

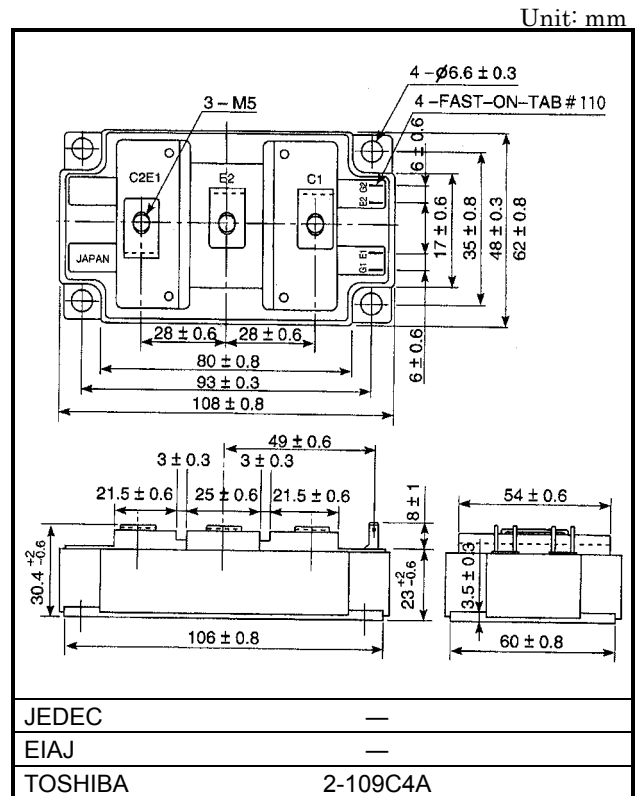
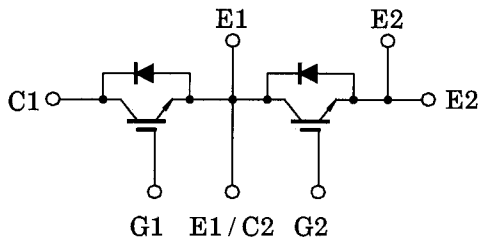
TOSHIBA GTR Module Silicon N Channel IGBT

MG100Q2YS51

High Power Switching Applications
Motor Control Applications

- High input impedance
- High speed : $t_f = 0.3\mu s$ (Max)
@Inductive load
- Low saturation voltage
: $V_{CE(sat)} = 3.6V$ (Max)
- Enhancement-mode
- Includes a complete half bridge in one package.
- The electrodes are isolated from case.

Equivalent Circuit



Weight: 430g

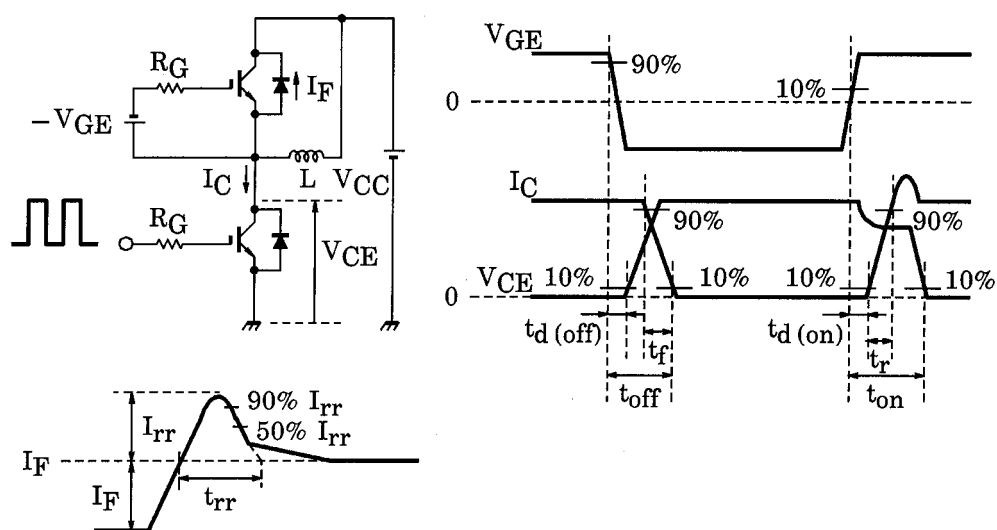
Maximum Ratings (Ta = 25°C)

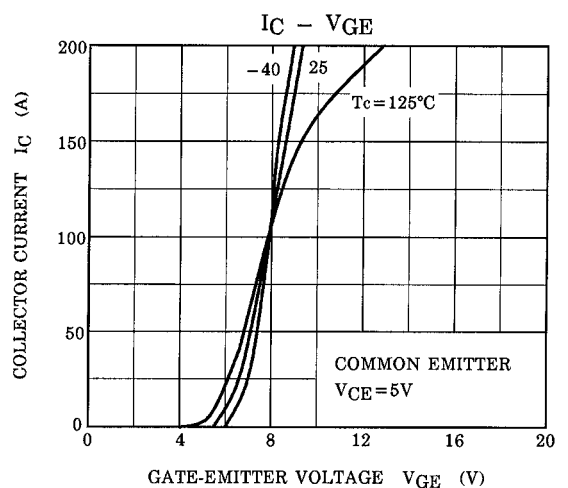
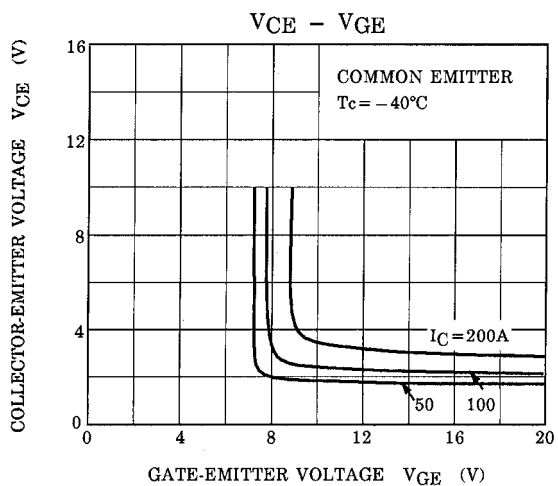
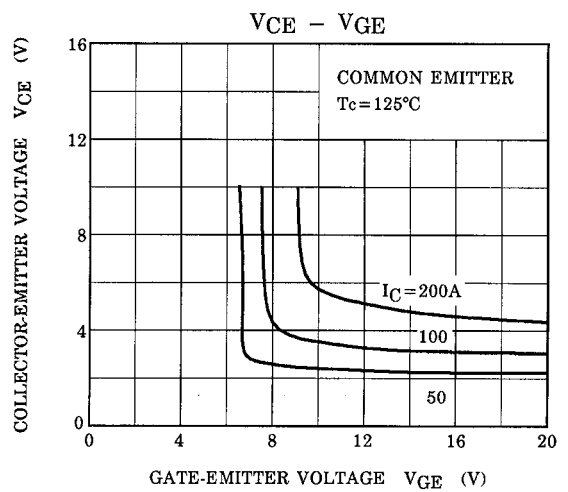
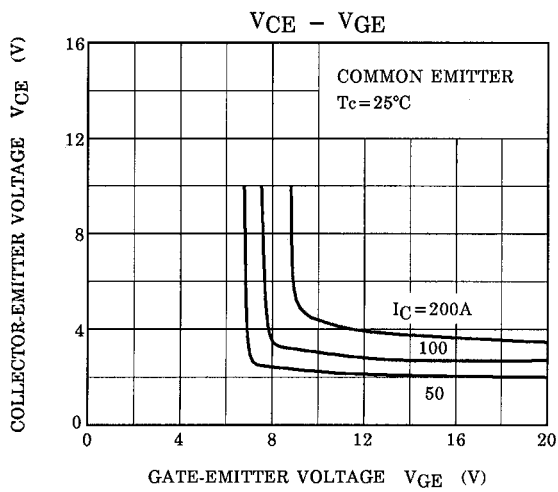
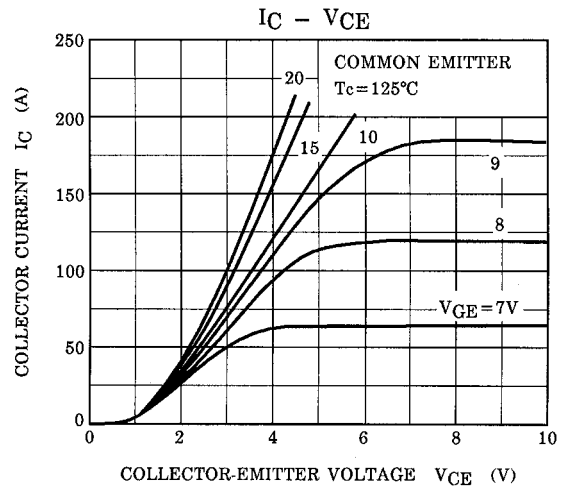
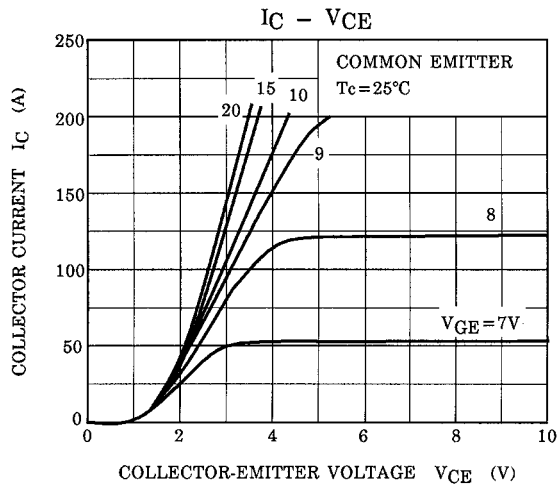
Characteristic		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	1200	V
Gate-emitter voltage		V_{GES}	±20	V
Collector current	DC	I_C (25°C / 80°C)	150 / 100	A
	1ms	I_{CP} (25°C / 80°C)	300 / 200	
Forward current	DC	I_F	100	A
	1ms	I_{FM}	200	
Collector power dissipation (Tc = 25°C)		P_C	660	W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-40 ~ 125	°C
Isolation voltage		V_{Isol}	2500 (AC 1 min.)	V
Screw torque (Terminal / mounting)		—	3 / 3	N·m

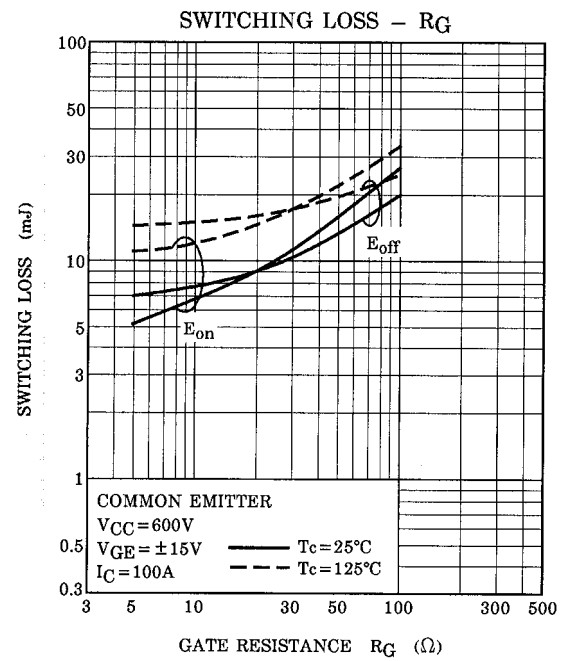
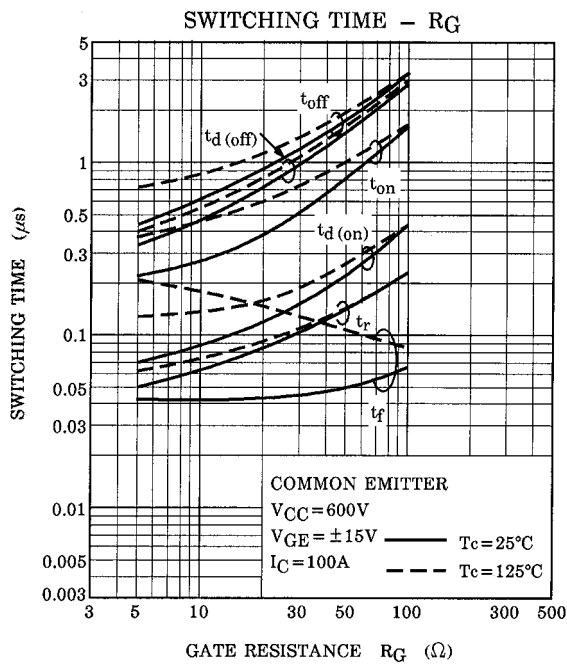
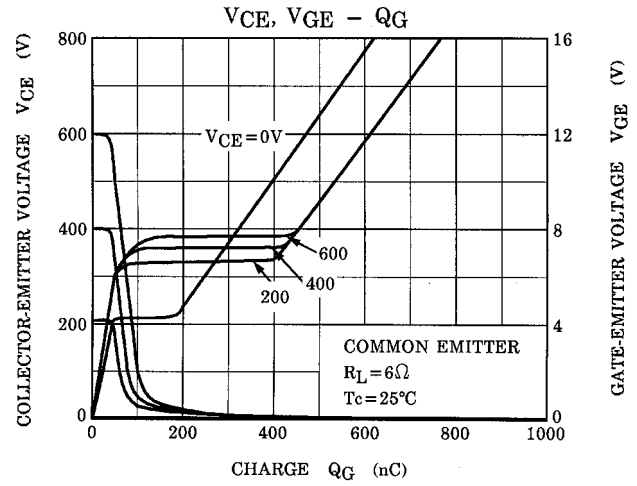
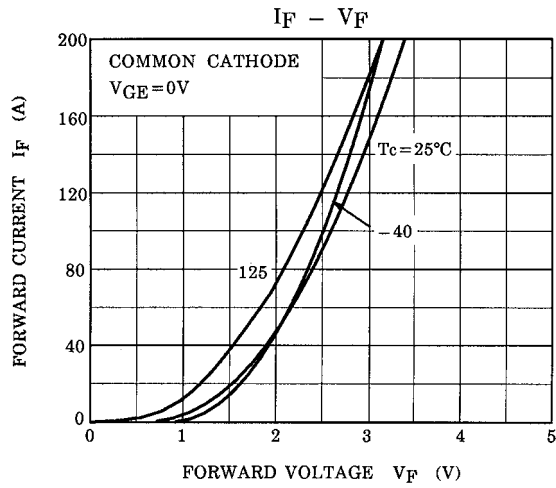
Electrical Characteristics (Ta = 25°C)

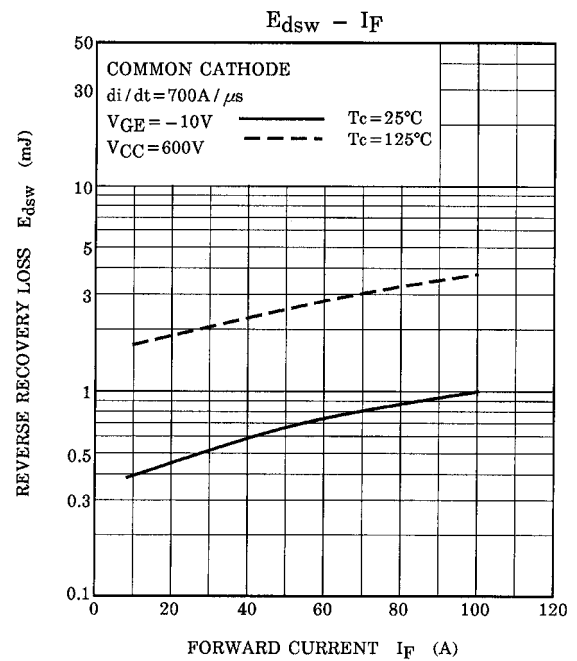
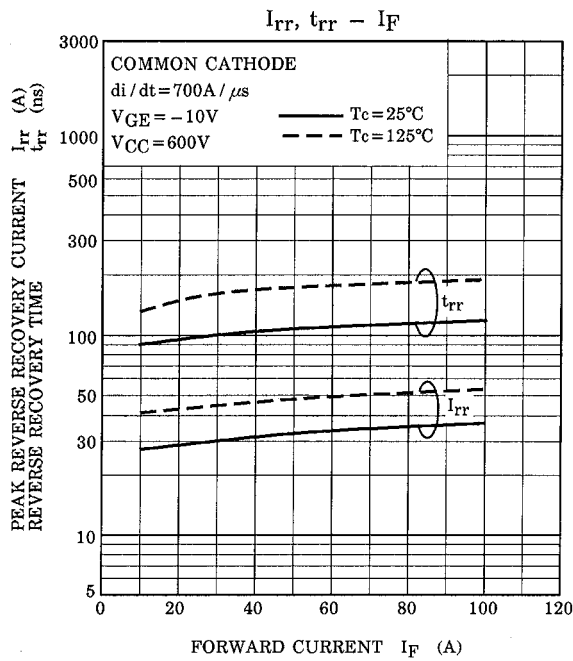
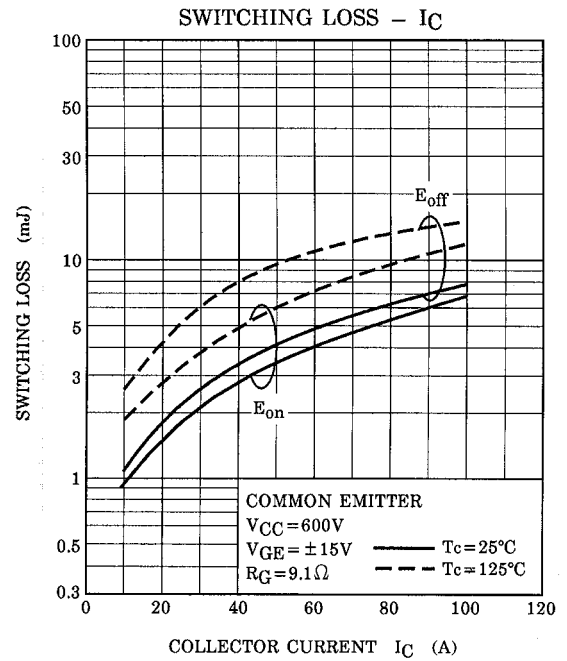
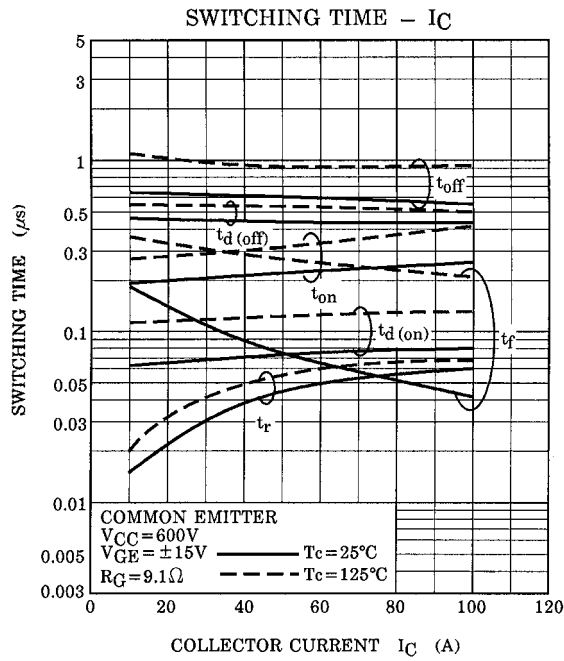
Characteristic		Symbol	Test Condition		Min	Typ.	Max	Unit
Gate leakage current		I _{GES}	V _{GE} = ±20V, V _{CE} = 0		—	—	±500	nA
Collector cut-off current		I _{CES}	V _{CE} = 1200V, V _{GE} = 0		—	—	2.0	mA
Gate-emitter cut-off voltage		V _{GE (off)}	I _C = 100mA, V _{CE} = 5A		3.0	—	6.0	V
Collector-emitter Saturation voltage		V _{CE (sat)}	I _C = 100A, V _{GE} = 15V	T _J = 25°C	—	2.8	3.6	V
				T _J = 125°C	—	3.1	4.0	
Input capacitance		C _{ies}	V _{CE} = 10V, V _{GE} = 0, f = 1MHz		—	12.0	—	nF
Switching time	Turn-on delay time	t _{d(on)}	Inductive load V _{CC} = 600V I _C = 100A V _{GE} = ±15V R _G = 9.1Ω (Note 1)		—	0.05	—	μs
	Rise time	t _r			—	0.05	—	
	Turn-on time	t _{on}			—	0.2	—	
	Turn-off delay time	t _{d(off)}			—	0.5	—	
	Fall time	t _f			—	0.1	0.3	
	Turn-off time	t _{off}			—	0.6	—	
Forward voltage		V _F	I _F = 100A, V _{GE} = 0		—	2.4	3.5	V
Reverse recovery time		t _{rr}	I _F = 100A, V _{GE} = -10V di / dt = 700A / μs (Note 1)		—	0.1	0.25	μs
Thermal resistance		R _{th (j-c)}	Transistor stage		—	—	0.16	°C / W
			Diode stage		—	—	0.47	

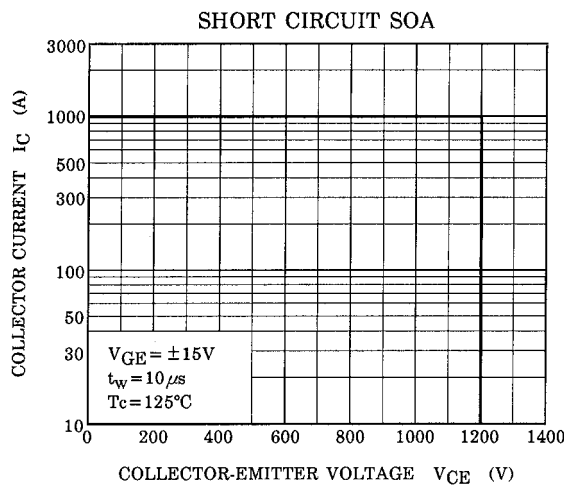
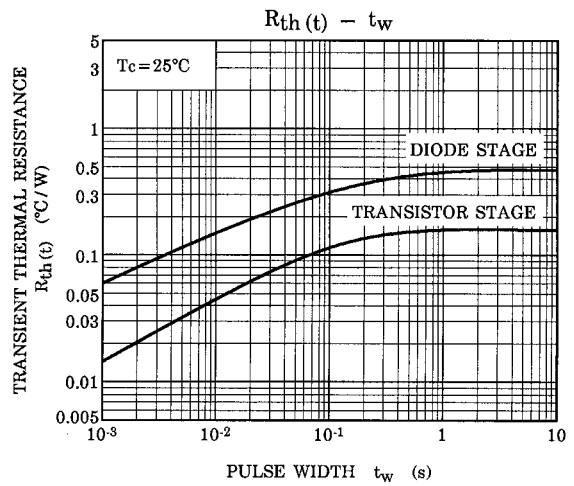
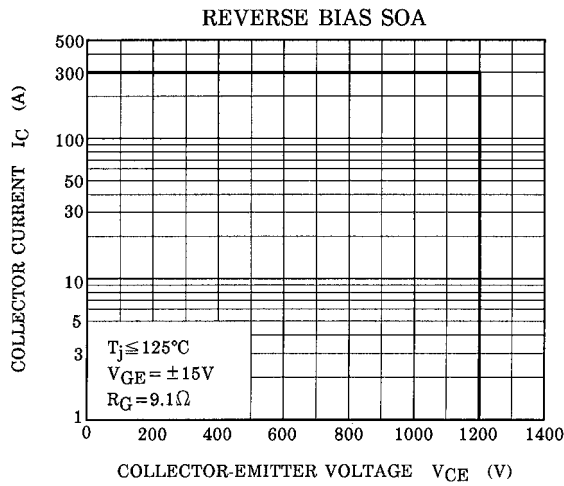
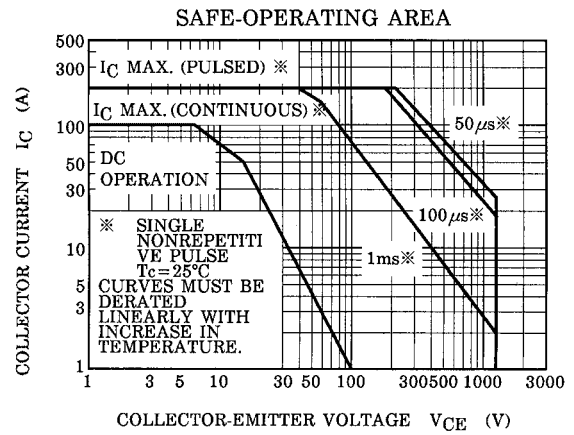
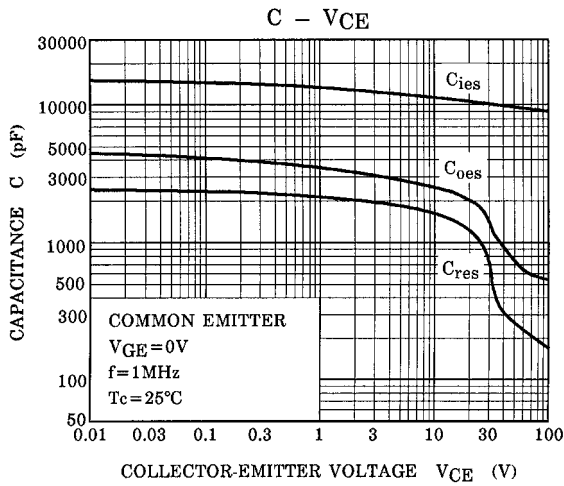
Note 1: Switching time and reverse recovery time test circuit & timing chart











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