



INTERNATIONAL RECTIFIER

S34B & S34BH SERIES

1200-600 VOLTS RANGE

1115 AMP RMS, RING AMPLIFYING GATE

PHASE CONTROL TYPE HOCKEY PUK SCRs

VOLTAGE RATINGS

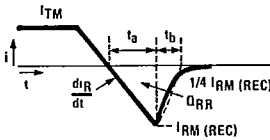
PART NUMBER		$V_{RRM}, V_{DRM} - [V]$ Max. rep. peak reverse and off-state voltage	$V_{RSM} - [V]$ Max. non-rep. peak reverse voltage $t_p \leq 5ms$	NOTES
		$T_J = -40^\circ C$ to max. rated	$T_J = 25^\circ C$ to max. rated	
S34B12A	S34BH12A	1200	1300	Gate open
S34B10A	S34BH10A	1000	1100	
S34B8B	S34BH8B	800	800	
S34B6B	S34BH6B	600	700	

MAXIMUM ALLOWABLE RATINGS

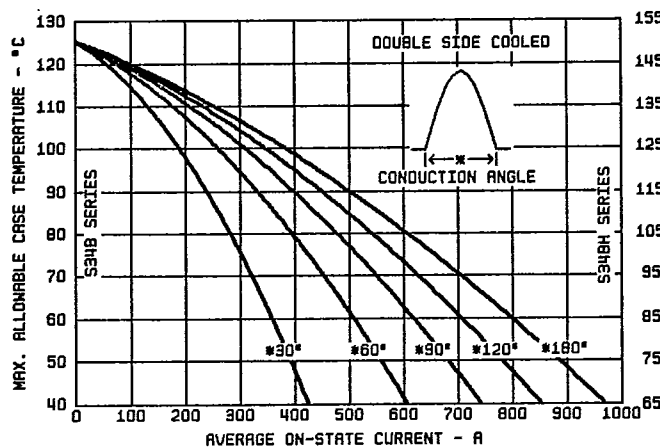
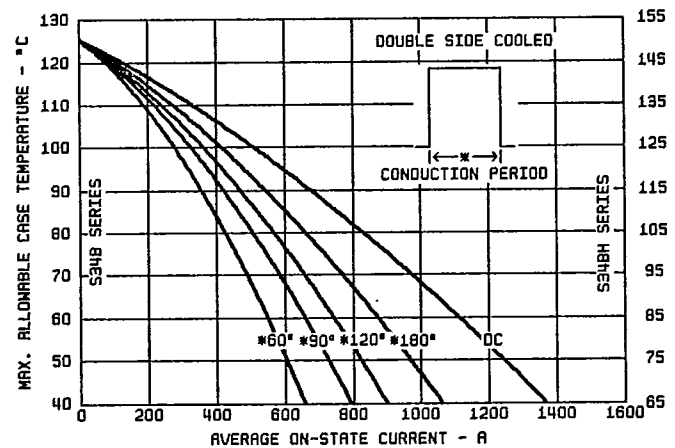
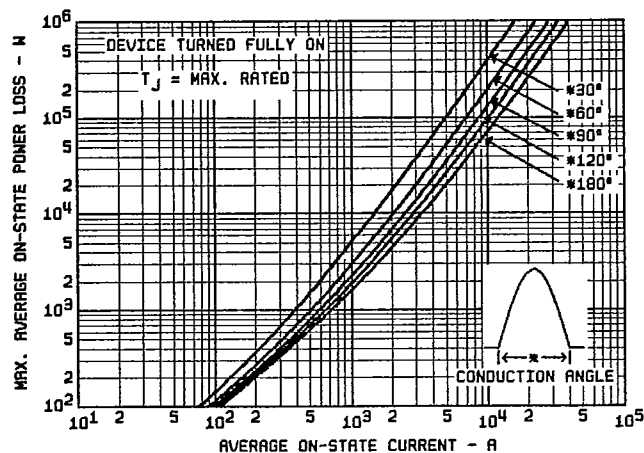
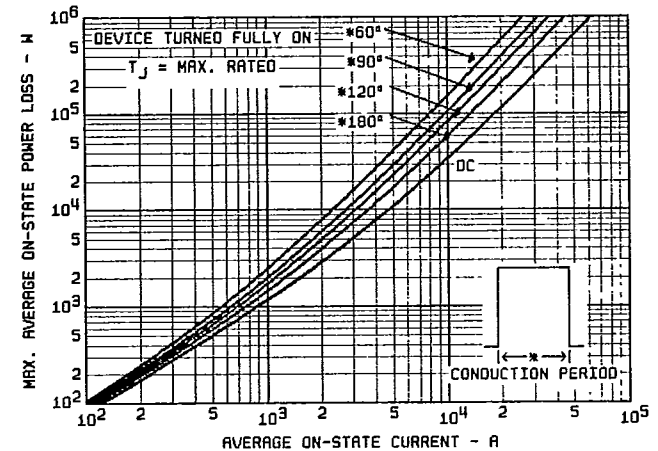
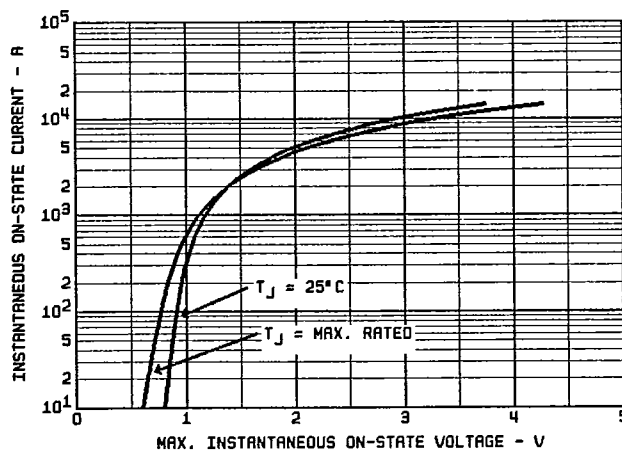
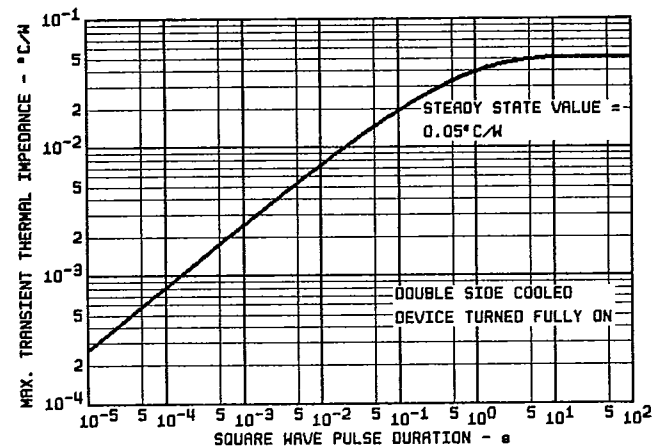
PARAMETER	SERIES	VALUE	UNITS	NOTES
T_J Junction temperature	S34B	-40 to 125	$^{\circ}\text{C}$	
	S34BH	-40 to 150		
T_{stg} Storage temperature	ALL	-40 to 150	$^{\circ}\text{C}$	
$I_{T(AV)}$ Max. av. current	ALL	710	A	180° half sine wave
@ Max. T_C	S34B	70	$^{\circ}\text{C}$	
	S34BH	85		
$I_{T(RMS)}$ Nom. RMS current	ALL	1115	A	
I_{TSM} Max. peak non-rep. surge current	ALL	13350	A	50Hz half cycle sine wave Initial $T_J = 125^{\circ}\text{C}$, rated V_{RRM} applied after surge.
		14000		60Hz half cycle sine wave
		15900		50Hz half cycle sine wave Initial $T_J = 125^{\circ}\text{C}$, no voltage applied after surge.
		16650		60Hz half cycle sine wave
I^2t Max. I^2t capability	ALL	894	kA^2s	$t = 10\text{ms}$ Initial $T_J = 125^{\circ}\text{C}$, rated V_{RRM} applied after surge.
		816		$t = 8.3\text{ms}$
		1285		$t = 10\text{ms}$ Initial $T_J = 125^{\circ}\text{C}$, no voltage applied after surge.
		1155		$t = 8.3\text{ms}$
$I^2\sqrt{t}$ Max. $I^2\sqrt{t}$ capability	ALL	12650	$\text{kA}^2\sqrt{\text{s}}$	Initial $T_J = 125^{\circ}\text{C}$, no voltage applied after surge. I^2t for time $t_x = I^2\sqrt{t} \cdot \sqrt{t_x}$. $0.1 \leq t_x \leq 10\text{ms}$.
di/dt Max. non-rep. rate-of-rise of current	ALL	800	A/ μs	$T_J = 125^{\circ}\text{C}$, $V_D = V_{DRM}$, $I_{TH} = 1600\text{A}$. Gate pulse: 20V, 20n, 10 μs , 0.5 μs rise. Max. repetitive di/dt is approximately 40% of non-repetitive value.
P_{GM} Max. peak gate power	ALL	16	W	$t_p \leq 5\text{ms}$
$P_{G(AV)}$ Max. av. gate power	ALL	3	W	
$+I_{GM}$ Max. peak gate current	ALL	4	A	$t_p \leq 5\text{ms}$
$-V_{GM}$ Max. peak neg. gate voltage	ALL	5	V	
F Mounting force	ALL	12250(2750) $\pm 10\%$	N(lbf)	

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CHARACTERISTICS

PARAMETER	SERIES	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
V_{TH} Peak on-state voltage	ALL	—	1.30	1.45	V	Initial $T_J = 25^{\circ}\text{C}$, 60Hz half sine, $I_{peak} = 2230\text{A}$.
$V_{T(TO)1}$ Low-level threshold	ALL	—	—	0.835	V	$T_J = \text{max. rated}$ $\text{Av. power} = V_{T(TO)} \cdot I_{T(AV)} + r_T \cdot [I_{T(RMS)}]^2$ Use low level values for $I_{TH} \leq \pi I_{T(AV)}$
$V_{T(TO)2}$ High-level threshold		—	—	0.982		
r_{T1} Low-level resistance	ALL	—	—	0.290	m Ω	
r_{T2} High-level resistance		—	—	0.234		
I_L Latching current	ALL	—	200	—	mA	$T_C = 25^{\circ}\text{C}$, 12V anode. Gate pulse: 10V, 20 Ω , 100 μs .
I_H Holding current	ALL	—	70	500	mA	$T_C = 25^{\circ}\text{C}$, 12V anode. Initial $I_T = 10\text{A}$.
t_d Delay time	ALL	—	0.5	1.5	μs	$T_C = 25^{\circ}\text{C}$, $V_D = V_{DRM}$, 50A resistive load. Gate pulse: 10V, 20 Ω , 10 μs , 1 μs rise.
t_q Turn-off time	S34B	—	100	—	μs	$T_J = \text{max. rated}$, $I_{TH} = 500\text{A}$, $di_R/dt = 25\text{A}/\mu\text{s}$, $V_R = 50\text{V}$, $dv/dt = 20\text{V}/\mu\text{s}$ lin. to rated V_{DRM} . Gate: 0V, 100 Ω .
	S34BH	—	130	—		
t_a Reverse current rise	ALL	—	12	—	μs	$T_J = 125^{\circ}\text{C}$, $I_{TH} = 500\text{A}$, $di_R/dt = 2.5\text{A}/\mu\text{s}$. 
t_b Reverse current fall	ALL	—	3.7	—	μs	
$I_{RM(REC)}$ Reverse current	ALL	—	30	—	A	
Q_{RR} Recovered charge	ALL	—	235	—	μC	
dv/dt Critical rate-of-rise of voltage	ALL	500	700	—	V/ μs	$T_J = 125^{\circ}\text{C}$. Exp. to 100% or lin. Higher dv/dt values to 80% V_{DRM} , gate open. available.
		1000	—	—		$T_J = 125^{\circ}\text{C}$. Exp. to 67% V_{DRM} , gate open.
I_{RM} , I_{DM} Peak reverse and off-state current	S34B	—	20	50	mA	$T_J = 125^{\circ}\text{C}$. Rated V_{RRM} and V_{DRM} , gate open.
	S34BH	—	35	120		$T_J = 150^{\circ}\text{C}$
I_{GT} DC gate current to trigger	ALL	—	—	300	mA	$T_C = -40^{\circ}\text{C}$ +12V anode. For recommended gate drive see "Gate Characteristics" figure.
		50	80	150		$T_C = 25^{\circ}\text{C}$
V_{GT} DC gate voltage to trigger	ALL	—	—	3.3	V	$T_C = -40^{\circ}\text{C}$
		—	1.2	2.5		$T_C = 25^{\circ}\text{C}$
V_{GD} DC gate voltage not to trigger	ALL	—	—	0.3	V	$T_C = 125^{\circ}\text{C}$. Max. value which will not trigger with rated V_{DRM} anode.
R_{thJC} Thermal resistance, junction-to-case	ALL	—	—	0.050	$^{\circ}\text{C}/\text{W}$	DC operation, double side
	ALL	—	—	0.057	$^{\circ}\text{C}/\text{W}$	180 $^{\circ}$ sine wave, double side
	ALL	—	—	0.059	$^{\circ}\text{C}/\text{W}$	120 $^{\circ}$ rectangular wave, double side
R_{thCS} Thermal resistance, case-to-sink	ALL	—	—	0.030	$^{\circ}\text{C}/\text{W}$	Mtg. surface smooth, flat and greased. Single side. For double side, divide value by 2.
wt Weight	ALL	—	255(9.0)	—	g(oz.)	
Case Style	ALL	T0-200AC		JEDEC		

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**S34B & S34BH SERIES
1200-600 VOLTS RANGE****Fig. 1 — Case Temperature Ratings — Sinusoidal Waveforms, 50 to 400 Hz****Fig. 2 — Case Temperature Ratings — Rectangular Waveforms, 50 to 400 Hz****Fig. 3 — Power Loss Characteristics — Sinusoidal Waveforms****Fig. 4 — Power Loss Characteristics — Rectangular Waveforms****Fig. 5 — On-State Characteristics****Fig. 6 — Transient Thermal Impedance, Junction-to-Case**

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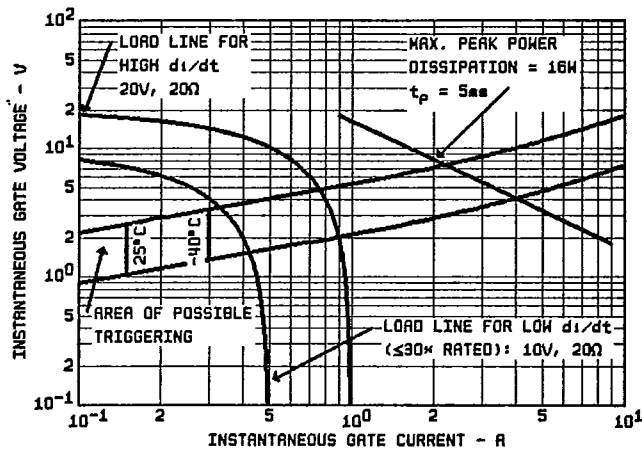


Fig. 7 — Gate Characteristics

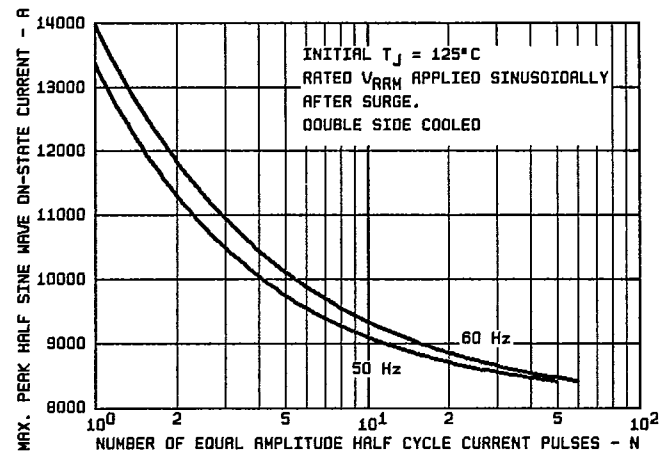
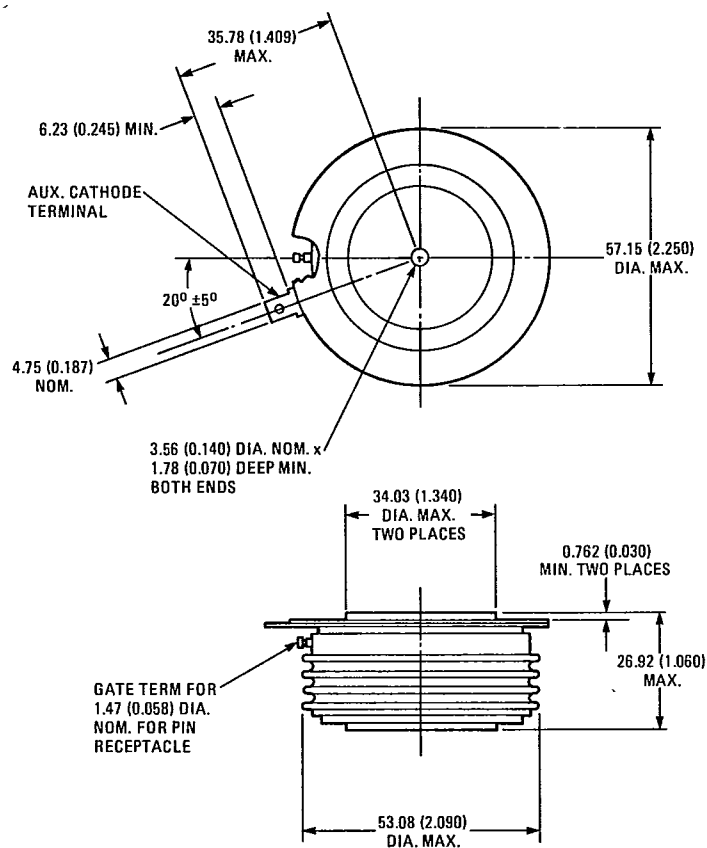


Fig. 8 — Non-Repetitive Surge Current Ratings



ANODE TO GATE
 CREEPAGE DISTANCE: 36.33 (1.430) MIN.
 STRIKE DISTANCE: 17.43 (0.686) MIN.

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 YOUR INTERNATIONAL RECTIFIER SALES OFFICE
 OR DISTRIBUTOR.

Conforms to JEDEC Outline TO-200AC
 Dimensions in Millimeters and (Inches)