

“HALF-BRIDGE” IGBT

Features

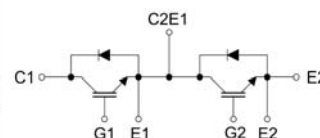
- 10μs short circuit capability
- Low turn-off losses
- Short tail current

Applications

- AC & DC motor controls
- General purpose inverters
- Optimized for high current inverter stages (AC TIG welding machines)
- Servo controls
- UPS
- Robotics

 $V_{CES} = 600V$
 $I_C = 75A$
 $V_{CE(ON)} \text{ typ.} = 1.9V$

@ $I_C = 75A$

Package : V1

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Absolute Maximum Ratings @ $T_c = 25^\circ C$ (per leg)

Symbol	Parameter	Test condition	Rating	Unit
V_{CES}	Collector-to-Emitter Voltage	$V_{GE} = 0V, I_C = 250\mu A$	600	V
V_{GES}	Gate emitter voltage		± 20	V
I_C	Continuous Collector Current	$T_c = 70^\circ C (25^\circ C)$	75(100)	A
I_{CM}	Pulsed collector current	$T_c = 70^\circ C (25^\circ C)$	150(200)	A
I_F	Diode Continuous Forward Current	$T_c = 70^\circ C (25^\circ C)$	70(90)	A
I_{FM}	Diode Maximum Forward Current		200	A
T_{SC}	Short Circuit Withstand Time	$T_c = 100^\circ C$	10	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
Mounting	Power Terminal Screw : M5		3.5	Nm
Torque	Terminal connection Screw : M5		3.5	Nm

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

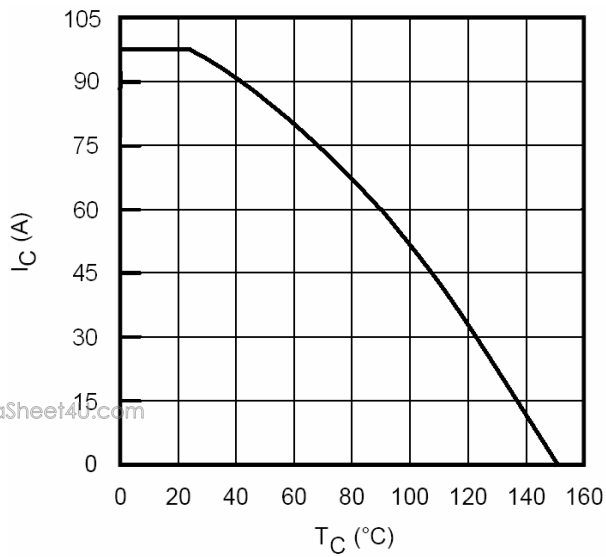
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
$V_{(BR)CES}$	Collector-to-Emitter Breakdown Voltage	600	-	-	V	$V_{GE} = 0V, I_C = 250\mu A$
$V_{CE(ON)}$	Collector-to-Emitter Saturation Voltage	-	1.9	2.3		$I_C = 75A, V_{GE} = 15V$
$V_{GE(th)}$	Gate Threshold Voltage	3.0	4.5	6.0		$V_{CE} = V_{GE}, I_C = 250\mu A$
I_{CES}	Zero Gate Voltage Collector Current	-	-	500	μA	$V_{GE} = 0V, V_{CE} = 600V$
I_{GES}	Gate-to-Emitter Leakage Current	-	-	± 100	nA	$V_{CE} = 0V, V_{GE} = \pm 20V$
V_{FM}	Diode Forward Voltage Drop	-	1.50	1.8	V	$I_C = 75A$

Switching Characteristics @ $T_j = 25^\circ\text{C}$ (unless otherwise specified)

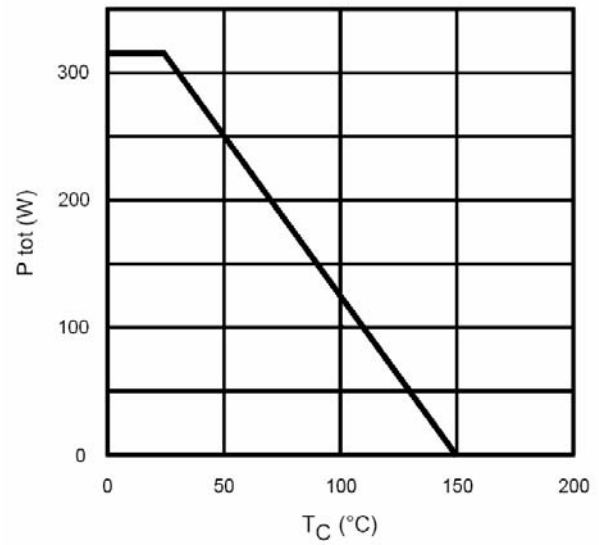
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
C_{ies}	Input capacitance	-	6900	-	pF	$V_{CE} = 30\text{V}, V_{GE} = 0\text{V}$ $f = 1.0\text{MHz}$
C_{oss}	Output capacitance	-	730	-		
C_{res}	Reverse transfer capacitance	-	190	-		
$t_{d(on)}$	Turn-on delay time	-	82	-	ns	$T_j = 25^\circ\text{C}, V_{CC} = 480\text{V}$ $I_C = 60\text{A}, V_{GE} = 15\text{V}$ $R_G = 5.0\Omega$
t_r	Rise time	-	107	-		
$t_{d(off)}$	Turn-off delay time	-	282	423		
t_f	Fall time	-	97	146		
I_{rr}	Diode Peak Reverse Recovery current	-	13	20	A	$T_j = 125^\circ\text{C}, V_R = 200\text{V}$ $I_F = 60\text{A}$
t_{rr}	Diode Reverse Recovery time	-	140	210	ns	

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Junction-to-Case (IGBT Part, Per 1/2 Module)	-	-	0.4	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.9	
$R_{\theta CS}$	Case-to-Heat Sink (Conductive grease applied)	-	0.05	-	



**Fig 1. Maximum DC Collector Current
vs. Case Temperature**



**Fig 2. Power Dissipation vs. Case
Temperature**

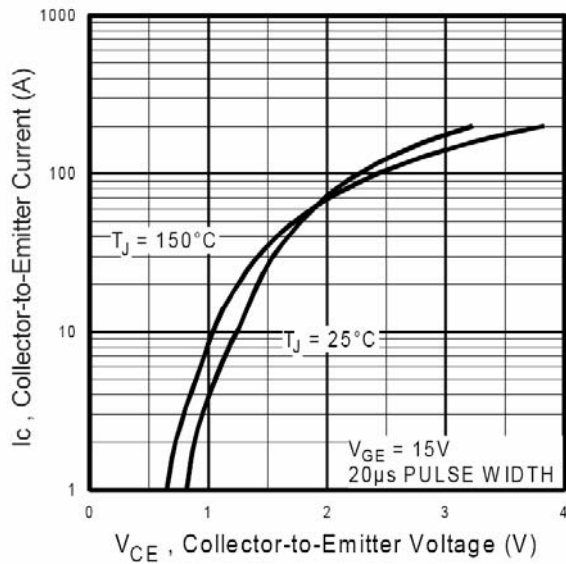
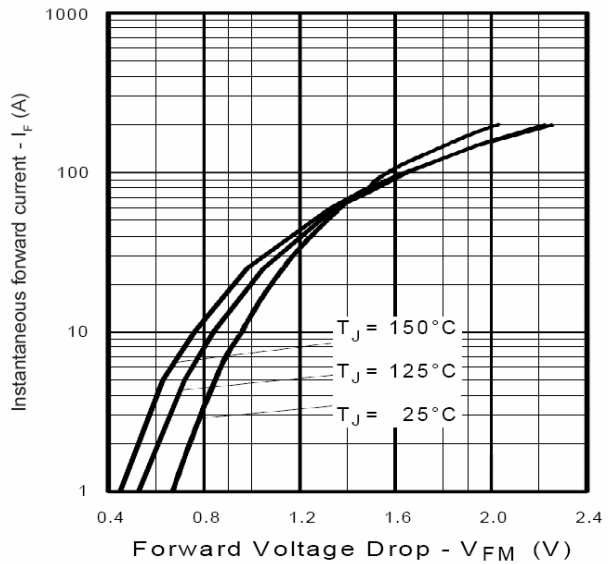
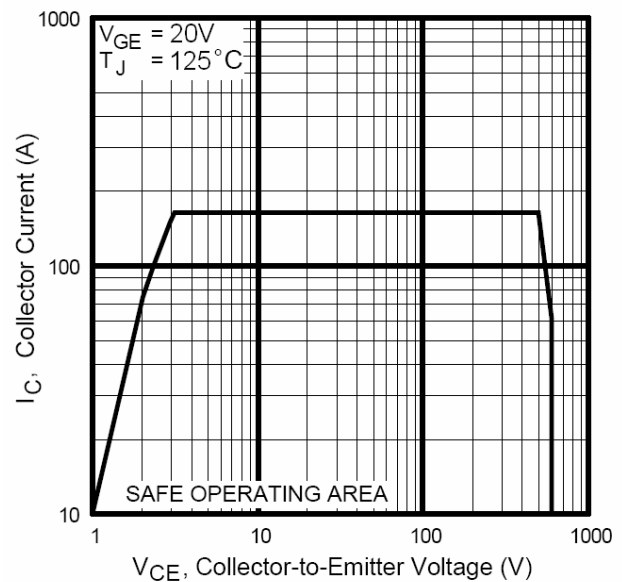
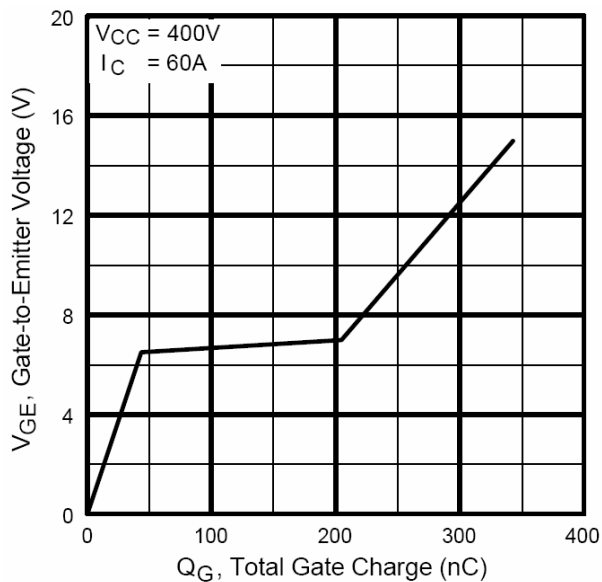
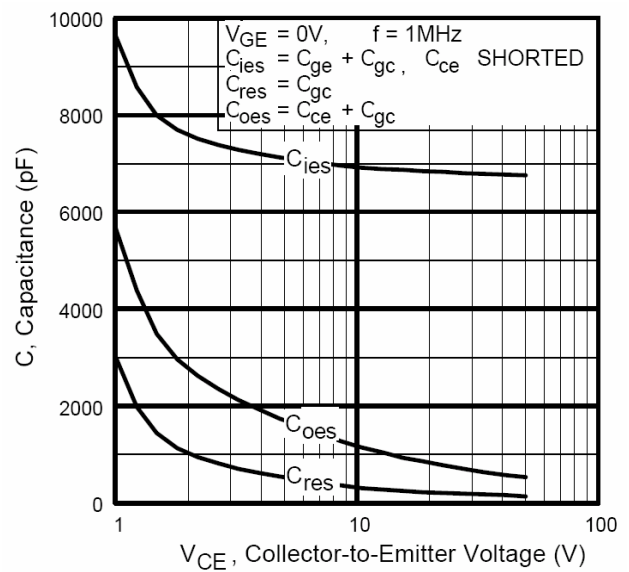
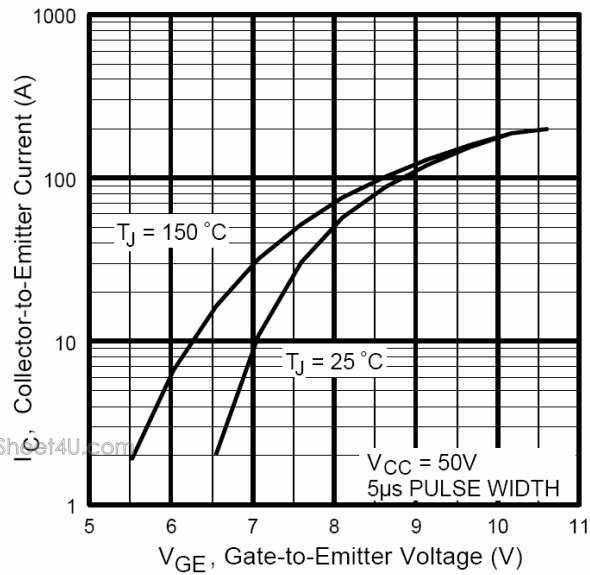


Fig 3. Typ. IGBT Output Characteristics



**Fig 4. Maximum Forward Voltage Drop vs.
Instantaneous Forward Current**



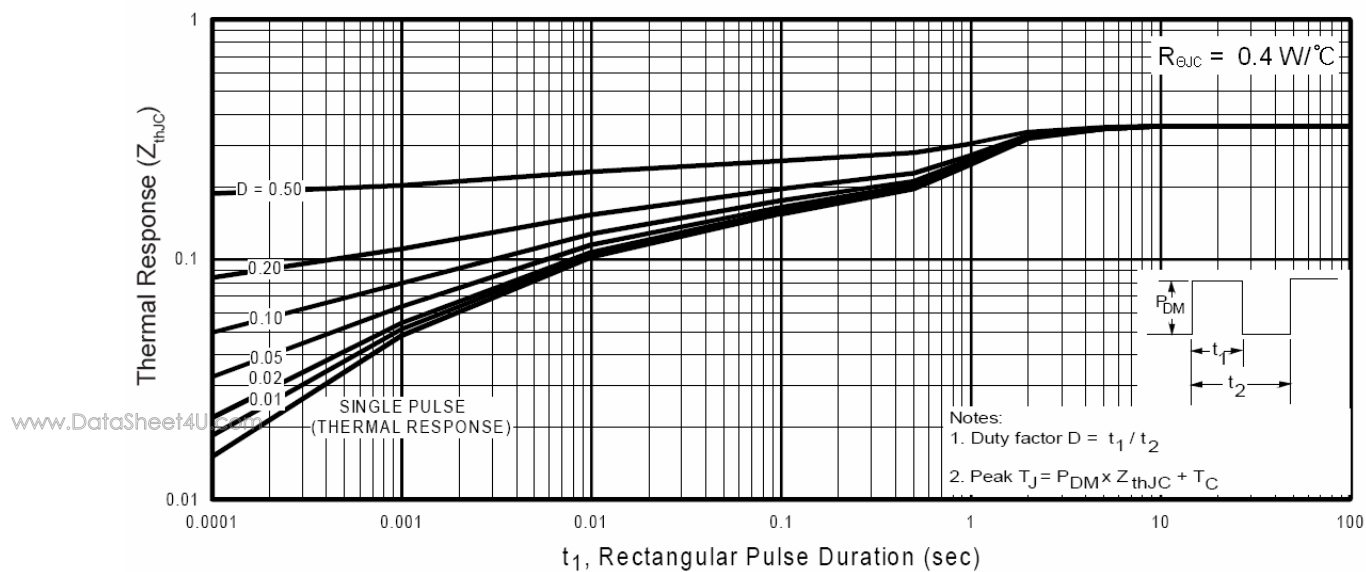


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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