

International
IOR Rectifier

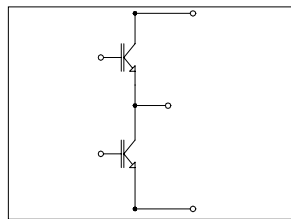
GA200HS60S

"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



$$V_{CES} = 600V$$

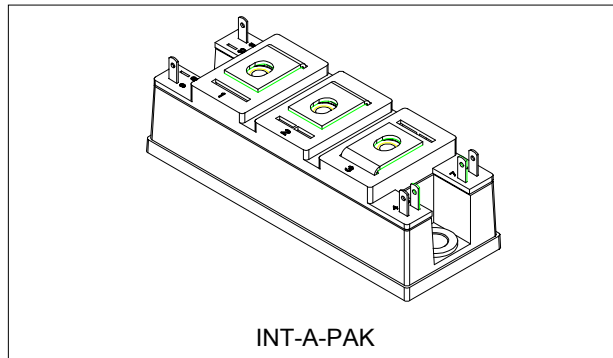
$$V_{CE(on) \text{ typ.}} = 1.19V @$$

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

$$T_J = 25^\circ C$$

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	@ $T_C = 25^\circ C$	A
	@ $T_C = 110^\circ C$	
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	@ $T_C = 25^\circ C$	W
	@ $T_C = 85^\circ C$	

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	$V_{GE} = 0\text{V}$, $I_C = 1\text{mA}$
$V_{CE(on)}$ Collector-to-Emitter Voltage		1.19	1.25		$V_{GE} = 15\text{V}$, $I_C = 200\text{A}$
		1.17	-		$V_{GE} = 15\text{V}$, $I_C = 200\text{A}$, $T_J = 125^\circ\text{C}$
$V_{GE(th)}$ Gate Threshold Voltage	3		6		$I_C = 0.5\text{mA}$
I_{CES} Collector-to-Emitter Leakage Current			1	mA	$V_{GE} = 0\text{V}$, $V_{CE} = 600\text{V}$
			10		$V_{GE} = 0\text{V}$, $V_{CE} = 600\text{V}$, $T_J = 125^\circ\text{C}$
I_{GES} Gate-to-Emitter Leakage Current			± 250	nA	$V_{GE} = \pm 20\text{V}$

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	$I_C = 200\text{A}$ $V_{CC} = 400\text{V}$ $V_{GE} = 15\text{V}$
Q_{ge} Gate-Emitter Charge		260	340		
Q_{gc} Gate-Collector Charge		580	670		
E_{on} Turn-On Switching Loss		27		mJ	$I_C = 200\text{A}$, $V_{CC} = 480\text{V}$, $V_{GE} = 15\text{V}$ $R_g = 10\Omega$ free-wheeling DIODE: 30ETH06
E_{off} Turn-Off Switching Loss		47			
E_{ts} Total Switching Loss		74			
E_{on} Turn-On Switching Loss		29	31	mJ	$I_C = 200\text{A}$, $V_{CC} = 480\text{V}$, $V_{GE} = 15\text{V}$ $R_g = 10\Omega$ free-wheeling DIODE: 30ETH06, $T_J = 125^\circ\text{C}$
E_{off} Turn-Off Switching Loss		77	90		
E_{ts} Total Switching Loss		106	121		
C_{ies} Input Capacitance		32500		pF	$V_{GE} = 0\text{V}$ $V_{CC} = 30\text{V}$ $f = 1.0\text{MHz}$
C_{oes} Output Capacitance		2080			
C_{res} Reverse Transfer Capacitance		380			

Thermal- Mechanical Specifications

Parameters	Min	Typ	Max	Units
T_J Operating Junction Temperature Range	- 40		150	$^\circ\text{C}$
T_{STG} Storage Temperature Range	- 40		125	
R_{thJC} Junction-to-Case			0.15	$^\circ\text{C}/\text{W}$
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

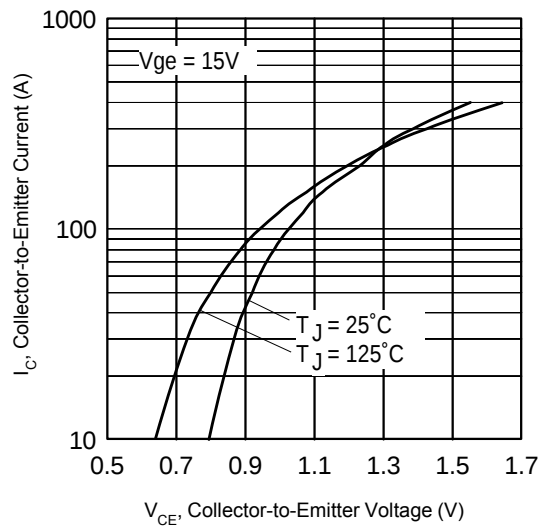


Fig. 1 - Typical Output Characteristics

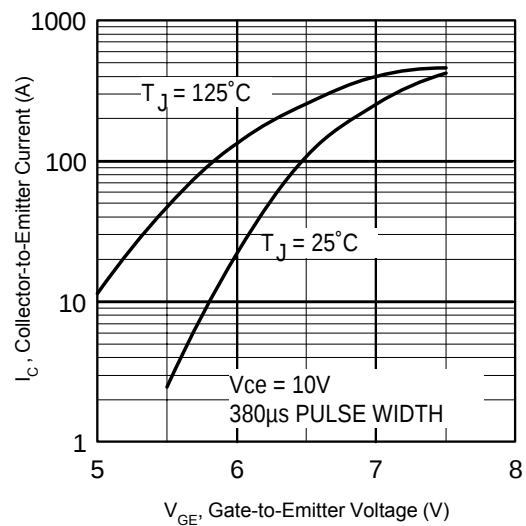


Fig. 2 - Typical Transfer Characteristics

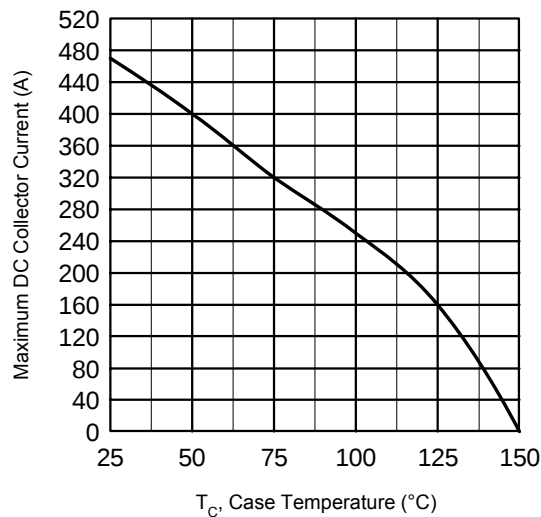


Fig. 3 - Maximum Collector Current vs. Case Temperature

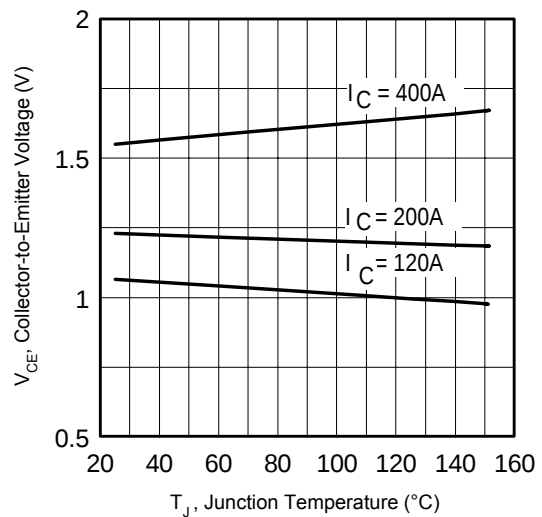


Fig. 4 - Typical Collector-to-Emitter Voltage vs. Junction Temperature

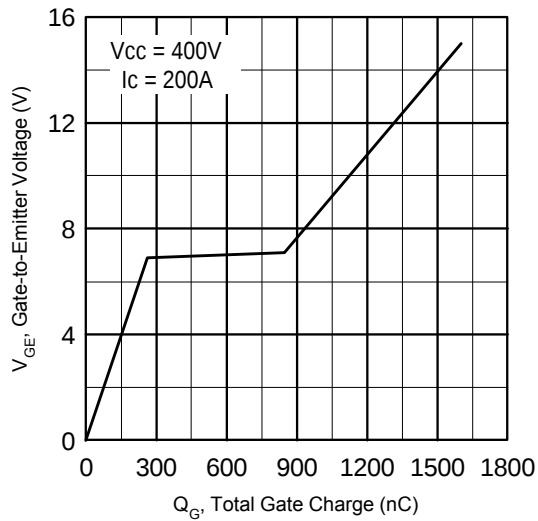


Fig. 5 - Typical Gate Charge vs. Gate-to-Emitter Voltage

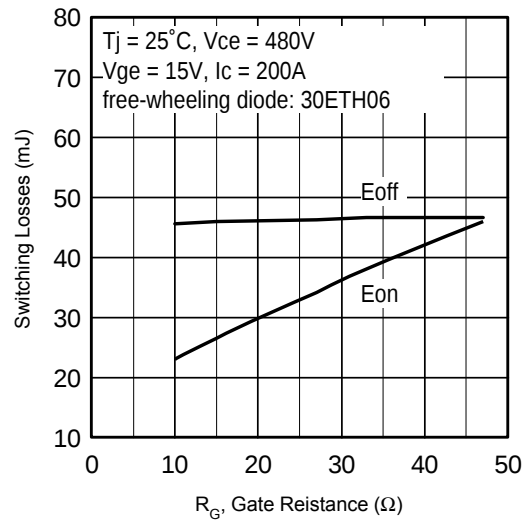


Fig. 6 - Typical Switching Losses vs Gate Resistance

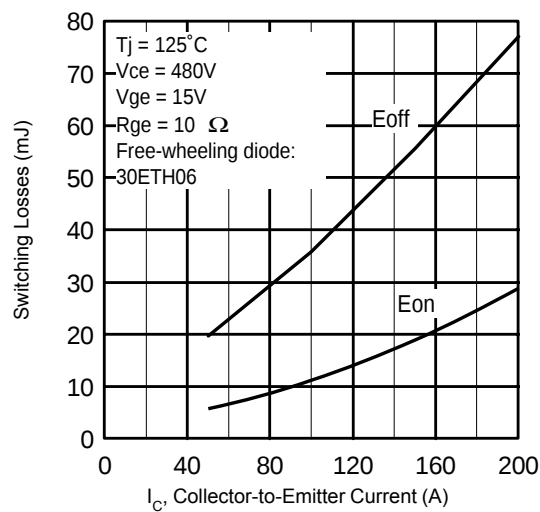
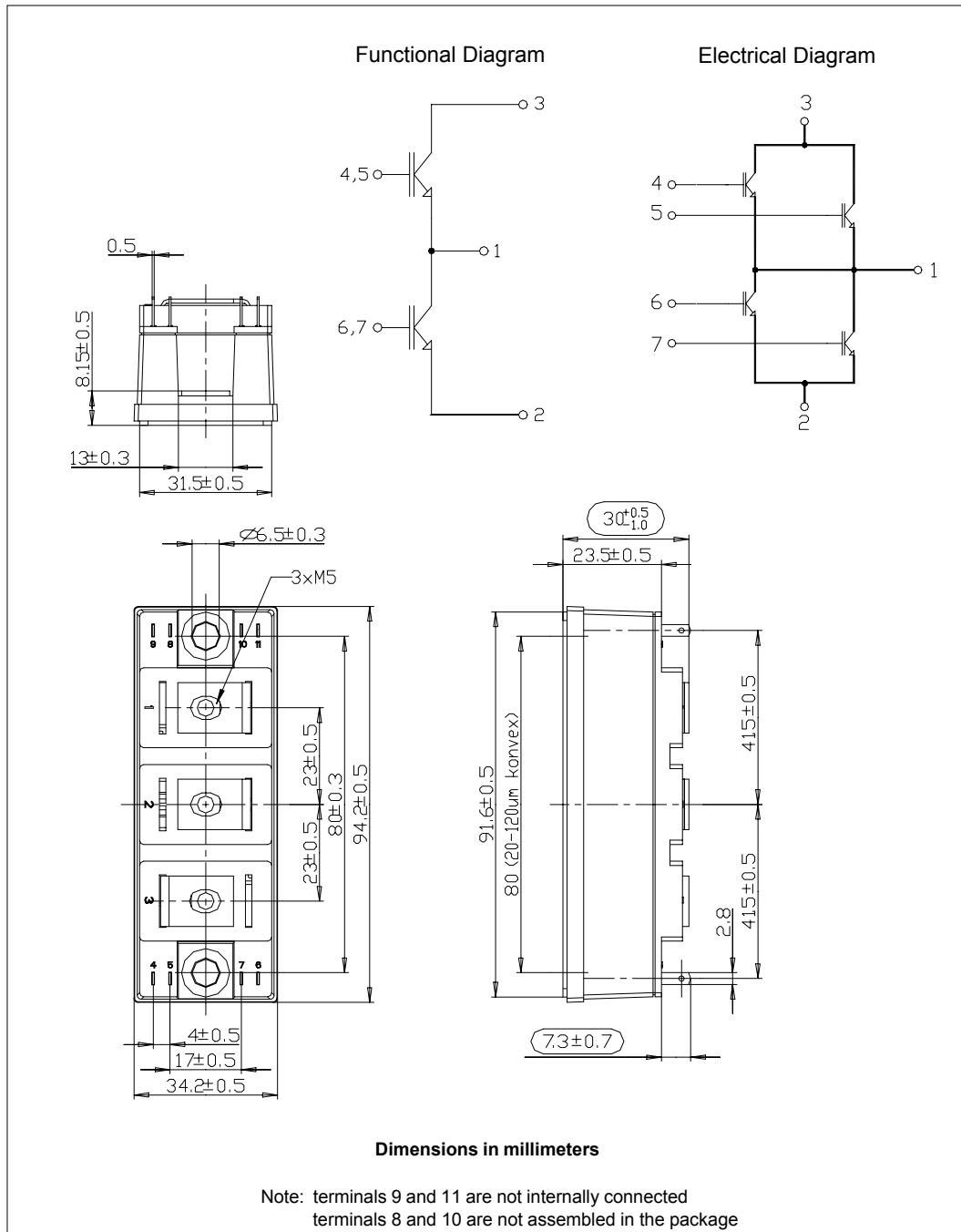


Fig. 7 - Typical Switching Losses vs Collector-to-Emitter Current

Outline Table



Ordering Information Table

Device Code

GA	200	H	S	60	S
1	2	3	4	5	6

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)

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

International
IR Rectifier

IR WORLD HEADQUARTERS: 233 Kansas St., El Segundo, California 90245, USA Tel: (310) 252-7105
TAC Fax: (310) 252-7309
Visit us at www.irf.com for sales contact information. 07/02