TOSHIBA INSULATED GATE BIPOLAR TRANSISTOR SILICON N CHANNEL IGBT

GT15J301

HIGH POWER SWITCHING APPLICATIONS MOTOR CONTROL APPLICATIONS

• The 3rd Generation

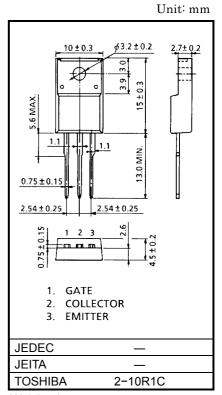
• Enhancement-Mode

• High Speed : $t_f = 0.30 \mu s$ (Max.) (IC = 15A) • Low Saturation Voltage : $V_{CE (sat)} = 2.7V$ (Max.) (IC = 15A)

• FRD included between Emitter and Collector.

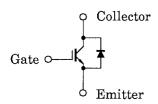
MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT	
Collector-Emitter Voltage		V _{CES}	600	V	
Gate-Emitter Voltage		V_{GES}	±20	V	
Collector Current	DC	Ic	15	Α	
	1ms	I _{CP}	30	Α	
Emitter-Collector Forward Current	DC	l _F	15	Α	
	1ms	I _{FM}	30	Α	
Collector Power Dissipation (Tc = 25°C)		PC	35	W	
Junction Temperature		Tj	150	°C	
Storage Temperature Range		T _{stg}	-55~150	°C	



Weight: 1.7g

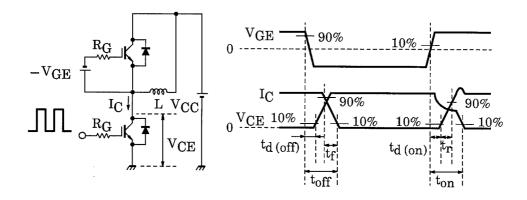
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (Ta = 25°C)

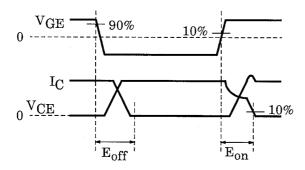
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Gate Leakage Current		I _{GES}	V _{GE} = ±20V, V _{CE} = 0	_	_	±500	nA
Collector Cut-Off Current		I _{CES}	V _{CE} = 600V, V _{GE} = 0	_	_	1.0	mA
Gate-Emitter Cut-Off Voltage		V _{GE} (OFF)	I _C = 1.5mA, V _{CE} = 5V	5.0	_	8.0	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 15A, V _{GE} = 15V	_	2.1	2.7	V
Input Capacitance		C _{ies}	V _{CE} = 20V, V _{GE} = 0, f = 1MHz	_	950	_	pF
Switching Time	Rise Time	t _r	Inductive Load $V_{CC} = 300V, I_C = 15A$ $V_{GG} = \pm 15V, R_G = 75\Omega$ (Note 1)	_	0.12	_	- µs
	Turn-On Time	t _{on}		_	0.40	_	
	Fall Time	t _f		_	0.15	0.30	
	Turn-Off Time	t _{off}		_	0.50	_	
Peak Forward Voltage		V _F	I _F = 15A, V _{GE} = 0	_	_	2.0	V
Reverse Recovery Time		t _{rr}	I _F = 15A, di / dt = -100A / μs	_	_	200	ns
Thermal Resistance (IGBT)		R _{th (j-c)}	_	_	_	3.57	°C/W
Thermal Resistance (Diode)		R _{th (j-c)}	_	_	_	4.63	°C/W

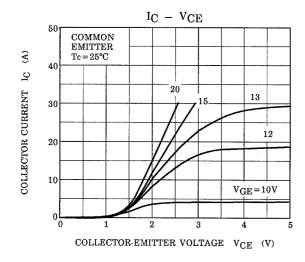
Note 1: Switching time measurement circuit and input / output waveforms

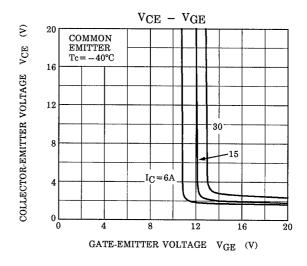


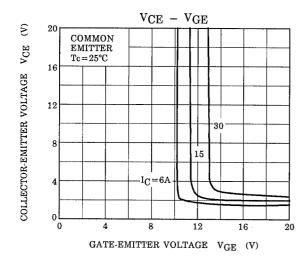
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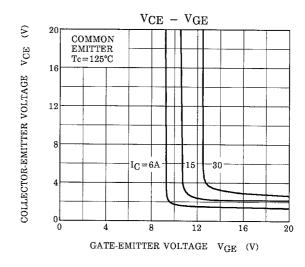
Switching loss measurement waveforms

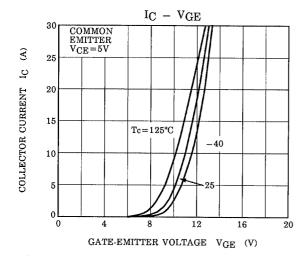


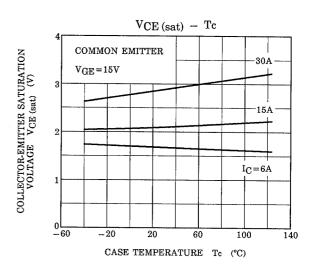


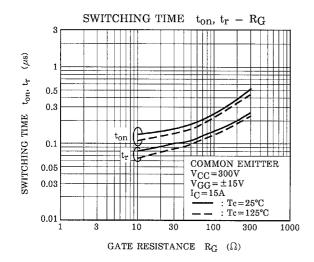


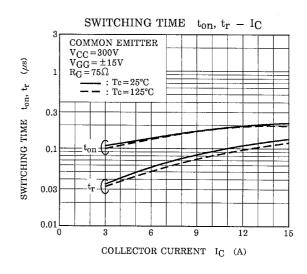


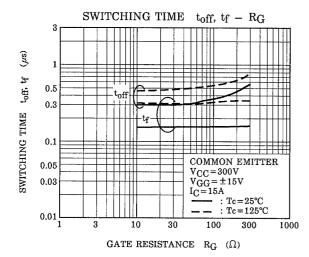


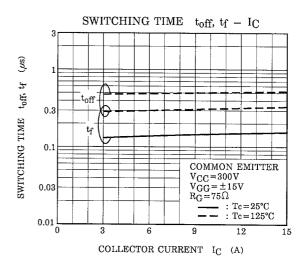


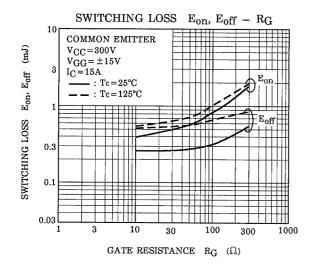


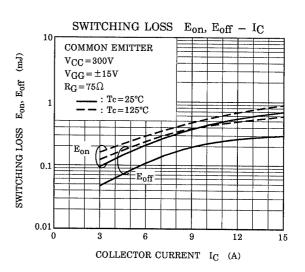


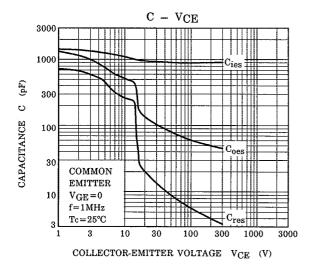


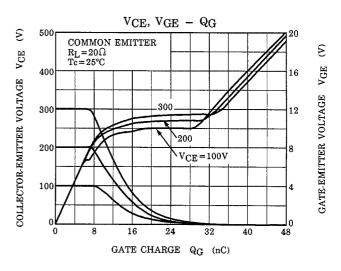


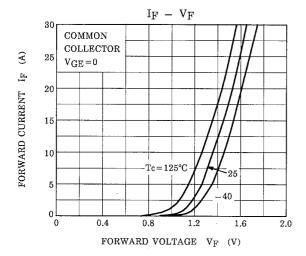


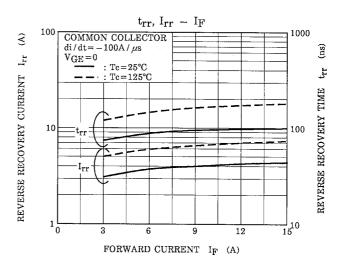


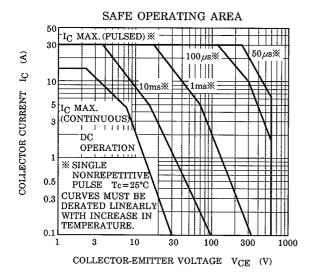


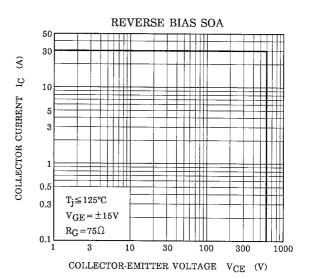


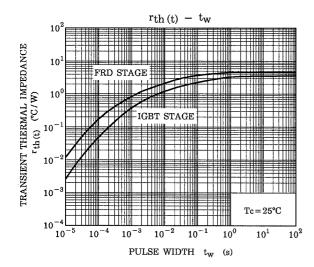












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