

Bulletin I27121 rev. B 07/02

International IOR Rectifier

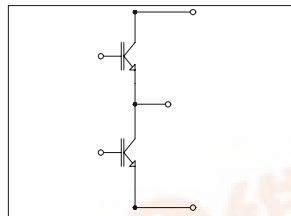
GA200HS60S

"HALF-BRIDGE" IGBT INT-A-PAK

Standard Speed IGBT

Features

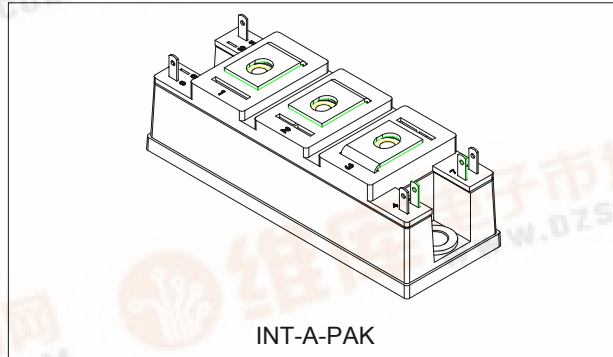
- Generation 4 IGBT Technology
- Standard speed: optimized for hard switching operating frequencies up to 1000 Hz
- Very Low Conduction Losses
- Industry standard package



$V_{CES} = 600V$
 $V_{CE(on) \text{ typ.}} = 1.19V @$
 $V_{GE} = 15V, I_C = 200A$
 $T_J = 25^\circ C$

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	@ $T_C = 25^\circ C$	470
	@ $T_C = 110^\circ C$	200
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

Electrical Characteristics @ T_J = 25°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		1.19	1.25		V _{GE} = 15V, I _C = 200A
			1.17	-		V _{GE} = 15V, I _C = 200A, T _J = 125°C
V _{GE(th)}	Gate Threshold Voltage	3		6	I _C = 0.5mA	
I _{CES}	Collector-to-Emitter Leakage Current			1	mA	V _{GE} = 0V, V _{CE} = 600V
				10		V _{GE} = 0V, V _{CE} = 600V, T _J = 125°C
I _{GES}	Gate-to-Emitter Leakage Current			± 250	nA	V _{GE} = ± 20V

Switching Characteristics @ T_J = 25°C (unless otherwise specified)

Parameters		Min	Typ	Max	Units	Test Conditions
Q _g	Total Gate Charge		1600	1700	nC	I _C = 200A V _{CC} = 400V V _{GE} = 15V
Q _{ge}	Gate-Emitter Charge		260	340		
Q _{gc}	Gate-Collector Charge		580	670		
E _{on}	Turn-On Switching Loss		27		mJ	I _C = 200A, V _{CC} = 480V, V _{GE} = 15V R _g = 10Ω 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 = 200A, V _{CC} = 480V, V _{GE} = 15V R _g = 10Ω free-wheeling DIODE: 30ETH06, T _J = 125°C
E _{off}	Turn-Off Switching Loss		77	90		
E _{ts}	Total Switching Loss		106	121		
C _{ies}	Input Capacitance		32500		pF	V _{GE} = 0V V _{CC} = 30V f = 1.0 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	°C
T _{STG}	Storage Temperature Range	- 40		125	
R _{thJC}	Junction-to-Case			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

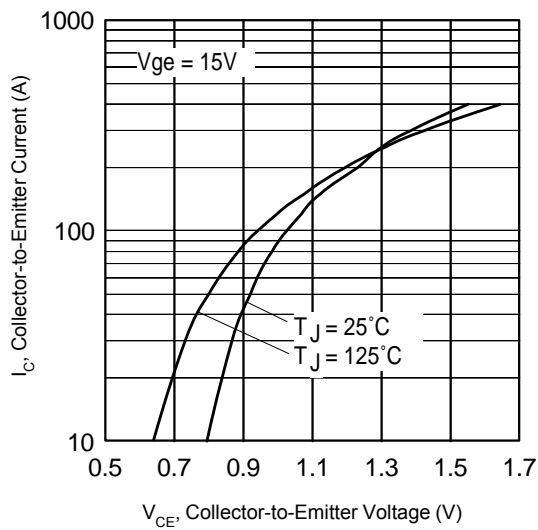


Fig. 1 - Typical Output Characteristics

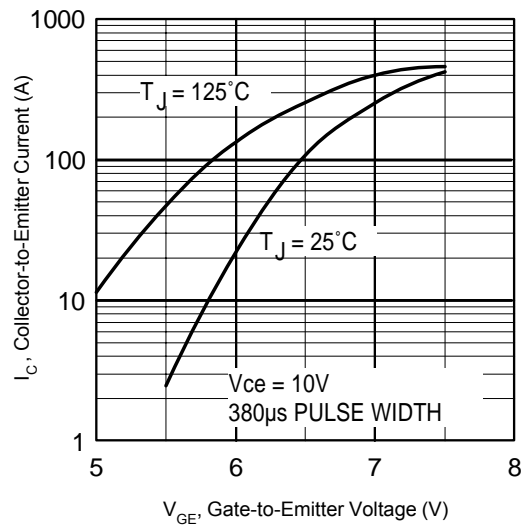


Fig. 2 - Typical Transfer Characteristics

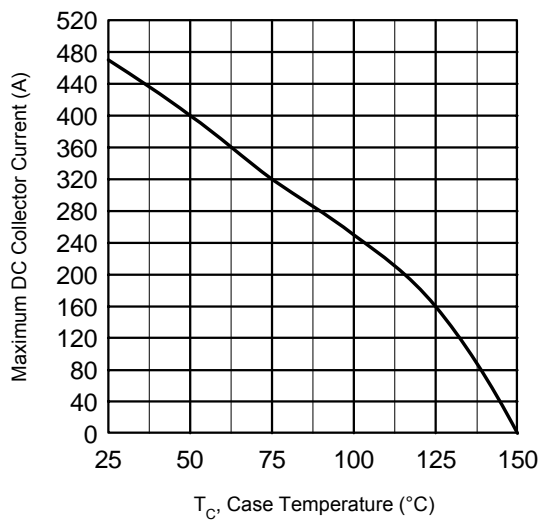


Fig. 3 - Maximum Collector Current vs. Case Temperature

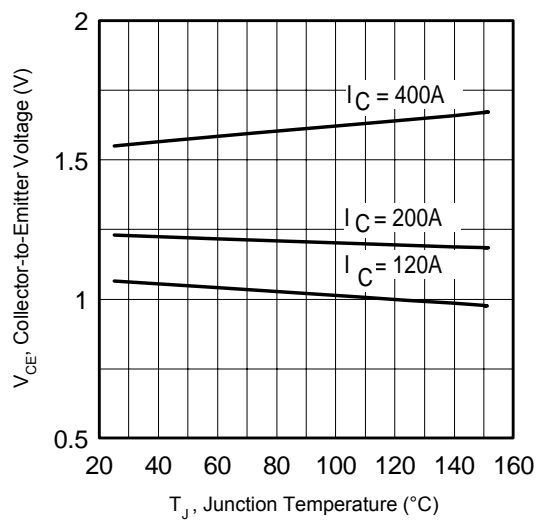


Fig. 4 - Typical Collector-to-Emitter Voltage vs. Junction Temperature

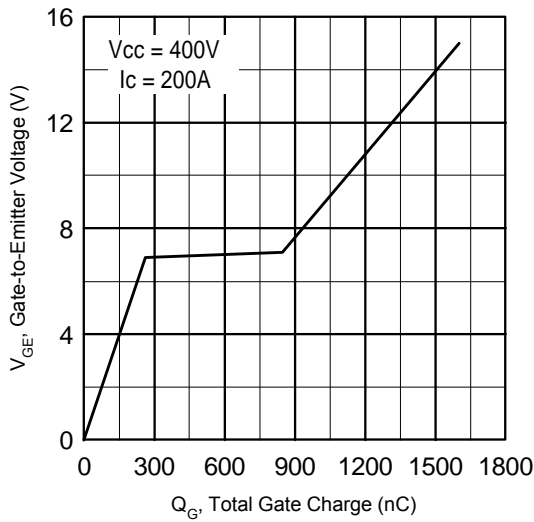


Fig. 5 - Typical Gate Charge vs. Gate-to-Emitter Voltage

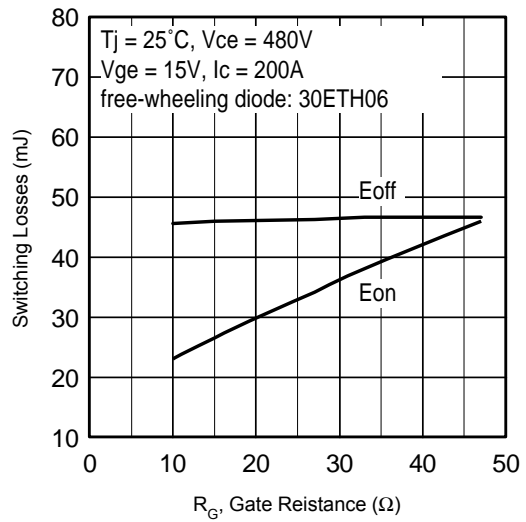


Fig. 6 - Typical Switching Losses vs Gate Resistance

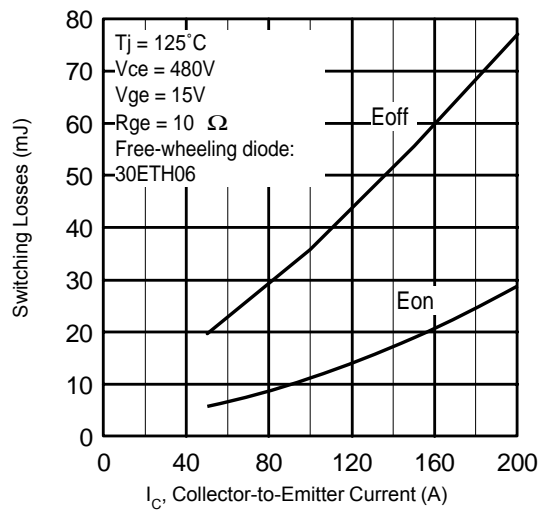
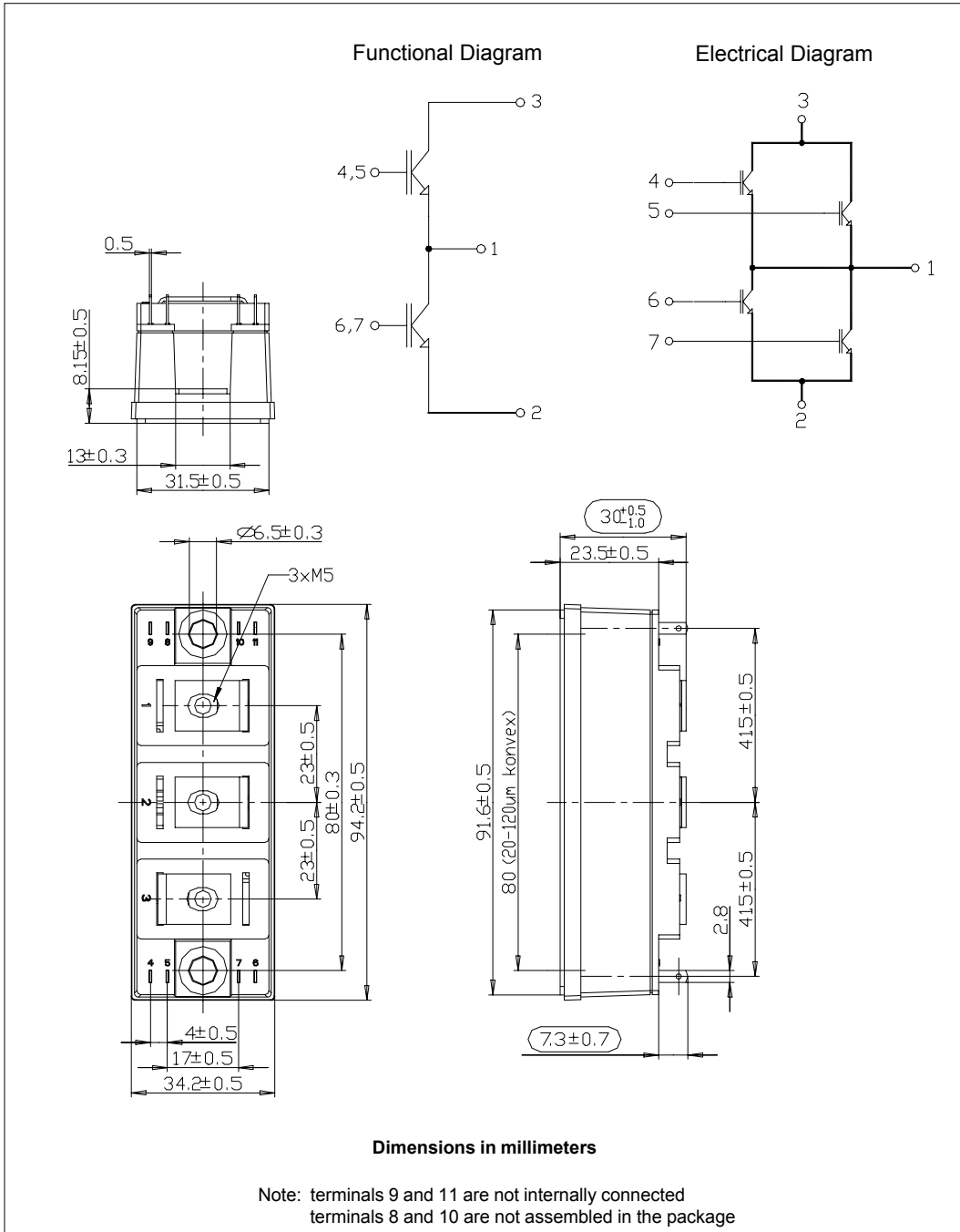


Fig. 7 - Typical Switching Losses vs Collector-to-Emitter Current

Outline Table



Ordering Information Table

Device Code													
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">GA</td> <td style="padding: 5px;">200</td> <td style="padding: 5px;">H</td> <td style="padding: 5px;">S</td> <td style="padding: 5px;">60</td> <td style="padding: 5px;">S</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> </tr> </table>	GA	200	H	S	60	S	①	②	③	④	⑤	⑥
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

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