



GT600HF120T2DH

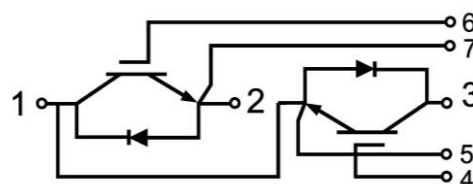
IGBT Module

Preliminary Data

Features:

- Trench & Field Stop IGBT
- Short Circuit Rated $>8\mu\text{s}$
- Low Switching Loss
- 100% RBSOA Tested($2\times I_c$)
- Low Stray Inductance
- Lead Free, Compliant with RoHS Requirement

Circuit Diagram



Applications:

- Industrial Inverters
- 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	$T_c=100^\circ\text{C}$	600	A
		$T_c=25^\circ\text{C}$	740	A
I_{CM}	Peak Collector Current Repetitive	$t_p=1\text{ms}$	1200	A
P_D	Maximum Power Dissipation (IGBT)	$T_c=25^\circ\text{C}, T_{Jmax}=175^\circ\text{C}$	2435	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	$I_C=23\text{mA}$, $V_{CE}=V_{GE}$		6.0		V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=600\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	1.65		V
			$T_J=125^{\circ}\text{C}$	1.90		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	$V_{GE}=20\text{V}$, $V_{CE}=0\text{V}$, $T_J=25^{\circ}\text{C}$			600	nA
C_{ies}	Input Capacitance	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		82.86		nF
C_{oes}	Output Capacitance			2.38		nF
C_{res}	Reverse Transfer Capacitance			0.39		nF

Switching Characteristics

Switching Characteristics							
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V, I_C=600A,$ $R_G=10\Omega, V_{GE}=\pm 15V,$ Inductive Load	$T_J=25^{\circ}C$		230		ns
			$T_J=125^{\circ}C$		720		
t_r	Rise Time		$T_J=25^{\circ}C$		640		ns
			$T_J=125^{\circ}C$		650		
$t_{d(off)}$	Turn-off Delay Time	$V_{CC}=600V, I_C=600A,$ $R_G=10\Omega, V_{GE}=\pm 15V,$ Inductive Load	$T_J=25^{\circ}C$		1240		ns
			$T_J=125^{\circ}C$		1340		
t_f	Fall Time		$T_J=25^{\circ}C$		120		ns
			$T_J=125^{\circ}C$		210		
E_{on}	Turn-on Switching Loss	$V_{CC}=600V, I_C=600A,$ $R_G=10\Omega, V_{GE}=\pm 15V,$ $di/dt=736A/\mu s$ ($T_J=125^{\circ}C$) Inductive Load	$T_J=25^{\circ}C$		290		mJ
			$T_J=125^{\circ}C$		327		
E_{off}	Turn-off Switching Loss	$V_{CC}=600V, I_C=600A,$ $R_G=10\Omega, V_{GE}=\pm 15V,$ $du/dt=2895V/\mu s$ ($T_J=125^{\circ}C$) Inductive Load	$T_J=25^{\circ}C$		85		mJ
			$T_J=125^{\circ}C$		100		
Q_g	Total Gate Charge	$V_{GE}=+15V \dots -15V$	$T_J=25^{\circ}C$		30.5		mC
$R_{G(int)}$	Internal Gate Resistance		$T_J=25^{\circ}C$		0		Ω
SCSOA	$V_{CC}=800V, V_{GE}=\pm 15V, T_J=25^{\circ}C$			8			μs
$R_{\theta JC}$	Thermal Resistance: Junction-to-Case (per IGBT)					0.062	$^{\circ}C/W$



FWD, Inverter

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

V_{RRM}	Repetitive Peak Reverse Voltage	$T_J=25^{\circ}\text{C}$	1200	V
I_F	Diode Continuous Forward Current		600	A
I_{FM}	Peak Diode Current Repetitive	$t_p=1\text{ms}$	1200	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units	
V _{FM}	Forward Voltage	I _F =600A	T _J =25℃		2.60		V	
			T _J =125℃		2.70			
t _{rr}	Reverse Recovery Time	I _F =600A, -diF/dt=528A/μs(T _J =125℃), V _R =600V, V _{GE} =-15V	T _J =25℃		400		ns	
			T _J =125℃		660			
I _{rr}	Peak Reverse Recovery Current		T _J =25℃		39		A	
			T _J =125℃		70			
Q _{rr}	Reverse Recovery Charge		T _J =25℃		7.7		μC	
			T _J =125℃		27.7			
E _{rec}	Reverse Recovery Energy		T _J =25℃		1.05		mJ	
			T _J =125℃		5.41			
R _{θJC}	Diode Thermal Resistance: Junction-to-Case (per Diode)					0.086	℃/W	



Module

Symbol	Description		Min.	Typ.	Max.	Units
V _{iso}	Isolation Voltage (All Terminals Shorted)	RMS, f=50Hz, 1minute	2500			V
T _J	Maximum Junction Temperature				175	°C
T _{JOP}	Maximum Operating Junction Temperature Range		-40		+150	°C
T _{stg}	Storage Temperature		-40		+125	°C
CTI	Comparative Tracking Index		200			
R _{ecs}	Case-to-Sink Thermally (Conductive Grease Applied)				0.03	°C/W
M	Power Terminals Screw:M6		3.0		5.0	N·m
M	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			315		g

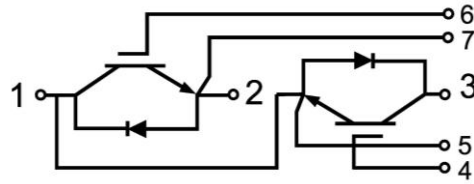
Ordering Information Table

Device code	G	T	600	HF	120	T2D	H
	①	②	③	④	⑤	⑥	⑦

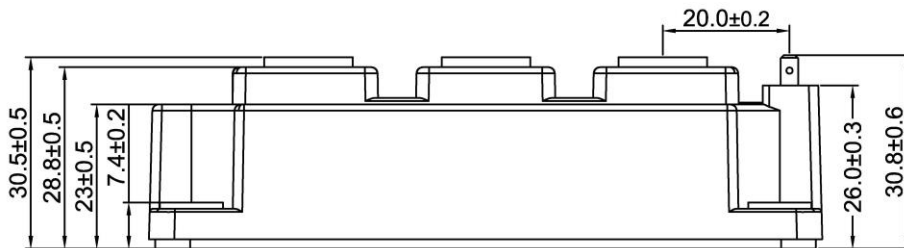
- ① - IGBT Module
- ② - Field Stop Trench Gate IGBT
- ③ - Rated Current (600=600A)
- ④ - Circuit Configuration (Half Bridge)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



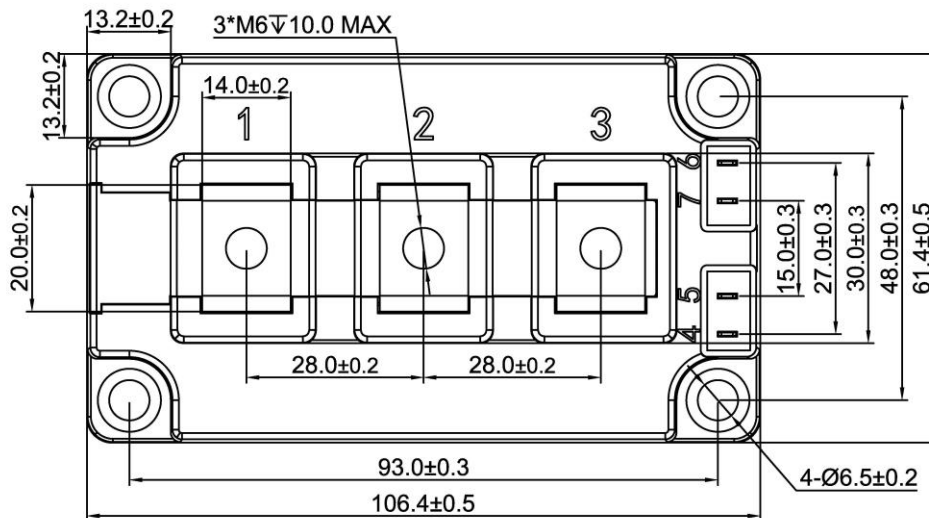
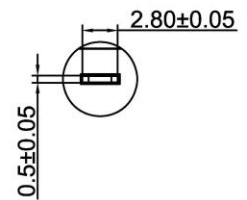
Internal Circuit



Package Outline (Unit: mm):



View A
scale 3:1





Revision	Notes
01	Initial Release

Announcement

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