



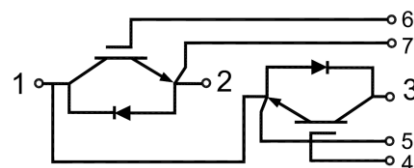
GT100HF120A5H

IGBT Module

Preliminary Datasheet

Features:

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



Applications:

- Inverter for Motor Drive
- AC and DC Servo Drive Amplifier
- UPS
- Industrial Machines, such as Welding Machines

IGBT, Inverter

Maximum Rated Values (T_C=25°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°C	100	A
		T _C =25°C	200	A
I _{CM}	Peak Collector Current Repetitive	t _p =1ms	200	A
P _D	Maximum Power Dissipation (IGBT)	T _C =25°C T _{Jmax} =175°C	781	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	$I_C=4\text{mA}$, $V_{CE}=V_{GE}$	4.6		6.9	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	1.75		V
			$T_J=125^{\circ}\text{C}$	2.15		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	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		10.83		nF
C_{oes}	Output Capacitance			1.38		nF
C_{res}	Reveres Transfer Capacitance			0.11		nF

Switching Characteristics

Switching Characteristics							
$t_{d(on)}$	Turn-on Delay Time	$V_{CC}=600V, I_C=100A,$ $R_{Gon}=5\Omega, V_{GE}=\pm 15V,$ Inductive Load	$T_J=25^{\circ}C$		78		ns
			$T_J=125^{\circ}C$		85		
t_r	Rise Time		$T_J=25^{\circ}C$		35		ns
			$T_J=125^{\circ}C$		43		
$t_{d(off)}$	Turn-off Delay Time	$V_{CC}=600V, I_C=100A,$ $R_{Goff}=5\Omega, V_{GE}=\pm 15V,$ Inductive Load	$T_J=25^{\circ}C$		193		ns
			$T_J=125^{\circ}C$		235		
t_f	Fall Time		$T_J=25^{\circ}C$		158		ns
			$T_J=125^{\circ}C$		261		
E_{on}	Turn-on Switching Loss	$V_{CC}=600V, I_C=100A,$ $R_{Gon}=5\Omega, V_{GE}=\pm 15V,$ $di/dt=2286A/\mu s(T_J=125^{\circ}C),$ Inductive Load	$T_J=25^{\circ}C$		7.2		mJ
			$T_J=125^{\circ}C$		9.6		
E_{off}	Turn-off Switching Loss	$V_{CC}=600V, I_C=100A,$ $R_{Goff}=5\Omega, V_{GE}=\pm 15V,$ $du/dt=1860V/\mu s(T_J=125^{\circ}C),$ Inductive Load	$T_J=25^{\circ}C$		6.2		mJ
			$T_J=125^{\circ}C$		8.4		
Q_g	Total Gate Charge	$V_{GE}=+15V \dots -15V$	$T_J=25^{\circ}C$		301		nC
$R_{G(int)}$	Internal Gate Resistor		$T_J=25^{\circ}C$		1.5		Ω
SCSOA	$V_{CC}=600V, V_{GE}=\pm 15V, R_{Gon}=1\Omega, R_{Goff}=1\Omega, T_J=25^{\circ}C$			10			μs
$R_{\theta JC}$	Thermal Resistance: Junction-to-Case (per IGBT)					0.19	$^{\circ}C/W$



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		100	A
I_{FM}	Peak FWD Current Repetitive	$t_p=1\text{ms}$	200	A

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

Symbol	Description	Conditions		Min.	Typ.	Max.	Units	
V _{FM}	Forward Voltage	I _F =100A	T _J =25°C		1.65		V	
			T _J =125°C		1.80			
t _{rr}	Reverse Recovery Time	I _F =100A, -diF/dt=2356A/μs(T _J =150°C), V _R =600V, V _{GE} =-15V	T _J =25°C		351		ns	
			T _J =125°C		462			
I _{rr}	Peak Reverse Recovery Current		T _J =25°C		92		A	
			T _J =125°C		94			
Q _{rr}	Reverse Recovery Charge		T _J =25°C		11		μC	
			T _J =125°C		17			
E _{rec}	Reverse Recovery Energy		T _J =25°C		4.0		mJ	
			T _J =125°C		6.6			
R _{θJC}	Thermal Resistance: Junction-to-Case (per Diode)					0.35	°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	°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)				0.05	°C/W
T	Power Terminals Screw:M5		3.0		5.0	N·m
T	Mounting Screw:M6		4.0		6.0	N·m
G	Weight			200		g

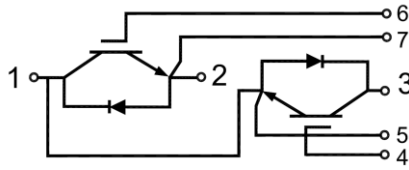
Ordering Information Table

Device code	G	T	100	HF	120	A5	H
	①	②	③	④	⑤	⑥	⑦

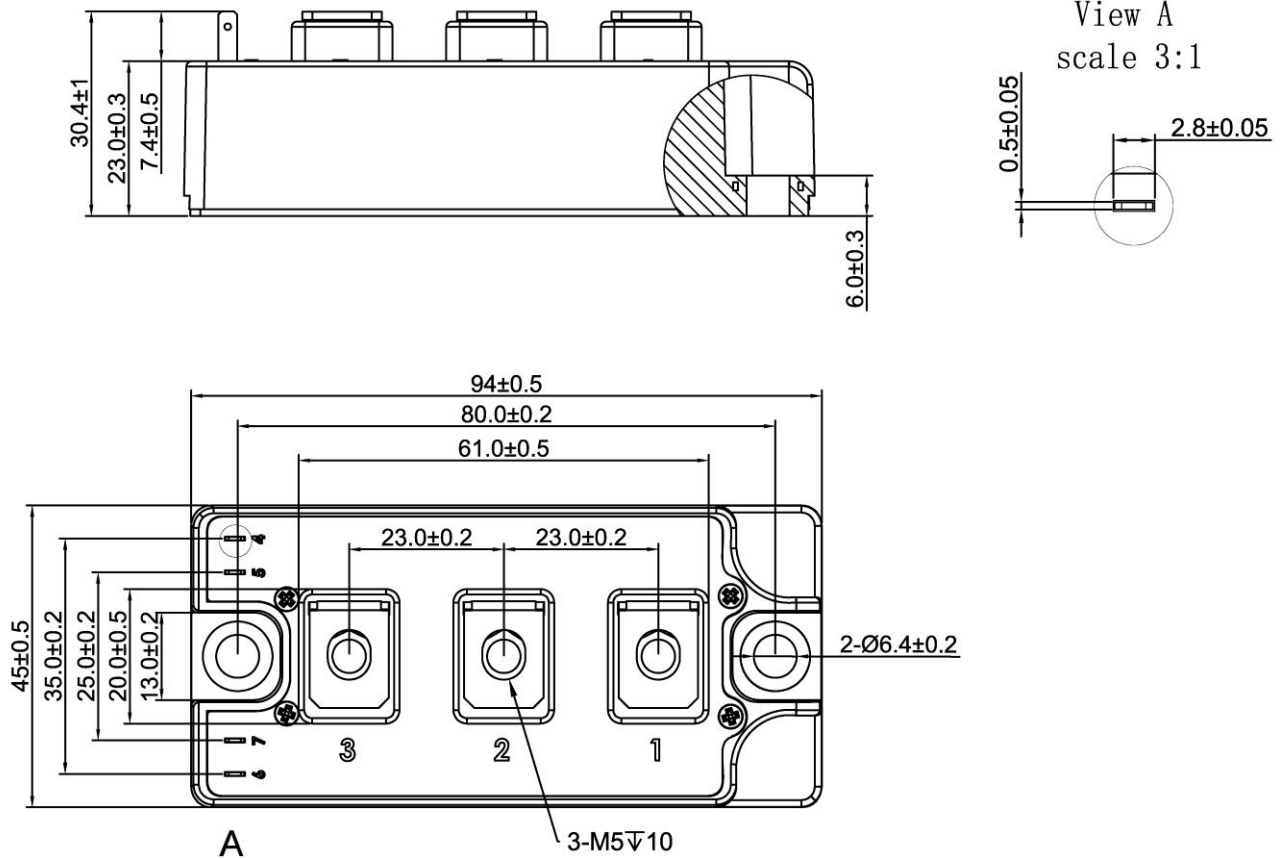
- ① - IGBT Module
- ② - Trench, Low Switching Losses IGBT
- ③ - Rated Current (100=100A)
- ④ - Circuit Configuration: HF (Half Bridge)
- ⑤ - Rated Voltage (120=1200V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



Internal Circuit:



Package Outline (Unit: mm):





Revision	Notes
01	Initial release

Announcement

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The 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”.