

“HALF-BRIDGE” IGBT

Features

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

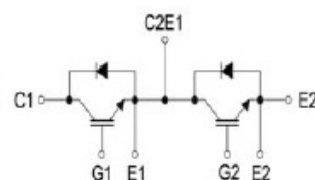
Applications

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. = 2.0V



Package : V1



Absolute Maximum Ratings @ T_c = 25 (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 (25)	100 (130)	A
I _{CP}	Pulsed collector current	T _c = 25	200	A
I _F	Diode continuous forward current	T _c = 75 (25)	80 (100)	A
I _{FM}	Diode maximum forward current	T _c = 25	260	A
T _{SC}	Short circuit test, V _{GE} =15V, V _{CC} =360V	T _c = 100	10	
V _{iso}	Isolation voltage test	AC @ 1 minute	2500	V
P _D	Maximum power dissipation	T _c = 25	450	W
T _j	Junction temperature		-40 ~ 150	
T _{stg}	Storage temperature		-40 ~ 125	
Weight	Weight of module		190	g
M _d	Mounting torque with screw : M5		2.0	Nm
	Terminal connection torque : M5		2.0	Nm

Electrical Characteristics @ T_j = 25 (unless otherwise specified)

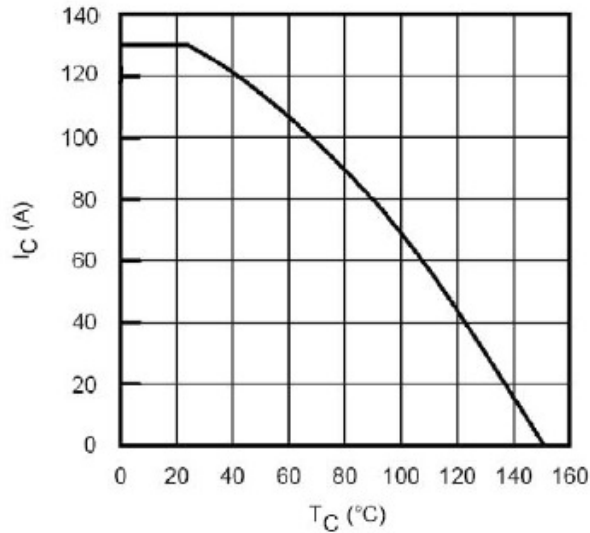
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
V _{CE(sat)}	Collector to emitter saturation voltage	-	2.0	2.5	V	I _c = 100A, V _{GE} = 15V
V _{GE(th)}	Gate threshold voltage	3.0	4.5	6.0		V _{CE} = V _{GE} , I _c = 250 μ A
I _{CES}	Zero gate voltage collector current	-	-	1.0		V _{GE} = 0V, V _{CE} = 600V
I _{GES}	Gate to emitter leakage current	-	-	2.0		V _{CE} = 0V, V _{GE} = $\pm$ 20V
V _F	Diode forward voltage drop	-	1.4	1.9	V	I _c = 100A

Switching Characteristics @ $T_j = 25$ (unless otherwise specified)

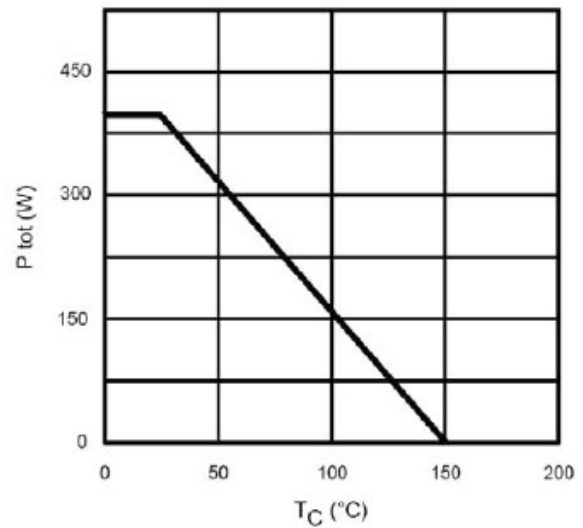
Symbol	Parameter	Min	Typ	Max	Unit	Test condition
C_{ies}	Input capacitance	-	6900	-	pF	$V_{CE} = 30V$, $V_{GE} = V$ $f = 1.0MHz$
C_{oss}	Output capacitance	-	730	-		
C_{res}	Reverse transfer capacitance	-	190	-		
$t_{d(on)}$	Turn-on delay time	-	82	-	ns	$T_j = 25$, $V_{CC} = 480V$ $I_C = 60A$, $V_{GE} = 15V$ $R_G = 5.0$
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	$T_j = 125$, $V_R = 200V$ $I_F = 60A$
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	/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**

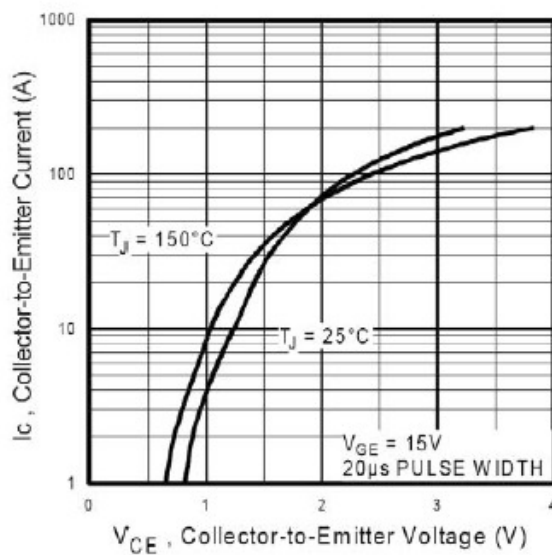
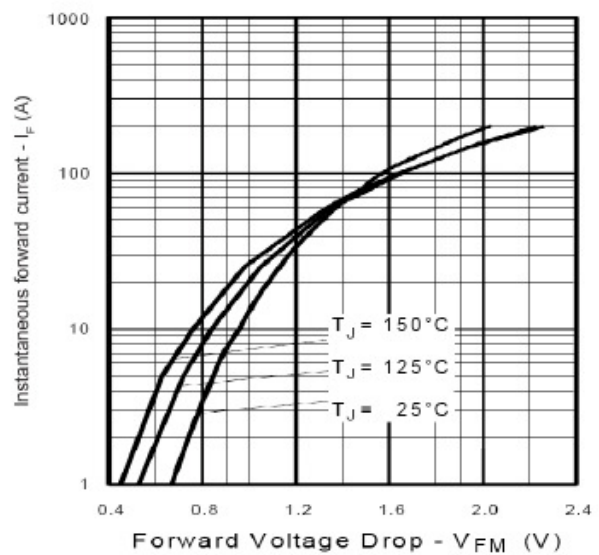


Fig 3. Typ. IGBT Output Characteristics



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

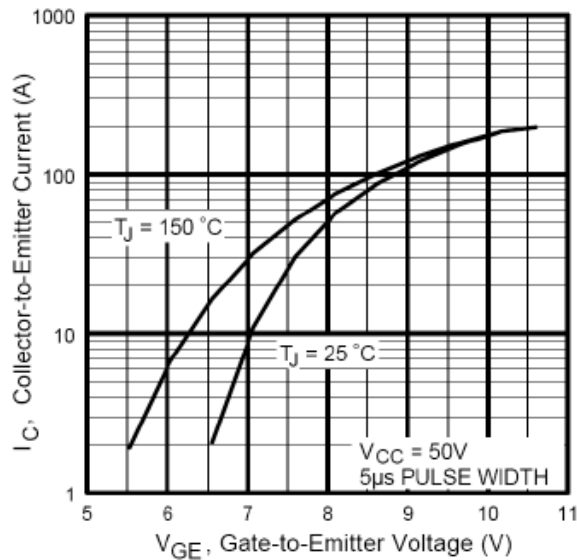


Fig 5. Typical Transfer Characteristics

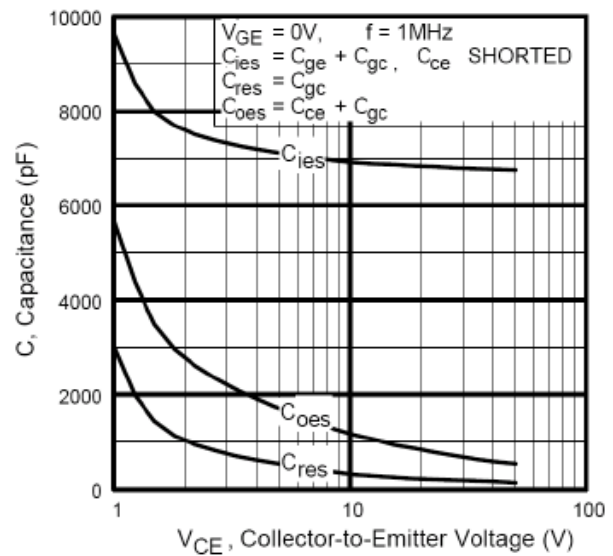


Fig 6. Typ. Capacitance vs. V_{CE}

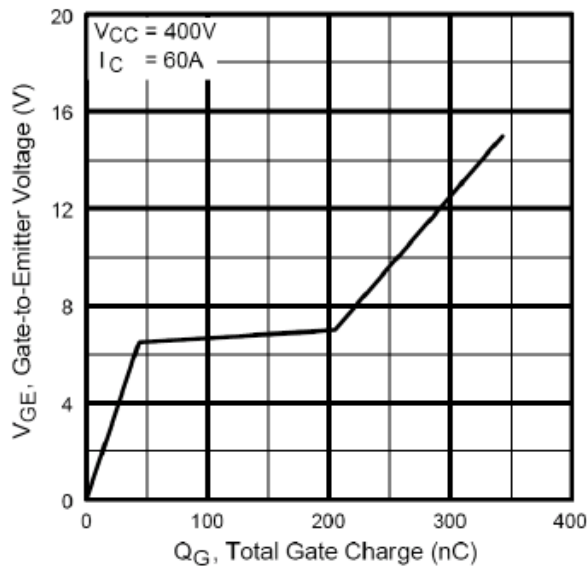


Fig 7. Typical Gate Charge vs. V_{GE}

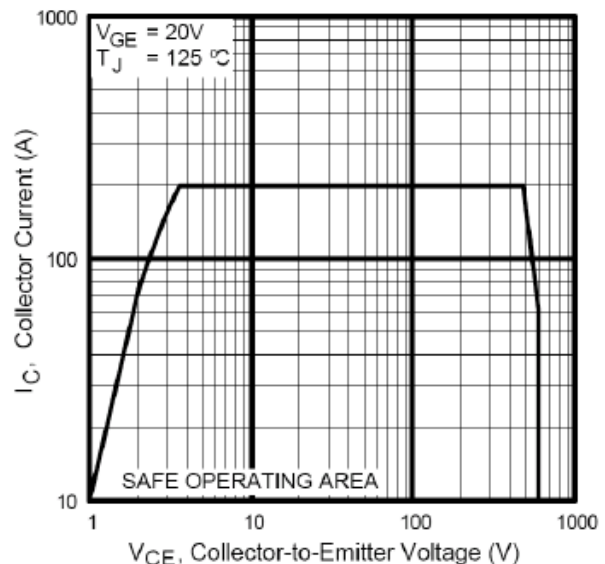


Fig 8. Turn-off SOA

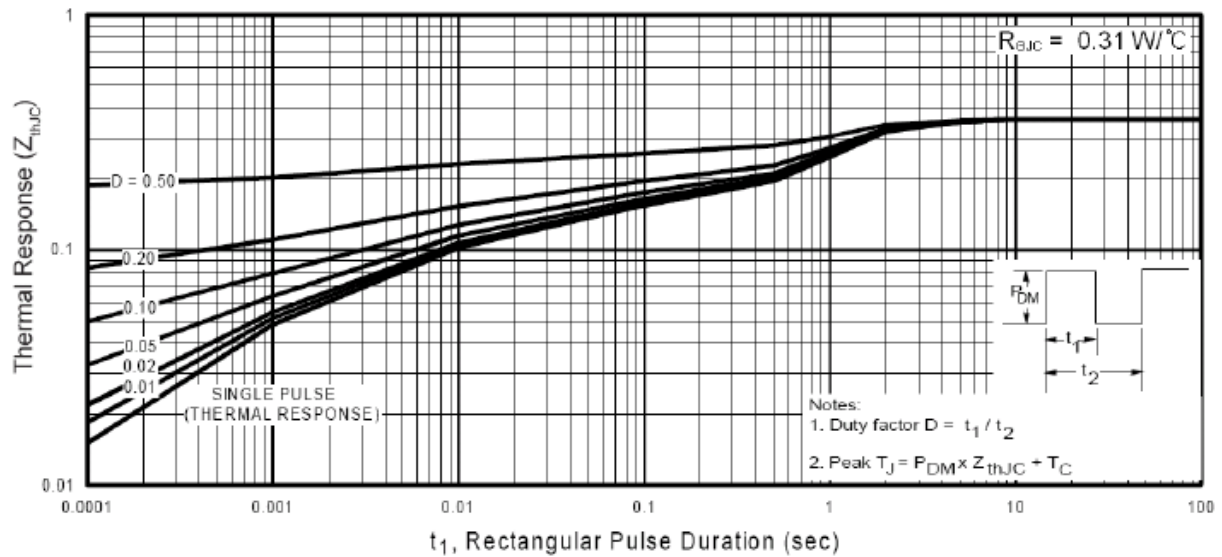


Fig 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case