

“HALF-BRIDGE” IGBT

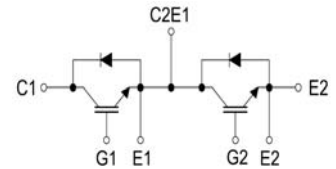
V_{CES} = 600V
I_c = 100A
V_{CE(ON)} typ. = 1.5V
@I_c = 100A

Feature

- IGBT New Technology
- Low V_{CE} (sat)
- Low Turn-off losses
- Short tail current
- Positive temperature coefficient

Application

- AC & DC Motor controls
- General purpose inverters
- Optimized for high current inverter
- Servo Controls
- UPS, Robotics



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

Package : V1

Symbol	Parameter	Condition	Ratings	Unit
V _{CES}	Collector-to-Emitter Voltage	V _{GE} = 0V, I _c = 250μA	600	V
V _{GES}	Gate emitter voltage		± 20	V
I _c	Continuous Collector Current	T _c = 80°C (25°C)	130 (100)	A
I _{CP}	Pulsed collector current	T _c = 25°C	200	A
I _F	Diode Continuous Forward Current	T _c = 80°C (25°C)	130 (100)	A
I _{FM}	Diode Maximum Forward Current	T _c = 25°C	200	A
t _p	Short circuit test, V _{GE} = 15V, V _{CC} = 360V	T _{vj} = 150°C (25°C)	6 (8)	μs
V _{iso}	Isolation Voltage test	AC @ 1 minute	2500	V
T _j	Junction Temperature		-40 ~ 150	°C
T _{stg}	Storage Temperature		-40 ~ 125	°C
Weight	Weight of Module		190	g
Md	Mounting torque with screw M5		2.0	N.m
	Terminal connection torque		2.0	N.m

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

Parameters		Min	Typ	Max	Unit	Test conditions
V _{(BR)CES}	Collector-to-Emitter Breakdown Voltage	600	—	—	V	V _{GE} = 0V, I _c = 250μA
V _{CE(ON)}	Collector-to-Emitter Saturation Voltage	1.05	1.50	1.90		I _c = 100A, V _{GE} = 15V
V _{GE(th)}	Gate Threshold Voltage	5.0	5.8	6.5		V _{CE} = V _{GE} , I _c = 1.5 mA
I _{CES}	Zero Gate Voltage Collector Current	—	—	250	μA	V _{GE} = 0V, V _{CE} = 600V
I _{GES}	Gate-to-Emitter Leakage Current	—	—	400	nA	V _{CE} = 0V, V _{GE} = 20V
V _{FM}	Diode Forward Voltage Drop	—	1.6	2.0	V	I _F = 100A, V _{GE} = 0V
R _{GINT}	Integrated gate resistor	—	4	—	Ω	

Electrical Characteristic Values (IGBT / DIODE) @ $T_j = 25^\circ\text{C}$ (unless otherwise specified)

Parameters		Min	Typ	Max	Unit	Test conditions
C_{iss}	Input capacitance	—	6100	—	pF	$V_{CE} = 25V$, $V_{GE} = 0V$ $f = 1\text{ MHz}$
C_{oss}	Output capacitance	—	390	—		
C_{rss}	Reverse transfer capacitance	—	190	—		
$t_{d(on)}$	Turn-on delay time	—	115	—	ns	Inductive Switching (25°C) $V_{CC} = 300V$ $I_C = 100A$, $V_{GE} = \pm 15V$ $R_G = 10\Omega$
t_r	Rise time	—	45	—		
$t_{d(off)}$	Turn-off delay time	—	225	—		
t_f	Fall time	—	55	—		
V_{RRM}	Maximum Peak Repetitive Reverse Voltage	600	—	—	V	
I_{RM}	Maximum Reverse leakage current	—	—	250	μA	$V_R = 600V$
t_{rr}	Reverse Recovery Time	—	125	—	ns	$I_F = 100A$, $V_R = 300V$ $di / dt = 2000A / \mu s$
Q_{rr}	Reverse Recovery Charge	—	4.7	—	μC	

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case (IGBT Part, Per 1/2 Module)	-	-	0.44	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.77	
$R_{\theta CS}$	Case-to-Heat Sink (Conductive grease applied)	-	0.05	-	

* Data and specifications subject to change without notice.

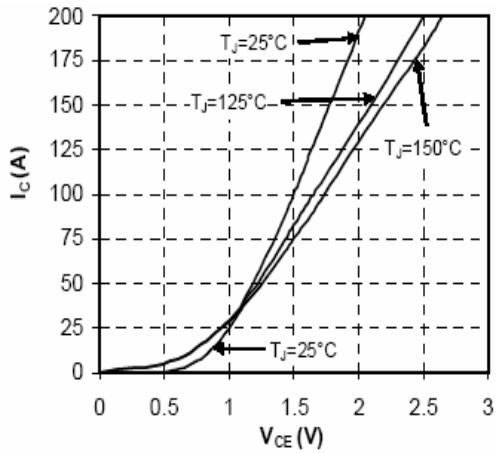


Fig 1. Typ. IGBT Output Characteristics

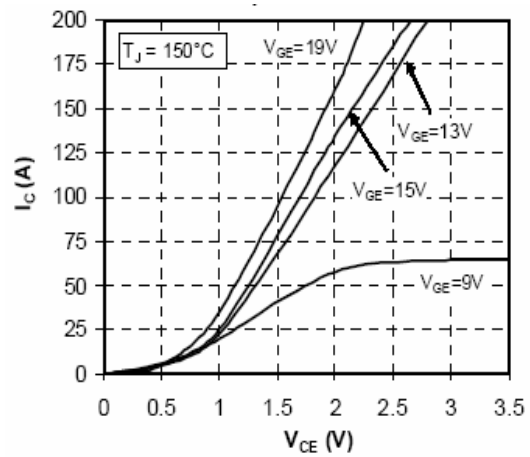


Fig 2. Typ. IGBT Out Characteristics

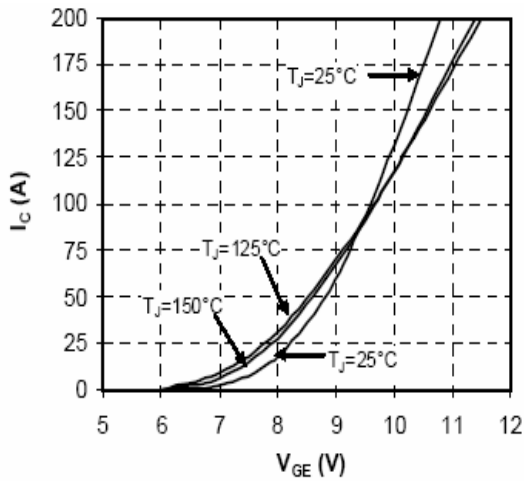


Fig 3. Typ. Transfer Characteristics

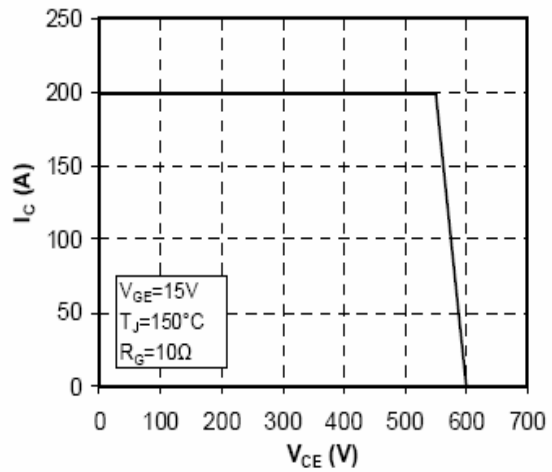


Fig 4. Reverse Bias Operating Area

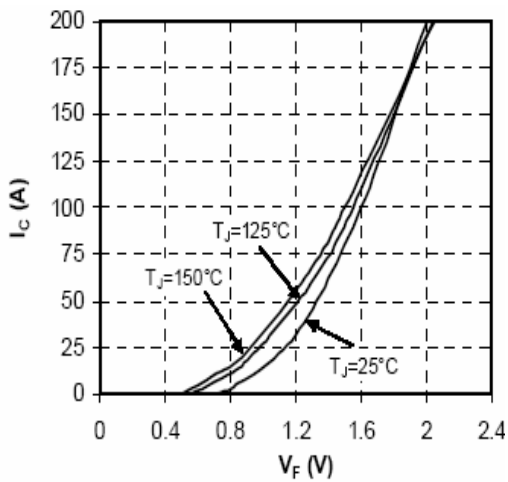


Fig 5. Forward Characteristics of Diode

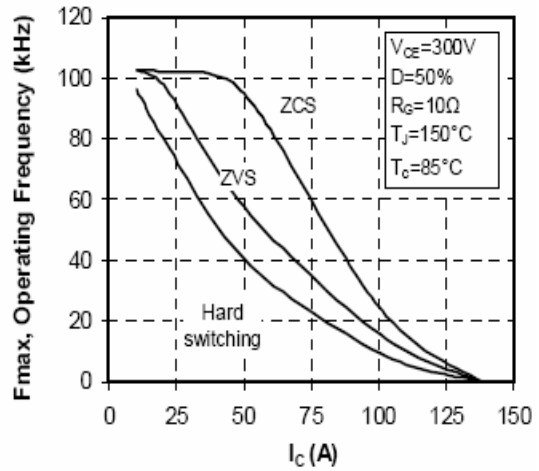
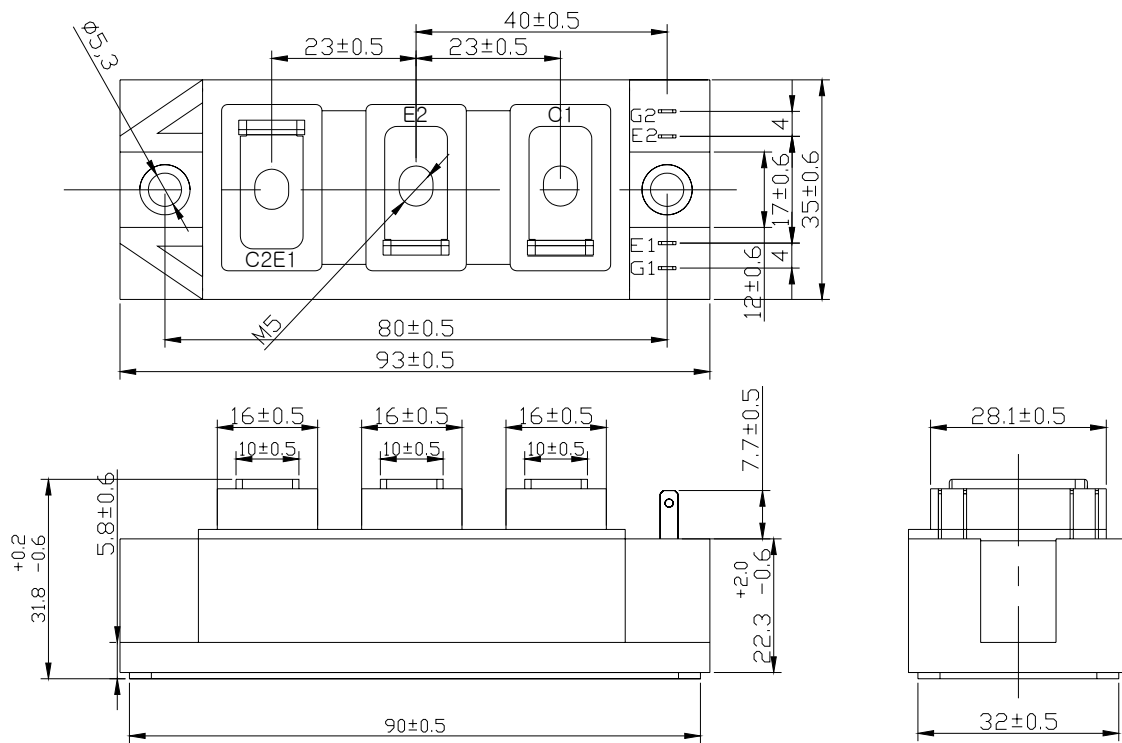


Fig 6. Operating Frequency vs Collector Current

Package Outline (dimensions in mm)


Data and specifications subject to change without notice.

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