

“HALF-BRIDGE” IGBT MODULE

Feature

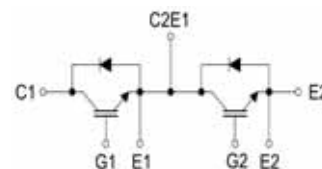
- Smart field stopper + Trench design technology
- Low $V_{CE(sat)}$
- Low Turn-off losses
- Short tail current for over 20KHz

Applications

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



Package : V1



$V_{CES} = 600V$
 $I_c = 75A$
 $V_{CE(ON)} \text{ typ.} = 1.5V$
 @ $I_c = 75A$

Absolute Maximum Ratings @ $T_j = 25^\circ C$ (Per Leg)

Symbol	Parameter	Condition	Ratings	Unit
V_{CES}	Collector-to-Emitter Voltage	$T_c = 25^\circ C$	600	V
V_{GES}	Gate emitter voltage		± 20	V
I_c	Continuous Collector Current	$T_c = 80^\circ C (25^\circ C)$	75 (100)	A
I_{CP}	Pulsed collector current	$T_c = 25^\circ C$	140	A
I_F	Diode Continuous Forward Current	$T_c = 80^\circ C (25^\circ C)$	75 (100)	A
I_{FM}	Diode Maximum Forward Current	$T_c = 25^\circ C$	140	A
t_p	Short circuit test, $V_{GE} = 15V$, $V_{CC} = 360V$	$T_c = 150^\circ C (25^\circ C)$	6 (8)	μs
V_{iso}	Isolation Voltage test	AC @ 1 minute	2500	V
T_j	Junction Temperature		-40 ~ 150	$^\circ C$
T_{stg}	Storage Temperature		-40 ~ 125	$^\circ C$
Weight	Weight of Module		190	g
Md	Mounting torque with screw : M5		2.0	N.m
	Terminal connection torque : M5		2.0	N.m

Static Characteristics @ $T_j = 25^\circ C$ (unless otherwise specified)

Parameters		Min	Typ	Max	Unit	Test conditions
$V_{CE(ON)}$	Collector-to-Emitter Saturation Voltage		1.50		V	$I_c = 75A$, $V_{GE} = 15V$
$V_{GE(th)}$	Gate Threshold Voltage		5.8			$V_{CE} = V_{GE}$, $I_c = 4mA$
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	Diode Forward Voltage Drop	—	1.6	2.0	V	$I_F = 75A$, $V_{GE} = 0V$
R_{GINT}	Integrated gate resistor	—	4	—	Ω	

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

Parameters		Min	Typ	Max	Unit	Test conditions
C _{iss}	Input capacitance	—	4700	—	pF	V _{CE} = 25V , V _{GE} = 0V f = 1 MHz
C _{oss}	Output capacitance	—	300	—		
C _{rss}	Reverse transfer capacitance	—	145	—		
t _{d(on)}	Turn-on delay time	—	25	—	ns	Inductive Switching (125) V _{CC} = 300V I _C = 75A, V _{GE} = ±15V R _G = 1.2Ω
t _r	Rise time	—	18	—		
t _{d(off)}	Turn-off delay time	—	210	—		
t _f	Fall time	—	60	—		
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 = 75A, V _R = 300V
Q _{rr}	Reverse Recovery Charge	—	7.6	—	μC	di / dt = 2000A / μs

※ Data and specifications subject to change without notice.

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
R _{θJC}	Junction-to-Case (IGBT Part, Per 1/2 Module)	-	-	0.60	/W
R _{θJC}	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.98	
R _{θCS}	Case-to-Heat Sink (Conductive grease applied)	-	0.05	-	

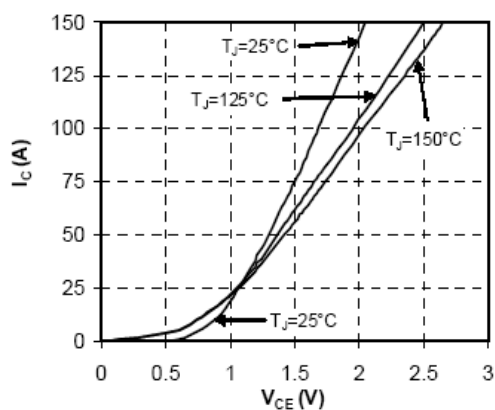


Fig 1. Typ. IGBT Output Characteristics

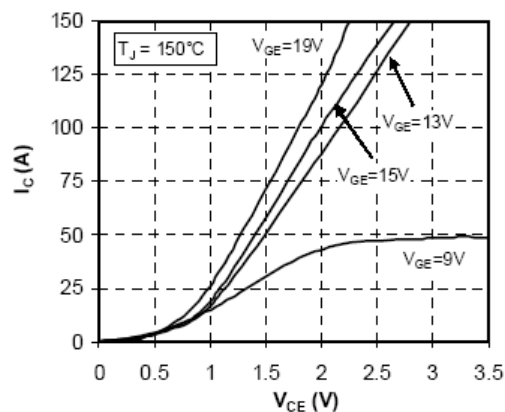


Fig 2. Typ. IGBT Out Characteristics

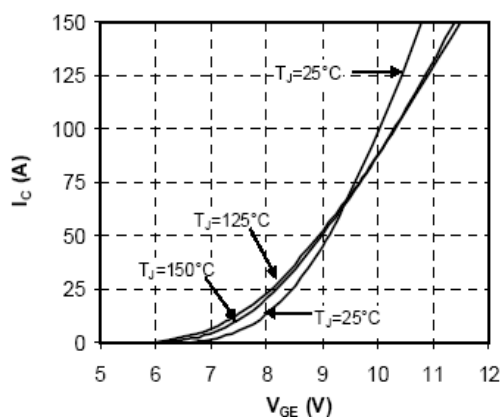


Fig 3. Typ. Transfer Characteristics

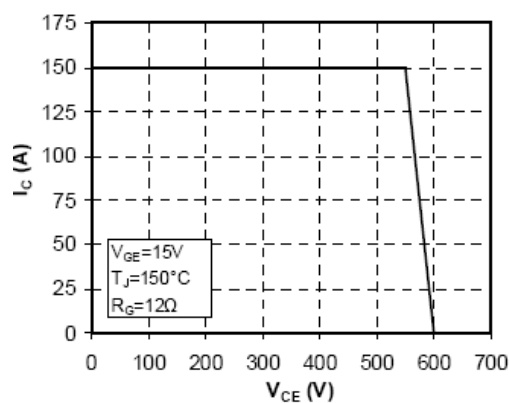


Fig 4. Reverse Bias Operating Area

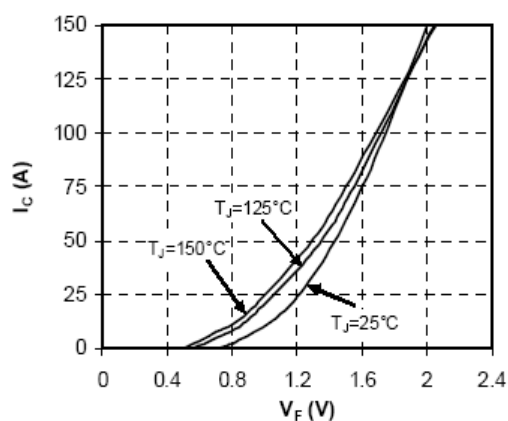


Fig 5. Forward Characteristics of Diode

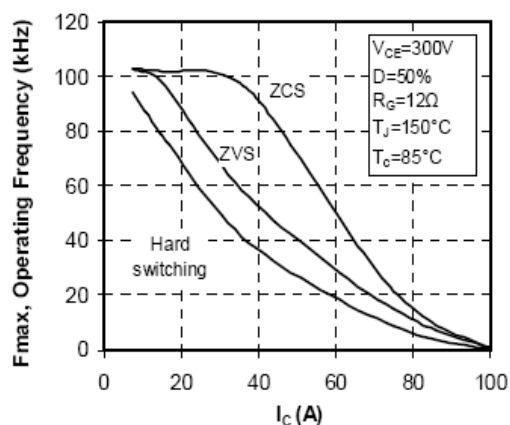
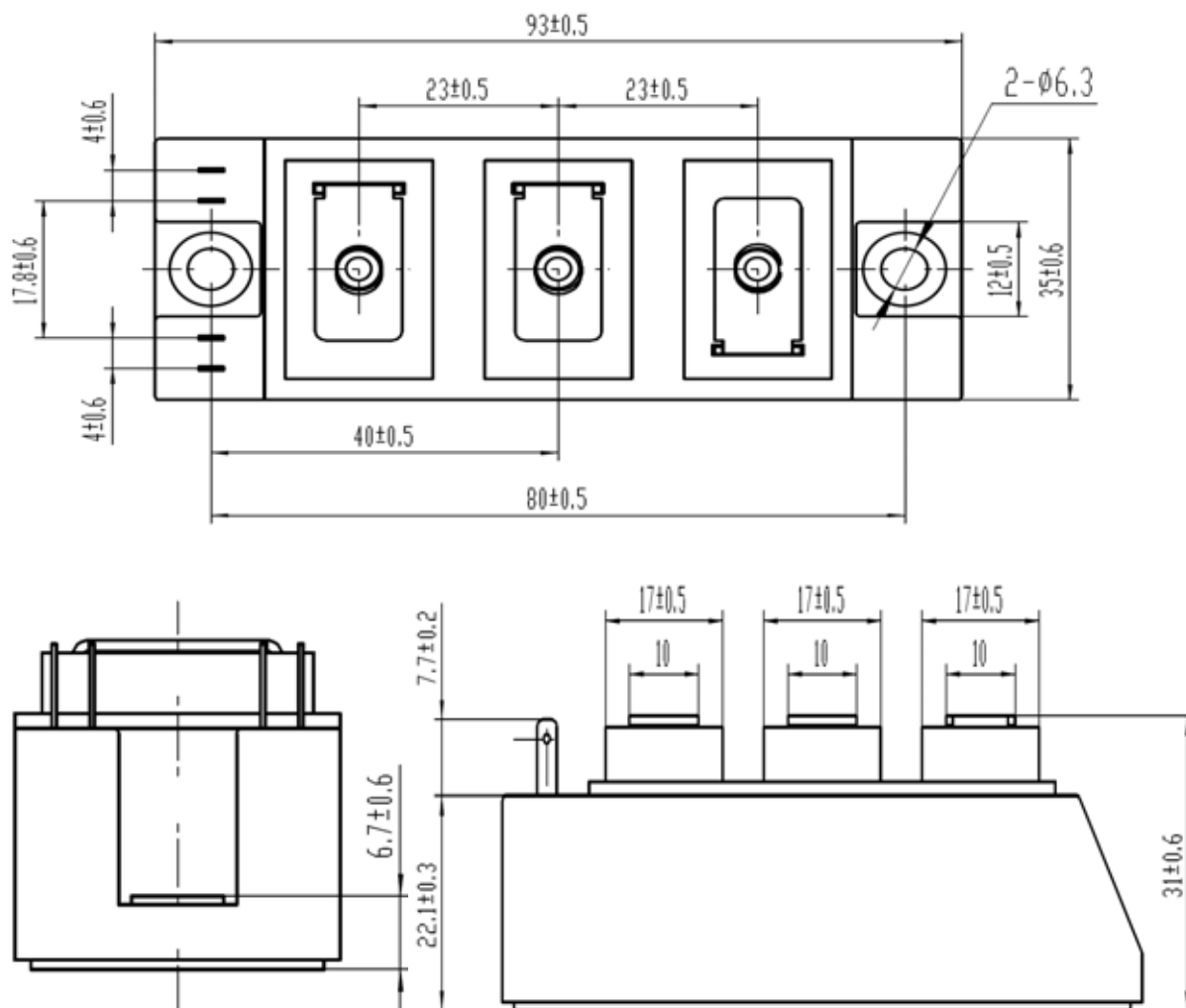


Fig 6. Operating Frequency vs Collector Current

Package Outline (dimensions in mm)



JUNE 2008

Headquarter:

#602, B/D, 402 BLD, BLK4, Techno-park, Wonmi-Gu,

Bucheon-City, S.KOREA

Tel)+82-32-234-4781, Fax)+82-32-234-4789

Sales & Marketing

clzhang@semiwell.com

sales@semiwell.com