



## SEMICONDUCTOR

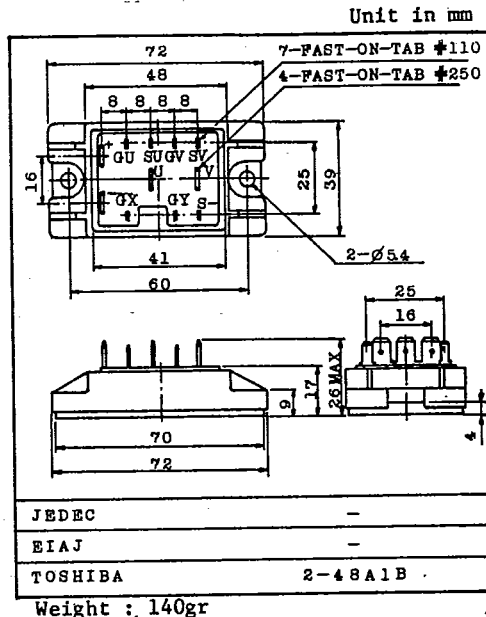
### TECHNICAL DATA

TOSHIBA GTR MODULE  
 MG15D4GM1  
 SILICON N CHANNEL MOS TYPE

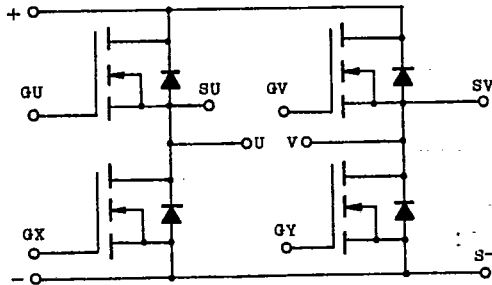
HIGH POWER SWITCHING APPLICATIONS.  
 MOTOR CONTROL APPLICATIONS.

**FEATURES:**

- The Drain is Isolated from Case.
- 4 MOS FETs are Built-in to 1 Package.
- With Built-in Free Wheeling Diode.
- Low Drain-Source ON Resistance  
 :  $R_{DS(ON)} = 0.24\Omega$  (Max.) ( $I_D = 15A$ )
- Enhancement-mode.



**EQUIVALENT CIRCUIT**



TOSHIBA CORPORATION



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TECHNICAL DATA

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V <sub>DSS</sub>	250	V
Gate-Source Voltage		V <sub>GSS</sub>	±20	V
Drain Current	DC	I <sub>D</sub>	±15	A
	1ms		±30	
Drain Power Dissipation (Tc=25°C)		P <sub>D</sub>	100	W
Channel Temperature		T <sub>ch</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-40 ~ 125	°C
Isolation Voltage		V <sub>isol</sub>	2500 (AC 1 Minute)	V
Screw Torque		-	30	kg·cm

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0	-	-	±100	nA
Drain Cut-off Current		I <sub>DSS</sub>	V <sub>DS</sub> =250V, V <sub>GS</sub> =0	-	-	1.0	mA
Drain-Source Breakdown Voltage		V(BR)DSS	I <sub>D</sub> =10mA, V <sub>GS</sub> =0	250	-	-	V
Gate Threshold Voltage		V <sub>th</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA	1.5	-	3.5	V
Forward Transfer Admittance		Y <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =15A	4.0	7.0	-	S
Drain-Source ON Resistance		R <sub>DS(ON)</sub>	I <sub>D</sub> =15A, V <sub>GS</sub> =10V	-	-	0.24	Ω
Source Drain Forward Voltage		V <sub>SDF</sub>	I <sub>S</sub> =15A, V <sub>GS</sub> =0	-	-	1.8	V
Input Capacitance		C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0, f=1MHz	-	2000	-	pF
Switching Time	Rise Time	t <sub>r</sub>		-	300	600	ns
	Turn-on Time	t <sub>on</sub>		-	350	700	ns
	Fall Time	t <sub>f</sub>		-	200	400	ns
	Turn-off Time	t <sub>off</sub>		V <sub>IN</sub> : t <sub>r</sub> , t <sub>f</sub> < 5ns D.U ≤ 1% (Z <sub>OUT</sub> = 50Ω)	-	600	1000
Reverse Recovery Time		t <sub>rr</sub>	I <sub>D</sub> =-15A, R <sub>C</sub> =220Ω V <sub>GS</sub> =-15V, di/dt=60A/µs	-	250	600	ns

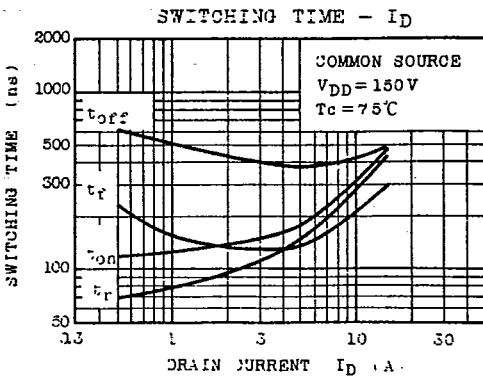
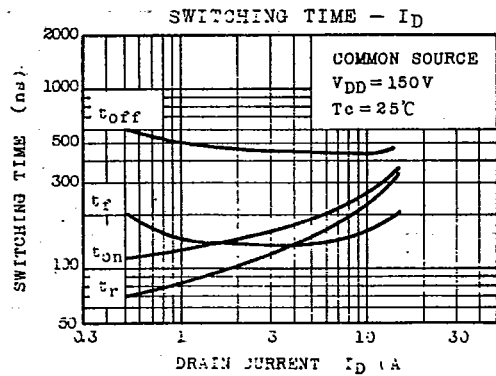
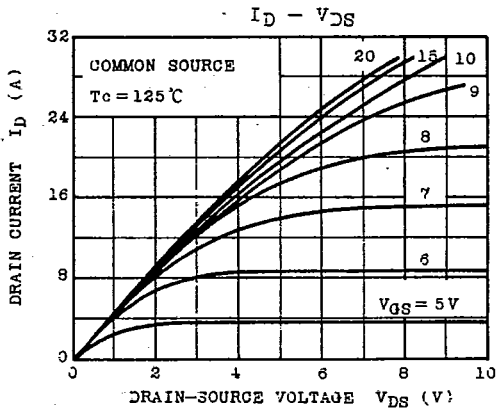
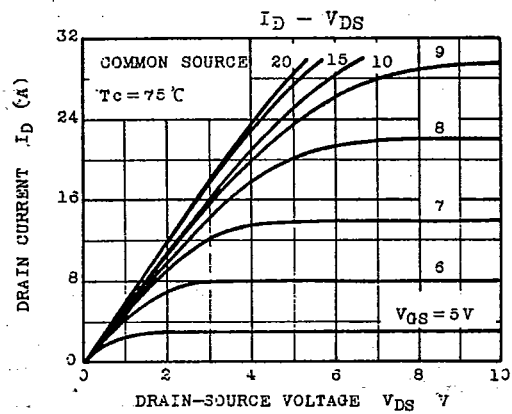
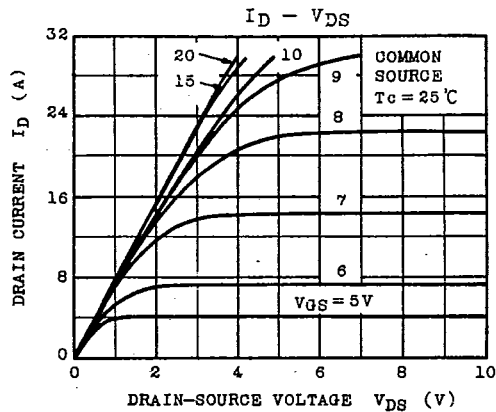
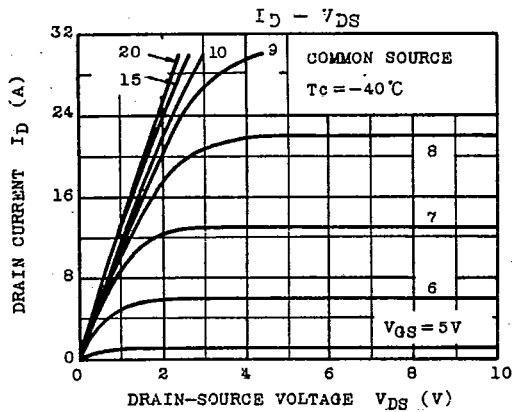
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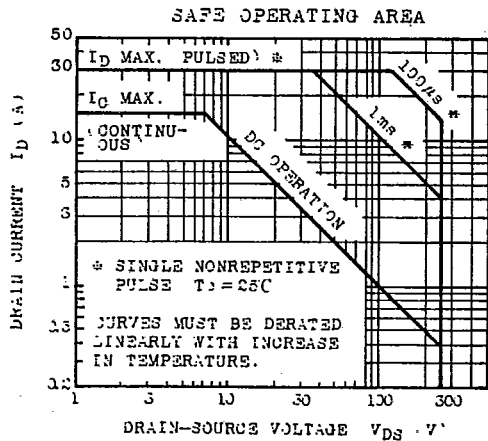
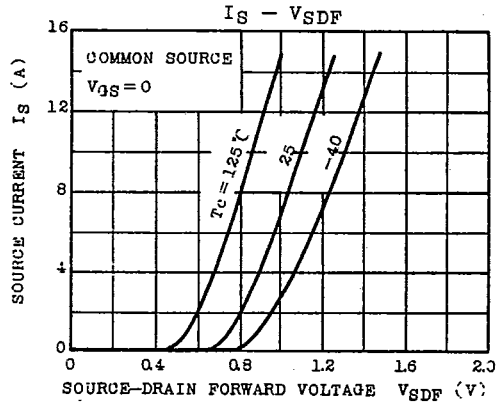
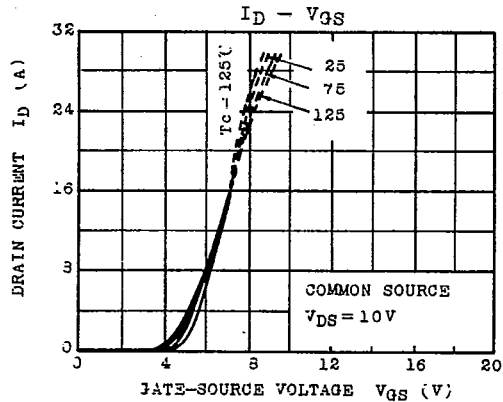
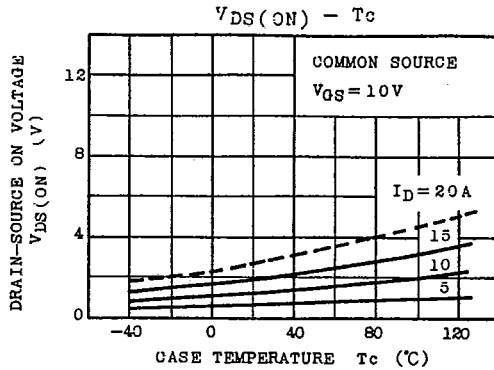
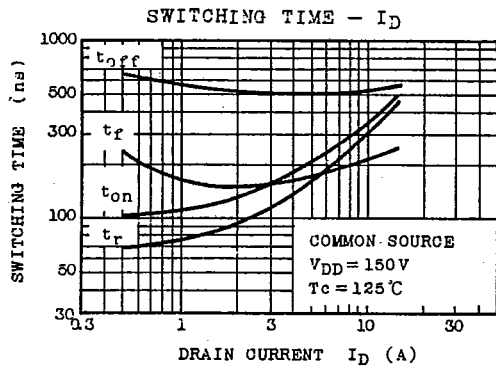
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