

IGBT Dual Transistor

MG50Q2YS50

1200V / 78A

DATASHEET

OEM – Toshiba

Source: Toshiba Databook 1996

MG50Q2YS50

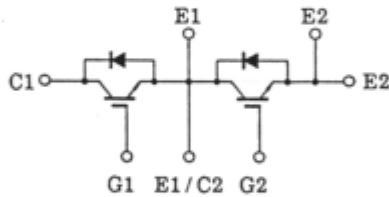
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HIGH POWER SWITCHING APPLICATIONS

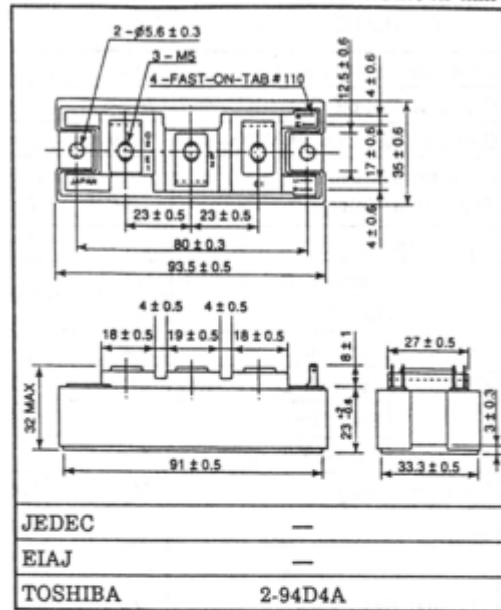
MOTOR CONTROL APPLICATIONS

- High Input Impedance
- High Speed : $t_f = 0.3\mu s$ (Max.)
@Inductive Load
- Low Saturation Voltage
: $V_{CE(sat)} = 3.6V$ (Max.)
- Enhancement-Mode
- Includes a Complete Half Bridge in One Package.
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Unit in mm



MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	V_{CES}	1200	V
Gate-Emitter Voltage	V_{GES}	± 20	V
Collector Current	DC	I_C ($25^\circ C / 80^\circ C$)	78 / 50
	1ms	I_{CP} ($25^\circ C / 80^\circ C$)	156 / 100
Forward Current	DC	I_F	50
	1ms	I_{FM}	100
Collector Power Dissipation ($T_c = 25^\circ C$)	P_C	400	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	-40~125	$^\circ C$
Isolation Voltage	V_{Isol}	2500 (AC 1 minute)	V
Screw Torque (Terminal / Mounting)	—	3 / 3	N·m

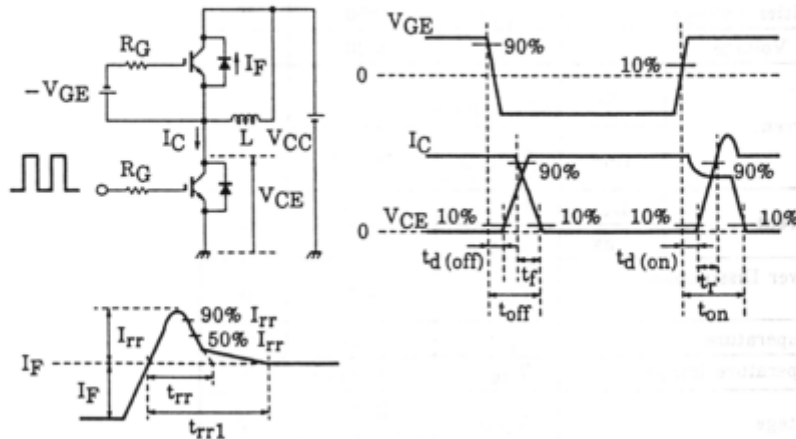
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

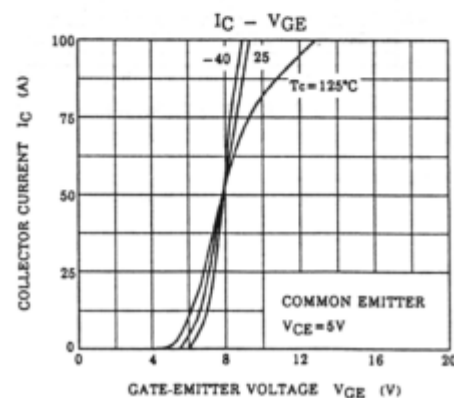
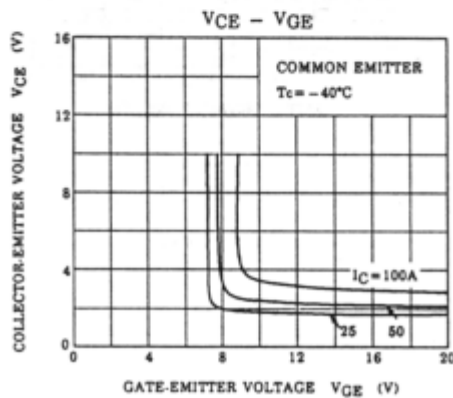
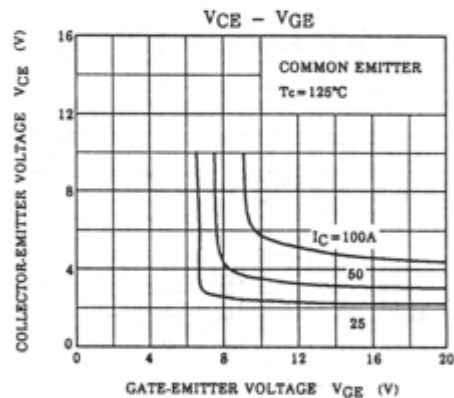
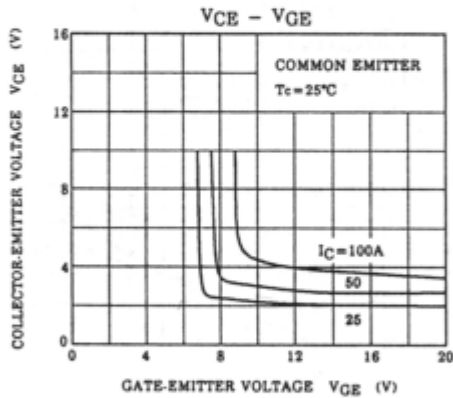
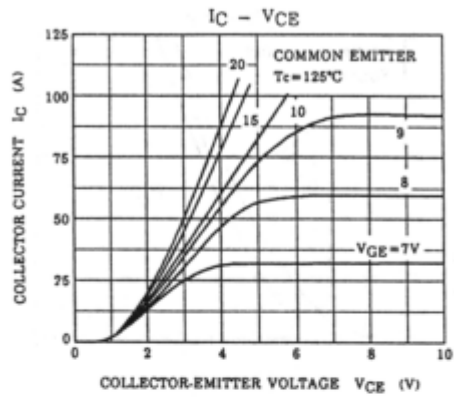
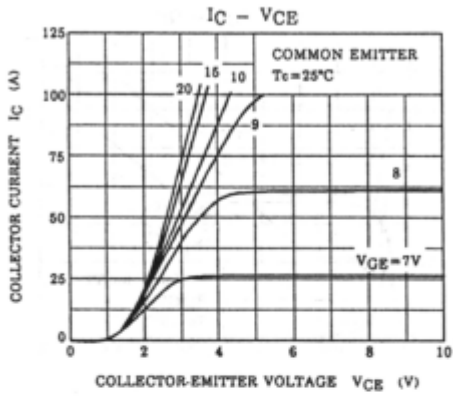
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	IGES	VGE = ±20V, VCE = 0	—	—	±500	nA	
Collector Cut-off Current	ICES	VCE = 1200V, VGE = 0	—	—	1.0	mA	
Gate-Emmitter Cut-off Voltage	VGE (off)	IC = 50mA, VCE = 5V	3.0	—	6.0	V	
Collector-Emmitter Saturation Voltage	VCE (sat)	IC = 50A, VGE = 15V	Tj = 25°C	—	2.8	3.6	V
			Tj = 125°C	—	3.1	4.0	
Input Capacitance	Cies	VCE = 10V, VGE = 0, f = 1MHz	—	6.0	—	nF	
Switching Time	Turn-on Delay Time	td (on)	—	0.05	—	μs	
	Rise Time	tr	—	0.05	—		
	Turn-on Time	ton	—	0.2	—		
	Turn-off Delay Time	td (off)	—	0.5	—		
	Fall Time	tf	—	0.1	0.3		
	Turn-off Time	toff	—	0.6	—		
Forward Voltage	VF	IF = 50A, VGE = 0	—	2.4	3.5	V	
Reverse Recovery Time	trr	IF = 50A, VGE = -10V di/dt = 700A/μs (Note 1)	—	0.1	0.25	μs	
Thermal Resistance	Rth (j-c)	Transistor Stage	—	—	0.31	°C/W	
		Diode Stage	—	—	0.94		

Note 1 : Switching Time and Reverse Recovery Time Test Circuit & Timing Chart



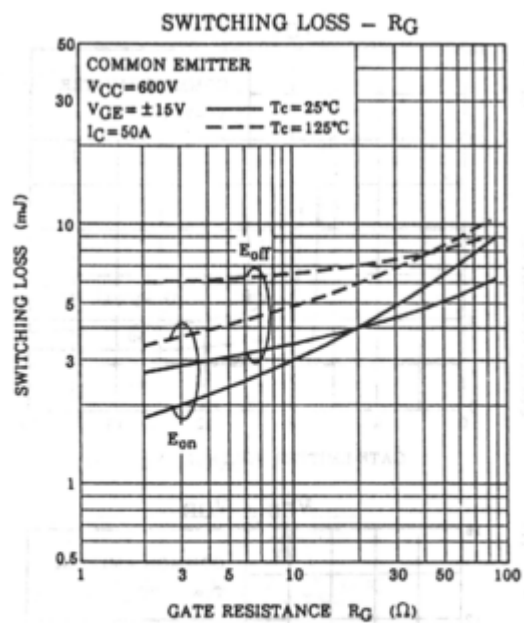
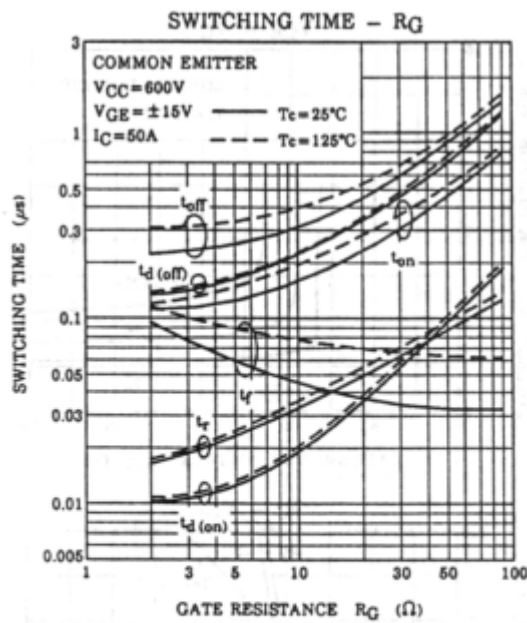
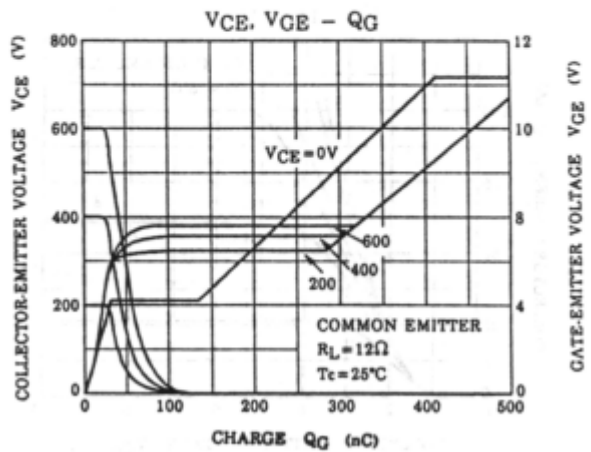
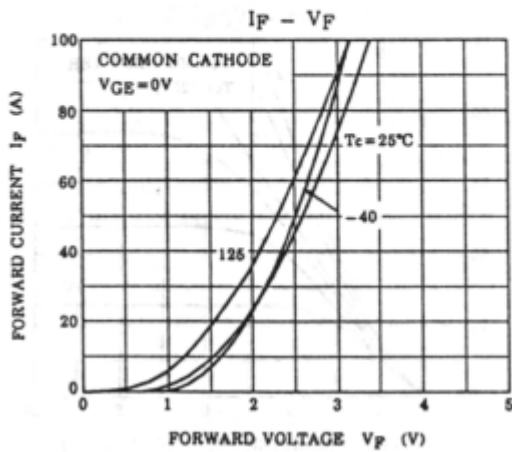
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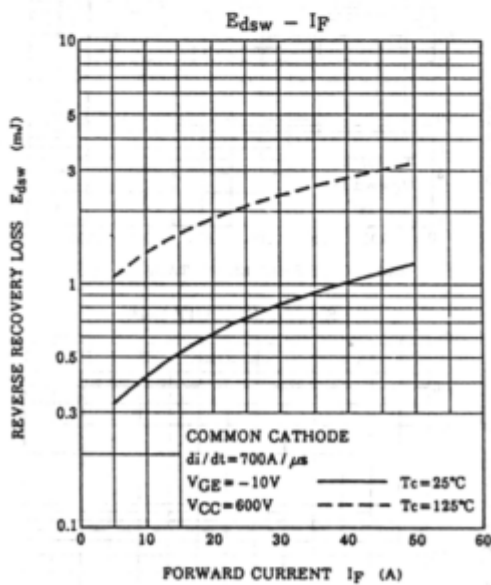
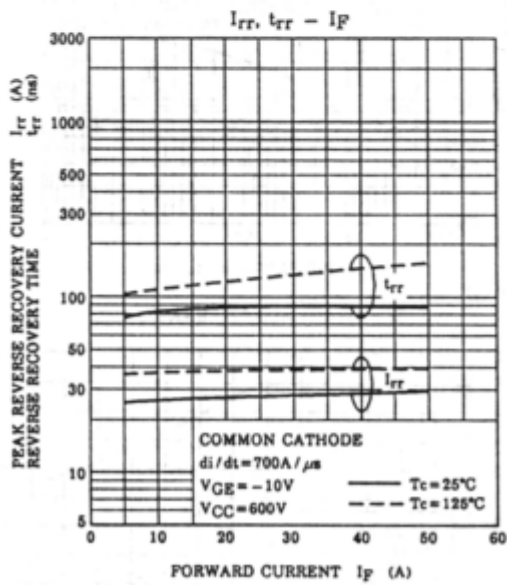
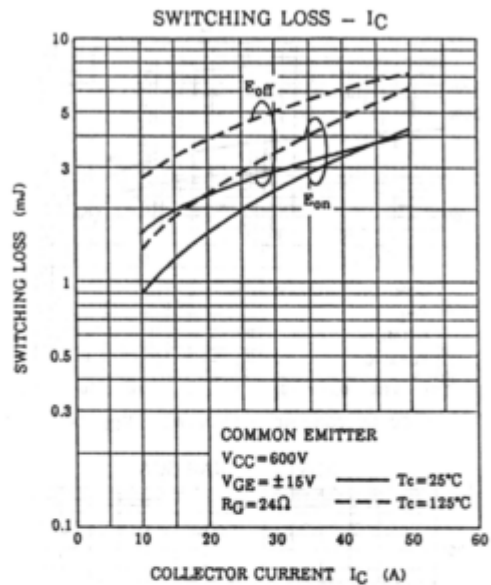
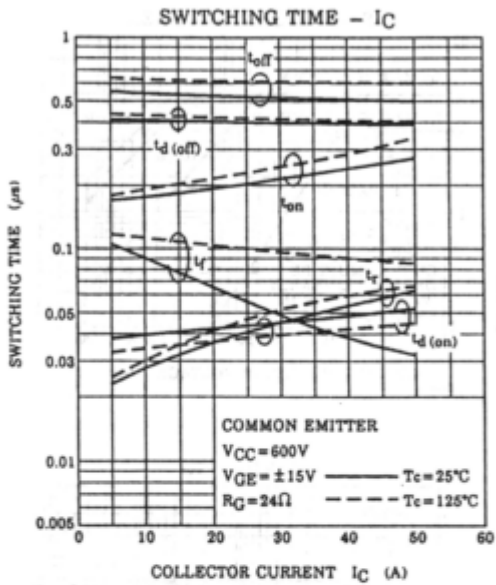
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