

INTERNATIONAL RECTIFIER



P200 SERIES

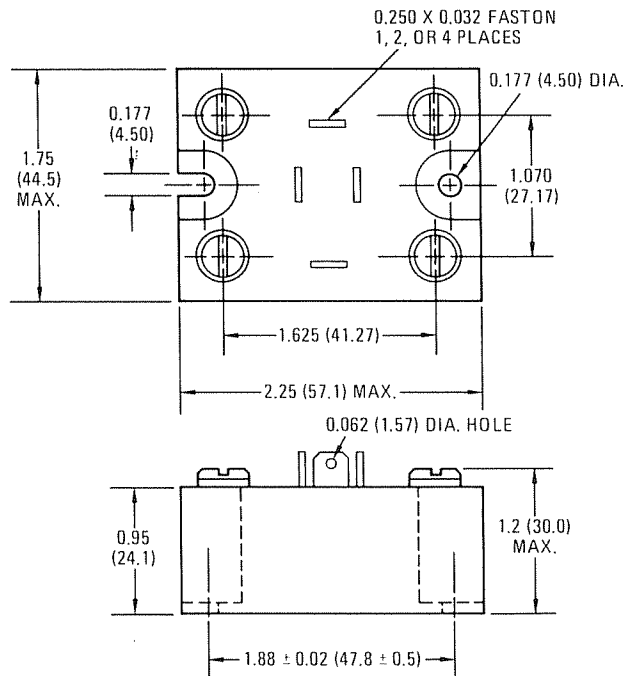
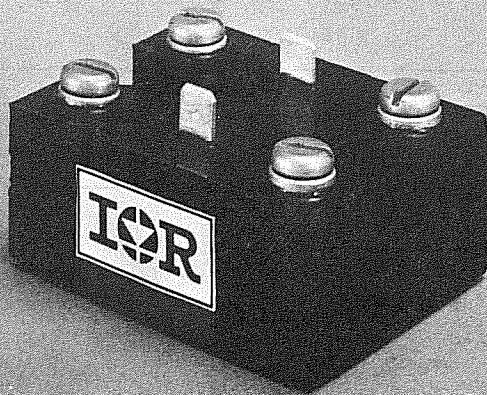
passivated assembled circuit elements

42.5 Amp PACE/pak

Maximum Ratings

	P200	Units
I_d	42.5	Adc
I_{TSM}	600	A
V_{RMS}	120, 240	V

- For 120 and 240 volts RMS
- 600 amp surge rating
- Hard glass passivation for greater reliability
- Electrically isolated baseplate
- Ease of assembly, installation, inventory



Case Style P200

All Dimensions in Inches and (Millimeters)

ELECTRICAL SPECIFICATIONS

SERIES ①		P200	UNITS	CONDITIONS
ON-STATE				
I_d	Max. DC output current	42.5	A dc	$T_C = 75^\circ\text{C}$, full conduction
I_{TSM}	Max. peak one cycle, non-repetitive surge current	600	A	60 Hz half sine wave, following any rated load condition.
I^2t	Max. I^2t for fusing	1500	A^2sec	$t = 5$ to 8.3 msec
		900	A^2sec	$t = 1.5$ msec
I_H	Typical holding current	20	mA	$T_C = 25^\circ\text{C}$, $V_D = 22\text{V}$ Initial $I_T = 2\text{A}$
t_d	Typical delay time	1.0	μsec	$T_C = 25^\circ\text{C}$, $V_{DM} = \text{rated } V_{DRM}$, $I_{TM} = 50\text{A}$, Gate pulse: 10V , 25Ω source, $t_p = 20 \mu\text{sec}$, $t_r = 0.1 \mu\text{sec}$, $V_G(\text{Bias}) = 0$
di/dt	Max. non-repetitive rate-of-rise of turned on current	100	$\text{A}/\mu\text{sec}$	$T_C = 125^\circ\text{C}$, $V_{DM} = \text{rated } V_{DRM}$, $I_{TM} = 200\text{A}$, $60\text{p}/\text{sec}$. Gate pulse: 20V , 15Ω source, $t_p = 6 \mu\text{sec}$ min., $t_r = 0.1 \mu\text{sec}$ max.
t_q	Typical turn-off time	40	μsec	$T_C = 125^\circ\text{C}$, $I_{TM} = 50\text{A}$, $di/dt = 5\text{A}/\mu\text{sec}$, $V_R = 50\text{V}$, reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ linear to rated V_{DRM}
T_J	Junction operating temperature range	-40 to 125	$^\circ\text{C}$	
BLOCKING				
dv/dt	Min. critical rate-of-rise of off-state voltage ②	20	$\text{V}/\mu\text{sec}$	$T_C = 125^\circ\text{C}$, exponential to rated V_{DRM}
I_{DRM} & I_{DM}	Max. peak reverse and off-state current			$T_J = 125^\circ\text{C}$, V_{RRM} and $V_{DRM} = \text{rated value}$, $V_G = 0\text{V}$, gate open circuited.
	V_{RRM} & $V_{DRM} = 300\text{V}$	14	mA	
	V_{RRM} & $V_{DRM} = 600\text{V}$	7	mA	
	Isolation Voltage	1500	V_{RMS}	Base plate to any terminal.
TRIGGERING				
P_{GM}	Max. peak gate power	10	W	0.5 msec pulse width
$P_{G(AV)}$	Max. average gate power	2	W	
$+I_{GM}$	Max. peak positive gate current	3	A	
$-V_{GM}$	Max. peak negative gate voltage	5	V	
I_{GT}	Max. required gate current to trigger ③	200	mA	$V_D = 6\text{V}$, $T_C = -40^\circ\text{C}$
		110	mA	$V_D = 6\text{V}$, $T_C = 25^\circ\text{C}$
		50	mA	$V_D = 6\text{V}$, $T_C = 125^\circ\text{C}$
I_{GT}	Typical gate current to trigger	50	mA	$V_D = 6\text{V}$, $T_C = 25^\circ\text{C}$
V_{GT}	Max. required gate voltage to trigger ④	4.0	V	$V_D = 6\text{V}$, $T_C = -40^\circ\text{C}$
		3.0	V	$V_D = 6\text{V}$, $T_C = 25^\circ\text{C}$
		1.2	V	$V_D = 6\text{V}$, $T_C = 25^\circ\text{C}$
	Typical gate voltage to trigger	1.2	V	$V_D = 6\text{V}$, $T_C = 25^\circ\text{C}$
	Min. required gate voltage to trigger ④	0.10	V	$V_D = \text{rated } V_{DRM}$, $T_C = 125^\circ\text{C}$

MECHANICAL SPECIFICATIONS

T_{stg}	Storage temperature range ($^\circ\text{C}$)	-40 to 150	$^\circ\text{C}$	
$R_{\theta CS}$	Thermal resistance, case-to-sink	0.1	$^\circ\text{C}/\text{W}$	Mounting surface flat, within 0.005 inch and greased
	Approximate Weight	3.0	oz.	

NOTES

- ① See circuits for all available part numbers.
- ② Higher dv/dt ratings available on request.
- ③ Max. required gate trigger current (or voltage) is the lowest value which will trigger all units under conditions shown.
- ④ Min. required gate trigger current (or voltage) is the lowest value below which no unit will trigger under conditions shown.

VOLTAGE RATINGS AND CIRCUITS

	Circuit BC		Circuit BA		Circuit BD		Circuit BS		Circuit A		Circuit DA		Circuit DS	
Terminal Positions														
Schematic Diagram														
	Single Phase, Hybrid Bridge, Common Cathode		Single Phase, Hybrid Bridge, Common Anode		Single Phase, Hybrid Bridge, Doubler Connection		Single Phase, All SCR Bridge		SCR AC Switch		Hybrid Doubler		SCR Doubler	
Basic series	P201	P202	P211	P212	P221	P222	P231	P232	P241	P242	P261	P262	P271	P272
With voltage suppression	P201K	P202K	P211K	P212K	P221K	P222K	P231K	P232K	P241K	P242K	-	-	-	-
With free-wheeling diode	P201W	P202W	P211W	P212W	-	-	-	-	-	-	-	-	-	-
With both voltage suppression and free-wheeling diode	P201KW	P202KW	P211KW	P212KW	-	-	-	-	-	-	-	-	-	-
V _{RMS} - Max. RMS Voltage	120	240	120	240	120	240	120	240	120	240	120	240	120	240

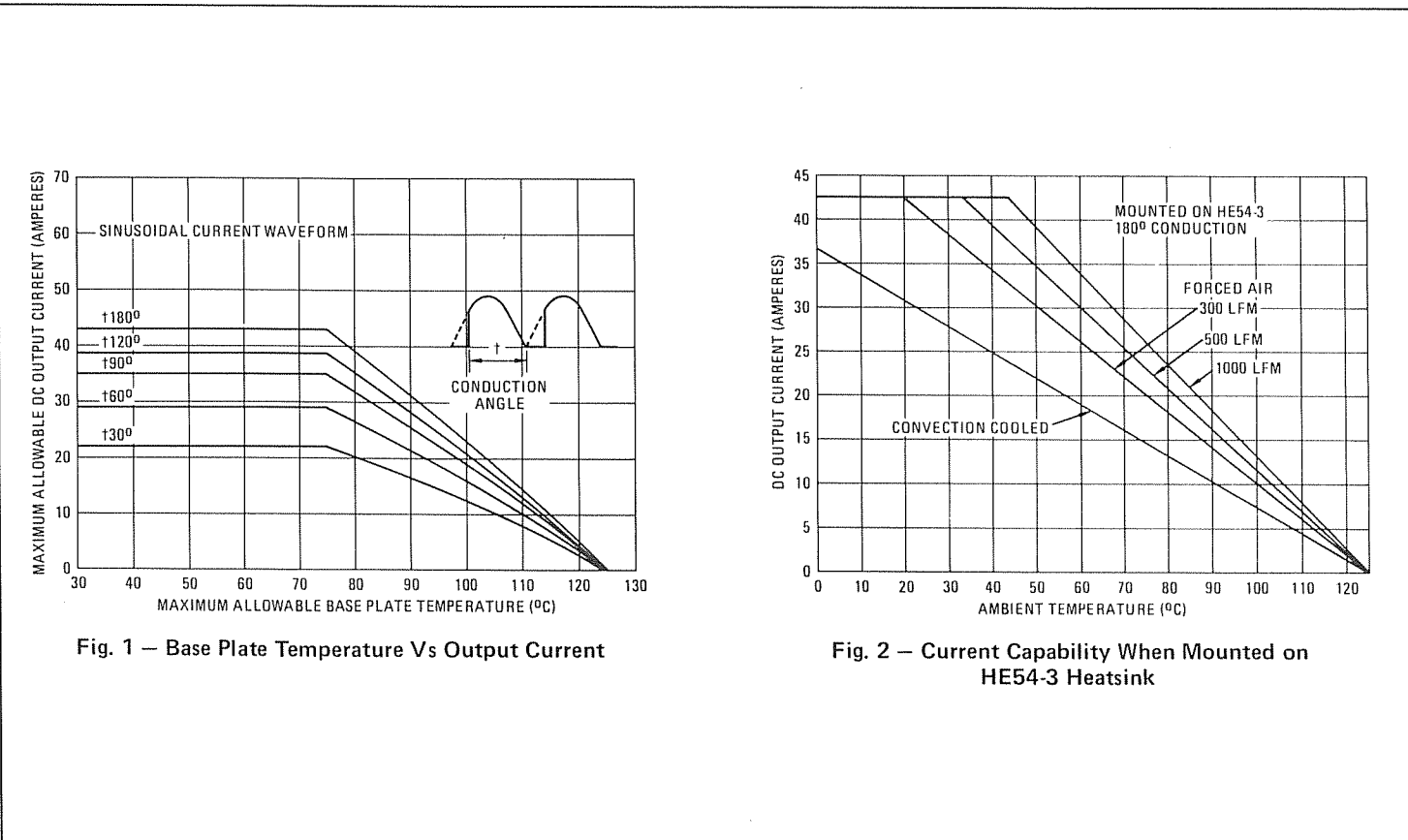


Fig. 1 - Base Plate Temperature Vs Output Current

Fig. 2 - Current Capability When Mounted on HE54-3 Heatsink

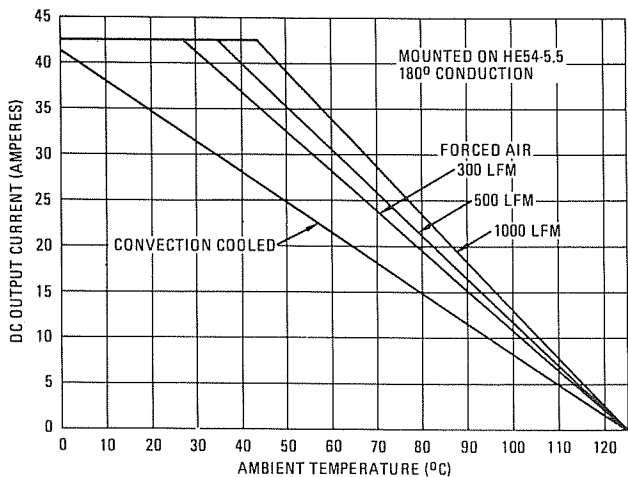


Fig. 3 - Current Capability When Mounted on HE54-5.5 Heatsink

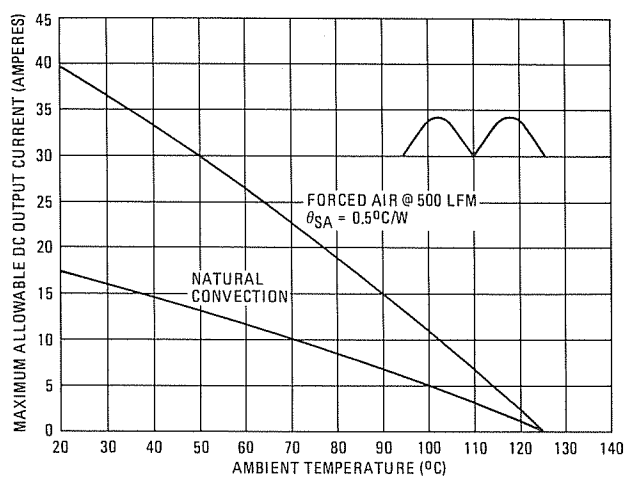


Fig. 4 - Current Capability When Mounted on Aluminum Cabinet

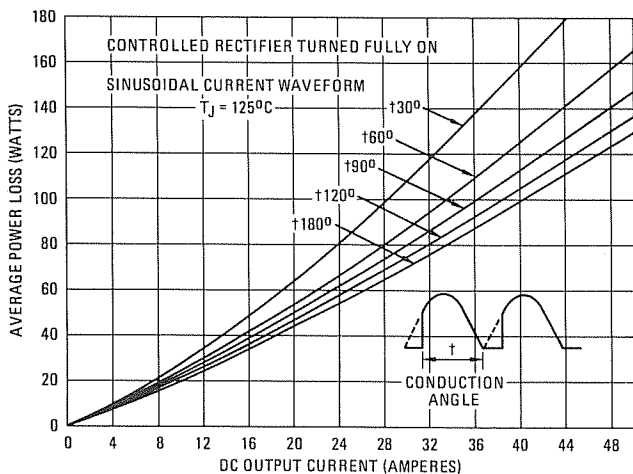


Fig. 5 - Low-Level Power Loss Vs Output Current (For P231 and P232 multiply power by 1.4)

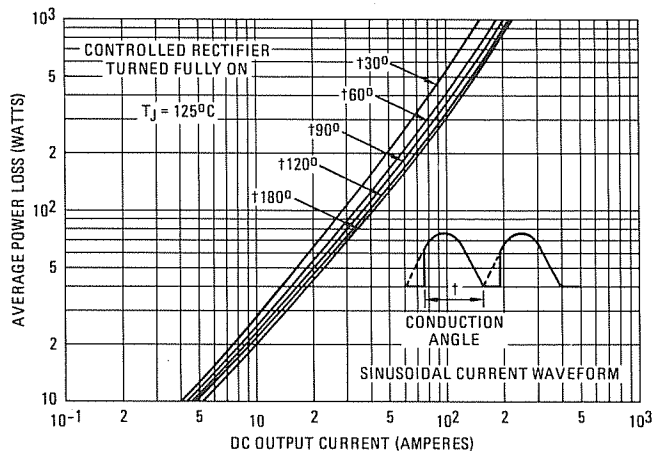


Fig. 6 - High-Level Power Loss Vs Output Current (For P231 and P232 multiply power by 1.4)

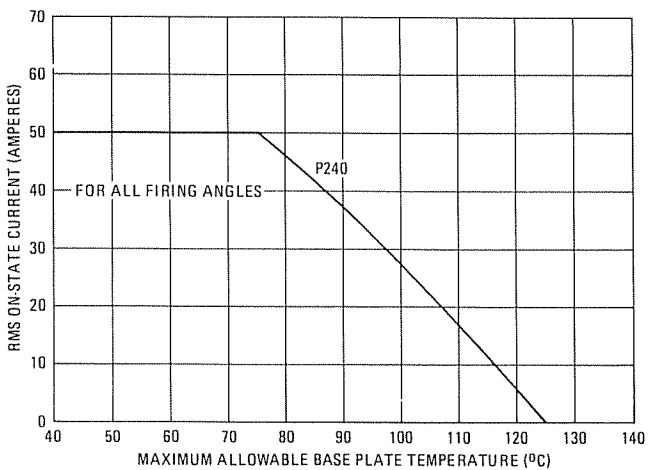


Fig. 7 - On-State Current Vs Base Plate Temperature, P240 Series

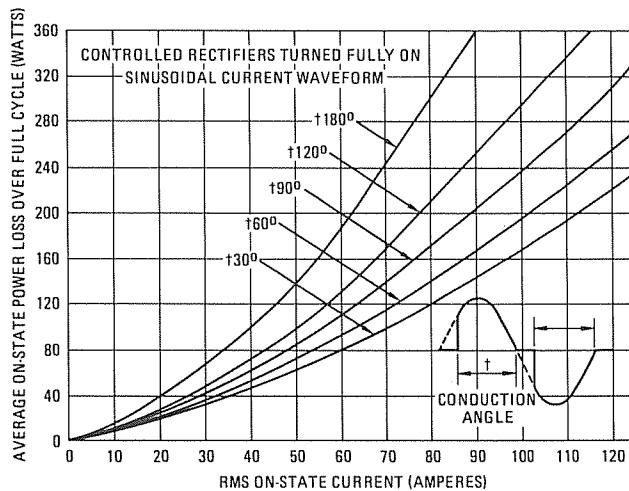


Fig. 8 - Average Power Loss Vs On-State Current, P240 Series

P200 Series, Data Sheet No. PD-4.002A

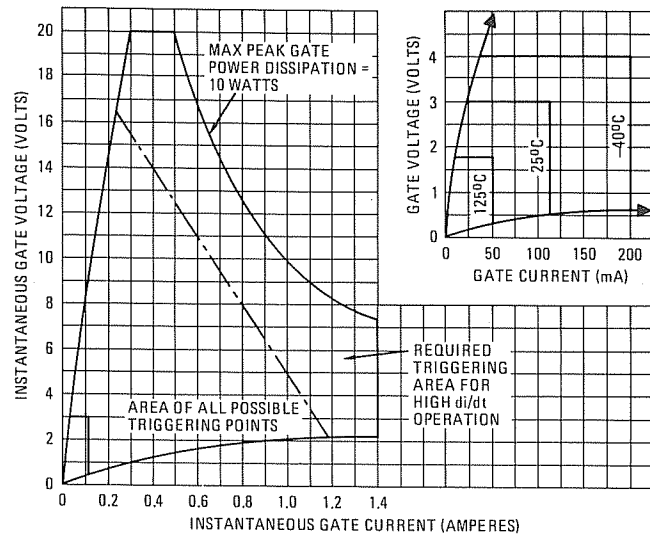


Fig. 9 - Gate Characteristics

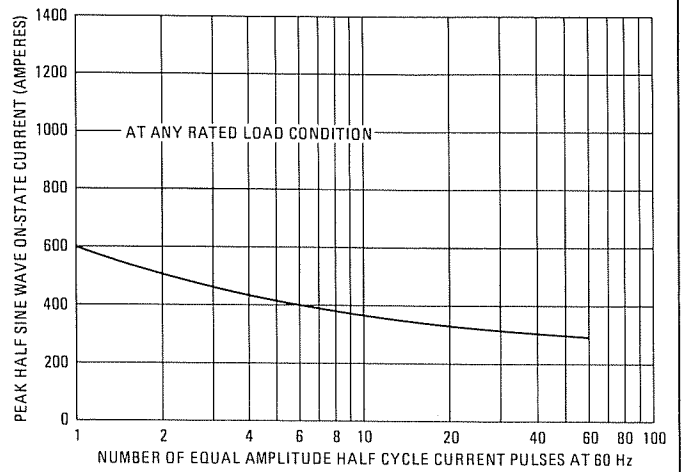


Fig. 10 - Maximum Non-Repetitive Surge Current Vs Number of Current Pulses