

# “HALF-BRIDGE” IGBT

**V<sub>CES</sub> = 600V**  
**I<sub>c</sub> = 200A**  
**V<sub>CE(ON)</sub> typ. = 1.8V**  
**@I<sub>c</sub> = 200A**

### Feature

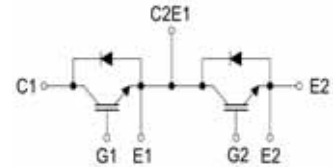
- Smart field stopper + Trench design technology
- Low V<sub>CE</sub> (sat)
- Low Turn-off losses
- Short tail current for over 20KHz

### Applications

- Motor controls
- VVVF inverters
- Inverter-type welding MC over 18K
- SMPS, Electrolysis
- UPS/EPS, Robotics



Package : V1



### Absolute Maximum Ratings @ T<sub>j</sub>=25°C (Per Leg)

Symbol	Parameter	Condition	Ratings	Unit
V <sub>CES</sub>	Collector-to-Emitter Voltage	T <sub>c</sub> = 25°C	600	V
V <sub>GE</sub>	Gate emitter voltage		± 20	V
I <sub>c</sub>	Continuous Collector Current	T <sub>c</sub> = 80°C (25°C)	200 (290)	A
I <sub>CP</sub>	Pulsed collector current	T <sub>c</sub> = 25°C	400	A
I <sub>F</sub>	Diode Continuous Forward Current	T <sub>c</sub> = 80°C (25°C)	200 (290)	A
I <sub>FM</sub>	Diode Maximum Forward Current	T <sub>c</sub> = 25°C	400	A
t <sub>p</sub>	Short circuit test, V <sub>GE</sub> = 15V, V <sub>CC</sub> = 360V	T <sub>c</sub> = 150°C (25°C)	6 (8)	μs
V <sub>iso</sub>	Isolation Voltage test	AC @ 1 minute	2500	V
Weight	Weight of Module		190	g
T <sub>j</sub>	Junction Temperature		-40 ~ 150	°C
T <sub>stg</sub>	Storage Temperature		-40 ~ 125	°C
M <sub>d</sub>	Mounting torque with screw : M5		2.0	N.m

### Static Characteristics @ T<sub>j</sub> = 25°C (unless otherwise specified)

Parameters		Min	Typ	Max	Unit	Test conditions
V <sub>CE(ON)</sub>	Collector-to-Emitter Saturation Voltage		1.80	1.95	V	I <sub>c</sub> = 200A, V <sub>GE</sub> = 15V
V <sub>GE(th)</sub>	Gate Threshold Voltage		5.8	6.5		V <sub>CE</sub> = V <sub>GE</sub> , I <sub>c</sub> = 4mA
I <sub>CES</sub>	Zero Gate Voltage Collector Current	—	—	5.0	mA	V <sub>GE</sub> = 0V, V <sub>CE</sub> = 600V
I <sub>GES</sub>	Gate-to-Emitter Leakage Current	—	—	400	nA	V <sub>CE</sub> = 0V, V <sub>GE</sub> = 20V
V <sub>F</sub>	Forward voltage drop		1.6	1.9	V	I <sub>F</sub> = 200A
R <sub>GINT</sub>	Integrated gate resistor	—	2	—	Ω	

**Electrical Characteristic Values (IGBT / DIODE) @ T<sub>j</sub> = 25°C (unless otherwise specified)**

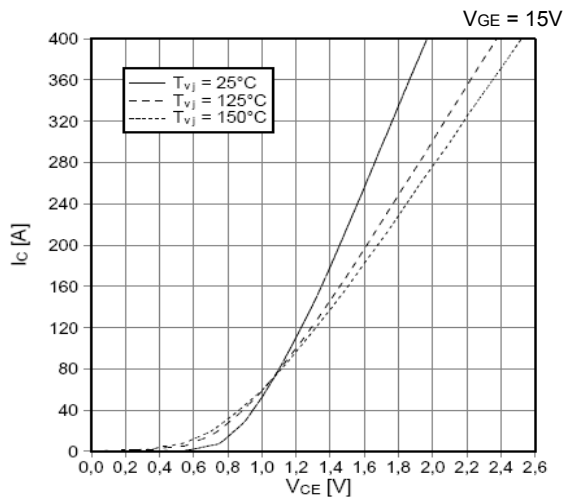
Parameters		Min	Typ	Max	Unit	Test conditions
C <sub>iss</sub>	Input capacitance	—	9200	—	pF	V <sub>CE</sub> = 25V, V <sub>GE</sub> = 0V f = 1 MHz
C <sub>oss</sub>	Output capacitance	—	580	—		
C <sub>rss</sub>	Reverse transfer capacitance	—	270	—		
t <sub>d(on)</sub>	Turn-on delay time	—	145	—	ns	Inductive Switching (125 ) V <sub>CC</sub> = 300V I <sub>C</sub> = 200A, V <sub>GE</sub> = ±15V R <sub>G</sub> = 2Ω
t <sub>r</sub>	Rise time	—	30	—		
t <sub>d(off)</sub>	Turn-off delay time	—	340	—		
t <sub>f</sub>	Fall time	—	60	—		
V <sub>BR</sub>	Cathode-Anode breakdown Voltage	600	—	—	V	
I <sub>RM</sub>	Maximum Reverse Leakage Current	—	—	250	μA	V <sub>R</sub> = 600V
t <sub>rr</sub>	Reverse Recovery Time	—	130	—	ns	I <sub>F</sub> = 200A, V <sub>R</sub> = 300V
Q <sub>rr</sub>	Reverse Recovery Charge	—	9	—	μC	di / dt = 2200A / μS

**Thermal Characteristics**

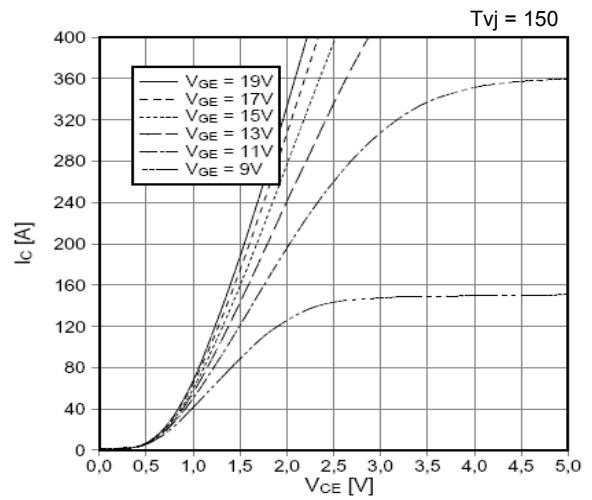
Symbol	Parameter	Min	Typ	Max	Unit
R <sub>θJC</sub>	Junction-to-Case (IGBT Part, Per 1/2 Module)	-	-	0.24	/W
R <sub>θJC</sub>	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.4	
R <sub>θCS</sub>	Case-to-Heat Sink (Conductive grease applied)	-	0.05	-	

※ Data and specifications subject to change without notice.

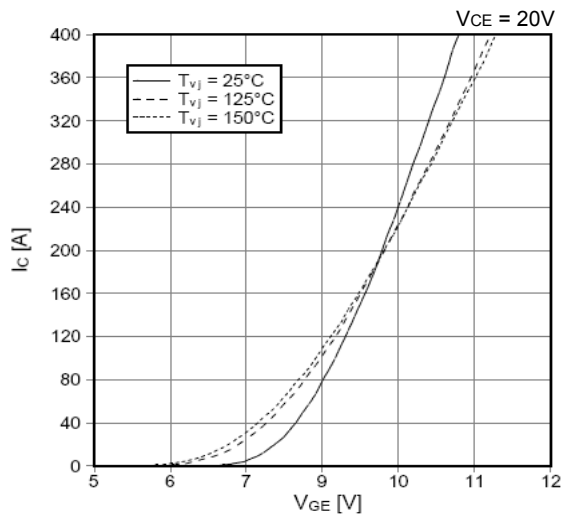
**Fig.1, Output characteristic (typical)**



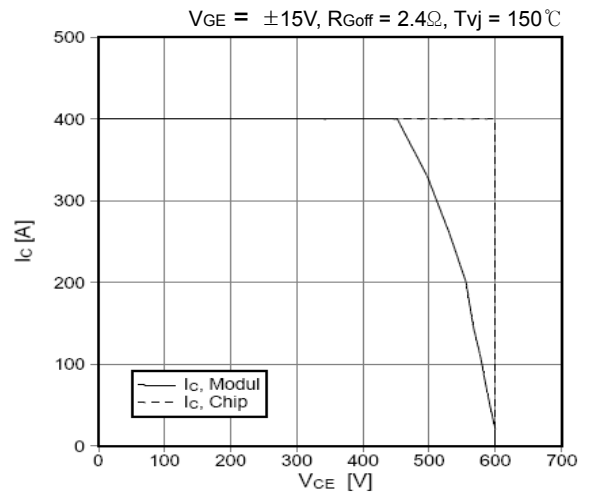
**Fig. 2, Output characteristic & VGE (typical)**



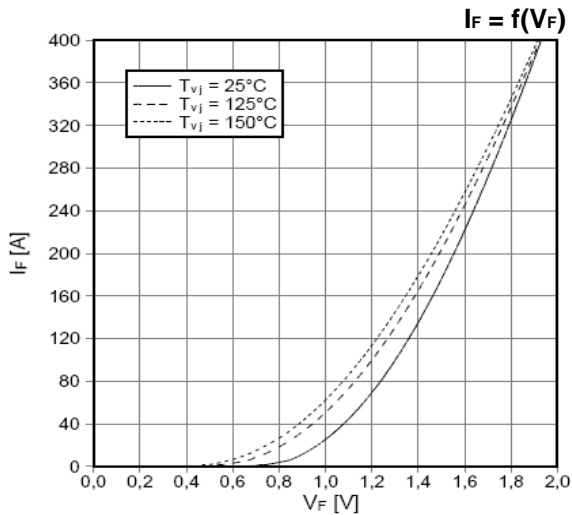
**Fig 3, Transfer characteristic (typical)**



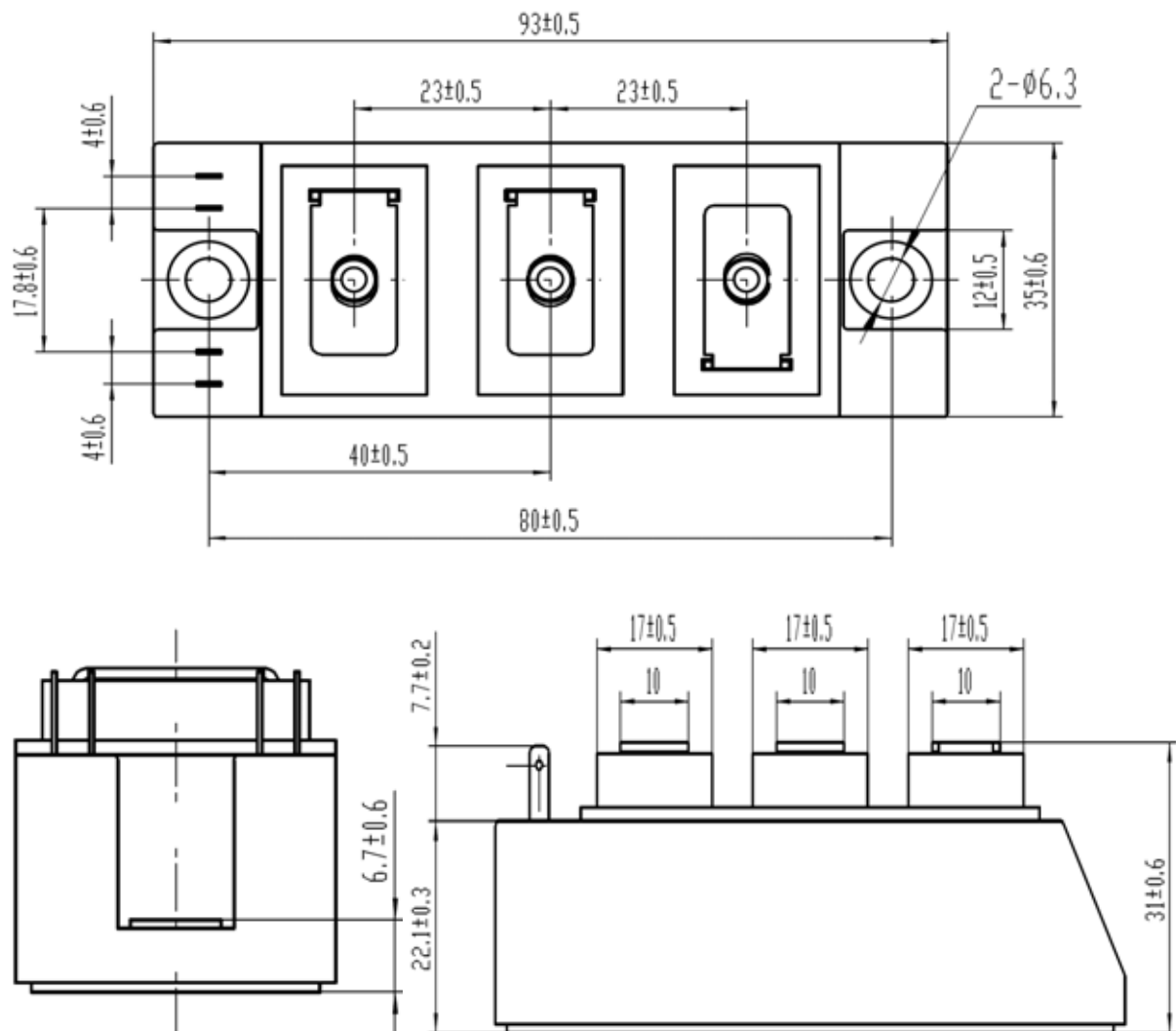
**Fig.4, Reverse bias safe operating area (RBSOA)**



**Fig.5, Forward characteristic of diode (typical)**



**Package Outline** (dimensions in mm)



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