

International
IOR Rectifier

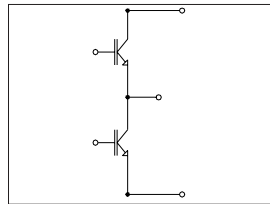
GA200HS60S1PbF

"HALF-BRIDGE" IGBT INT-A-PAK

Standard Speed IGBT

Features

- Generation 4 IGBT Technology
- Standard speed: optimized for hard switching operating frequencies up to 1000 Hz
- Very Low Conduction Losses
- Industry standard package
- TOTALLY LEAD-FREE



$$V_{CES} = 600V$$

$$V_{CE(on) \text{ typ.}} = 1.13V @$$

$$V_{GE} = 15V, I_C = 200A$$

$$T_J = 25^\circ C$$

Benefits

- Increased operating efficiency
- Direct mounting to heatsink
- Performance optimized as output inverter stage for TIG welding machines



Absolute Maximum Ratings

Parameters		Max	Units
V_{CES}	Collector-to-Emitter Voltage	600	V
I_C	Continuous Collector Current	@ $T_C = 25^\circ C$	480
		@ $T_C = 110^\circ C$	220
I_{CM}	Pulsed Collector Current	800	
I_{LM}	Peak Switching Current	800	
V_{GE}	Gate-to-Emitter Voltage	± 20	V
V_{ISOL}	RMS Isolation Voltage, Any Terminal to Case, $t = 1 \text{ min}$	2500	
P_D	Maximum Power Dissipation	@ $T_C = 25^\circ C$	830
		@ $T_C = 85^\circ C$	430

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Electrical Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

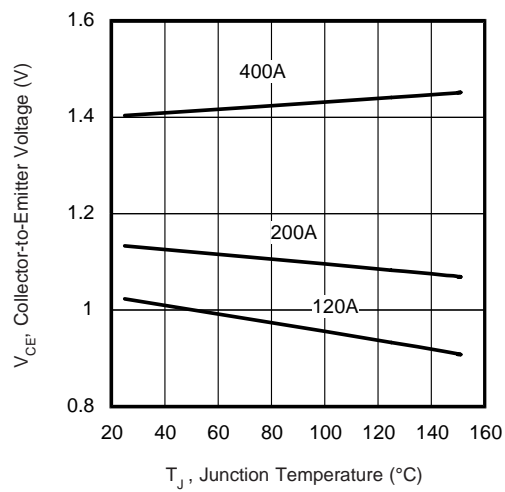
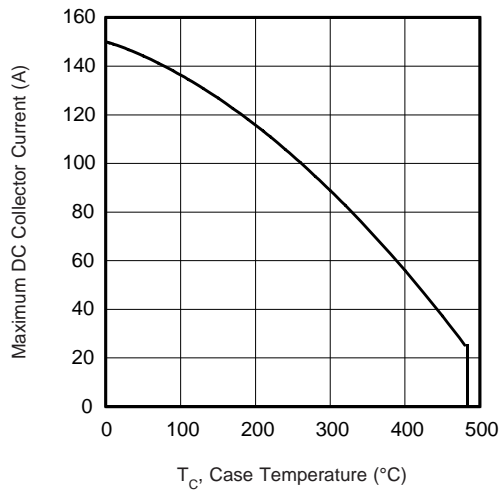
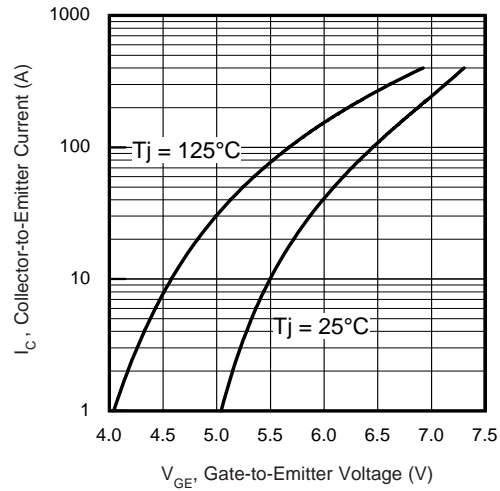
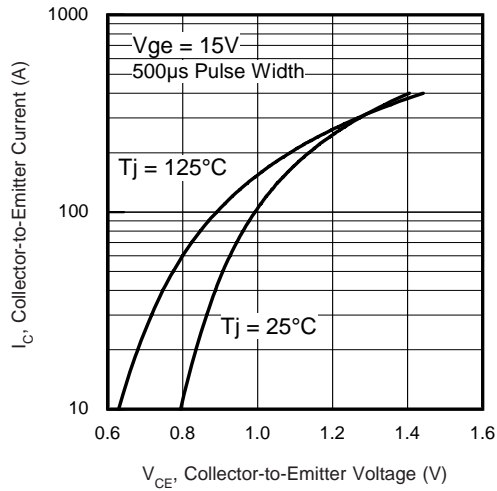
Parameters	Min	Typ	Max	Units	Test Conditions
V_{CES} Collector-to-Emitter Breakdown Voltage	600			V	$V_{GE} = 0V, I_C = 1mA$
$V_{CE(on)}$ Collector-to-Emitter Voltage		1.13	1.21		$V_{GE} = 15V, I_C = 200A$
		1.08	1.18		$V_{GE} = 15V, I_C = 200A, T_J = 125^\circ\text{C}$
$V_{GE(th)}$ Gate Threshold Voltage	3	4.5	6		$I_C = 0.25mA$
I_{CES} Collector-to-Emitter Leakage Current		0.025	1	mA	$V_{GE} = 0V, V_{CE} = 600V$
			10		$V_{GE} = 0V, V_{CE} = 600V, T_J = 125^\circ\text{C}$
I_{GES} Gate-to-Emitter Leakage Current			± 250	nA	$V_{GE} = \pm 20V$

Switching Characteristics @ $T_J = 25^\circ\text{C}$ (unless otherwise specified)

Parameters	Min	Typ	Max	Units	Test Conditions
Q_g Total Gate Charge		1600	1700	nC	$I_C = 200A$
Q_{ge} Gate-Emitter Charge		260	340		$V_{CC} = 400V$
Q_{gc} Gate-Collector Charge		580	670		$V_{GE} = 15V$
E_{on} Turn-On Switching Loss		30		mJ	$I_C = 200A, V_{CC} = 480V, V_{GE} = 15V$
E_{off} Turn-Off Switching Loss		50			$R_g = 10\Omega$
E_{ts} Total Switching Loss		80			free-wheeling DIODE: 30EPH06
E_{on} Turn-On Switching Loss		34		mJ	$I_C = 200A, V_{CC} = 480V, V_{GE} = 15V$
E_{off} Turn-Off Switching Loss		104			$R_g = 10\Omega$
E_{ts} Total Switching Loss		106	121		free-wheeling DIODE: 30EPH06, $T_J = 125^\circ\text{C}$
C_{ies} Input Capacitance		32500		pF	$V_{GE} = 0V$
C_{oes} Output Capacitance		2080			$V_{CC} = 30V$
C_{res} Reverse Transfer Capacitance		380			$f = 1.0\text{ MHz}$

Thermal- Mechanical Specifications

Parameters	Min	Typ	Max	Units
T_J Operating Junction Temperature Range	- 40		150	°C
T_{STG} Storage Temperature Range	- 40		125	
R_{thJC} Junction-to-Case (Per Leg)			0.15	°C/ W
R_{thCS} Case-to-Sink		0.1		
T Mounting torque	Case to heatsink		4	Nm
	Case to terminal 1, 2, 3		3	
Weight		185		g



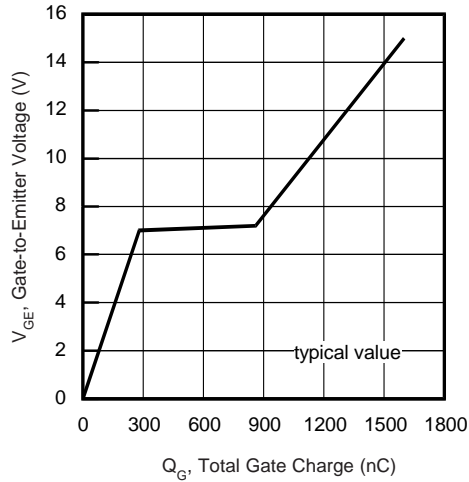


Fig. 5 - Typical Gate Charge vs. Gate-to-Emitter Voltage

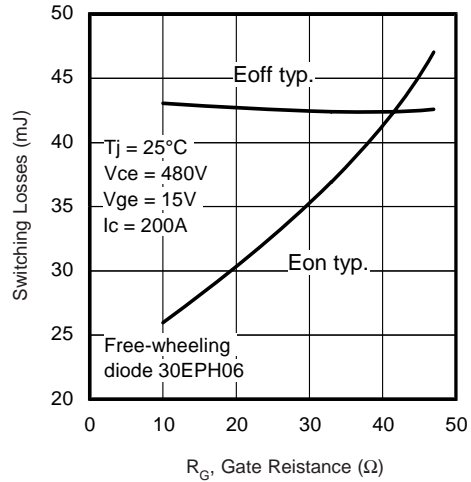


Fig. 6 - Typical Switching Losses vs Gate Resistance

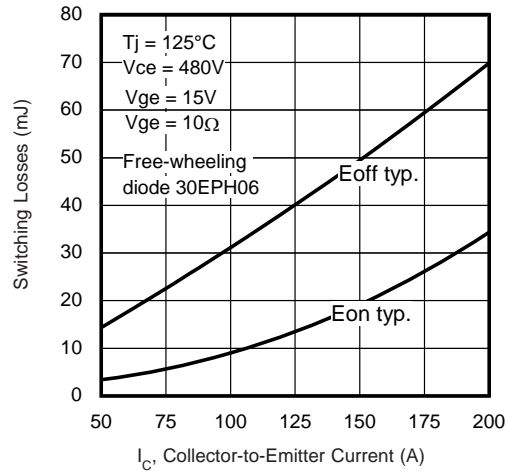
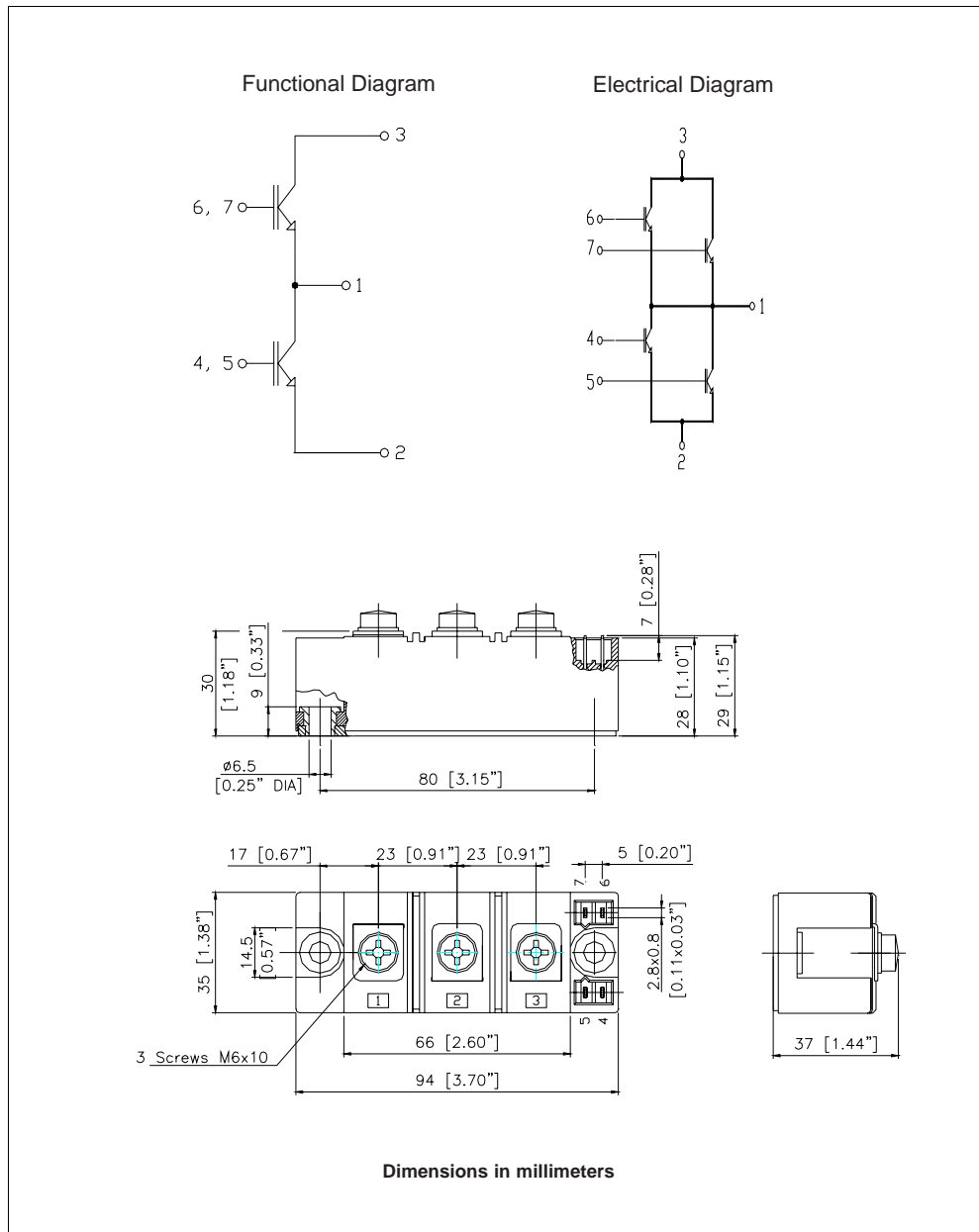


Fig. 7 - Typical Switching Losses vs Collector-to-Emitter Current

Outline Table



Ordering Information Table

Device Code	
	GA 200 H S 60 S 1 PbF
	① ② ③ ④ ⑤ ⑥ ⑦ ⑧
1	- Essential Part Number IGBT modules
2	- Current rating (200 = 200A)
3	- Circuit Configuration (H = Half Bridge without f/w diode)
4	- Int-A-Pak
5	- Voltage Code (60 = 600V)
6	- Speed/ Type (S = Standard Speed IGBT)
7	- Assy location IRCI
8	- PbF = Lead-Free

Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level and Lead-Free.
 Qualification Standards can be found on IR's Web site.

International
IR Rectifier

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