

“HALF-BRIDGE” IGBT MODULE

V_{CES} = 600V
I_c = 300A
V_{CE(ON)} typ. = 1.5V
@I_c = 300A

Feature

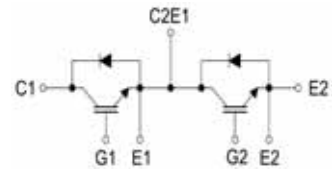
- Smart field stopper + Trench design technology
- Low V_{CE} (sat)
- Low Turn-off losses
- Short tail current for over 20KHz

Applications

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



Package : V3



Absolute Maximum Ratings @ T_j = 25°C (Per Leg)

Symbol	Parameter	Condition	Ratings	Unit
V _{CES}	Collector-to-Emitter Voltage	T _c = 25°C	600	V
V _{GE}	Gate emitter voltage		± 20	V
I _c	Continuous Collector Current	T _c = 80°C (25°C)	300 (430)	A
I _{CP}	Pulsed collector current	T _c = 25°C	600	A
I _F	Diode Continuous Forward Current	T _c = 80°C (25°C)	300 (430)	A
I _{FM}	Diode Maximum Forward Current	T _c = 25°C	600	A
t _p	Short circuit test, V _{GE} = 15V, V _{CC} = 360V	T _c = 150°C (25°C)	6 (8)	μs
V _{iso}	Isolation Voltage test	AC @ 1 minute	2500	V
Weight	Weight of Module		360	g
T _j	Junction Temperature		-40 ~ 150	°C
T _{stg}	Storage Temperature		-40 ~ 125	°C
M _d	Mounting torque with screw : M6		4.0	N.m

Static Characteristics @ T_j = 25°C (unless otherwise specified)

Parameters		Min	Typ	Max	Unit	Test conditions
V _{CE(ON)}	Collector-to-Emitter Saturation Voltage		1.50	1.95	V	I _c = 300A, V _{GE} = 15V
V _{GE(th)}	Gate Threshold Voltage		5.8	6.5		V _{CE} = V _{GE} , I _c = 8mA
I _{CES}	Zero Gate Voltage Collector Current	—	—	5.0	mA	V _{GE} = 0V, V _{CE} = 600V
I _{GES}	Gate-to-Emitter Leakage Current	—	—	400	nA	V _{CE} = 0V, V _{GE} = 20V
V _F	Forward voltage drop		1.6	1.9	V	I _F = 300A
R _{GINT}	Integrated gate resistor	—	1	—	Ω	

Electrical Characteristic Values (IGBT / DIODE) @ T_j = 25°C (unless otherwise specified)

Parameters		Min	Typ	Max	Unit	Test conditions
C _{iss}	Input capacitance	—	18480	—	pF	V _{CE} = 25V, V _{GE} = 0V f = 1 MHz
C _{oss}	Output capacitance	—	1152	—		
C _{rss}	Reverse transfer capacitance	—	548	—		
t _{d(on)}	Turn-on delay time	—	115	—	ns	Inductive Switching (125) V _{CC} = 300V I _C = 300A, V _{GE} = ±15V R _G = 3.3Ω
t _r	Rise time	—	45	—		
t _{d(off)}	Turn-off delay time	—	200	—		
t _f	Fall time	—	45	—		
V _{BR}	Cathode-Anode breakdown Voltage	600	—	—	V	
I _{RM}	Maximum Reverse Leakage Current	—	—	350	μA	V _R = 600V
t _{rr}	Reverse Recovery Time	—	120	—	ns	I _F = 300A, V _R = 300V
Q _{rr}	Reverse Recovery Charge	—	13.5	—	μC	di / dt = 3100A / μs

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
R _{θJC}	Junction-to-Case (IGBT Part, Per 1/2 Module)	-	-	0.13	/W
R _{θJC}	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.21	
R _{θCS}	Case-to-Heat Sink (Conductive grease applied)	-	0.03	-	

Fig.1 Output characteristic (typical)

$I_c = f(T_{vj})$

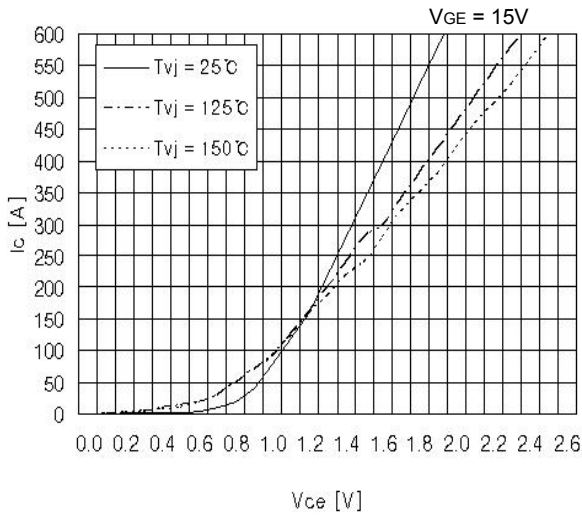


FIG.2 Output characteristic (typical)

$I_c = f(V_{GE})$

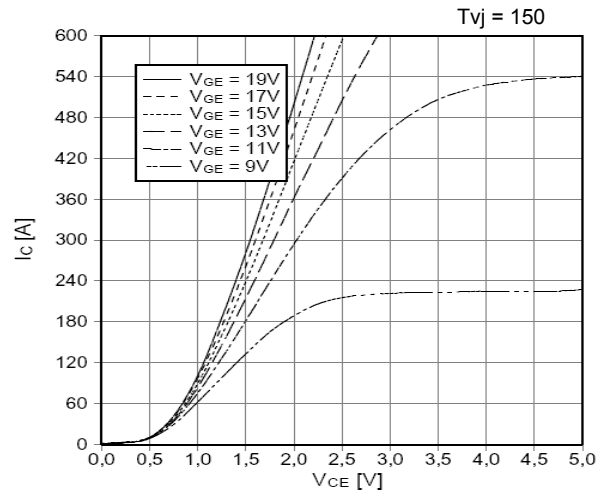


Fig.3, Transfer characteristic (typical)

$I_c = f(T_{vj})$

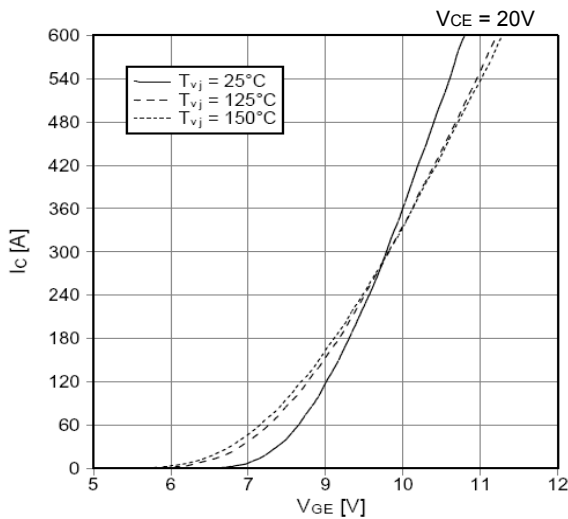


Fig.4, Reverse biasRBSOA

$I_c = f(V_{GE})$

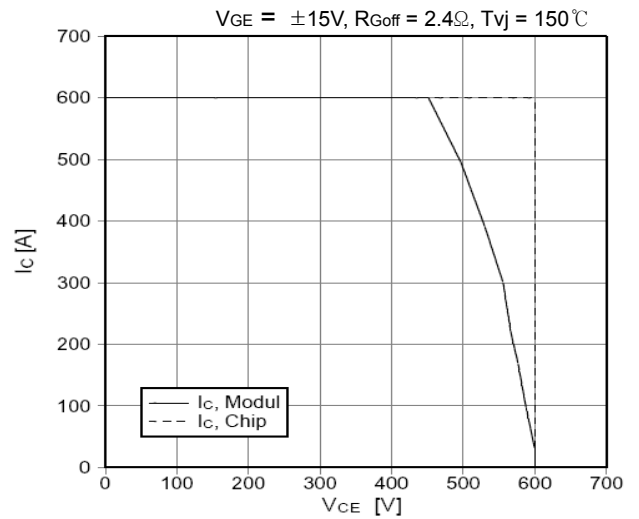
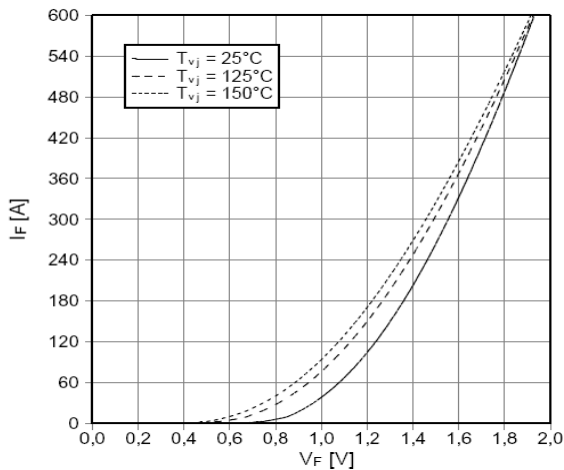
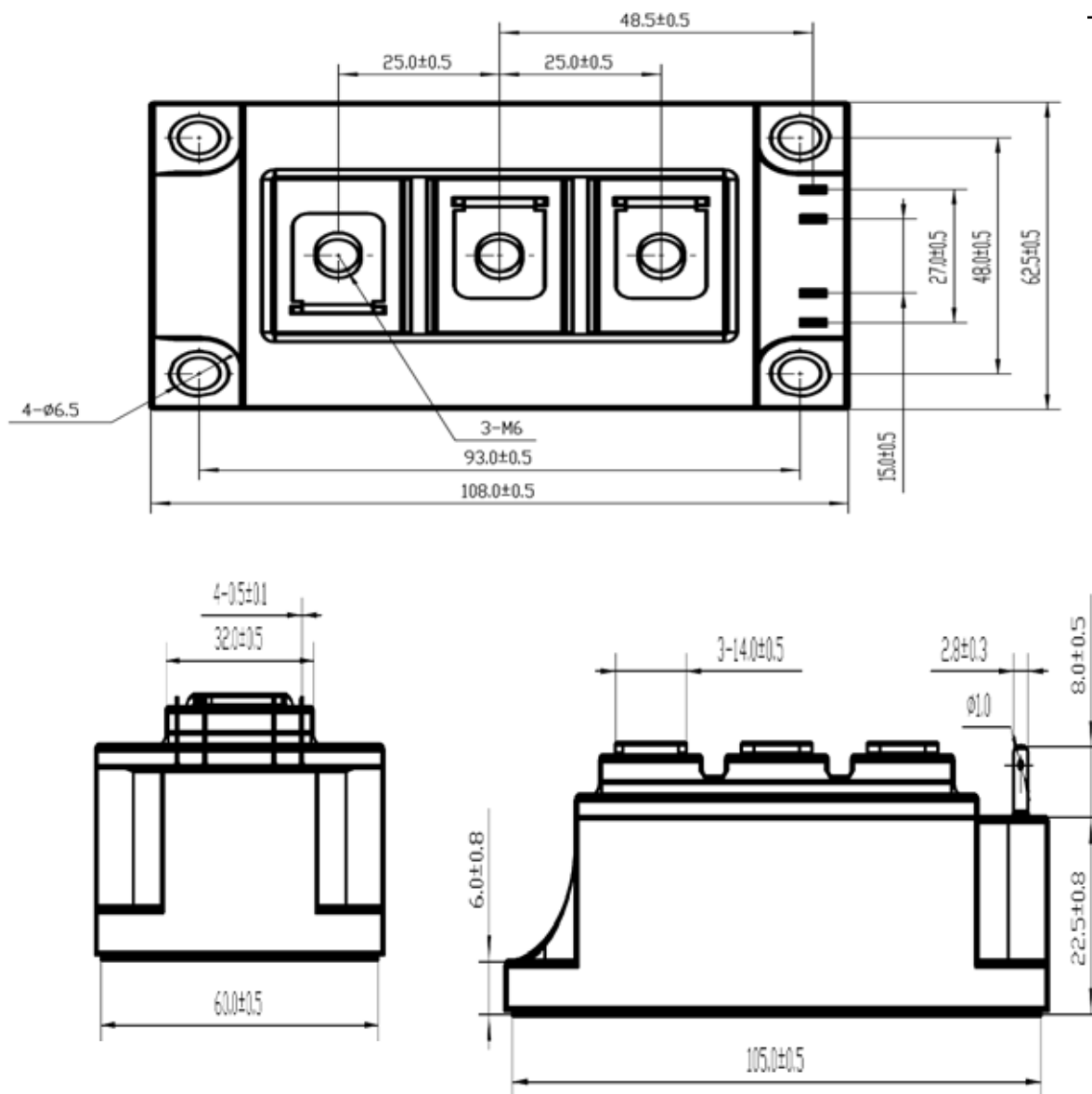


Fig.5, Forward characteristic of diode (typical)

$I_F = f(T_j)$



Package Outline (dimensions in mm)



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