

IGBT Module T-Series

600V / 100A 2 in one-package

■ Features

- High speed switching
- Voltage drive
- Low inductance module structure

■ Applications

- Inverter for Motor drive
- AC and DC Servo drive amplifier
- Uninterruptible power supply
- Industrial machines, such as Welding machines

■ Maximum ratings and characteristics

● Absolute maximum ratings (at Tc=25°C unless otherwise specified)

Item	Symbol	Conditions	Rating	Unit	
Collector-Emitter voltage	V _{CES}	I _c =1mA	600	V	
Gate-Emitter voltage	V _{GES}		±20	V	
Collector current	Continuous	I _c	Duty=100%	100	A
	1ms	I _c pulse	1ms	200	A
	Continuous	-I _c	Duty=50%	100	A
	1ms	-I _c pulse	1ms	200	A
Max. power dissipation	P _c	1 device	310	W	
Operating temperature	T _j		+150	°C	
Storage temperature	T _{stg}		-40 to +125	°C	
Isolation voltage	V _{is}	AC:1min.	AC 2500 (1min.)	V	
Screw torque	Mounting *1		3.5	N·m	
	Terminals *1		3.5	N·m	

*1 : All terminals should be connected together when isolation test will be done.

*2 : Recommendable value : 2.5 to 3.5 N·m(M5)

● Electrical characteristics (at Tj=25°C unless otherwise specified)

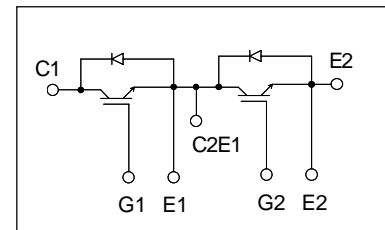
Item	Symbol	Characteristics			Conditions	Unit	
		Min.	Typ.	Max.			
Zero gate voltage collector current	I _{CES}	–	–	1.0	V _{GE} =0V, V _{CES} =600V	mA	
Gate-Emitter leakage current	I _{GES}	–	–	200	V _{CES} =0V, V _{GE} =±20V	nA	
Gate-Emitter threshold voltage	V _{GE(th)}	6.2	6.7	7.7	V _{CES} =20V, I _c =100mA	V	
Collector-Emitter saturation voltage	V _{CES(sat)}	–	1.8	–	Chip	V _{GE} =15V, I _c =100A	V
		–	2.0	2.4	Terminal		
Input capacitance	C _{ies}	–	8500	–	V _{CE} =0V	pF	
Output capacitance	C _{oes}	–	1500	–	V _{CE} =10V		
Reverse transfer capacitance	C _{res}	–	1300	–	f=1MHz		
Turn-on time	t _{on}	–	0.4	1.2	V _{CC} =300V	μs	
	t _r	–	0.25	0.6	I _c =100A		
	t _{r(j)}	–	0.1	–	V _{GE} =±15V		
Turn-off time	t _{off}	–	0.4	1.2	R _G =33 ohm	μs	
	t _f	–	0.04	0.45			
Forward on voltage	V _F	–	1.7	–	Chip	I _F =100A	V
		–	2.0	2.5	Terminal		
Reverse recovery time	t _{rr}	–	–	0.3	I _F =100A	μs	
Allowable avalanche energy during short circuit cutting off (Non-repetitive)	PAV	55	–	–	I _c >200A, T _j =125°C	mJ	

● Thermal resistance characteristics

Item	Symbol	Characteristics			Conditions	Unit
		Min.	Typ.	Max.		
Thermal resistance	R _{th(j-c)}	–	–	0.400	IGBT	°C/W
	R _{th(j-c)}	–	–	1.02	FWD	°C/W
Contact Thermal resistance	R _{th(c-f)*2}	–	0.05	–	With thermal compound	°C/W

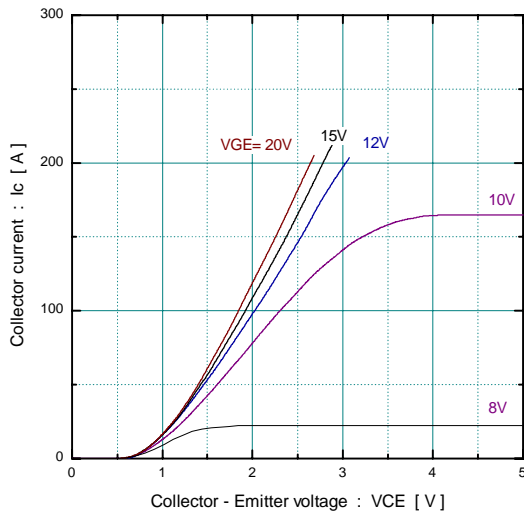
*2 : This is the value which is defined mounting on the additional cooling fin with thermal compound

Equivalent Circuit Schematic

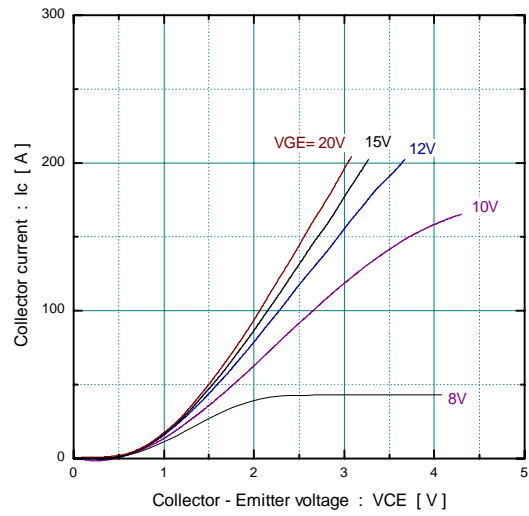


■ Characteristics (Representative)

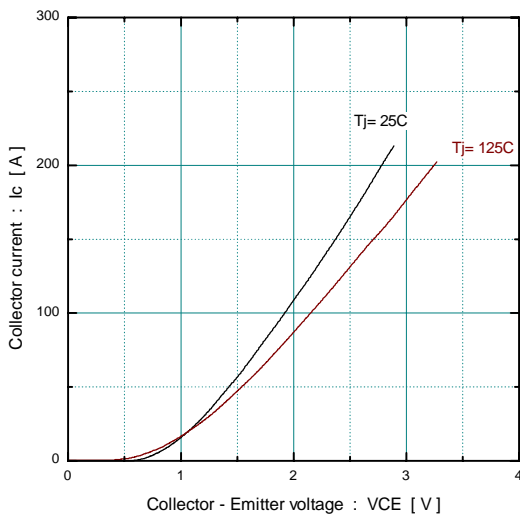
[Inverter]
Collector current vs. Collector-Emitter voltage
 $T_j = 25\text{C}$ (typ.)



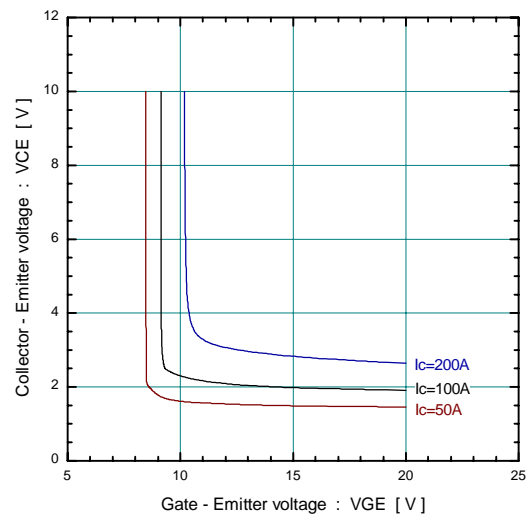
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Collector current vs. Collector-Emitter voltage
 $T_j = 125\text{C}$ (typ.)



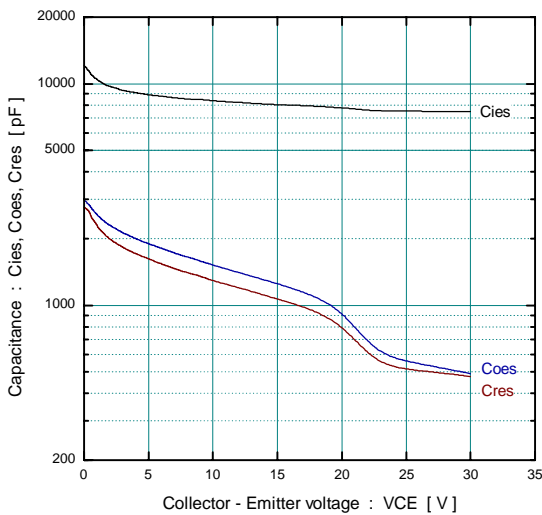
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Collector current vs. Collector-Emitter voltage
 $V_{GE} = 15\text{V}$ (typ.)



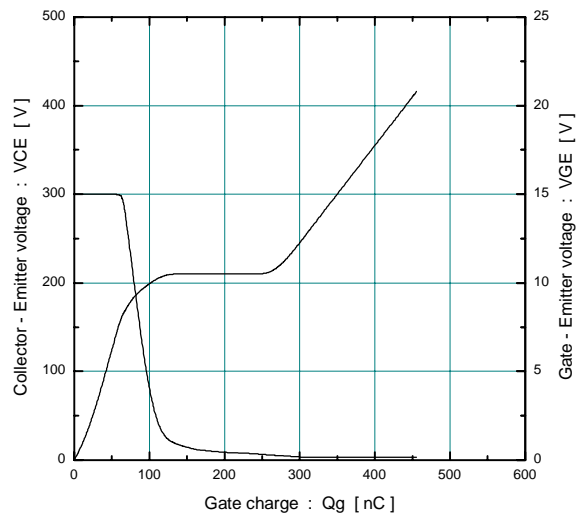
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Collector-Emitter voltage vs. Gate-Emitter voltage
 $T_j = 25\text{C}$ (typ.)

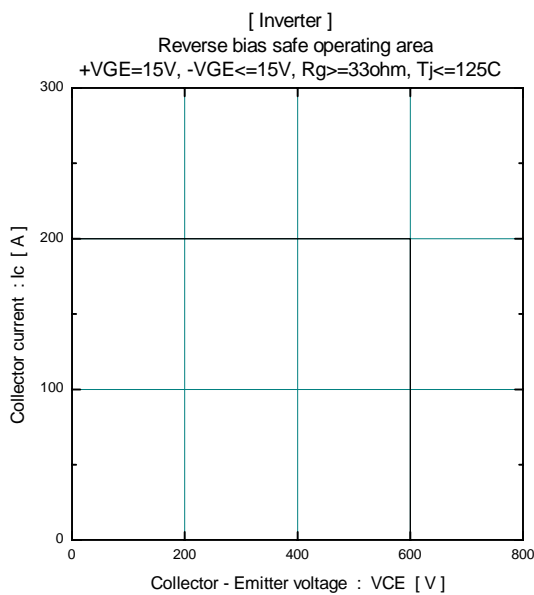
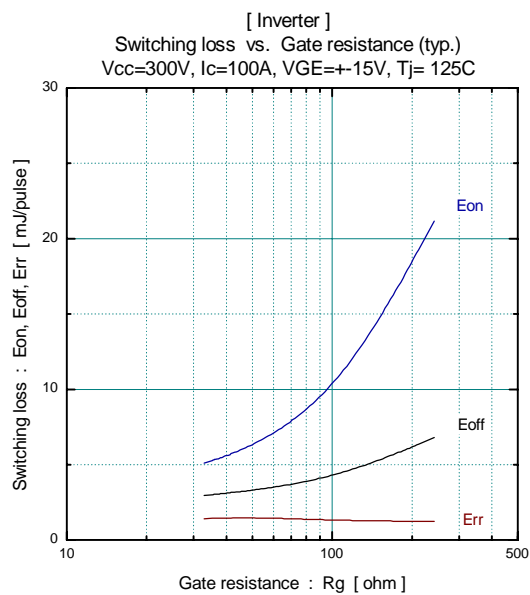
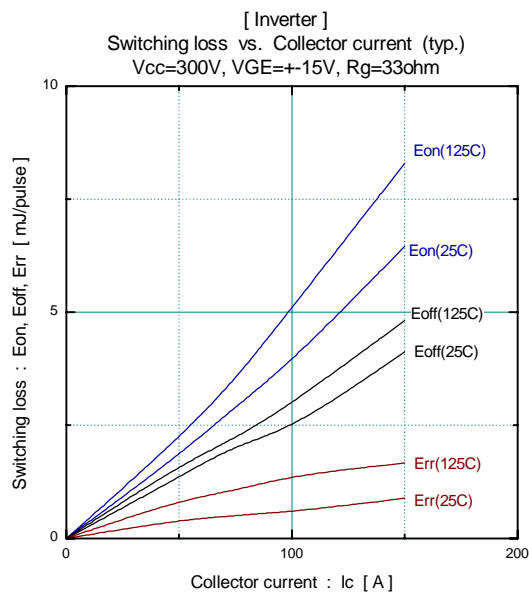
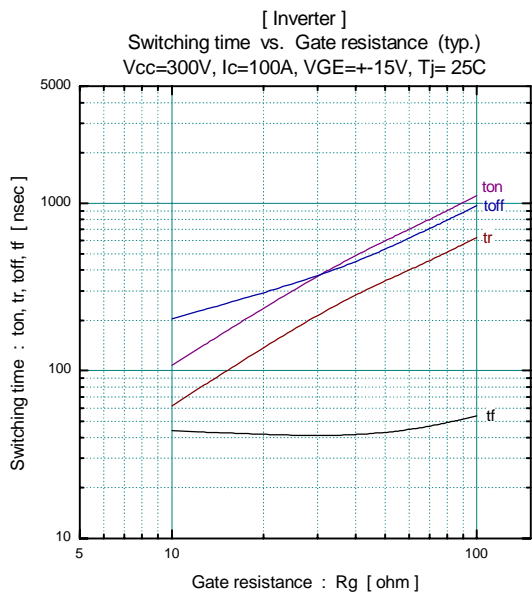
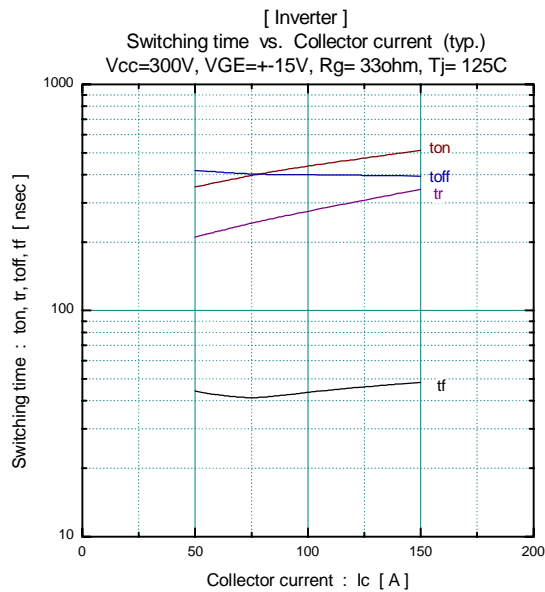
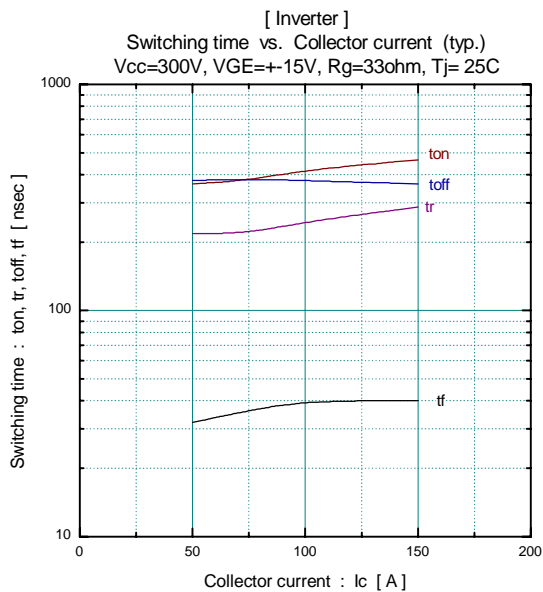


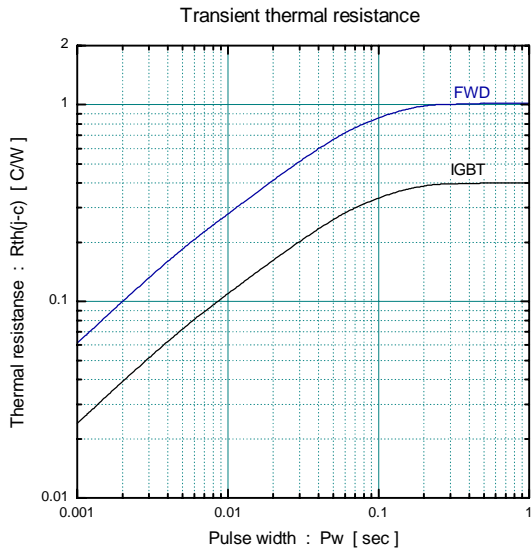
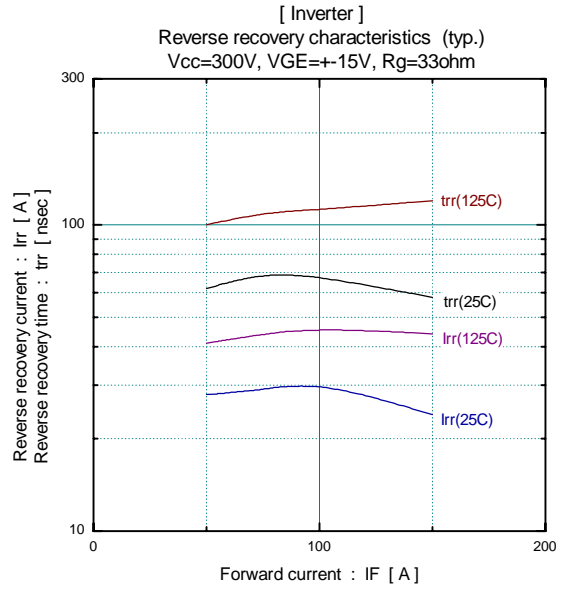
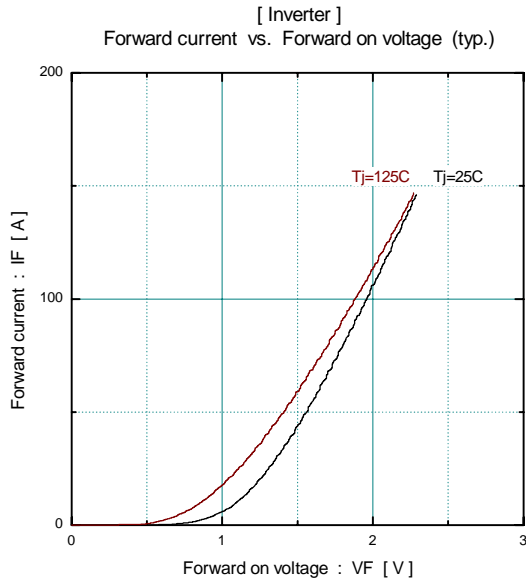
[Inverter]
Capacitance vs. Collector-Emitter voltage (typ.)
 $V_{GE} = 0\text{V}$, $f = 1\text{MHz}$, $T_j = 25\text{C}$



[Inverter]
Dynamic Gate charge (typ.)
 $V_{CC} = 300\text{V}$, $I_c = 100\text{A}$, $T_j = 25\text{C}$







■ Outline Drawings, mm

