

TOSHIBA

INSULATED GATE BIPOLAR TRANSISTOR

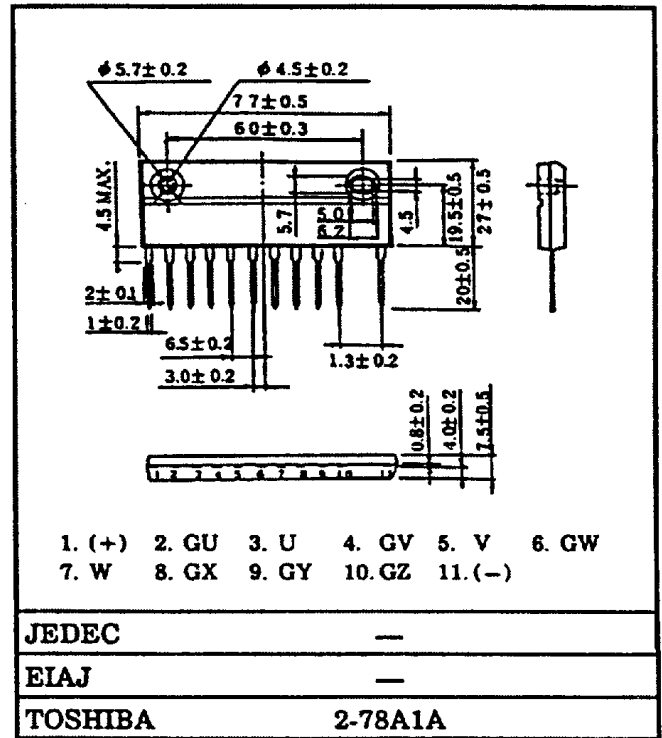
MP6753

High Power Switching Applications

Unit in mm

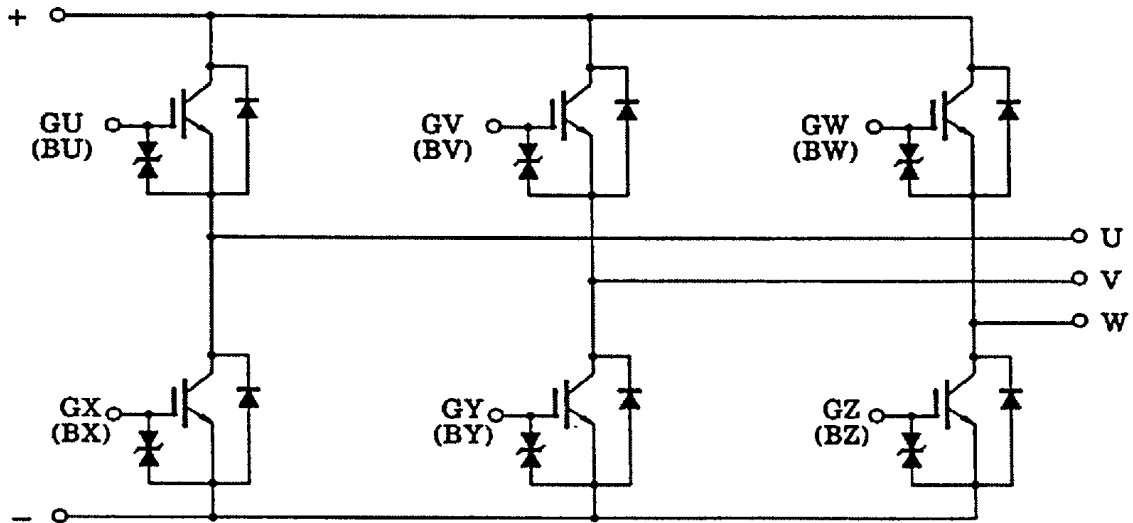
Motor Control Applications

- The Electrodes are Isolated from Case.
- 6 IGBTs are Built Into 1 Package.
- Enhancement-Mode
- Low Saturation Voltage
 - : $V_{CE(sat)} = 2.7V$ (Max.) ($I_C = 20A$)
- High Speed
 - : $t_f = 1.0\mu s$ (Max.) ($I_C = 20A$)
 - : $t_{rr} = 0.15\mu s$ (Max.) ($I_F = 20A$)



Weight : 44g

Equivalent Circuit



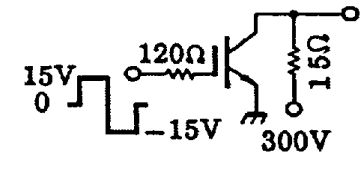
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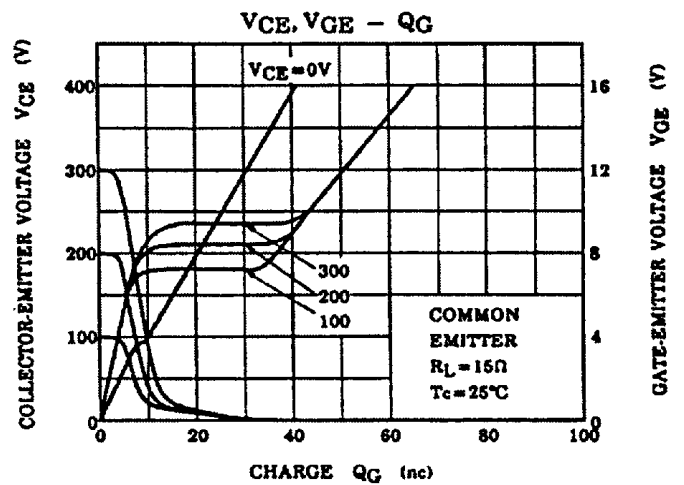
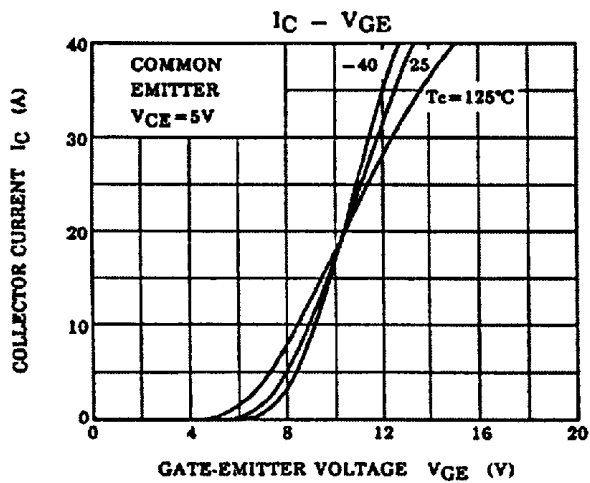
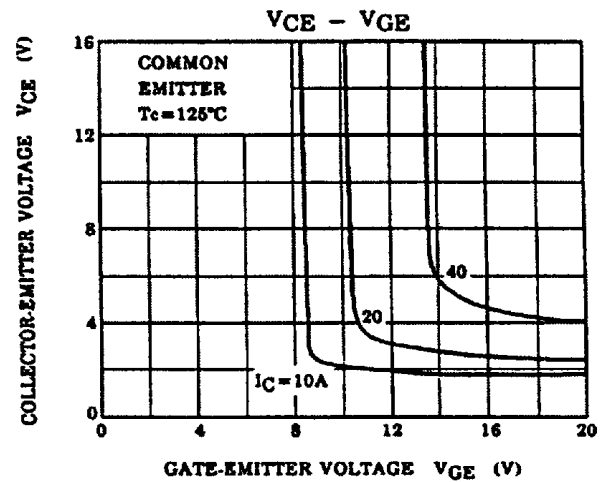
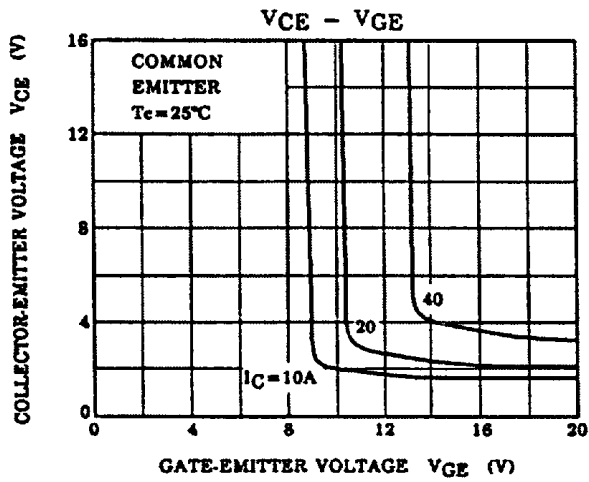
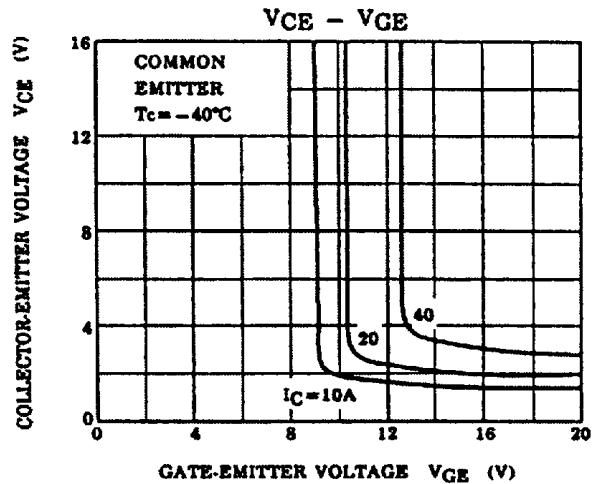
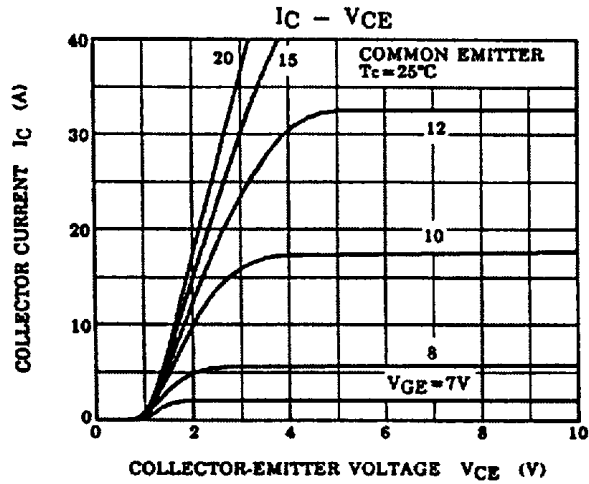
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Maximum Ratings (Ta = 25°C)

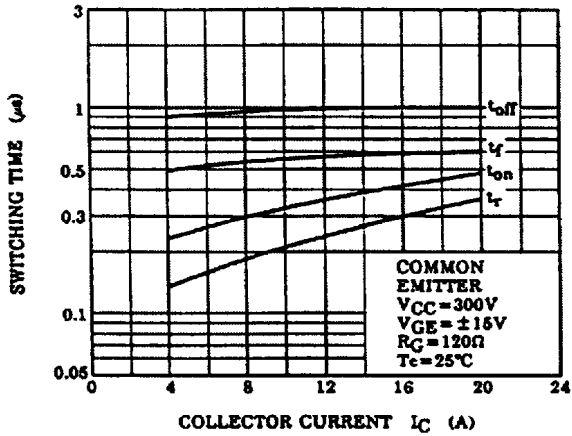
CHARACTERISTIC		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collector Current	DC	I_C	20	A
	1ms	I_{CP}	40	
Forward Current	DC	I_F	20	A
	1ms	I_{FM}	40	
Collector Power Dissipation (Tc = 25°C)		P_C	60	W
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-40 ~ 125	°C
Isolation Voltage		V_{isol}	2500 (AC 1 minute)	V
Screw Torque		—	1.5	N•m

Electrical Characteristics (Ta = 25°C)

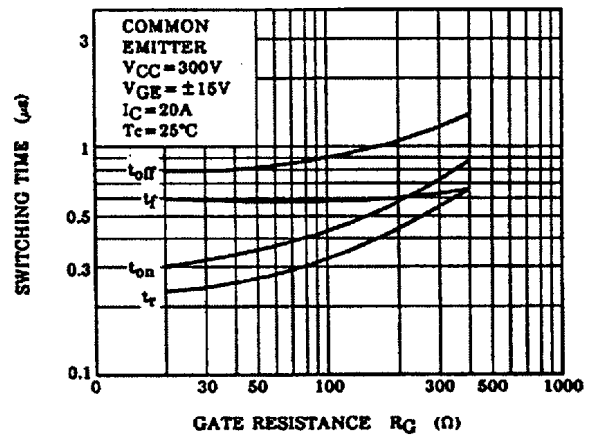
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	±20	µA
Collector Cut-off Current		I_{CES}	$V_{CE} = 600V, V_{GE} = 0$	—	—	1.0	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CES}$	$I_C = 10mA, B_{GE} = 0$	600	—	—	V
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	$V_{CE} = 5V, I_C = 20mA$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 20A, V_{GE} = 15V$	—	2.3	2.8	V
Input Capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	1300	—	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		—	0.6	1.0	
	Turn-off Time	t_{off}		—	1.0	1.6	
Forward Voltage		V_F	$I_F = 15A, V_{GE} = 0$	—	1.7	2.5	V
Reverse Recovery Time		t_{rr}	$I_F = 20A, V_{GE} = -10V$ $di/dt = 50A/\mu s$	—	0.08	0.15	µs
Thermal Resistance		$R_{th(j-c)}$	Transistor	—	—	2.08	°C/W
			Diode	—	—	3.09	



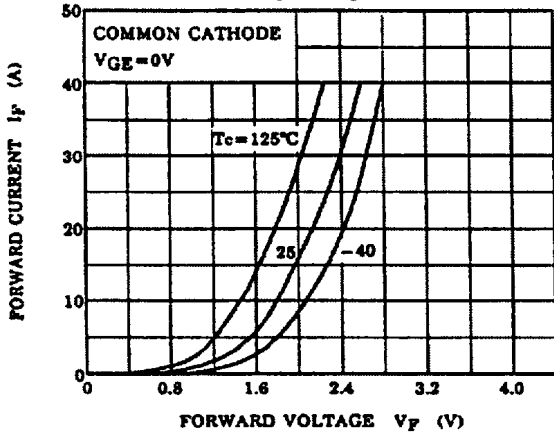
SWITCHING TIME - I_C



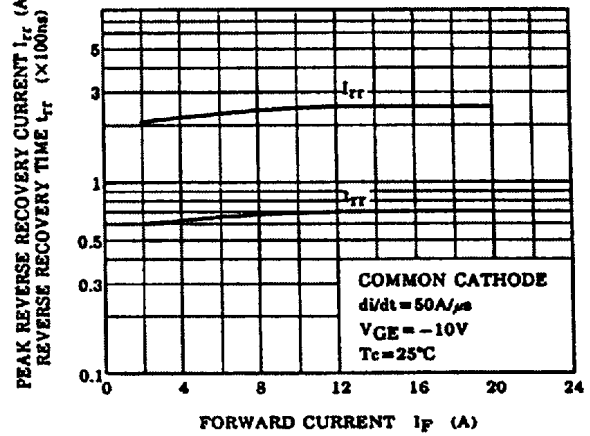
SWITCHING TIME - R_G



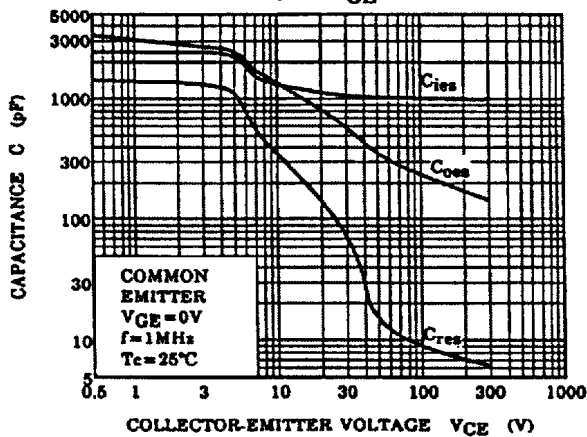
$I_F - V_F$



$t_{rr}, I_{rr} - I_F$



C - V_{CE}



$R_{th}(t) - t_w$

