INTERNATIONAL RECTIFIER IOR

30HFU... SERIES

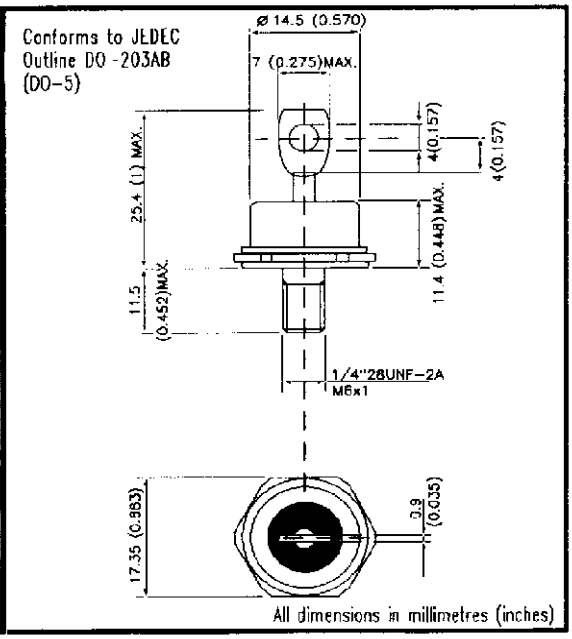
SUPER FAST RECTIFIER DIODE 30 Amp 60ns

Major ratings and characteristics

	30HFU	Units
$I_{F(AVG)}$	30	A
T_c	91	°C
I_{RMS}	47	A
I_{FSM} @10ms	475	A
I_{FSM} @8.3ms	500	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

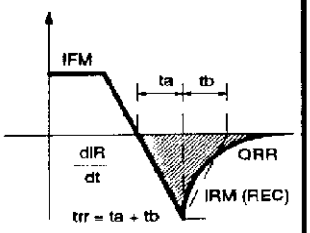
	Parameters	Value	Units	Conditions
$I_{F(AV)}$	Maximum average forward current	30	A	180° conduction, half sine cond @ Case temperature = 91°C
		33	A	180° conduction, rect cond @ Case temperature = 91°C
I_{RMS}	Maximum RMS current	47	A	
I_{FSM}	Maximum peak, one-cycle	475	A	t = 10ms No voltage reapplied
	non-repetitive forward current	500	A	t = 8.3ms
	Initial $T_J = T_J$ max.	400	A	t = 10ms 100% V_{RRM} reapplied
		420	A	t = 8.3ms
I^2t	Maximum I²t for fusing	1130	A^2s	t = 10ms No voltage reapplied
	initial $T_J = T_J$ max.	1030	A^2s	t = 8.3ms
		800	A^2s	t = 10ms 100% V_{RRM} reapplied
		730	A^2s	t = 8.3ms
$I^2\sqrt{t}$	Maximum $I^2\sqrt{t}$ for fusing	11300	$A^2\sqrt{s}$	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	6.33	mΩ	T_J = 125°C
V_{FM}	Maximum forward voltage drop	1.45	V	I_{FM} = 30 Apk T_J = 25°C
		1.25	V	I_{FM} = 30 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	0.60	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	200	250	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
30HFU(R)-100	100	110	2.5	10	35
30HFU(R)-200	200	220	2.5	10	35
30HFU(R)-300	300	330	2.5	10	35
30HFU(R)-400	400	440	2.5	10	35
30HFU(R)-500	500	550	2.5	15	35
30HFU(R)-600	600	660	2.5	15	35

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°	0.09	0.08	K/W	
120°	0.12	0.14	K/W	
90°	0.16	0.18	K/W	
60°	0.23	0.24	K/W	
30°	0.35	0.36	K/W	

Fig.1 – Maximum Forward Energy Loss Per Pulse Characteristics

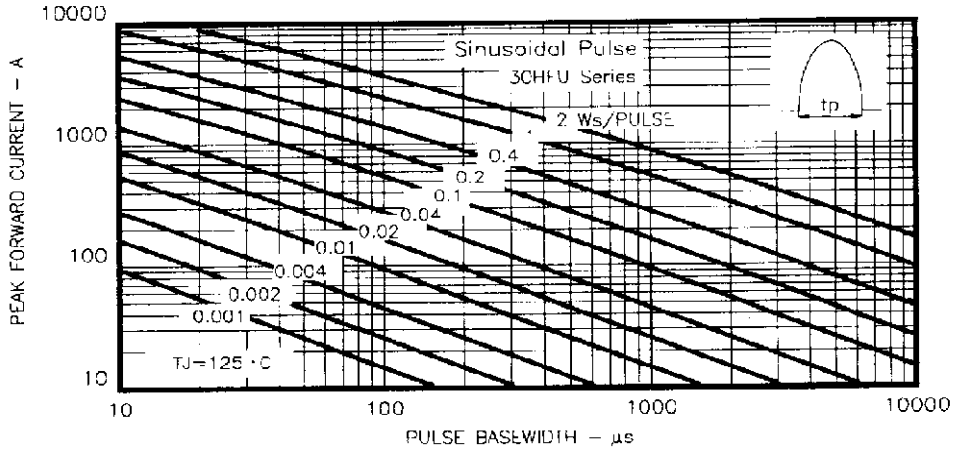


Fig.2 – Maximum Forward Energy Loss Per Pulse Characteristics

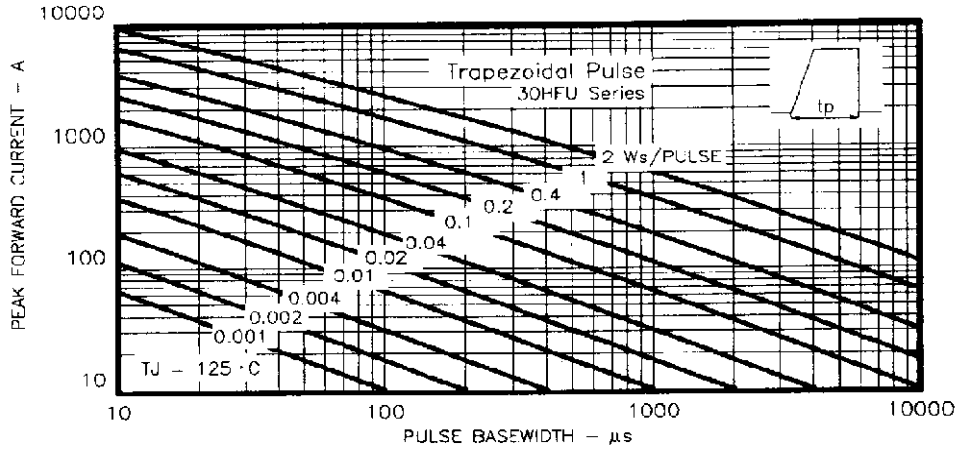


Fig. 3 – CURRENT RATINGS CHARACTERISTICS

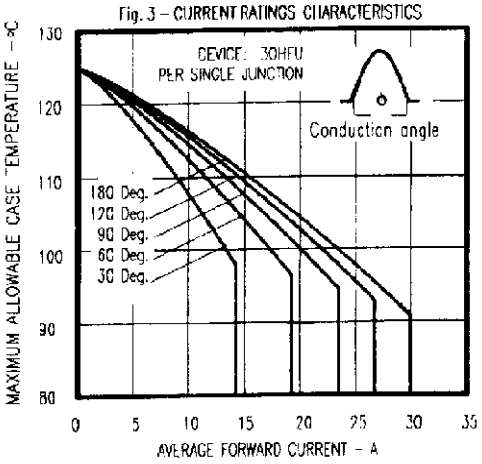


Fig. 4 – CURRENT RATINGS CHARACTERISTICS

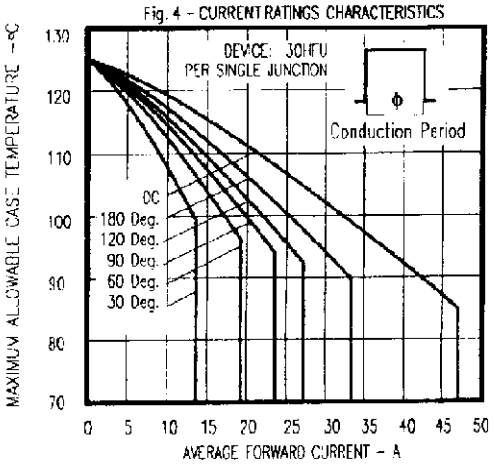


Fig. 5 – FORWARD POWER LOSS CHARACTERISTICS

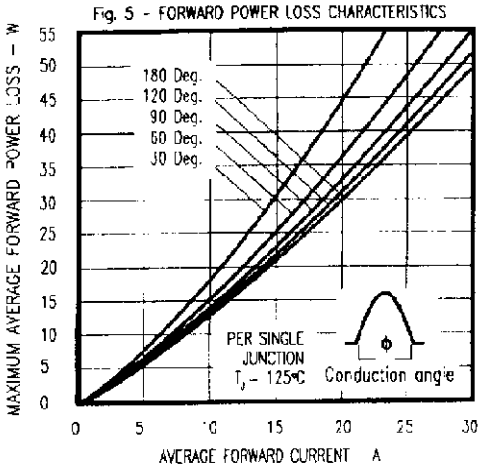


Fig. 6 – FORWARD POWER LOSS CHARACTERISTICS

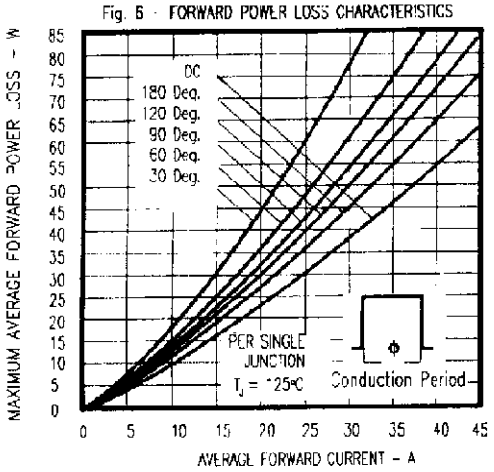


Fig. 7 – MAXIMUM NON-REPETITIVE SURGE CURRENT

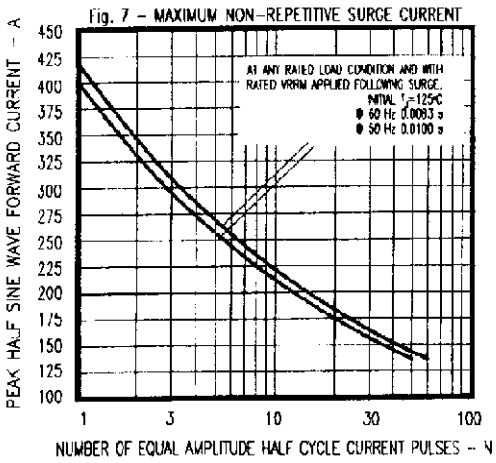


Fig. 8 – MAXIMUM NON-REPETITIVE SURGE CURRENT

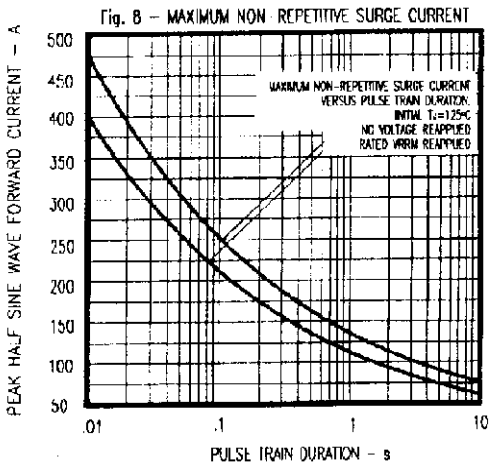


Fig. 9 – FORWARD VOLTAGE DROP CHARACTERISTICS

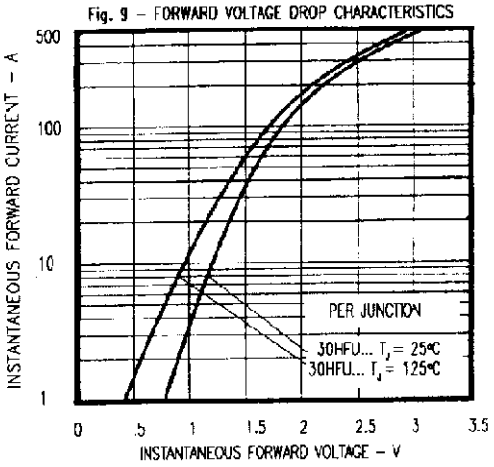


Fig. 10 – THERMAL IMPEDANCE Zthjc CHARACTERISTICS

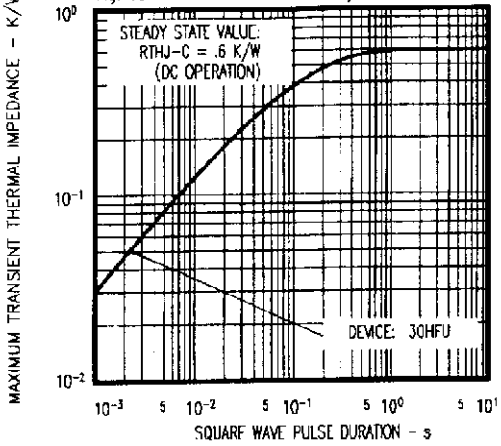


Fig. 11 – RECOVERY TIME CHARACTERISTICS

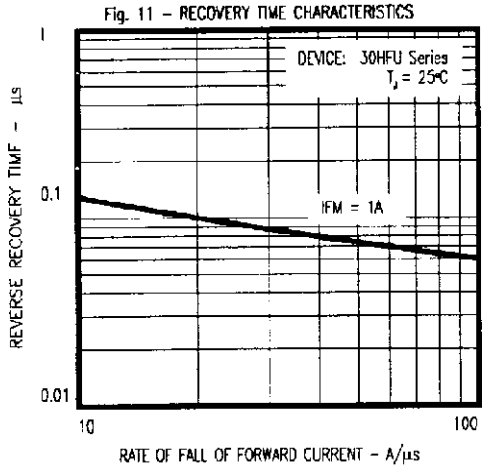
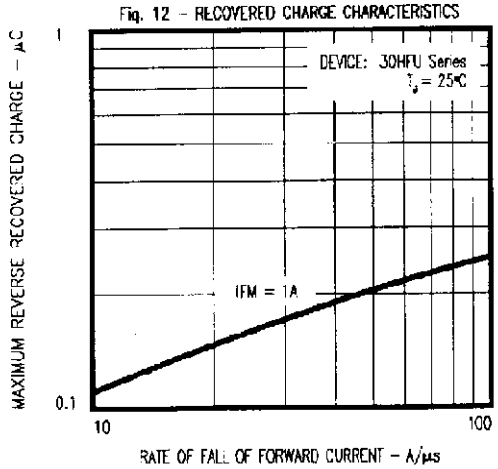


Fig. 12 – RECOVERED CHARGE CHARACTERISTICS



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