

“HALF-BRIDGE” IGBT

Features

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

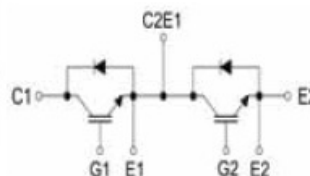
Applications

- 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 = 100A
V_{CE(sat)} typ. = 2.3V



Package : V1



Absolute Maximum Ratings @ T_c = 25 °C (per leg)

Symbol	Parameter	Test condition	Rating	Unit
V _{CES}	Collector to emitter voltage	V _{GE} =0V, I _c =250 μ A	600	V
V _{GES}	Gate emitter voltage		$\pm$ 20	V
I _c	Continuous collector current	T _c = 75 °C (25 °C)	100 (130)	A
I _{CP}	Pulsed collector current	T _c = 25 °C	200	A
I _F	Diode continuous forward current	T _c = 75 °C (25 °C)	80 (100)	A
I _{FM}	Diode maximum forward current	T _c = 25 °C	260	A
t _p	Short circuit test, V _{GE} =15V, V _{CC} =360V	T _c = 100 °C	10	μ s
V _{iso}	Isolation voltage test	AC @ 1 minute	2500	V
P _D	Maximum power dissipation	T _c = 25 °C	450	W
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	Nm
	Terminal connection torque : M5		2.0	Nm

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

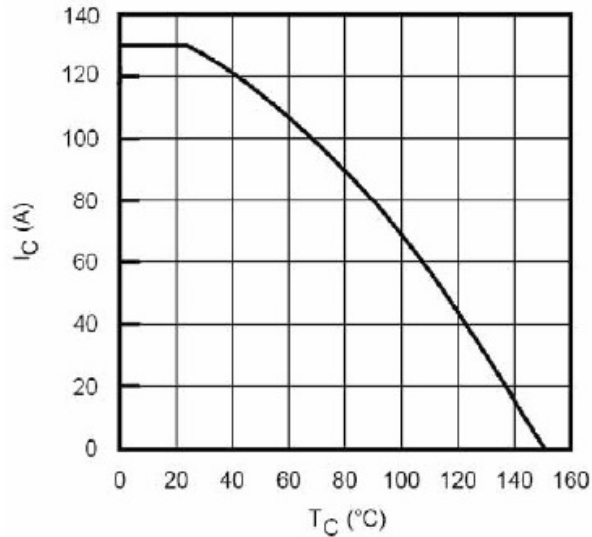
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
V _{CE(sat)}	Collector to emitter saturation voltage	-	2.3	2.8	V	I _c = 100A, V _{GE} = 15V
V _{GE(th)}	Gate threshold voltage	3.5	5.0	6.5		V _{CE} = V _{GE} , I _c = 250 μ A
I _{CES}	Zero gate voltage collector current	-	-	1.0	mA	V _{GE} = 0V, V _{CE} = 600V
I _{GES}	Gate to emitter leakage current	-	-	2.0	μ A	V _{CE} = 0V, V _{GE} = $\pm$ 20V
V _F	Diode forward voltage drop	-	1.6	2.0	V	I _c = 100A

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

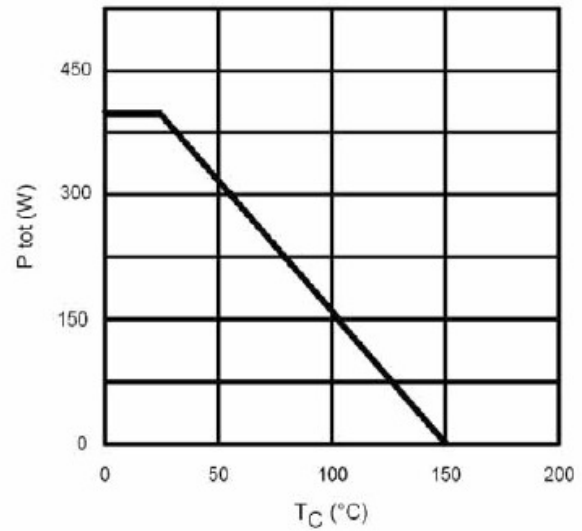
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
C_{ies}	Input capacitance	-	6900	-	pF	$V_{CE} = 30\text{V}, V_{GE} = 0\text{V}$ $f = 1.0\text{MHz}$
C_{oss}	Output capacitance	-	730	-		
C_{res}	Reverse transfer capacitance	-	190	-		
$t_{d(on)}$	Turn-on delay time	-	82	-	ns	$T_j = 25^\circ\text{C}, V_{CC} = 480\text{V}$ $I_C = 60\text{A}, V_{GE} = 15\text{V}$ $R_G = 5.0\Omega$
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)	-	-	0.26	$^\circ\text{C/W}$
$R_{\theta JC}$	Junction-to-Case (Diode Part, Per 1/2 Module)	-	-	0.6	
$R_{\theta CS}$	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**

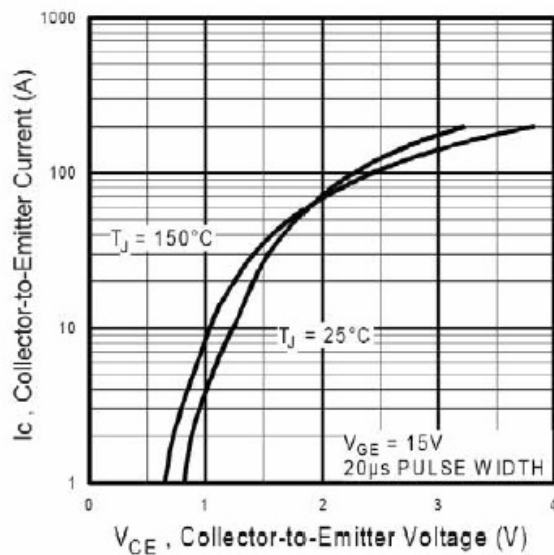
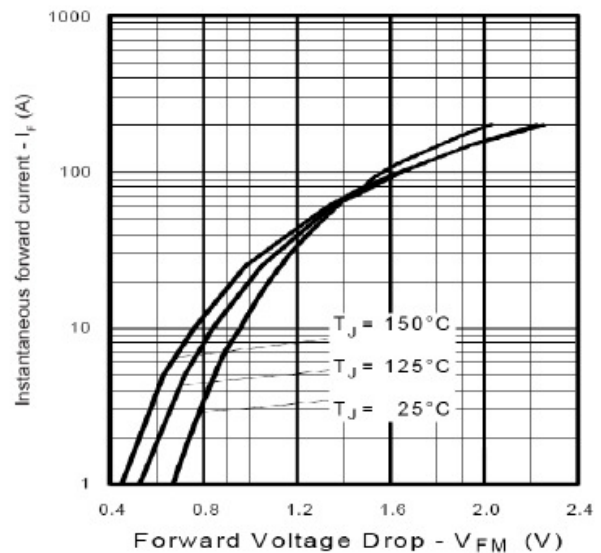


Fig 3. Typ. IGBT Output Characteristics



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

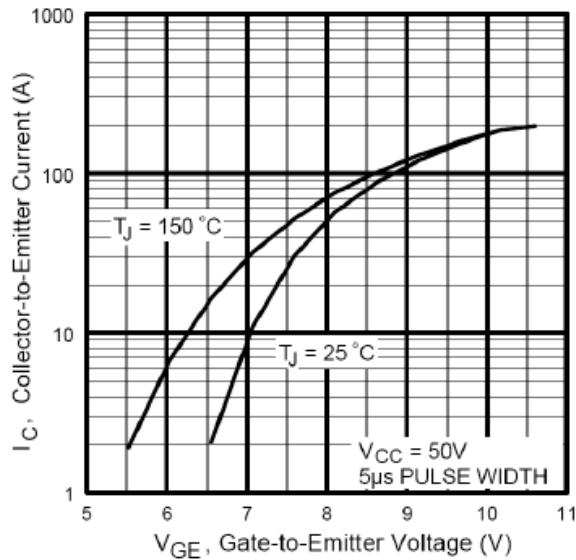


Fig 5. Typical Transfer Characteristics

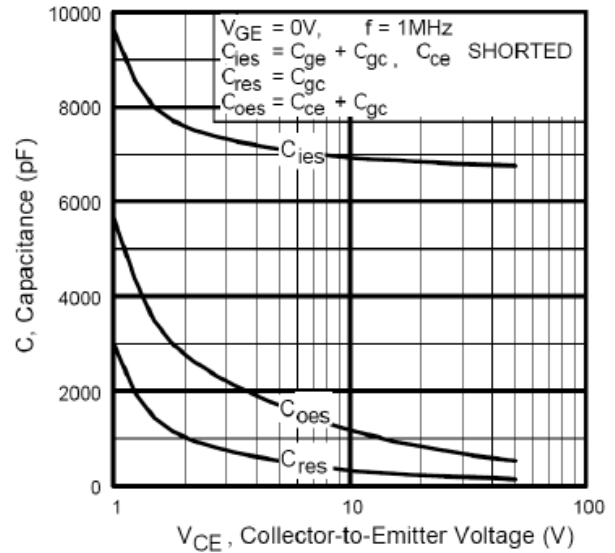


Fig 6. Typ. Capacitance vs. V_{CE}

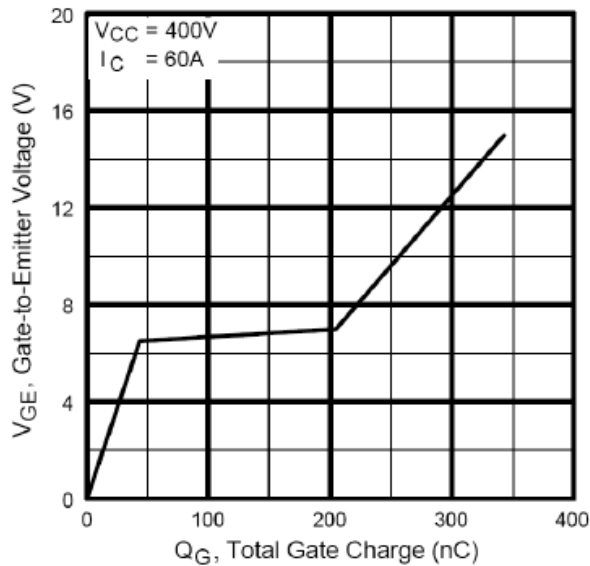


Fig 7. Typical Gate Charge vs. V_{GE}

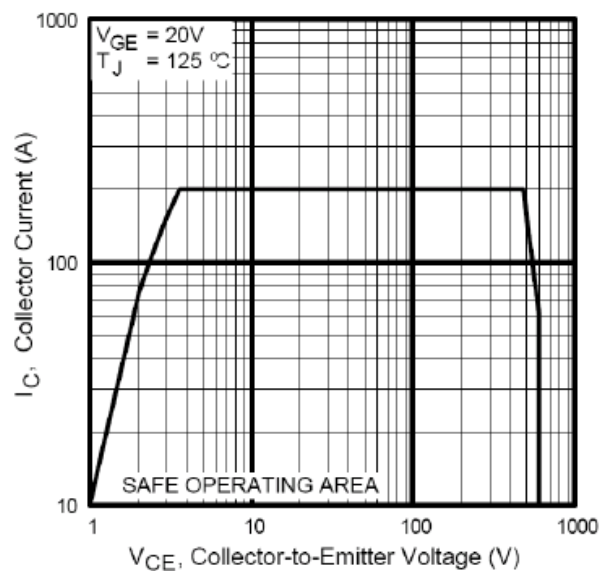


Fig 8. Turn-off SOA

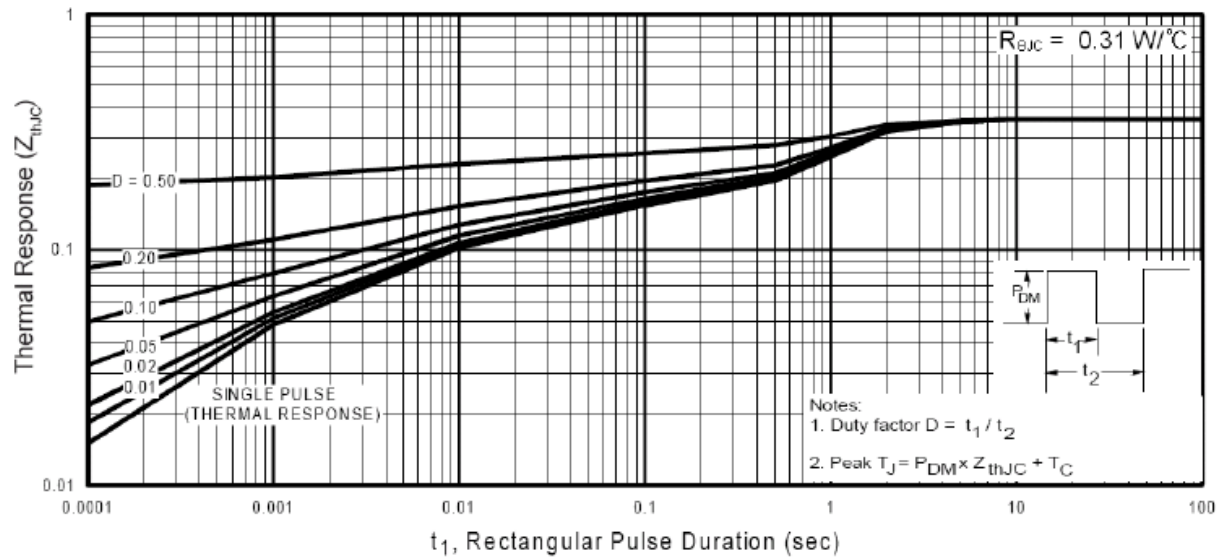
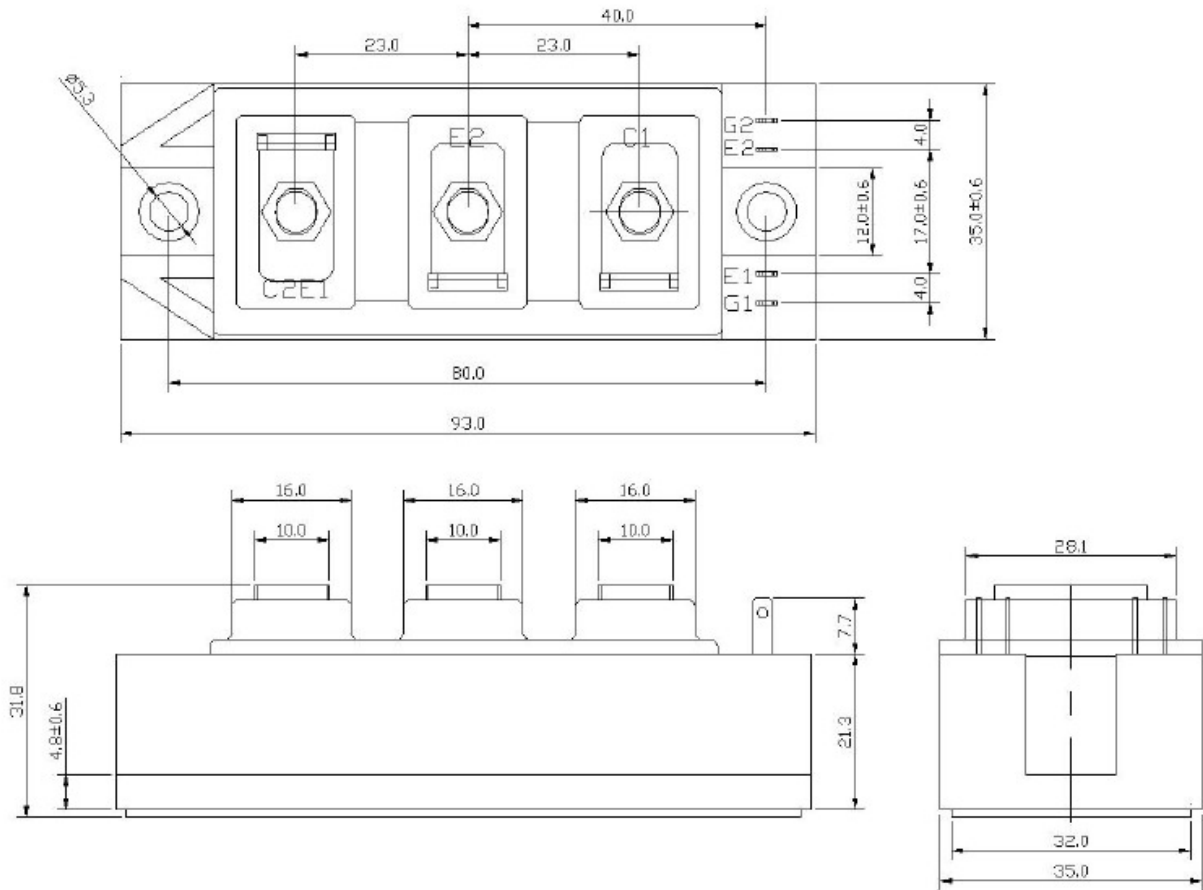


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Outline (dimensions in mm)



* Data and specifications subject to change without notice.