



GT200HF120T2VH

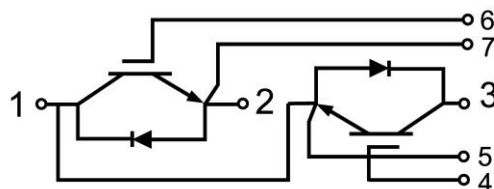
IGBT Module

Preliminary Datasheet

Features:

- Field Stop Trench Gate IGBT
- Short Circuit Rated $>10\mu\text{s}$
- Low Saturation Voltage
- Low Switching Loss
- 100% RBSOA Tested($2\times I_c$)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Circuit Diagram



Applications:

- Weld Turbines
- High Power Converters
- Motor Drives
- UPS Systems

IGBT, Inverter

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

V_{CES}	Collector-Emitter Blocking Voltage		1200	V
V_{GES}	Gate-Emitter Voltage		± 20	V
I_c	Continuous Collector Current	$T_c=100^\circ\text{C}$	200	A
		$T_c=25^\circ\text{C}$	350	A
I_{CM}	Peak Collector Current Repetitive	$t_p=1\text{ms}$	400	A
t_{SC}	Short Circuit Withstand Time	$V_{CC}=600\text{V}$, $V_{GE}=\pm 15\text{V}$, $T_J=150^\circ\text{C}$	>10	μs
P_D	Maximum Power Dissipation (IGBT)	$T_c=25^\circ\text{C}$ $T_{Jmax}=175^\circ\text{C}$	1396	W



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

Static Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
$V_{GE(th)}$	Gate-Emitter Threshold Voltage	$I_C=7.6\text{mA}$, $V_{CE}=V_{GE}$	5.0		7.0	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=200\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	2.10		V
			$T_J=125^{\circ}\text{C}$	2.65		V
			$T_J=175^{\circ}\text{C}$	2.95		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	$V_{GE}=20\text{V}$, $V_{CE}=0\text{V}$, $T_J=25^{\circ}\text{C}$			200	nA
C_{ies}	Input Capacitance	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		22.53		nF
C_{oes}	Output Capacitance			1.19		nF
C_{res}	Reveres Transfer Capacitance			0.23		nF

Switching Characteristics

$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V, I_C=200A,$ $R_{Gon}=1\Omega, V_{GE}=\pm 15V,$ Inductive Load	$T_J=25^{\circ}C$		171		ns
			$T_J=125^{\circ}C$		186		
			$T_J=175^{\circ}C$		194		
t_r	Rise Time		$T_J=25^{\circ}C$		39		ns
			$T_J=125^{\circ}C$		47		
			$T_J=175^{\circ}C$		53		
$t_{d(off)}$	Turn-off Delay Time		$T_J=25^{\circ}C$		233		ns
			$T_J=125^{\circ}C$		276		
			$T_J=175^{\circ}C$		293		
t_f	Fall Time	$T_J=25^{\circ}C$		129		ns	
		$T_J=125^{\circ}C$		179			
		$T_J=175^{\circ}C$		204			
E_{on}	Turn-on Switching Loss	$V_{CC}=600V, I_C=200A,$ $R_{Gon}=1\Omega, V_{GE}=\pm 15V,$ $di/dt=3418A/\mu s(T_J=175^{\circ}C),$ Inductive Load	$T_J=25^{\circ}C$		9.8		mJ
		$T_J=125^{\circ}C$		15.2			
		$T_J=175^{\circ}C$		19.4			



E _{off}	Turn-off Switching Loss	V _{CC} =600V, I _C =200A, R _{Goff} =1Ω, V _{GE} =±15V, du/dt=10195V/μs(T _J =175°C), Inductive Load	T _J =25°C		8.4		mJ
			T _J =125°C		11.2		
			T _J =175°C		12.5		
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C		1264		nC
R _{G(int)}	Internal Gate Resistor		T _J =25°C		2.5		Ω
R _{θJC}	Thermal Resistance: Junction-to-Case (per IGBT)					0.11	°C/W

FWD, Inverter

Maximum Rated Values (T_C=25°C unless otherwise specified)

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	1200	V
I _F	Diode Continuous Forward Current		200	A
I _{FM}	Peak Diode Current Repetitive	t _p =1ms	400	A

Electrical Characteristics of Diode (T_C=25°C unless otherwise specified)

Symbol	Description	Conditions		Min.	Typ.	Max.	Units
V _{FM}	Forward Voltage	I _F =200A	T _J =25℃		1.56		V
			T _J =125℃		1.62		
			T _J =175℃		1.65		
t _{rr}	Reverse Recovery Time	I _F =200A, -diF/dt=3700A/μs(T _J =175℃), V _R =600V, V _{GE} =-15V	T _J =25℃		305		ns
			T _J =125℃		470		
			T _J =175℃		557		
I _{rr}	Peak Reverse Recovery Current		T _J =25℃		144		A
			T _J =125℃		152		
			T _J =175℃		168		
Q _{rr}	Reverse Recovery Charge		T _J =25℃		18.7		μC
			T _J =125℃		30.6		
			T _J =175℃		40.8		



E _{rec}	Reverse Recovery Energy	I _F =200A, -diF/dt=3700A/μs(T _J =175°C), V _R =600V, V _{GE} =-15V	T _J =25°C		6.5		mJ
			T _J =125°C		12.3		
			T _J =175°C		15.9		
R _{θJC}	Thermal Resistance: Junction-to-Case (per Diode)					0.21	°C/W

Module

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V _{iso}	Isolation Voltage (All Terminals Shorted)	f=50Hz, 1minute	2500			V
T _J	Maximum Junction Temperature				175	℃
T _{JOP}	Maximum Operating Junction Temperature Range		-40		+150	℃
T _{stg}	Storage Temperature		-40		+125	℃
CTI	Comparative Tracking Index		200			
R _{θCS}	Case-to-Sink Thermally (Conductive Grease Applied)				0.03	℃/W
T	Power Terminals Screw:M6		3.0		5.0	N·m
T	Mounting Screw:M6		3.0		6.0	N·m
G	Weight			300		g

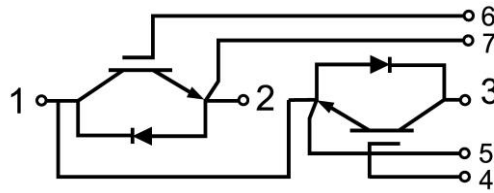
Ordering Information Table

Device code	G	T	200	HF	120	T2V	H
	①	②	③	④	⑤	⑥	⑦

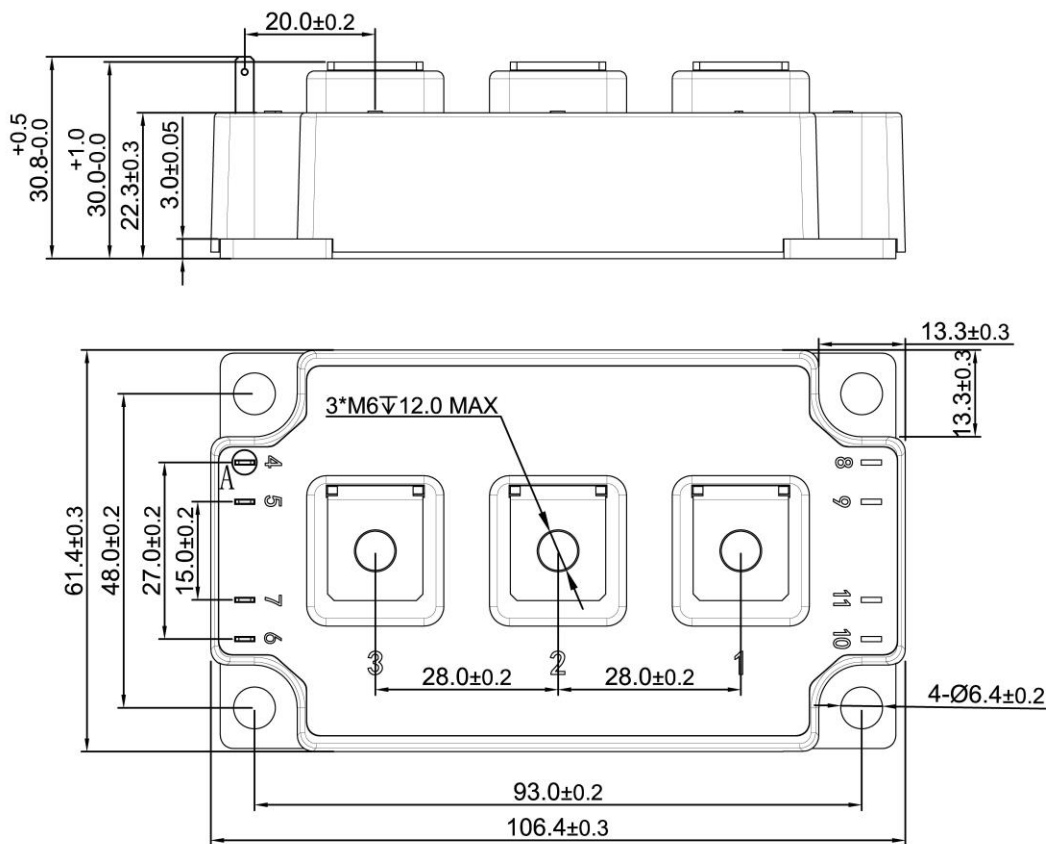
- ① - IGBT Module
- ② - Trench, Low Switching Losses IGBT
- ③ - Rated Current (200=200A)
- ④ - Circuit Configuration: HF (Half Bridge)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



Internal Circuit:



Package Outline (Unit: mm):





Revision	Notes
01	Initial Release

Announcement

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The released datasheet would be issued with “REV.” + “alphabet characters”.