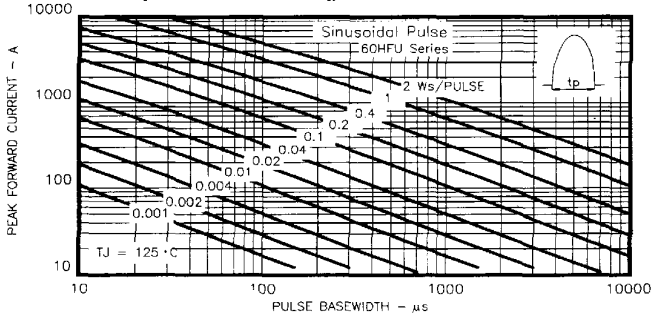


Fig.2 - Maximum Forward Energy Loss Per Pulse Characteristics

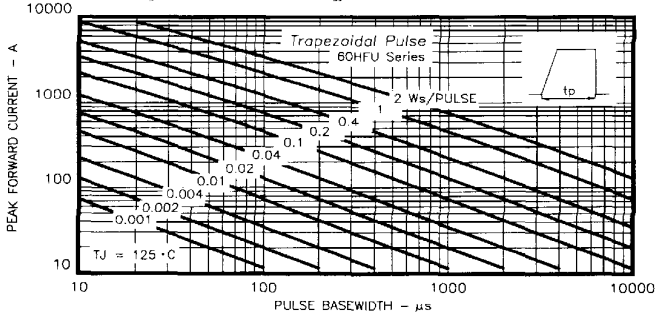


Fig. 3 – CURRENT RATINGS CHARACTERISTICS

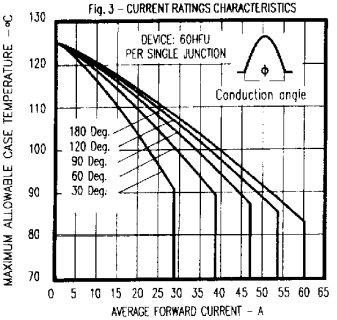


Fig. 4 – CURRENT RATINGS CHARACTERISTICS

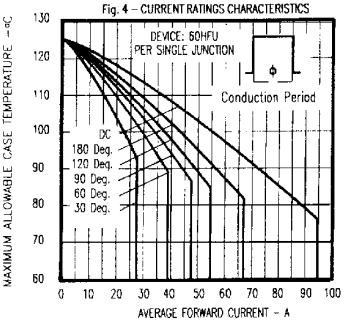


Fig. 5 – FORWARD POWER LOSS CHARACTERISTICS

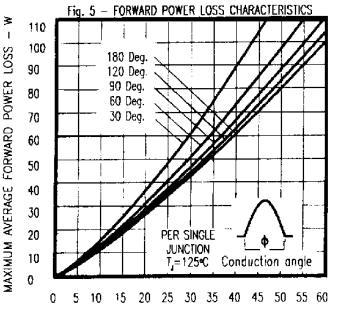


Fig. 6 – FORWARD POWER LOSS CHARACTERISTICS

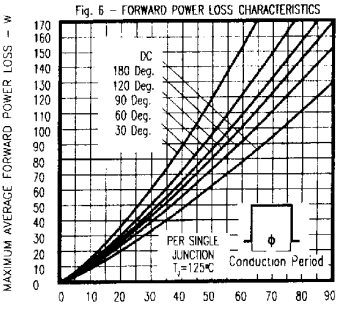


Fig. 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

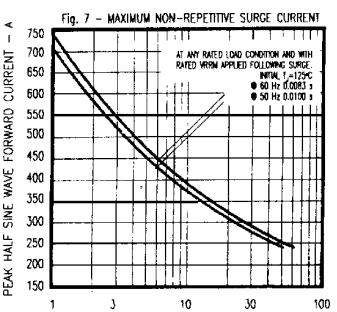


Fig. 8 – MAXIMUM NON-REPETITIVE SURGE CURRENT

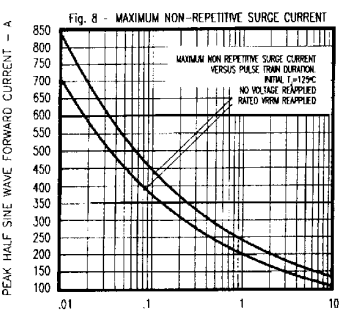


Fig. 9 – FORWARD VOLTAGE DROP CHARACTERISTICS

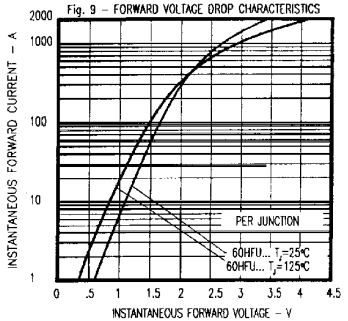


Fig. 10 – THERMAL IMPEDANCE Zthjc CHARACTERISTICS

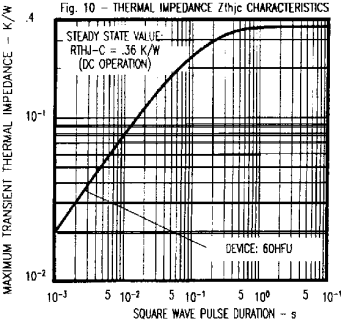


Fig. 11– RECOVERY TIME CHARACTERISTICS

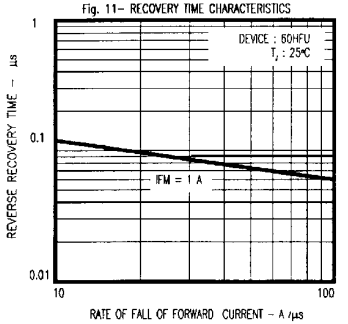


Fig. 12– RECOVERED CHARGE CHARACTERISTICS