

TOSHIBA INSULATED GATE BIPOLAR TRANSISTOR SILICON N CHANNEL IGBT

GT10J301

HIGH POWER SWITCHING APPLICATIONS

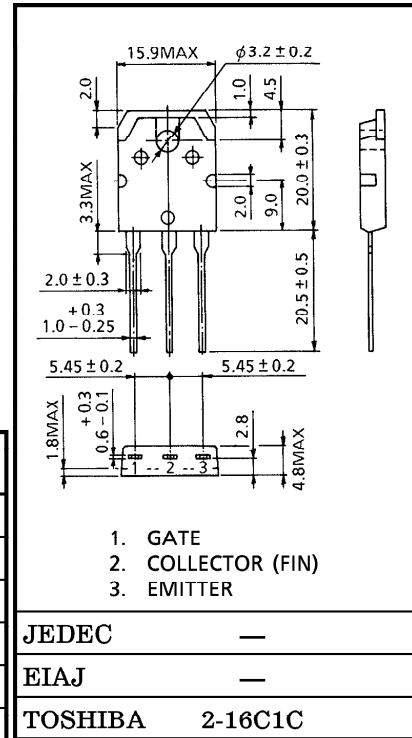
MOTOR CONTROL APPLICATIONS

- 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 ($T_a = 25^\circ C$)

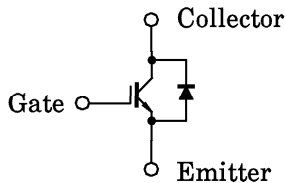
CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	V_{CES}	600	V
Gate-Emitter Voltage	V_{GES}	± 20	V
Collector Current	DC	I_C	10 A
	1ms	I_{CP}	20 A
Emitter-Collector Forward Current	DC	I_F	10 A
	1ms	I_{FM}	20 A
Collector Power Dissipation ($T_c = 25^\circ C$)	P_C	90	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$

Unit in mm



Weight : 4.6g

EQUIVALENT CIRCUIT



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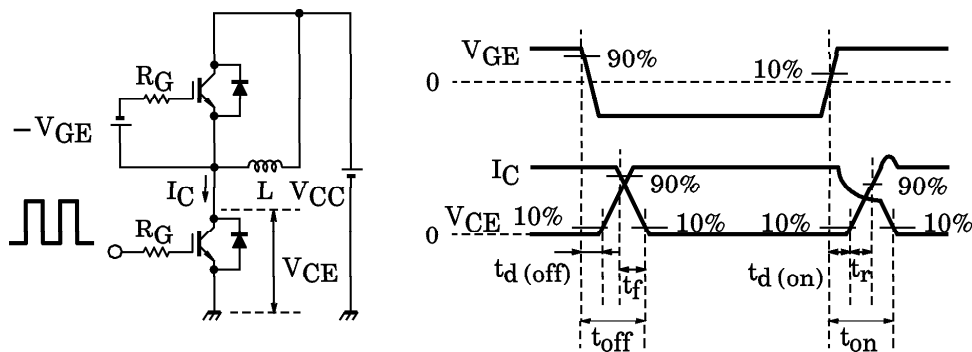
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 500	nA
Collector Cut-Off Current	I_{CES}	$V_{CE} = 600V, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-Off Voltage	$V_{GE (OFF)}$	$I_C = 1mA, V_{CE} = 5V$	5.0	—	8.0	V
Collector-Emitter Saturation Voltage	$V_{CE (sat)}$	$I_C = 10A, V_{GE} = 15V$	—	2.1	2.7	V
Input Capacitance	C_{ies}	$V_{CE} = 20V, V_{GE} = 0, f = 1MHz$	—	720	—	pF
Switching Time	Rise Time	Inductive Load $V_{CC} = 300V, I_C = 10A$ $V_{GG} = \pm 15V, R_G = 100\Omega$ (Note 1)	—	0.12	—	μs
	Turn-On Time		—	0.40	—	
	Fall Time		—	0.15	0.30	
	Turn-Off Time		—	0.70	—	
Peak Forward Voltage	V_F	$I_F = 10A, V_{GE} = 0$	—	—	2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 10A, di/dt = -100A/\mu s$	—	—	200	ns
Thermal Resistance (IGBT)	$R_{th(j-c)}$	—	—	—	1.39	°C/W
Thermal Resistance (Diode)	$R_{th(j-c)}$	—	—	—	2.91	°C/W

(Note 1) Switching time measurement circuit and input/output waveforms



Switching loss measurement waveforms

