



GT100CU170T2VH

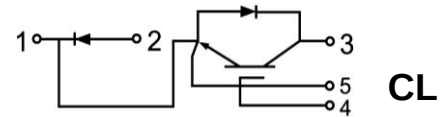
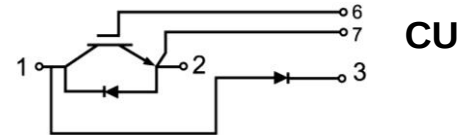
GT100CL170T2VH

IGBT Module

Preliminary Data

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:

- Industrial Inverters
- Motor Drives
- UPS Systems

IGBT, Chopper

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

V _{CES}	Collector-Emitter Blocking Voltage		1700	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	691	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	$I_C=6\text{mA}$, $V_{CE}=V_{GE}$	5.2	6.0	6.8	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C=100\text{A}$, $V_{GE}=15\text{V}$	$T_J=25^{\circ}\text{C}$	2.05	2.35	V
			$T_J=125^{\circ}\text{C}$	2.35		V
			$T_J=150^{\circ}\text{C}$	2.45		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	$V_{GE}=\pm 20\text{V}$, $V_{CE}=0\text{V}$, $T_J=25^{\circ}\text{C}$			± 200	nA
C_{ies}	Input Capacitance	$V_{CE}=25\text{V}$, $V_{GE}=0\text{V}$, $f=100\text{kHz}$		14.42		nF
C_{oes}	Output Capacitance			0.37		nF
C_{res}	Reveres Transfer Capacitance			0.15		nF

Switching Characteristics

t _{d(on)}	Turn-on Delay Time	V _{CC} =900V, I _C =100A, R _{Gon} =7.5Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		93		ns
			T _J =125℃		95		
			T _J =150℃		100		
t _r	Rise Time		T _J =25℃		61		ns
			T _J =125℃		69		
			T _J =150℃		86		
t _{d(off)}	Turn-off Delay Time	V _{CC} =900V, I _C =100A, R _{Goff} =7.5Ω, V _{GE} =±15V, Inductive Load	T _J =25℃		310		ns
			T _J =125℃		470		
			T _J =150℃		530		
t _f	Fall Time		T _J =25℃		294		ns
			T _J =125℃		479		
			T _J =150℃		483		
E _{on}	Turn-on Switching Loss	V _{CC} =900V, I _C =100A, R _{Gon} =7.5Ω, V _{GE} =±15V, di/dt=952A/μs(T _J =150℃), Inductive Load	T _J =25℃		15.8		mJ
			T _J =125℃		25.0		
			T _J =150℃		27.9		



E _{off}	Turn-off Switching Loss	V _{CC} =900V, I _C =100A, R _{Goff} =7.5Ω, V _{GE} =±15V, du/dt=6580V/μs(T _J =150°C), Inductive Load	T _J =25°C		15.2		mJ
			T _J =125°C		24.7		
			T _J =150°C		25.6		
Q _g	Total Gate Charge	V _{GE} =+15V...-15V	T _J =25°C		8545		nC
R _{G(int)}	Internal Gate Resistor		T _J =25°C		0.5		Ω
I _{SC}	V _{CC} =900V, V _{GE} =+/-15V, R _{Gon} =7.5Ω, R _{Goff} =7.5Ω, T _J =150°C				414		A
R _{θJC}	Thermal Resistance: Junction-to-Case (per IGBT)					0.22	°C/W

Diode, Chopper

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

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	1700	V
I _F	Diode Continuous Forward Current	T _C =100°C	100	A
I _{FM}	Peak Diode Current Repetitive	t _p =1ms	200	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 =100A	T _J =25°C		1.90		V
			T _J =125°C		2.05		
			T _J =150°C		2.00		
t _{rr}	Reverse Recovery Time	I _F =100A, -diF/dt=1967A/μs(T _J =150°C), V _R =900V, V _{GE} =-15V	T _J =25°C		298		ns
			T _J =125°C		673		
			T _J =150°C		732		
I _{rr}	Peak Reverse Recovery Current		T _J =25°C		93		A
			T _J =125°C		112		
			T _J =150°C		117		
Q _{rr}	Reverse Recovery Charge		T _J =25°C		10.7		μC
			T _J =125°C		26.6		
			T _J =150°C		30.6		



E _{rec}	Reverse Recovery Energy	I _F =100A, -diF/dt=1967A/μs(T _J =150°C), V _R =900V, V _{GE} =-15V	T _J =25°C		4.84		mJ
			T _J =125°C		14.97		
			T _J =150°C		17.18		
R _{θJC}	Thermal Resistance: Junction-to-Case (per Diode)					0.19	°C/W

Diode, Reverse

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

V _{RRM}	Repetitive Peak Reverse Voltage	T _J =25°C	1700	V
I _F	Diode Continuous Forward Current	T _C =100°C	75	A
I _{FM}	Peak FWD Current Repetitive	t _p =1ms	150	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 =75A	T _J =25℃		1.80		V
			T _J =125℃		1.90		
			T _J =150℃		1.90		
t _{rr}	Reverse Recovery Time	I _F =75A, -diF/dt=1180A/μs(T _J =150℃), V _R =900V, V _{GE} =-15V	T _J =25℃		179		ns
			T _J =125℃		193		
			T _J =150℃		194		
I _{rr}	Peak Reverse Recovery Current		T _J =25℃		107		A
			T _J =125℃		125		
			T _J =150℃		128		
Q _{rr}	Reverse Recovery Charge		T _J =25℃		9.06		μC
			T _J =125℃		12.62		
			T _J =150℃		13.08		
E _{rec}	Reverse Recovery Energy		T _J =25℃		3.12		mJ
			T _J =125℃		4.28		
			T _J =150℃		4.90		
R _{θJC}	Thermal Resistance: Junction-to-Case (per Diode)					0.34	℃/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)				0.03	°C/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	100	CU	170	T2V	H
	①	②	③	④	⑤	⑥	⑦

- ① - IGBT Modules
- ② - Trench, Low Switching Losses IGBT
- ③ - Rated Current (100=100A)
- ④ - Circuit Configuration: Chopper, CU(Diode on High Side) / CL(Diode on Low Side)
- ⑤ - Rated Voltage (170=1700V)
- ⑥ - Package Type
- ⑦ - Test Level (Pass the Important Reliability Test-Industrial Grade)



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”.