GTR Module

Silicon N Channel IGBT

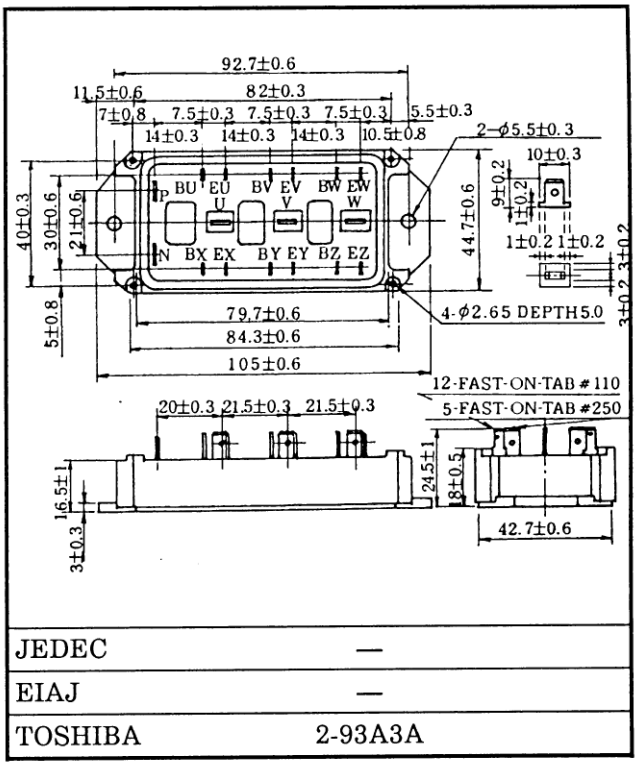
High Power Switching Applications

Motor Control Applications

Features

- 6 IGBTs are built into 1 package
- High speed: t_f = 0.5μs (Max.)
  t_{rr} = 0.5μs (Max.)
- Low saturation voltage: $V_{CE\ (sat)}$ = 4.0V (Max.)
- Enhancement mode
- The electrodes are isolated from case

Unit in mm



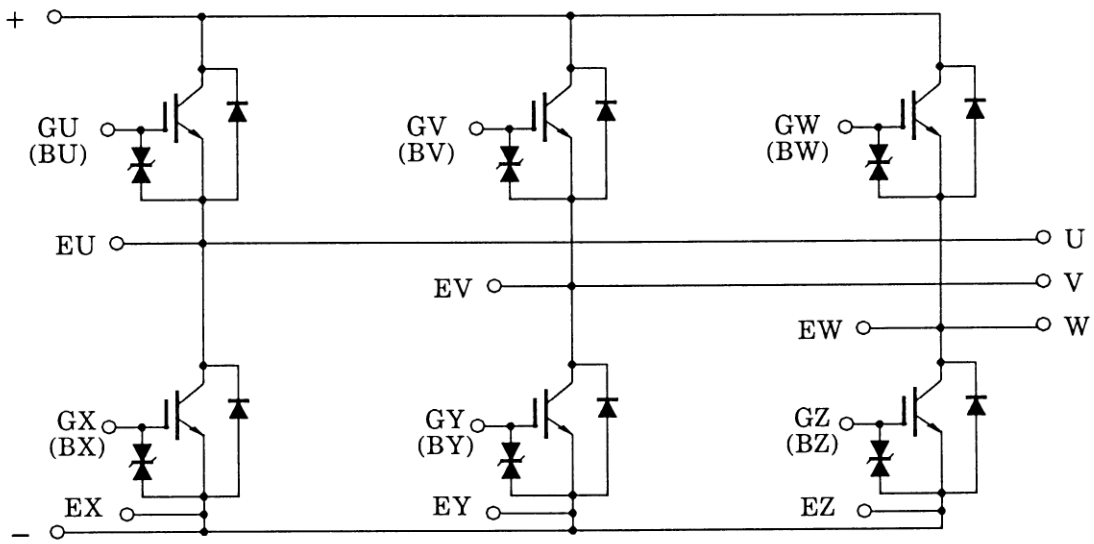
JEDEC	—
EIAJ	—
TOSHIBA	2-93A3A

Weight : 220g

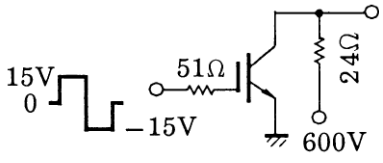
Maximum Ratings (Ta = 25°C)

CHARACTERISTICS		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C	25	A
	1ms	I_{CP}	50	
Forward Current	DC	I_F	25	A
	1ms	I_{FM}	50	
Collector Power Dissipation (Tc = 25°C)		P_C	200	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-40 ~ 125	°C
Isolation Voltage		V_{Isol}	2500 (AC 1 Minute)	V
Screw Torque		—	3	N ¥ m

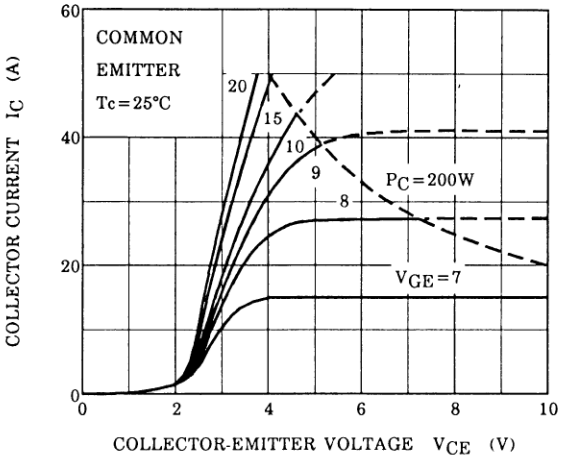
Equivalent Circuit



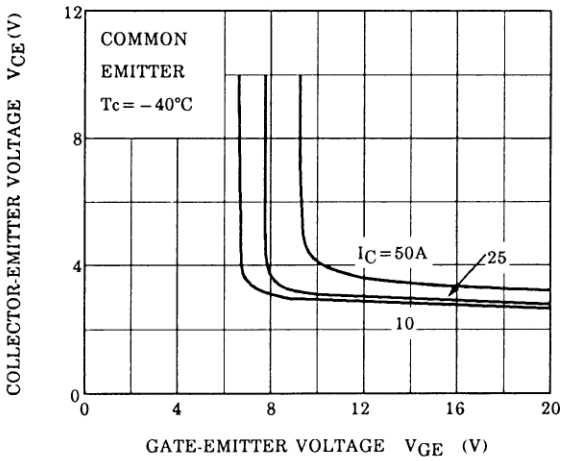
Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	V_{GE} = ± 20V, V_{CE} = 0	—	—	± 10	μA
Collector Cut-off Current		I_{CES}	V_{CE} = 1200V, V_{GE} = 0	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE\ (OFF)}$	I_C = 25mA, V_{CE} = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C = 25A, V_{GE} = 15V	—	3.0	4.0	V
Input Capacitance		C_{ies}	V_{CE} = 10V, V_{GE} = 0, f = 1MHz	—	3000	—	pF
Switching Time	Rise Time	t_r		—	0.3	0.6	μs
	Turn-on Time	t_{on}		—	0.4	0.8	
	Fall Time	t_f		—	0.25	0.5	
	Turn-off Time	t_{off}		—	0.8	1.5	
Forward Voltage		V_F	I_F = 25A, V_{GE} = 0	—	2.0	2.5	V
Reverse Recovery Time		t_{rr}	I_F = 25A, V_{GE} = -10V di/dt = 100A/μs	—	0.2	0.5	μs
Thermal Resistance		$R_{th\ (j-c)}$	Transistor	—	—	0.625	°C/W
			Diode	—	—	1.3	

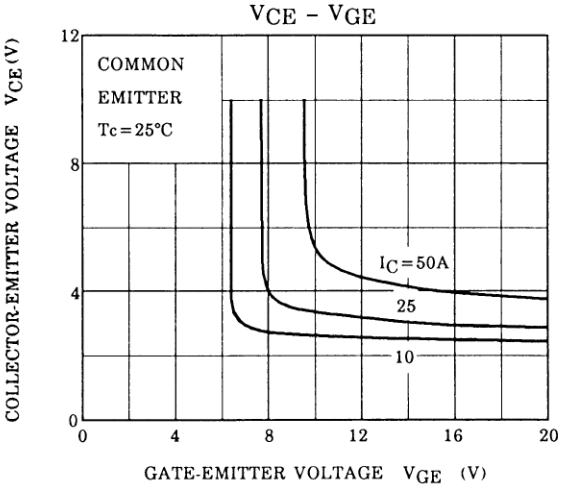
I_C – V_{CE}



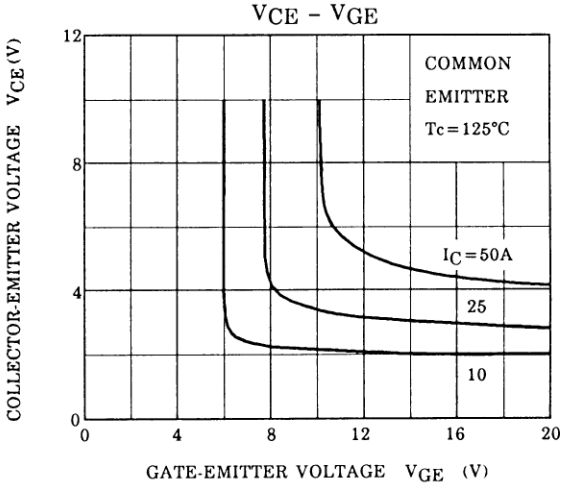
V_{CE} – V_{GE}



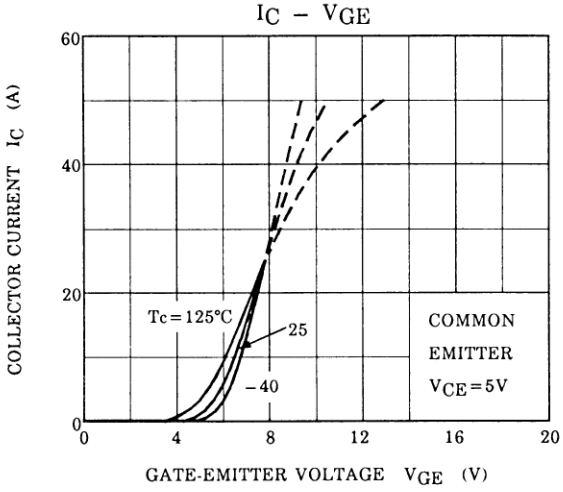
V_{CE} – V_{GE}



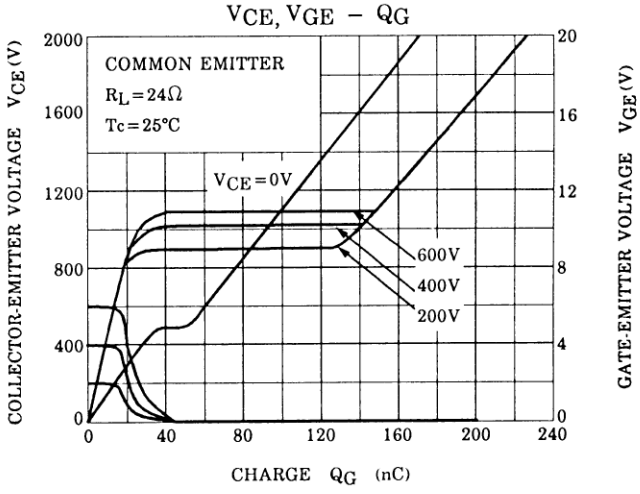
V_{CE} – V_{GE}



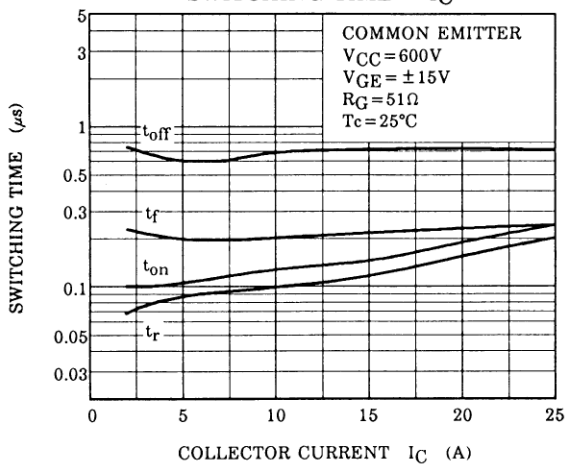
I_C – V_{GE}



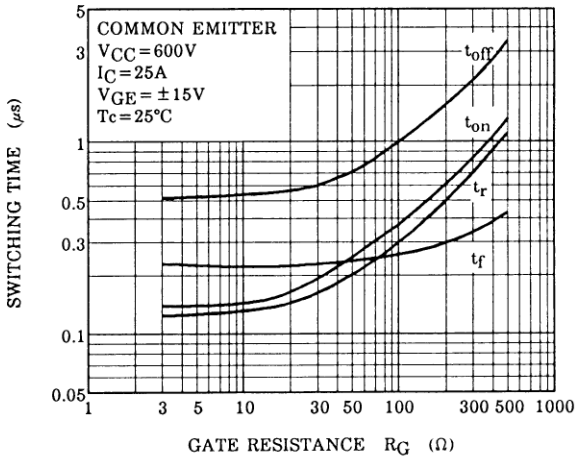
V_{CE}, V_{GE} – Q_G



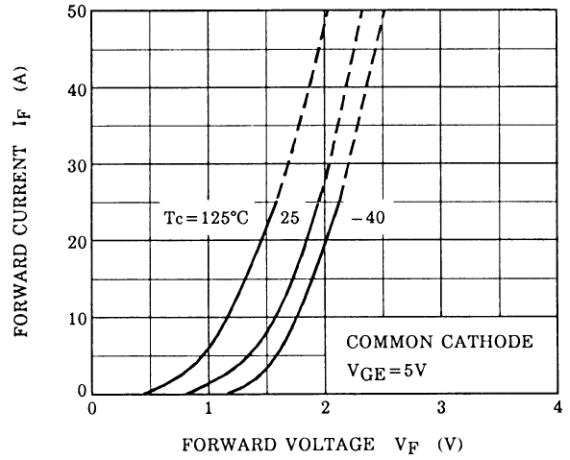
SWITCHING TIME – I_C



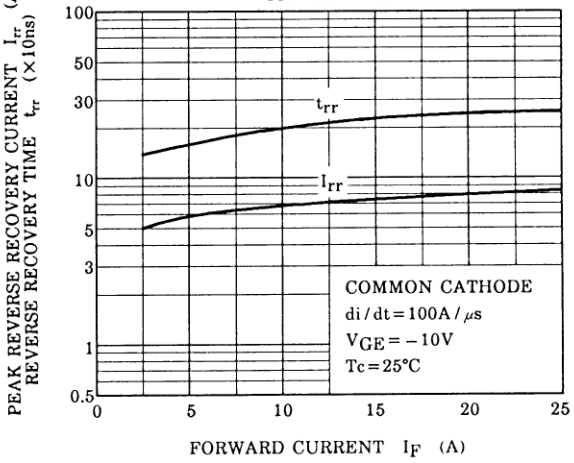
SWITCHING TIME – R_G



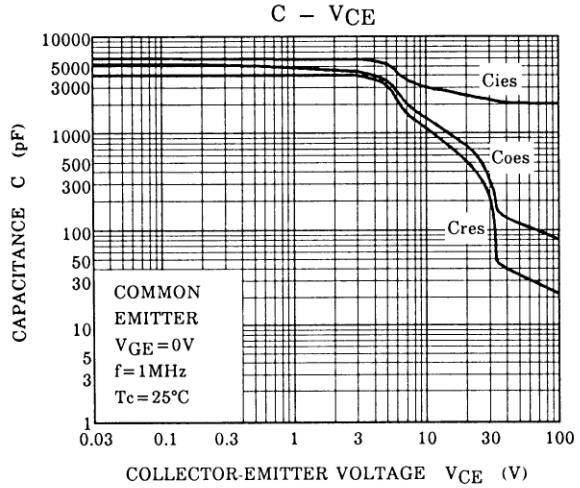
I_F – V_F



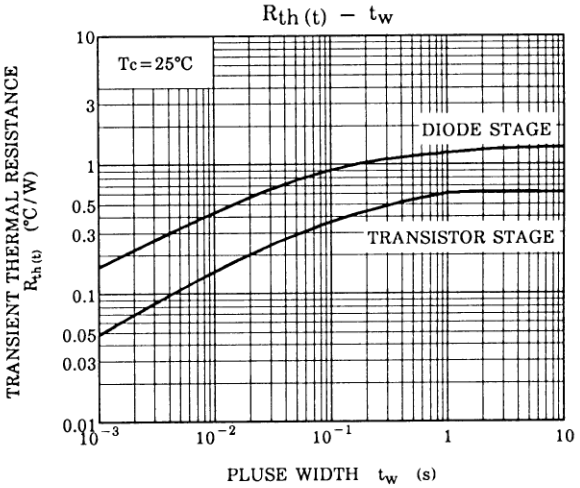
I_{rr}, t_{rr} – I_F



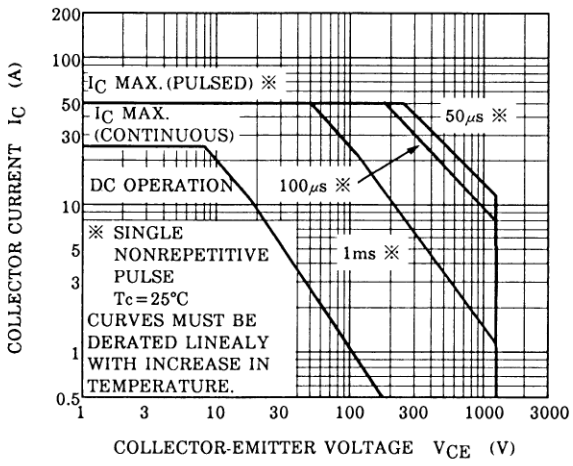
C – V_{CE}



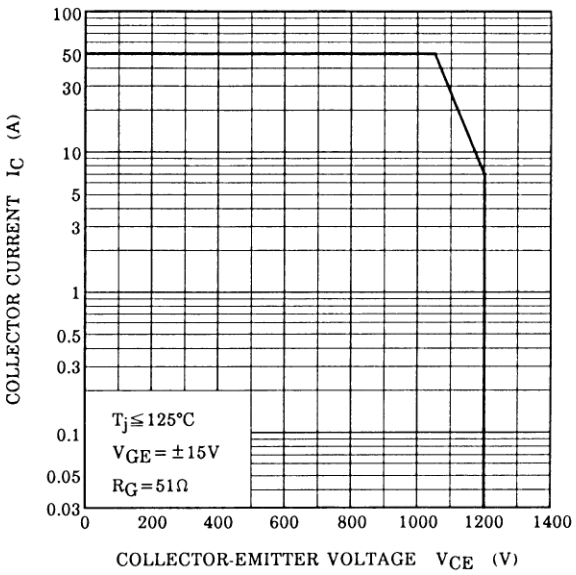
$R_{th\,(t)}$ – t_w



SAFE OPERATING AREA

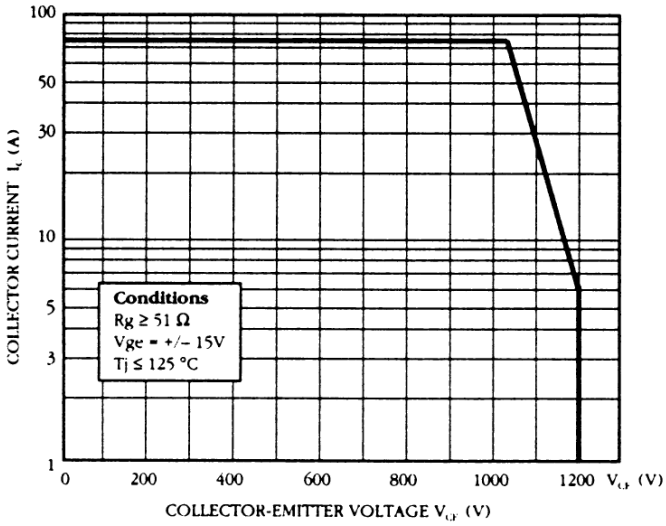


REVERSE BIAS SOA



CHARACTERISTIC	CONDITION	LIMITS	UNIT
PeakCollector Current (Icp)	Tj ≤ 125°C	≤ 75	A
Diode surge current (IFSM)	10ms 1/2 sinewave, Tj ≤ 25°C, Non-repetitive	≤ 155	A
Diode I^2t	10ms 1/2 sinewave, Non-repetitive	≥ 120	A^2s

REVERSE BIAS SOA



FORWARD BIAS SOA