



GT100HF65T1VH

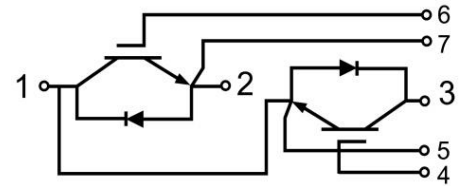
IGBT Module

Preliminary Data

Features:

- 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:

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

IGBT, Inverter

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

V_{CES}	Collector-Emitter Blocking Voltage		650	V
V_{GES}	Gate-Emitter Voltage		± 20	V
I_c	Continuous Collector Current	$T_c=100^\circ\text{C}$	100	A
		$T_c=25^\circ\text{C}$	200	A
I_{CM}	Peak Collector Current Repetitive	$t_p=1\text{ms}$	200	A
P_D	Maximum Power Dissipation (IGBT)	$T_c=25^\circ\text{C}$ $T_J=175^\circ\text{C}$	406	W



Electrical Characteristics of IGBT (T_C=25°C Unless otherwise specified)

Static characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
V _{GE(th)}	Gate-Emitter Threshold Voltage	I _C =1mA, V _{CE} =V _{GE}	4.0	4.6	6.0	V
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C =100A, V _{GE} =15V	T _J =25°C	1.40	1.70	V
			T _J =125°C	1.55		V
			T _J =150°C	1.60		V
I _{CES}	Collector-Emitter Leakage Current	V _{GE} =0V, V _{CE} =V _{CES} , T _J =25°C			1	mA
I _{GES}	Gate-Emitter Leakage Current	V _{GE} =±20V, V _{CE} =0V, T _J =25°C			±200	nA
C _{ies}	Input Capacitance	V _{CE} =25V, V _{GE} =0V, f=100kHz		7.30		nF
C _{oes}	Output Capacitance			0.43		nF
C _{res}	Reveres Transfer Capacitance			0.15		nF

Switching Characteristics

t _{d(on)}	Turn-on Delay Time	V _{CC} =300V, I _C =100A, R _{Gon} =10Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		224		ns
			T _J =125℃		247		
			T _J =150℃		253		
t _r	Rise Time		T _J =25℃		102		ns
			T _J =125℃		107		
			T _J =150℃		110		
t _{d(off)}	Turn-off Delay Time	V _{CC} =300V, I _C =100A, R _{Goff} =10Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		263		ns
			T _J =125℃		267		
			T _J =150℃		280		
t _f	Fall Time		T _J =25℃		132		ns
			T _J =125℃		153		
			T _J =150℃		155		
E _{on}	Turn-on Switching Loss	V _{CC} =300V, I _C =100A, R _{Gon} =10Ω, V _{GE} =±15V, di/dt=786A/us (T _J =150℃) Inductive Load	T _J =25℃		1.49		mJ
			T _J =125℃		1.80		
			T _J =150℃		2.07		



E _{off}	Turn-off Switching Loss	V _{CC} =300V, I _C =100A, R _{Goff} =10Ω, V _{GE} =±15V, dv/dt=3433V/μs (T _J =150°C) Inductive Load	T _J =25°C		2.14		mJ
			T _J =125°C		2.98		
			T _J =150°C		3.30		
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C		512		μC
R _{g (int)}	Internal Gate Resistor				2		Ω
I _{SC}	V _{CC} =300V, tp=10μs, V _{GE} =+/-15V, T _J =150°C				700		A
R _{θJC}	IGBT Thermal Resistance: Junction-to-Case					0.37	°C/W

Diode, Inverter

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

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	650	V
I _F	Diode Continuous Forward Current	T _C =100°C	100	A
I _{FM}	Diode Maximum Forward Current	tp=1ms	200	A

Electrical Characteristics of FWD (T_C=25°C Unless otherwise specified)

Symbol	Description	Conditions		Min.	Typ.	Max.	Unit
V _{FM}	Forward Voltage	I _F =100A	T _J =25℃		1.60		V
			T _J =125℃		1.65		
			T _J =150℃		1.60		
t _{rr}	Reverse Recovery Time	I _F =100A, -di _F /dt=1031A/μs(T _J =150℃), V _R =300V, V _{GE} =-15V	T _J =25℃		125		ns
			T _J =125℃		170		
			T _J =150℃		204		
I _{rr}	Peak Reverse Recovery Current		T _J =25℃		39		A
			T _J =125℃		52		
			T _J =150℃		55		



Q _{rr}	Reverse Recovery Charge	I _F =100A, -di _F /dt=1031A/μs(T _J =150°C), V _R =300V, V _{GE} =-15V	T _J =25°C		2.98		μC
			T _J =125°C		5.41		
			T _J =150°C		6.37		
E _{rec}	Reverse Recovery Energy		T _J =25°C		0.57		mJ
			T _J =125°C		1.13		
			T _J =150°C		1.32		
R _{θJC}	Diode Thermal Resistance: Junction-to-Case					0.61	°C/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)				0.07	°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			165		g

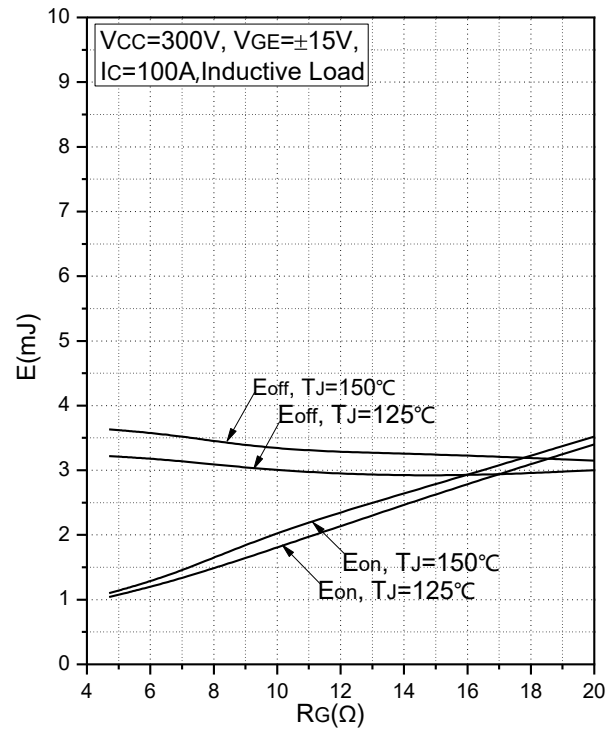
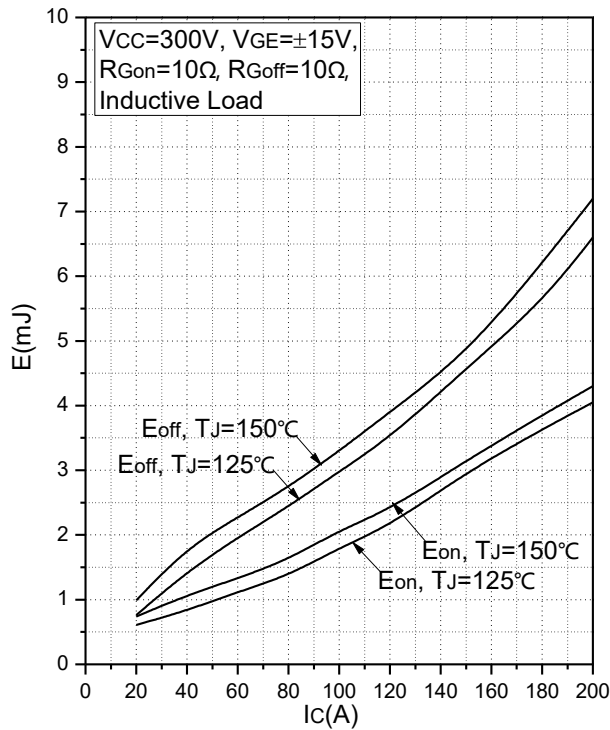
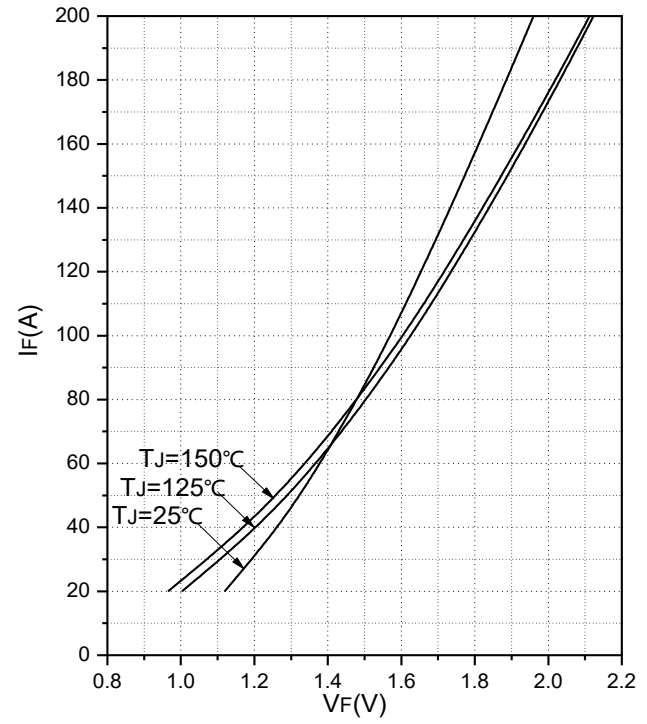
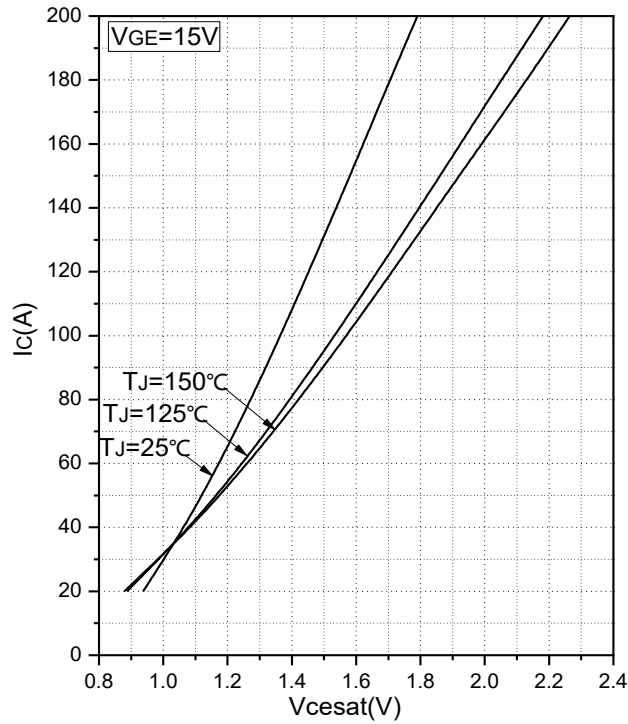


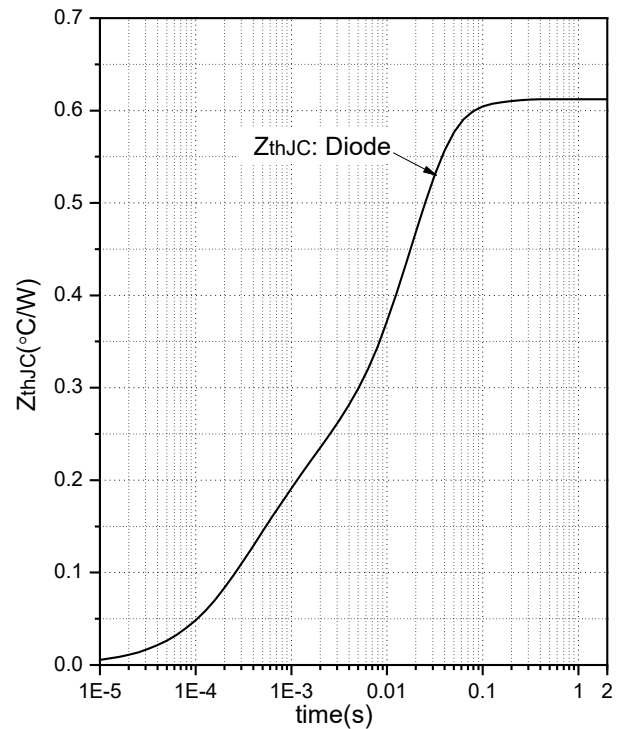
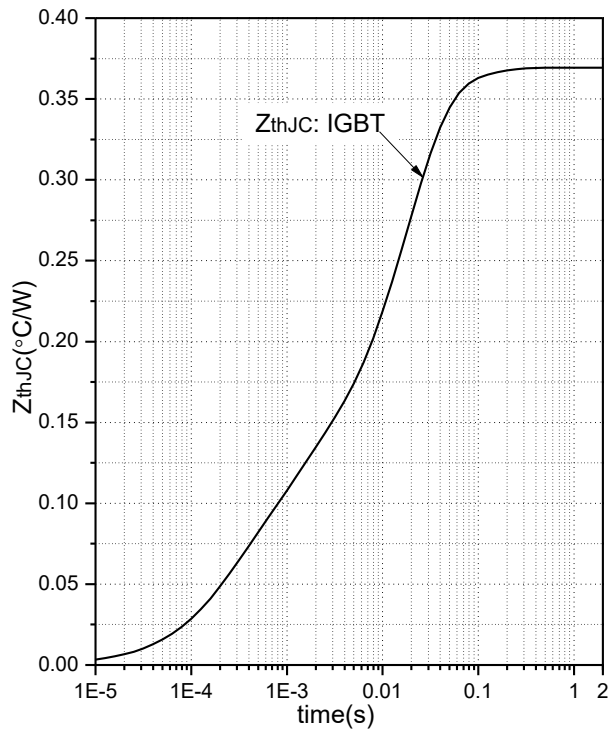
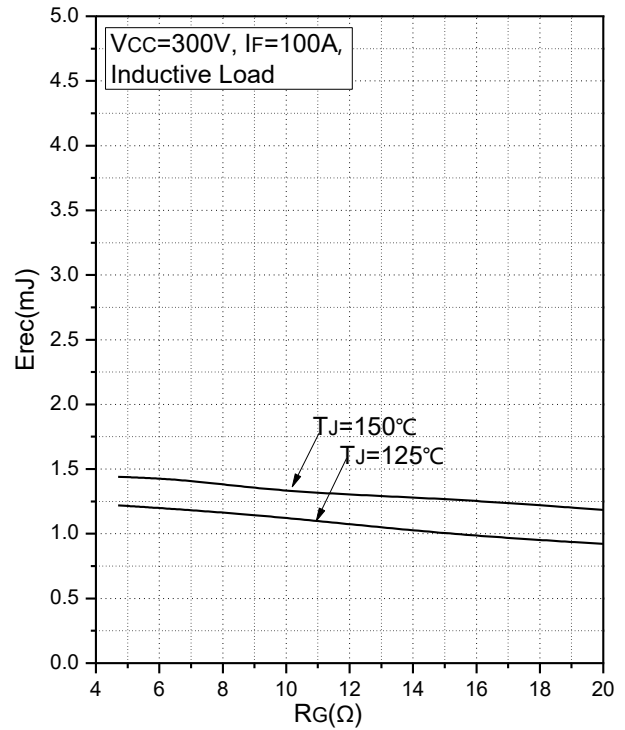
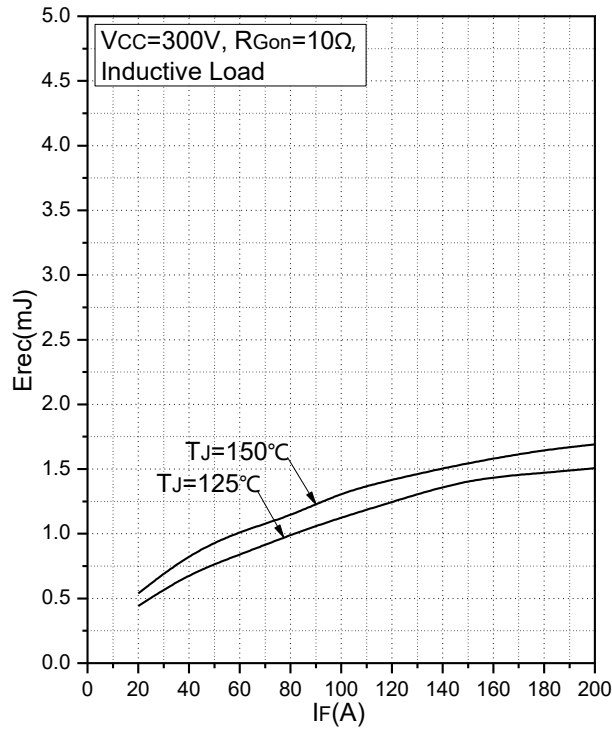
Ordering Information Table

Device code

G	T	100	HF	65	T1V	H
①	②	③	④	⑤	⑥	⑦

- ① - IGBT Module
- ② - Trench & Field Stop IGBT
- ③ - Rated Current (100=100A)
- ④ - Circuit Configuration: HF (Half Bridge)
- ⑤ - Rated Voltage (65=650V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)





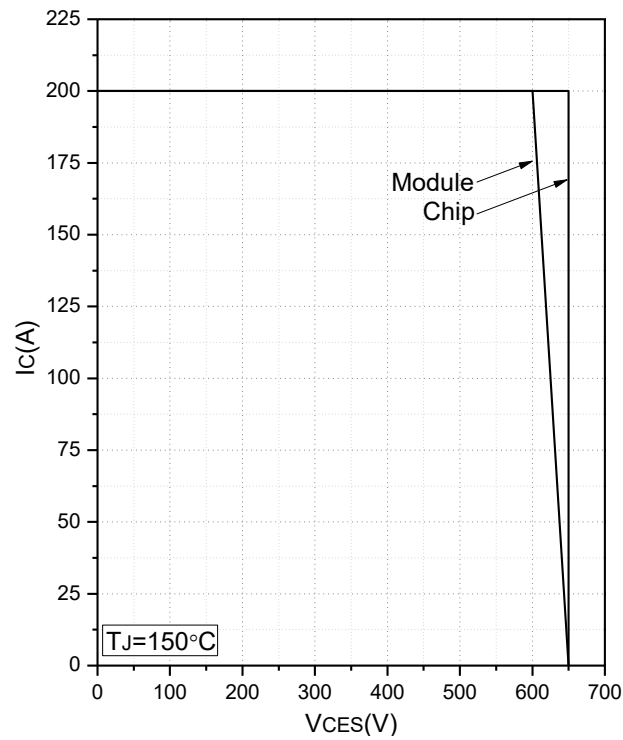


Fig.9 Reverse Bias Safe Operation Area (RBSOA)

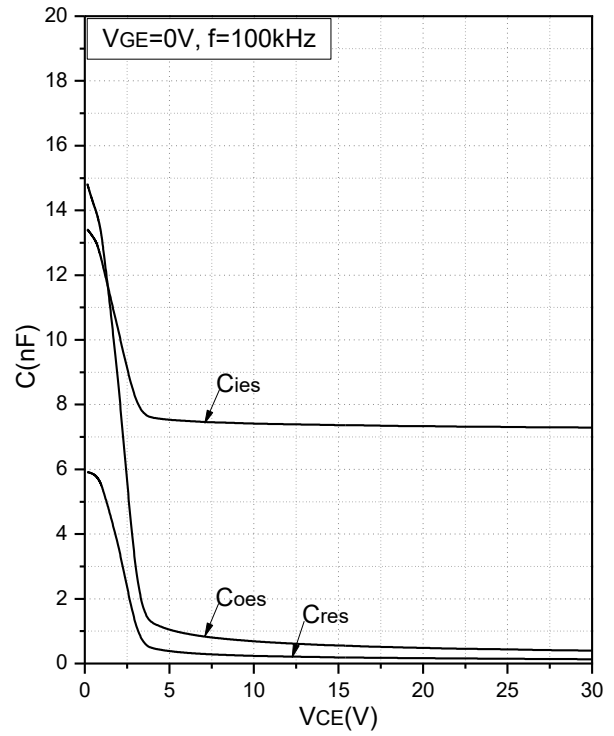


Fig.10 Capacitance Characteristics



Revision	Notes
01	Initial Release

Announcements

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