

LG200HF060T1VH

IGBT Module

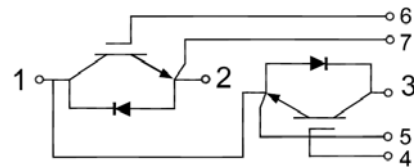
Features:

- Short Circuit Rated 10 μ s
- Low Saturation Voltage: $V_{CE(sat)} = 1.80V @ I_C = 200A, T_C = 25^{\circ}C$
- Low Switching Loss
- 100% RBSOA Tested ($2 \times I_C$)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement



Applications:

- Welding Machine、Cutting Machine
- Plating Power Supply、Induction Heating
- SMPS、UPS



Maximum Rated Values of IGBT($T_C = 25^{\circ}C$ unless otherwise specified)

V_{CES}	Collector-Emitter Blocking Voltage		600	V
V_{GES}	Gate-Emitter Voltage		± 20	V
I_C	Continuous Collector Current	$T_C = 80^{\circ}C,$	200	A
		$T_C = 25^{\circ}C$	320	A
I_{CM}	Repetitive Peak Collector Current	$T_J = 150^{\circ}C$	400	A
t_{SC}	Short Circuit Withstand Time		>10	μs
P_D	Maximum Power Dissipation per IGBT	$T_C = 25^{\circ}C$ $T_{Jmax} = 150^{\circ}C$	780	W

Electrical Characteristics of IGBT ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Static characteristics

Symbol	Description	Conditions	Min	Typ	Max	Unit
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	$I_C = 1\text{mA}$, $V_{CE} = V_{GE}$	3.0	4.5	5.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 200\text{A}$, $V_{GE} = 15\text{V}$	$T_J = 25^{\circ}\text{C}$	1.80	2.10	V
			$T_J = 125^{\circ}\text{C}$	2.00		V
I_{CES}	Collector-Emitter Leakage Current	$V_{GE} = 0\text{V}$, $V_{CE} = V_{CES}$, $T_J = 25^{\circ}\text{C}$			1	mA
I_{GES}	Gate-Emitter Leakage Current	$V_{GE} = \pm 20\text{V}$, $V_{CE} = 0\text{V}$, $T_J = 25^{\circ}\text{C}$			200	nA
C_{ies}	Input Capacitance	$V_{CE} = 25\text{V}$, $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$		11.9		nF
C_{oes}	Output Capacitance			1.15		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	$V_{CC} = 300V, I_C = 200A,$ $R_G = 15\Omega, V_{GE} = \pm 15V,$ Inductive Load	$T_J = 25^{\circ}C$		223		ns
			$T_J = 125^{\circ}C$		210		
t_r	Rise Time		$T_J = 25^{\circ}C$		190		ns
			$T_J = 125^{\circ}C$		195		
$t_{d(off)}$	Turn-off Delay Time		$T_J = 25^{\circ}C$		492		ns
			$T_J = 125^{\circ}C$		510		
t_f	Fall Time		$T_J = 25^{\circ}C$		145		ns
			$T_J = 125^{\circ}C$		140		
E_{on}	Turn-on Switching Loss		$T_J = 25^{\circ}C$		1.5		mJ
			$T_J = 125^{\circ}C$		2.3		
E_{off}	Turn-off Switching Loss		$T_J = 25^{\circ}C$		8.0		mJ
			$T_J = 125^{\circ}C$		8.6		
Q_g	Total Gate Charge		$T_J = 25^{\circ}C$		1100		nC
RBSOA	Reverse Bias Safe Operation Area	$I_C=400A, V_{CC}=480V, V_p=600V,$ $R_g = 15\Omega, V_{GE}=\pm 15V$ to 0V, $T_J = 150^{\circ}C$		Trapezoid			
SCSOA	Short Circuit Safe Operation Area	$V_{CC}=300V, V_{GE} = 15V,$ $T_J = 150^{\circ}C$		10		μs	
$R_{\theta JC}$	IGBT Thermal Resistance: Junction-To-Case				0.16	$^{\circ}C/W$	

Maximum Rated Values of Diode ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

V_{RRM}	Repetitive Peak Reverse Voltage	600	V
I_F	Diode Continuous Forward Current	200	A
I_{FM}	Diode Maximum Forward Current	400	A

Electrical Characteristics of Diode ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Description	Conditions		Min	Typ	Max	Unit
V _{FM}	Forward Voltage	I _F =200A , V _{GE} = 0V	T _J = 25°C		1.40	1.60	V
			T _J = 125°C		1.40		
I _{rr}	Peak Reverse Recovery Current	I _F =200A, di/dt =580A/μs, V _{rr} = 300V, V _{GE} = -15V	T _J = 25°C		40		A
			T _J = 125°C		55		
Q _{rr}	Reverse Recovery Charge		T _J = 25°C		4.9		μC
			T _J = 125°C		9.4		
E _{rec}	Reverse Recovery Energy		T _J = 25°C		0.34		mJ
			T _J = 125°C		1.38		
R _{θJC}	Diode Thermal Resistance: Junction-To-Case				0.44		°C/W

Module

Symbol	Description		Min	Typ	Max	Unit
V_{iso}	Isolation Voltage(All Terminals Shorted)	$f = 50\text{Hz}$, 1minute			2500	V
T_J	Maximum Junction Temperature				150	$^{\circ}\text{C}$
T_{JOP}	Maximum Operating Junction Temperature Range		-40		+150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature		-40		+125	$^{\circ}\text{C}$
$R_{\theta CS}$	Case-To-Sink (Conductive Grease Applied)			0.1		$^{\circ}\text{C}/\text{W}$
T	Power Terminals Screw:M5		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			165		g

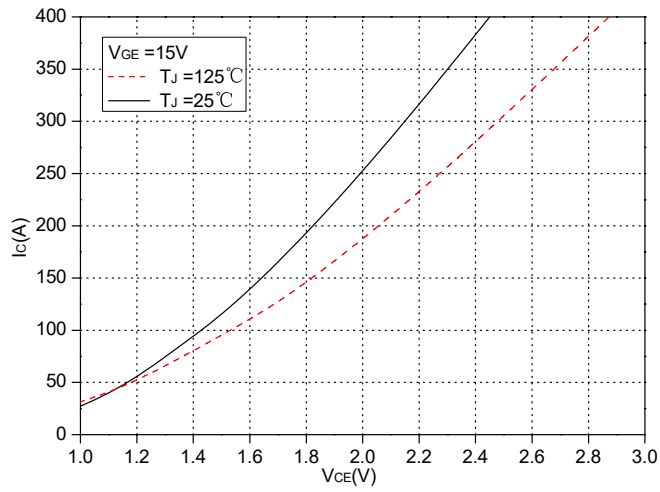


Fig.1 Typical Saturation Voltage Characteristics

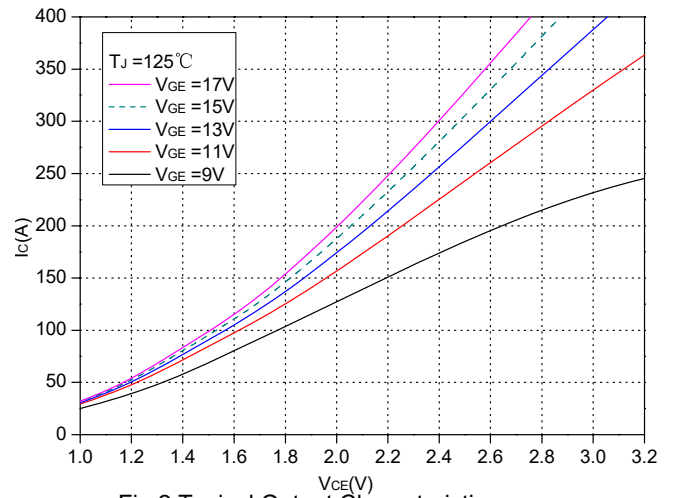


Fig.2 Typical Output Characteristics

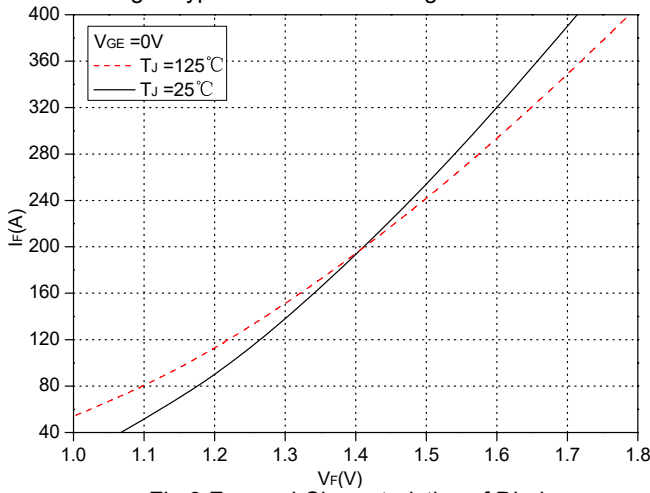


Fig.3 Forward Characteristics of Diode

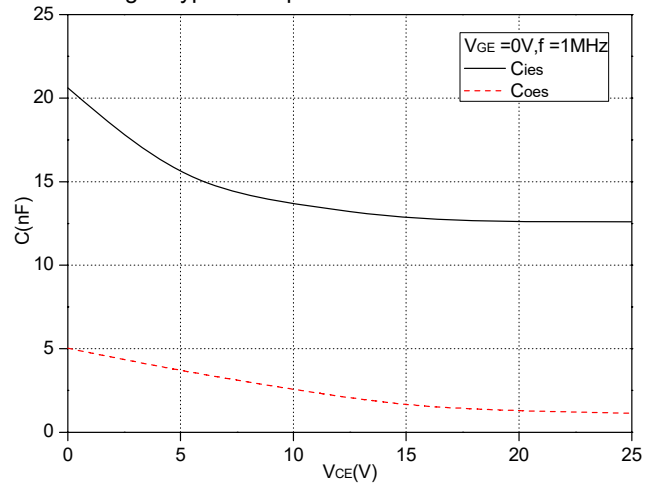


Fig.4 Capacitance Characteristics

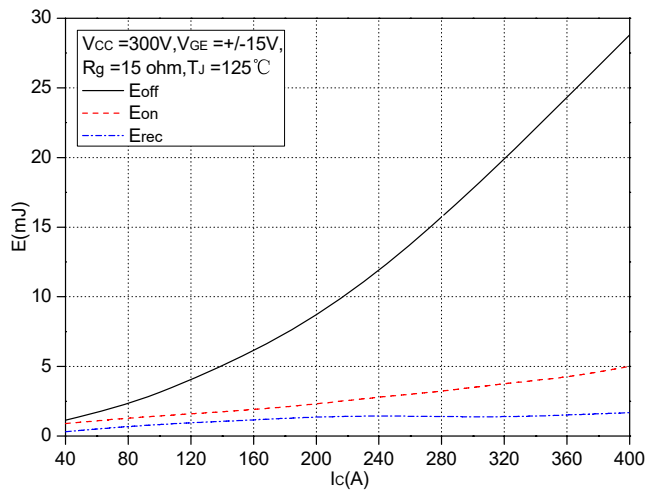


Fig.5 Typical Switching Loss vs. Collector Current

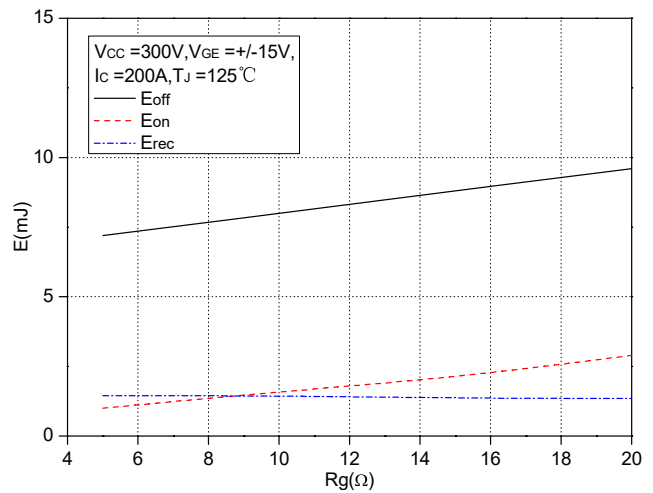


Fig.6 Typical Switching Loss vs. Gate Resistance

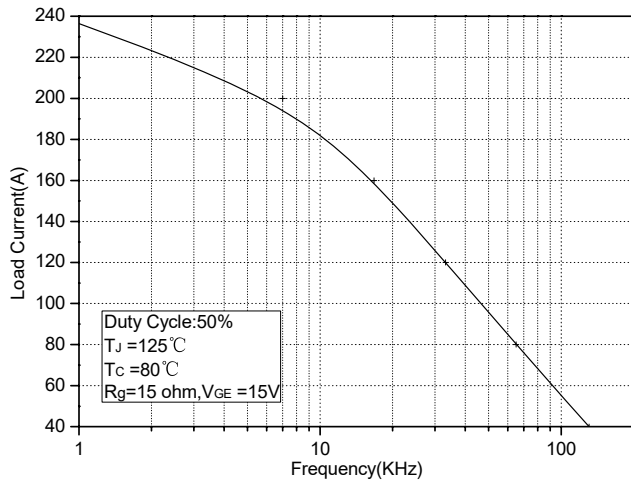


Fig.7 Typical Load Current vs. Frequency

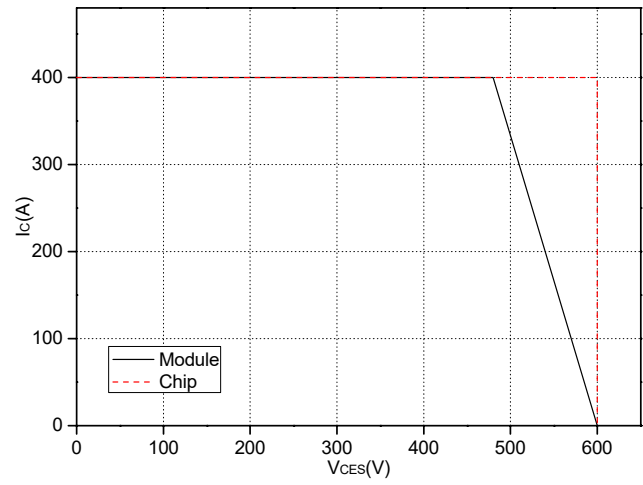


Fig.8 Reverse Bias Safe Operation Area (RBSOA)

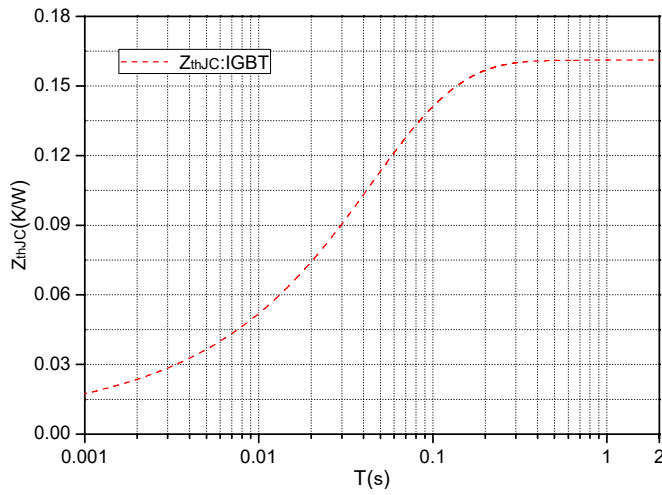


Fig.9 Transient thermal impedance (IGBT)

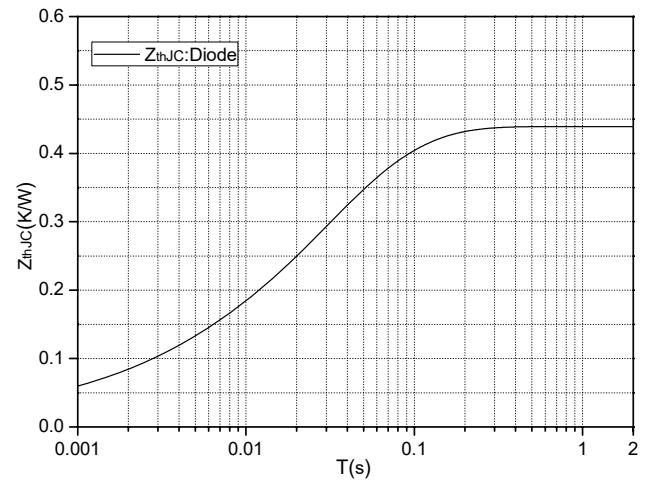
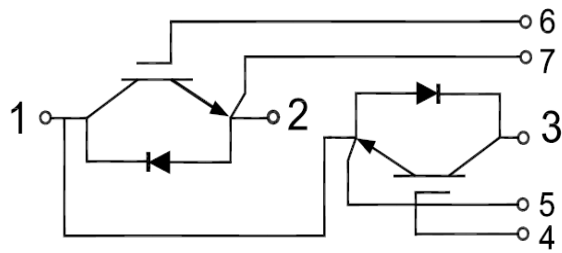


Fig.10 Transient thermal impedance (Diode)

Internal Circuit



Package Outline (Unit: mm):

