

# GT50J301

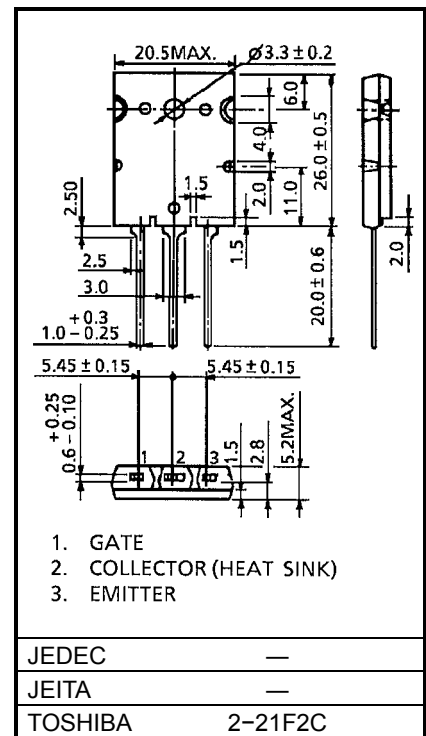
HIGH POWER SWITCHING APPLICATIONS  
MOTOR CONTROL APPLICATIONS

- The 3rd Generation
- Enhancement-Mode
- High Speed :  $t_f = 0.30\mu s$  (Max.)
- Low Saturation Voltage :  $V_{CE(sat)} = 2.7V$  (Max.)
- FRD Included Between Emitter and Collector

## MAXIMUM RATINGS (Ta = 25°C)

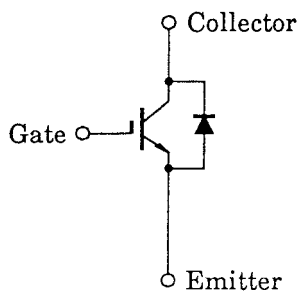
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	$V_{CES}$	600	V
Gate-Emitter Voltage	$V_{GES}$	±20	V
Collector Current	DC	$I_C$	50
	1ms	$I_{CP}$	100
Forward Current	DC	$I_F$	50
	1ms	$I_{FM}$	100
Collector Power Dissipation (Tc = 25°C)	$P_C$	200	W
Junction Temperature	$T_j$	150	°C
Storage Temperature	$T_{stg}$	-55~150	°C
Screw Torque	—	0.8	N · m

Unit: mm



Weight: 9.75 g

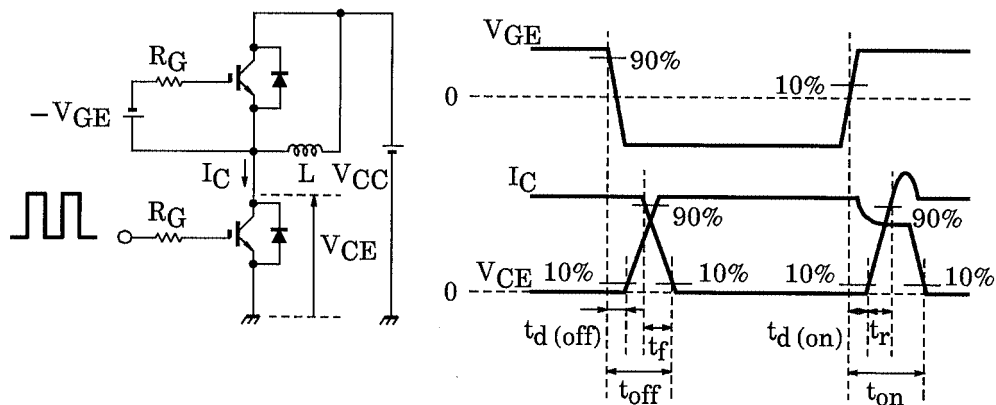
## EQUIVALENT CIRCUIT

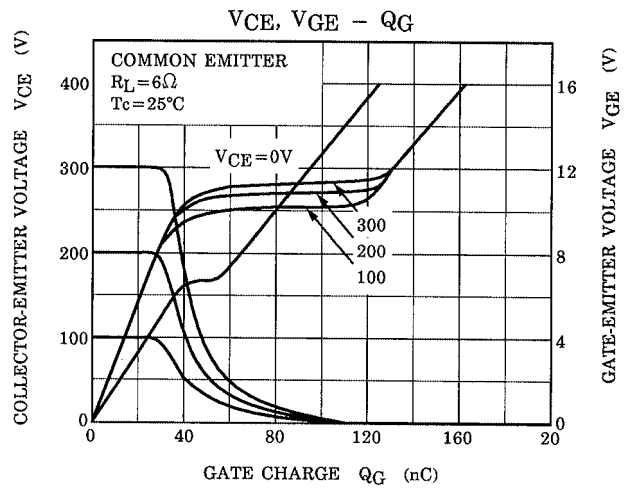
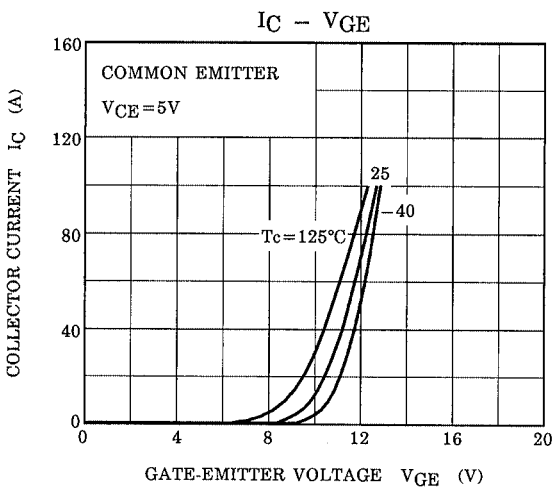
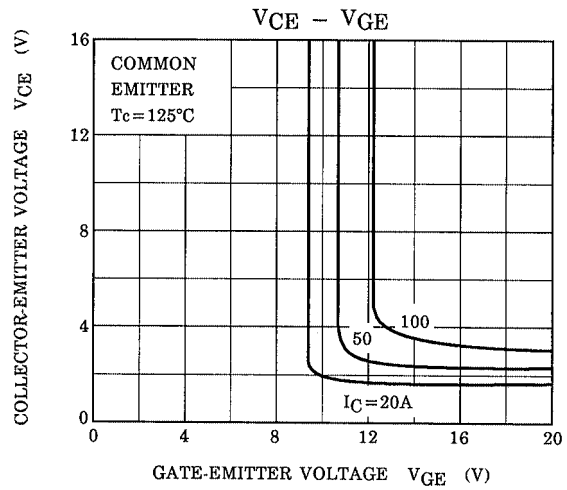
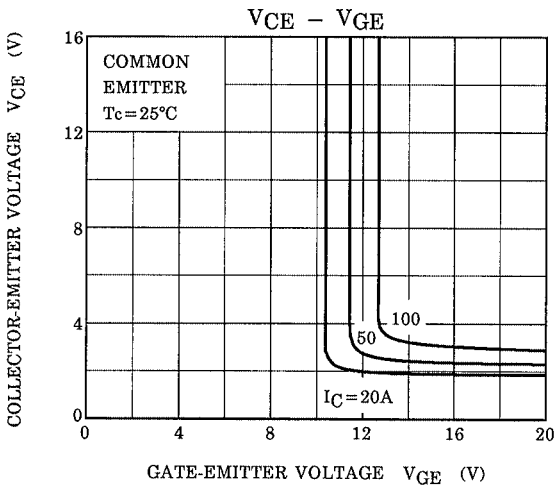
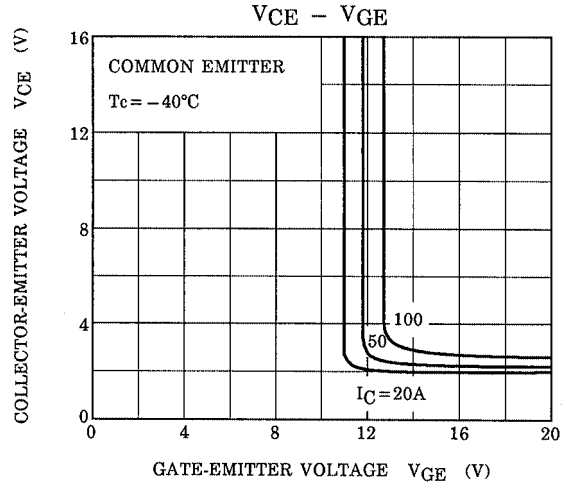
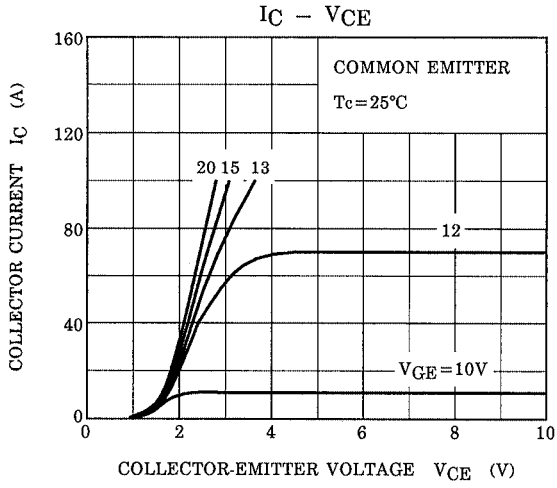


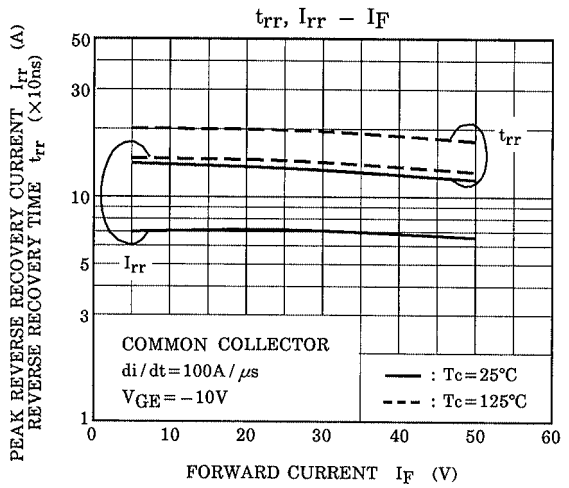
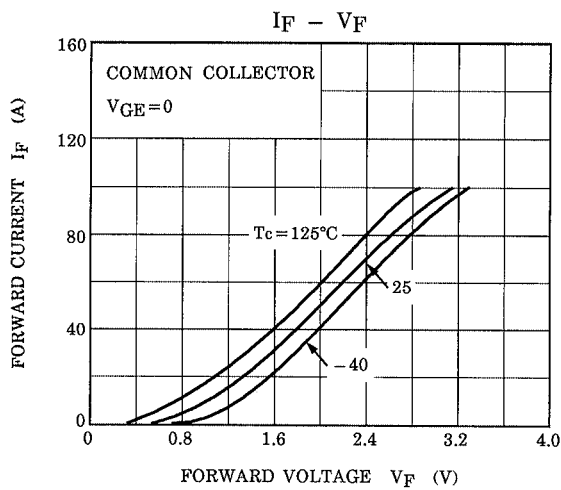
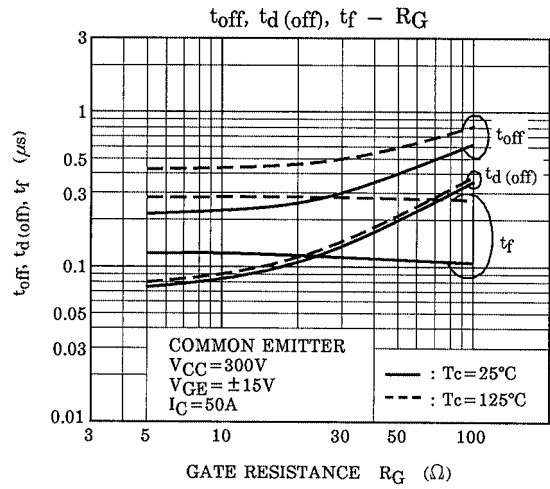
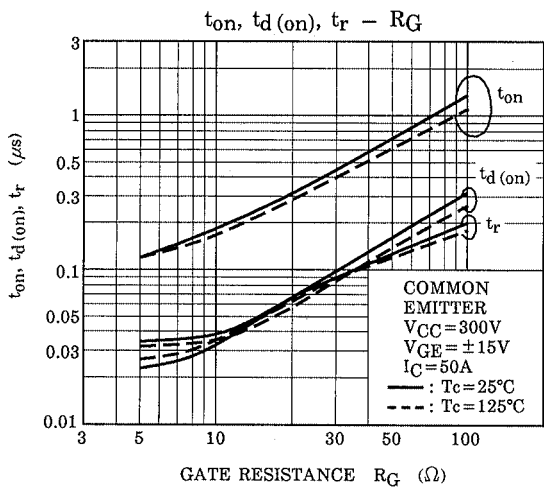
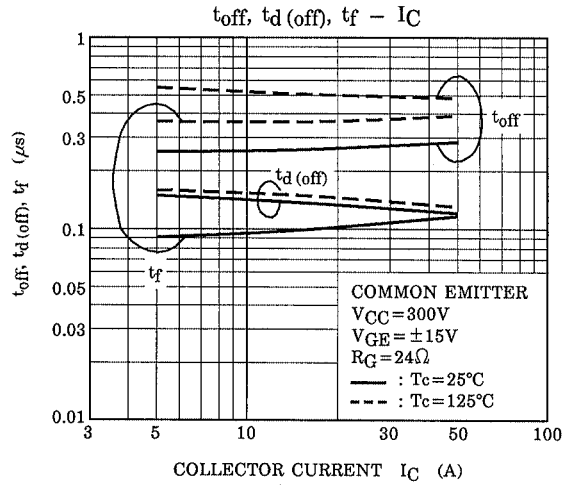
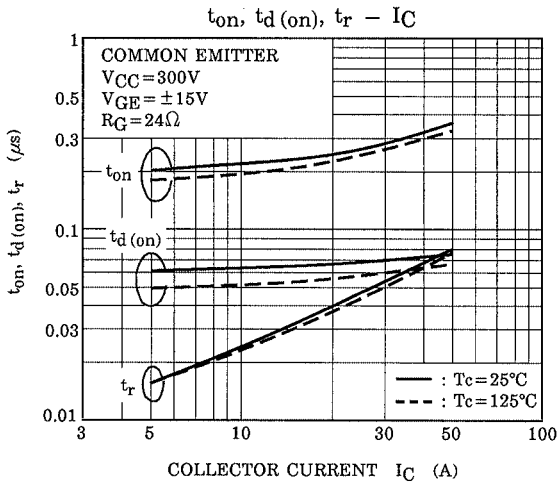
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

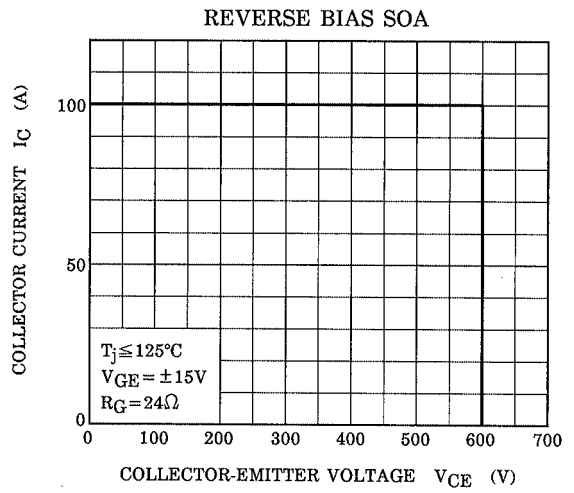
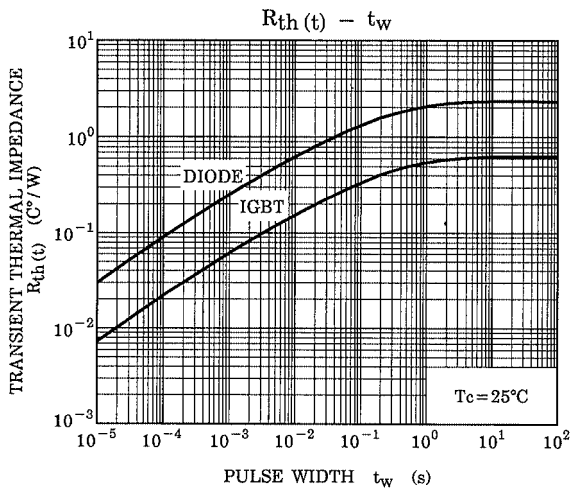
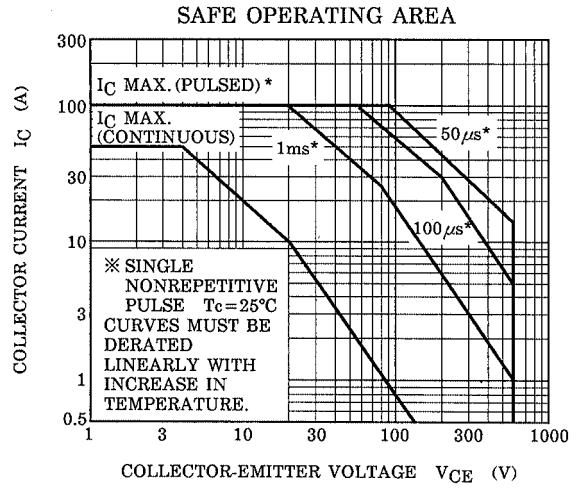
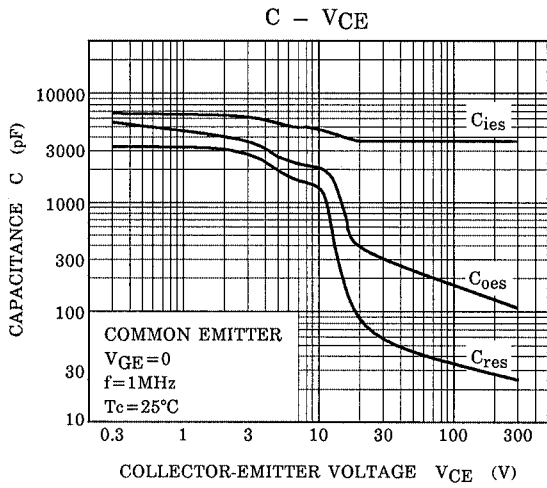
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Gate Leakage Current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector Cut-off Current		$I_{CES}$	$V_{CE} = 600V, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	$I_C = 5mA, V_{CE} = 5V$	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 50A, V_{GE} = 15V$	—	2.1	2.7	V
Input Capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0$ $f = 1MHz$	—	4500	—	pF
Switching Time	Turn-on delayTime	$t_d(on)$	Inductive Load $V_{CC} = 300V$ $V_{GE} = \pm 15V$ $I_C = 50A$ $R_G = 24\Omega$  (Note 1)	—	0.08	—	$\mu s$
	Rise Time	$t_r$		—	0.12	—	
	Turn-on Time	$t_{on}$		—	0.40	—	
	Turn-off delayTime	$t_d(off)$		—	0.20	—	
	Fall Time	$t_f$		—	0.15	0.30	
	Turn-off Time	$t_{off}$		—	0.50	—	
Forward Voltage		$V_F$	$I_F = 50A, V_{GE} = 0$	—	2.4	3.5	V
Reverse Recovery Time		$t_{rr}$	$I_F = 50A, V_{GE} = 10V$ $di/dt = 100A/\mu s$	—	0.1	0.2	$\mu s$
Thermal Resistance		$R_{th(j-c)}$	IGBT	—	—	0.625	$^{\circ}C/W$
Thermal Resistance		$R_{th(j-c)}$	DIODE	—	—	2.50	$^{\circ}C/W$

Note 1: Switching time measurement circuit and input / output waveforms









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