



GT600CE120T2DH

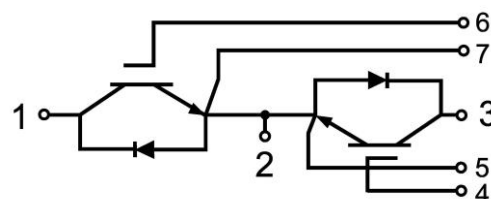
IGBT Module

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	$I_C=23\text{mA}$, $V_{CE}=V_{GE}$		6.3		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

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



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 _{θCS}	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

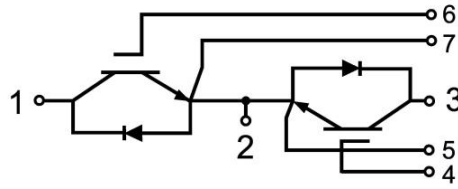
Ordering Information Table

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

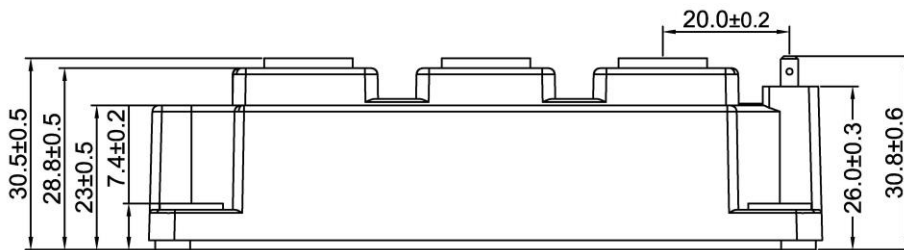
- ① - IGBT Module
- ② - Field Stop Trench Gate IGBT
- ③ - Rated Current (600=600A)
- ④ - Circuit Configuration: CE (Common Emitter)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



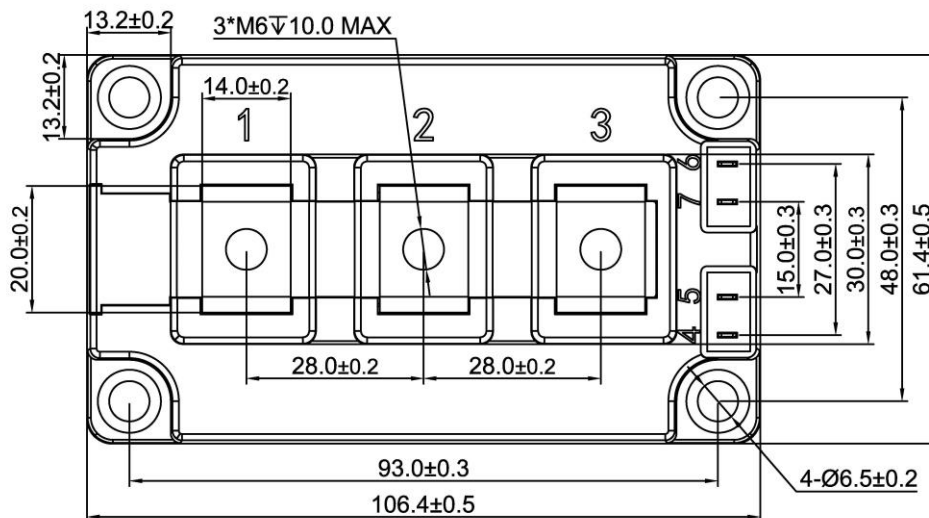
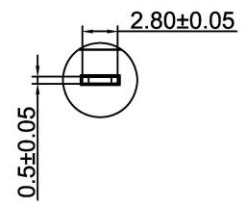
Internal Circuit



Package Outline (Unit: mm):



View A
scale 3:1





Revision	Notes
01	Initial Release

Announcement

Information in this document is believed to be accurate and reliable. However, NJSME does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Right to Make Changes

NJSME reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.

The datasheet with “REV.” + “Arabic numerals” is based on engineering data for initial reference purpose only.

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