

TOSHIBA POWER MOS FET MODULE SILICON N CHANNEL MOS TYPE (L²-π-MOSIII 4 IN 1)

MP4202

HIGH POWER HIGH SPEED SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING

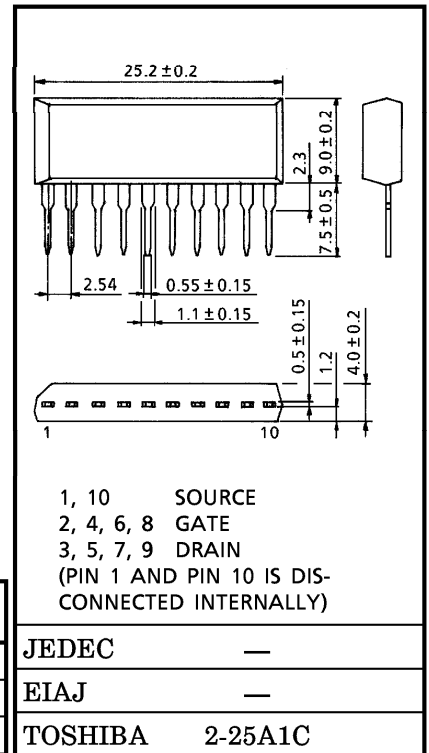
INDUSTRIAL APPLICATIONS

Unit in mm

- 4V Gate Drive Available
- Small Package by Full Molding (SIP 10 Pin)
- High Drain Power Dissipation (4 Devices Operation)
: P_T=4W (T_a=25°C)
- Low Drain-Source ON Resistance : R_{DS(ON)}=0.12Ω (Typ.)
- Low Leakage Current : I_{GSS}=±5μA (Max.) (V_{GS}=±16V)
I_{DSS}=100μA (Max.) (V_{DS}=60V)
- Enhancement-Mode : V_{th}=0.8~2.0V (I_D=1mA)

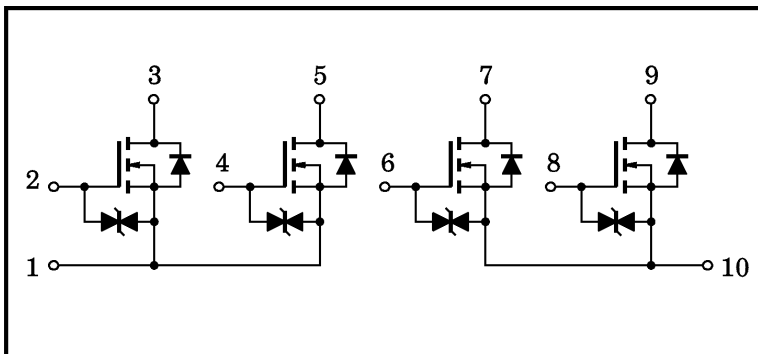
MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V _{DSS}	60	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current	I _D	5	A
Peak Drain Current	I _{DP}	10	A
Drain Power Dissipation (1 Device Operation)	P _D	2.0	W
Drain Power Dissipation (4 Devices Operation)	P _{DT}	4.0	W
Channel Temperature	T _{ch}	150	°C
Storage Temperature Range	T _{stg}	-55~150	°C



Weight : 2.1g (Typ.)

ARRAY CONFIGURATION



THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Channel to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th(ch-a)}$	31.2	°C / W
Maximum Lead Temperature for Soldering Purposes (3.2mm from Case for 10s)	T_L	260	°C

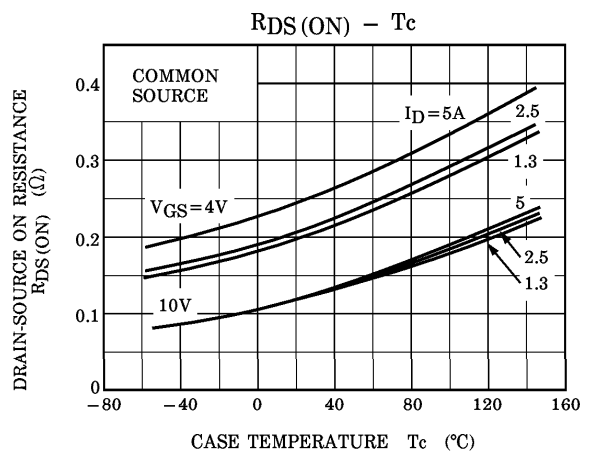
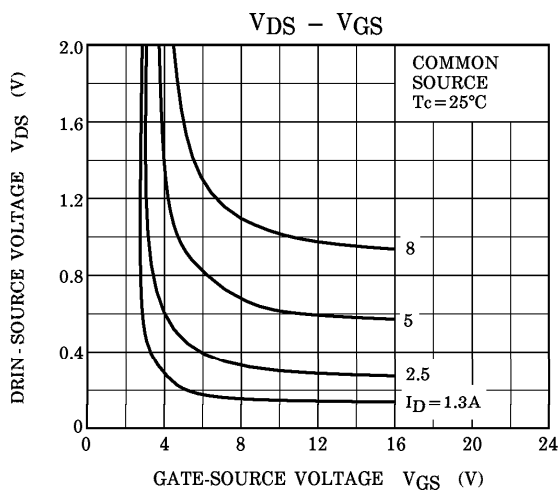
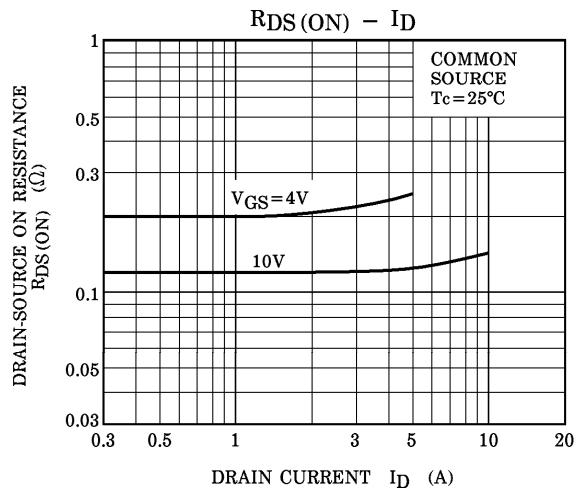
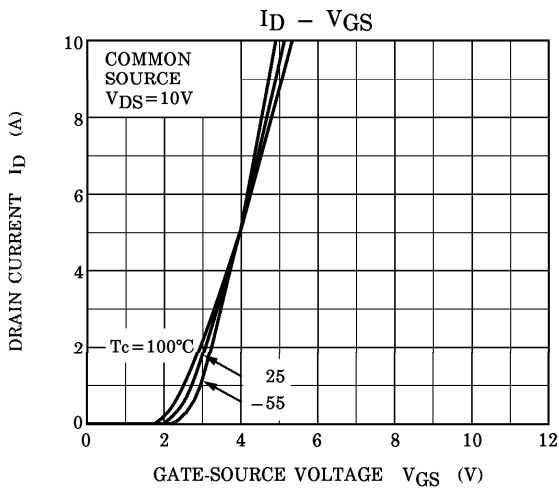
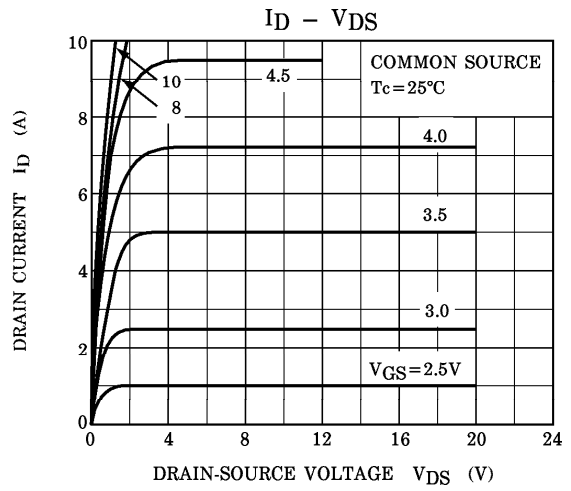
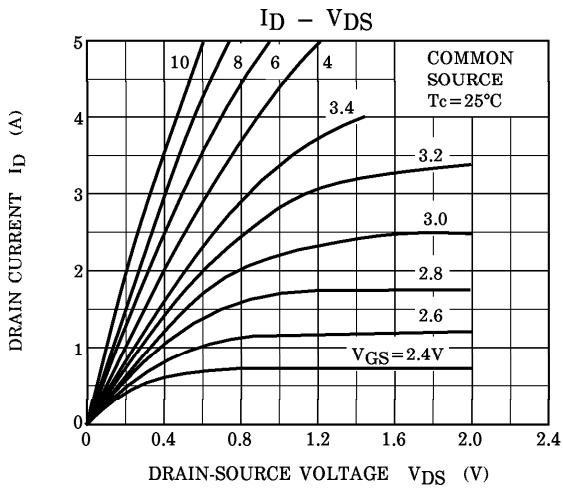
This Transistor is an Electrostatic Sensitive Device. Please Handle with Caution.

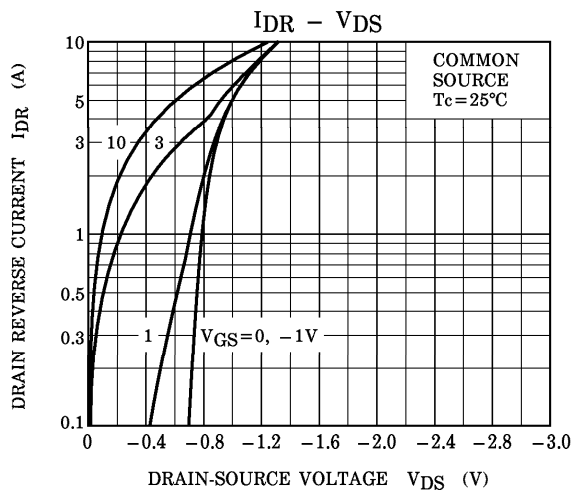
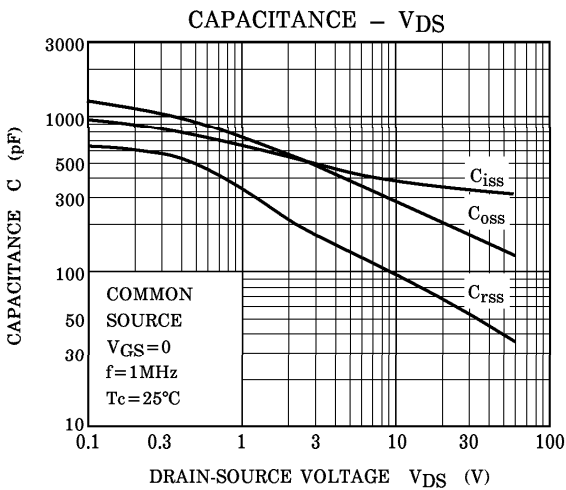
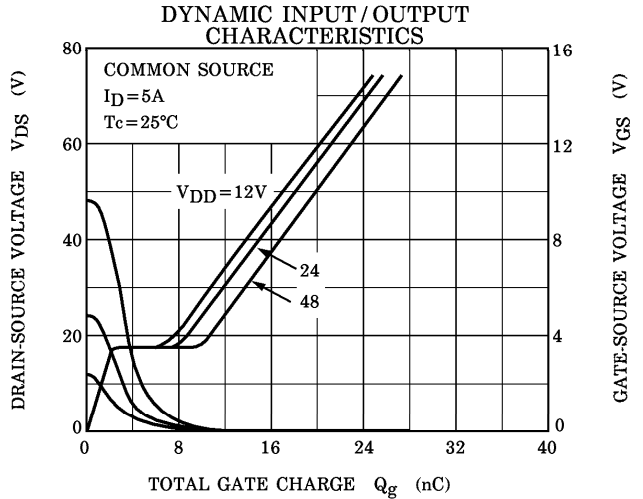
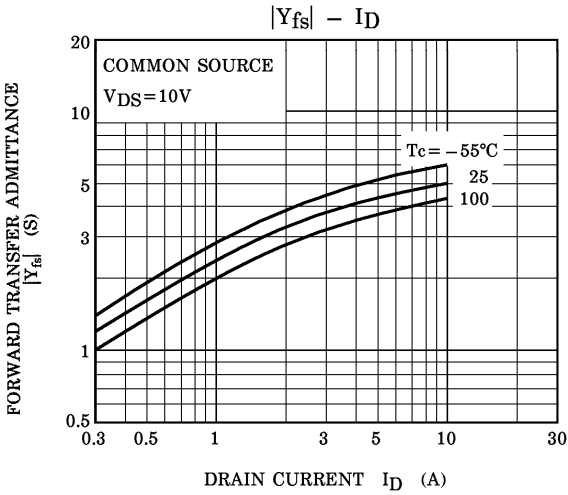
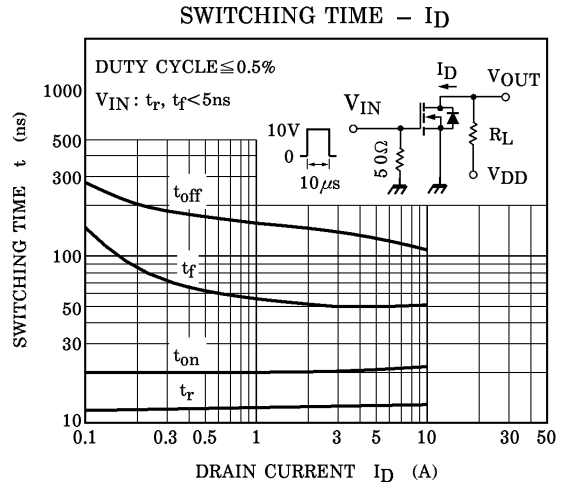
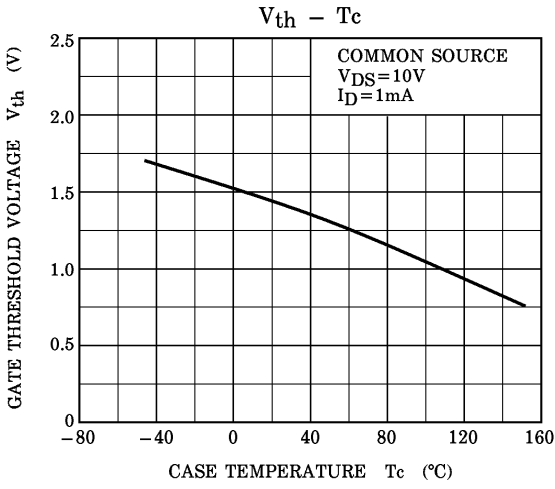
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

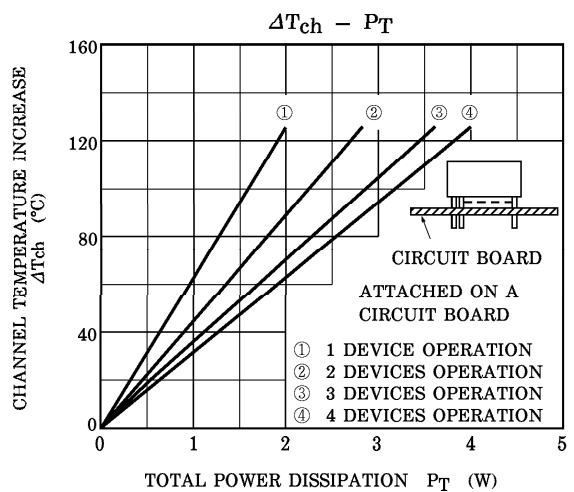
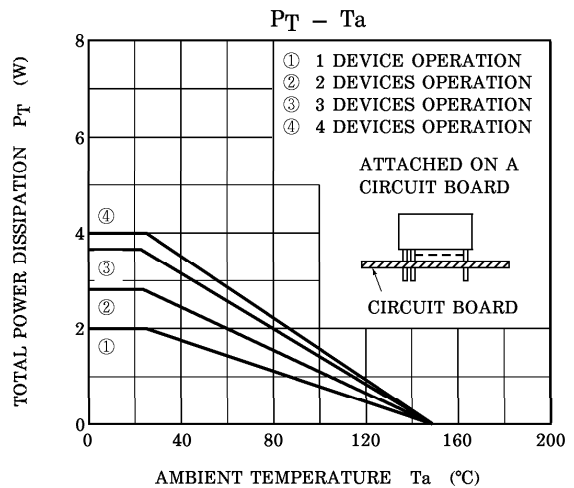
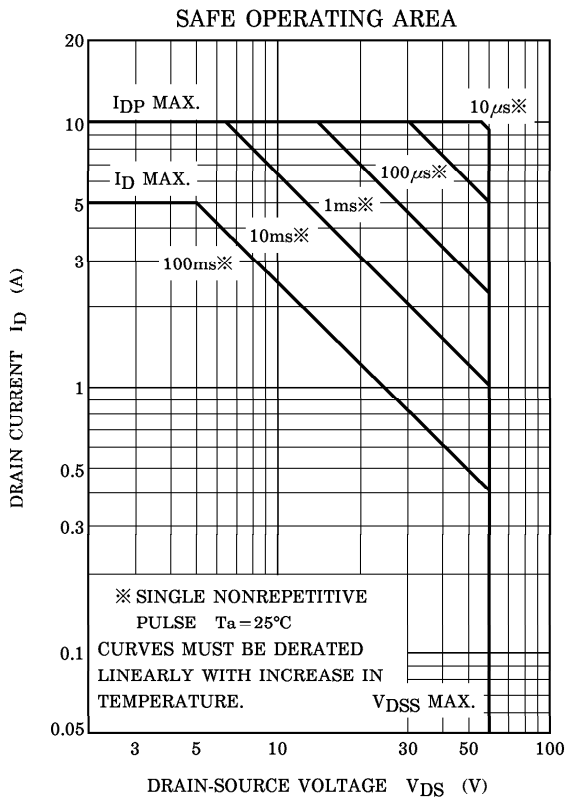
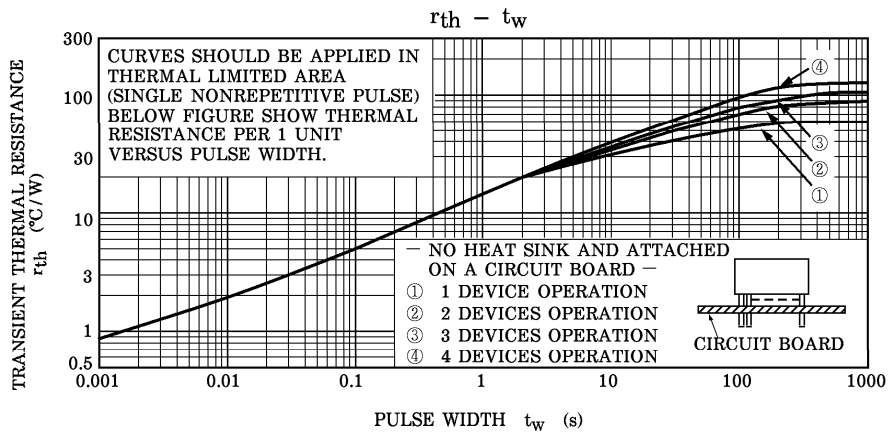
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 16V, V_{DS} = 0$	—	—	± 5	μA	
Drain Cut-off Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0$	—	—	100	μA	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0$	60	—	—	V	
Gate Threshold Voltage	V_{th}	$V_{DS} = 10V, I_D = 1mA$	0.8	—	2.0	V	
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10V, I_D = 2.5A$	1.5	3.5	—	S	
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D = 2.5A, V_{GS} = 4V$	—	0.2	0.32	Ω	
	$R_{DS(ON)}$	$I_D = 2.5A, V_{GS} = 10V$	—	0.12	0.2		
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0, f = 1MHz$	—	380	—	pF	
Reverse Transfer Capacitance	C_{rss}		—	95	—		
Output Capacitance	C_{oss}		—	280	—		
Switching Time	Rise Time	t_r		—	12	—	ns
	Turn-on Time	t_{on}		—	20	—	
	Fall Time	t_f		—	50	—	
	Turn-off Time	t_{off}		$V_{IN} : t_r, t_f < 5ns$ $Du. \leq 1\%$	—	140	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$I_D = 5A, V_{GS} = 10V, V_{DD} = 48V$	—	20	—	nC	
Gate-Source Charge	Q_{gs}		—	12	—		
Gate-Drain ("Miller") Charge	Q_{gd}		—	8	—		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain Reverse Current	I_{DR}	—	—	—	5	A
Peak Drain Reverse Current	I_{DRP}	—	—	—	10	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 5A, V_{GS} = 0$	—	-1.0	-1.7	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 5A, V_{GS} = 0$	—	120	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = -20A / \mu s$	—	0.09	—	μC







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