

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

MP4201

HIGH POWER, HIGH SPEED SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING

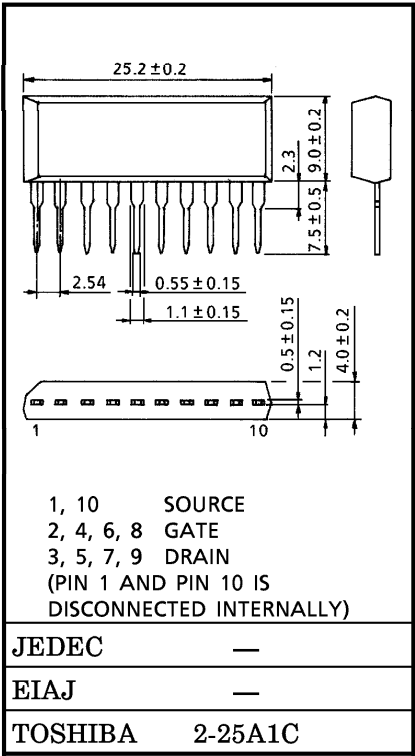
- 4V Gate Drive Available
- Small Package by Full Molding (SIP 10 Pin)
- High Drain Power Dissipation (4 Devices Operation)
: P_T=4W (T_a=25°C)
- Low Drain-Source ON Resistance : R_{DS (ON)}=0.33Ω (Typ.)
- Low Leakage Current : I_{GSS}=±5μA (Max.) (V_{GS}=±16V)
I_{DSS}=100μA (Max.) (V_{DS}=120V)
- Enhancement-Mode : V_{th}=0.8~2.0V (I_D=1mA)

MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V _{DSS}	120	V
Gate-Source Voltage	V _{GSS}	±20	V
Drain Current	I _D	3	A
Peak Drain Current	I _{DP}	6	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

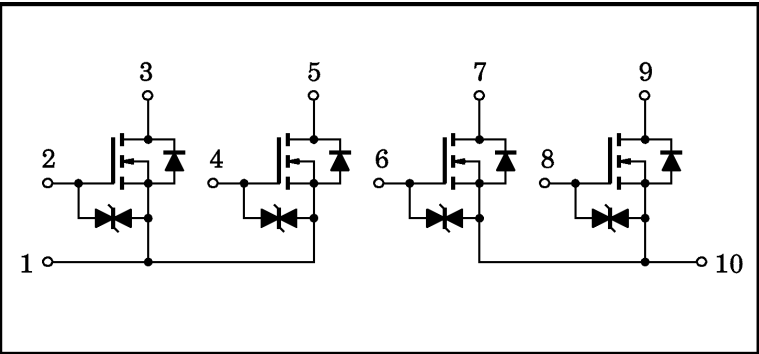
INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 2.1g (Typ.)

ARRAY CONFIGURATION

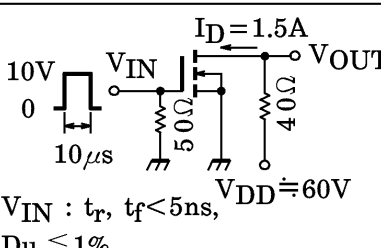


THERMAL CHARACTERISTICS

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

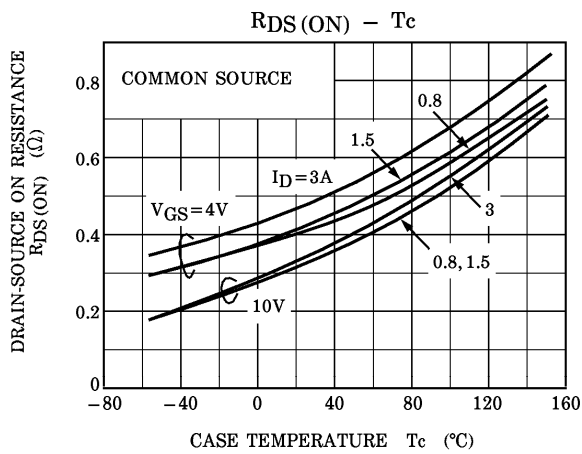
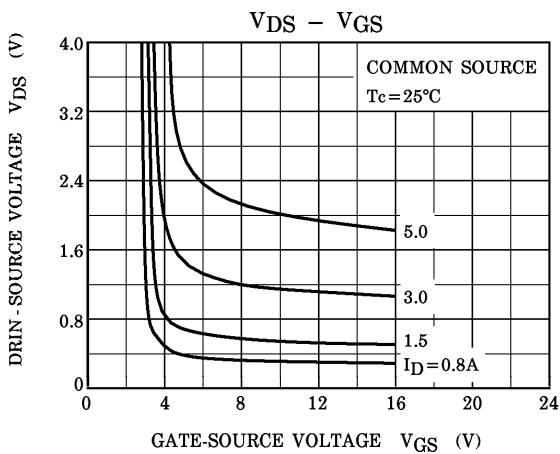
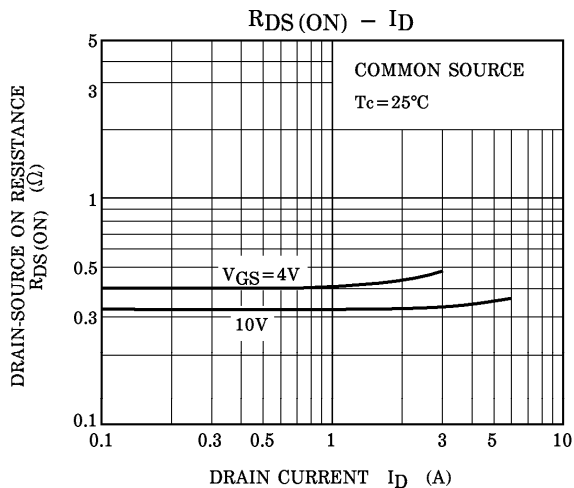
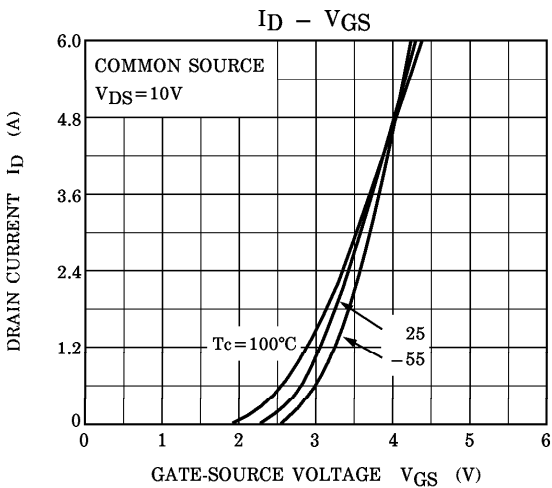
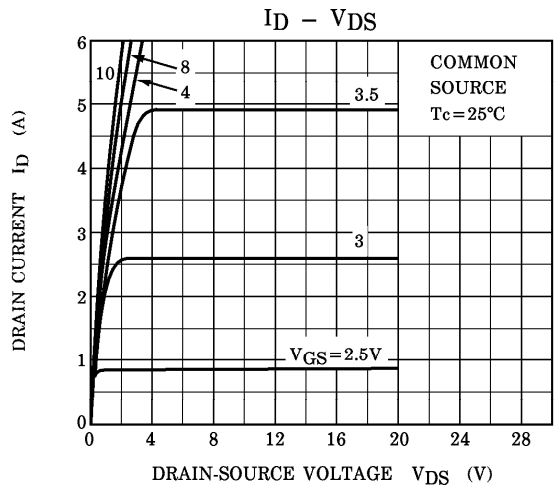
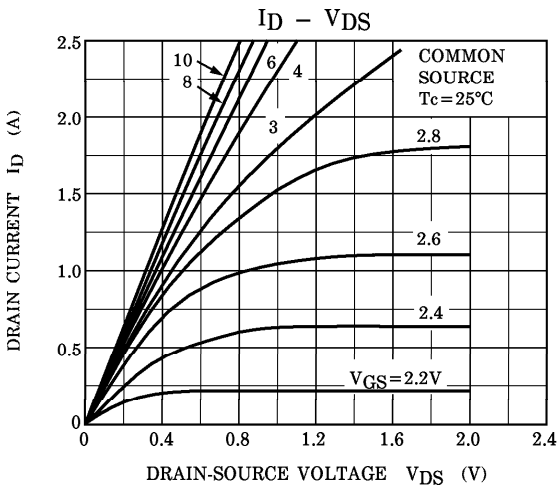
This Transistor is an Electrostatic Sensitive Device. Please Handle with Caution.

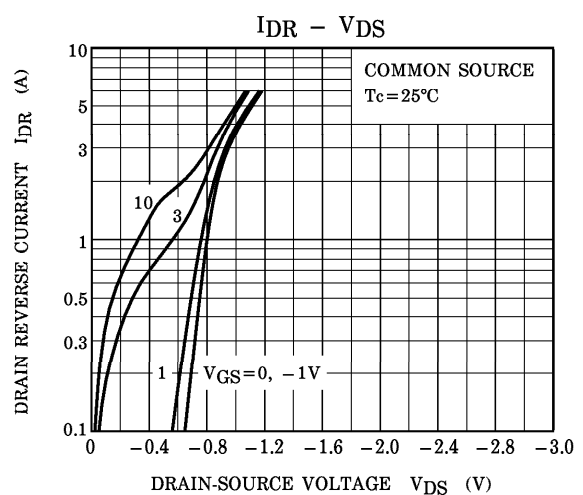
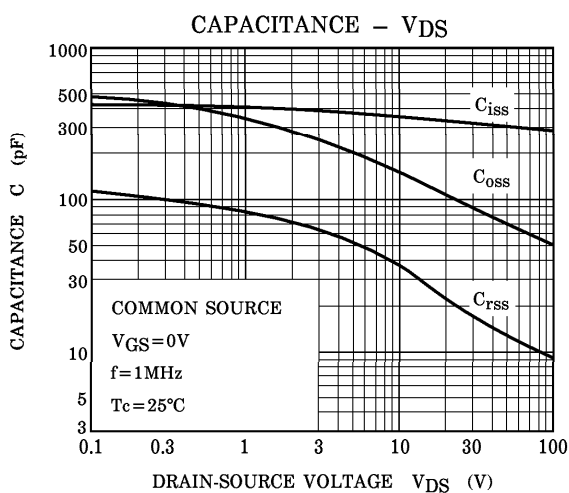
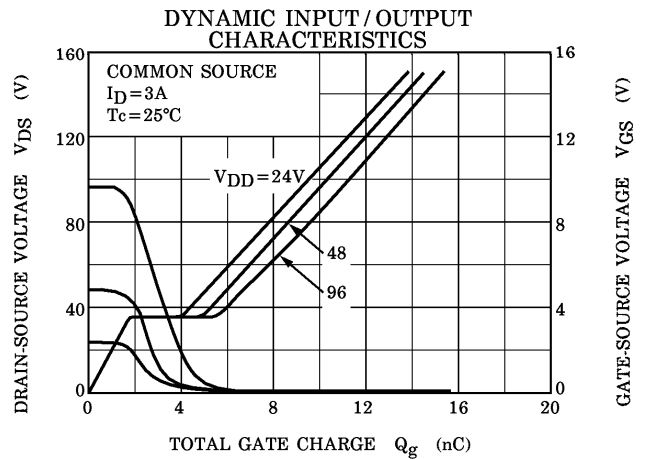
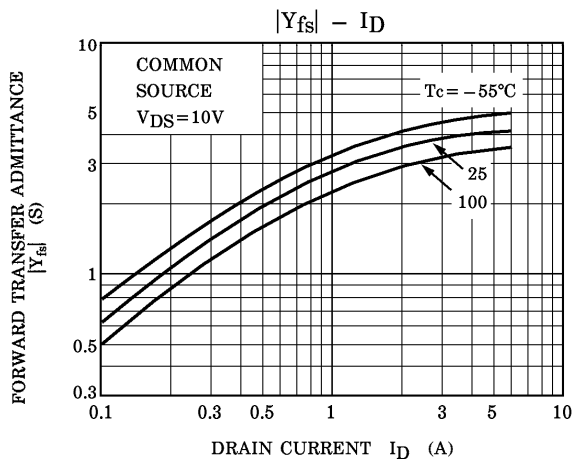
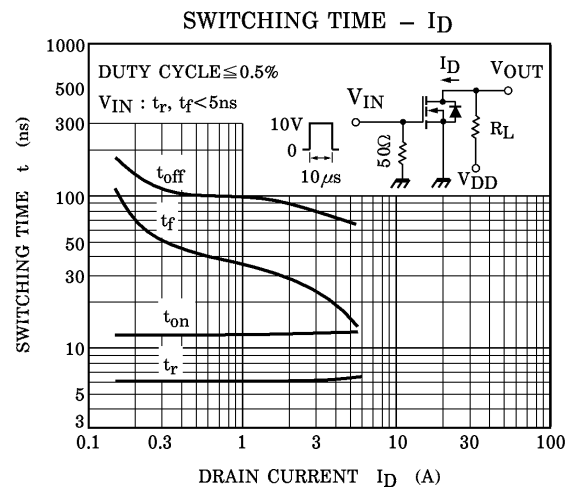
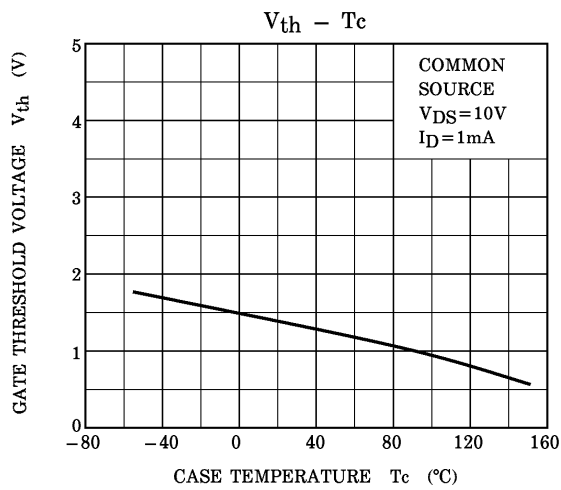
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

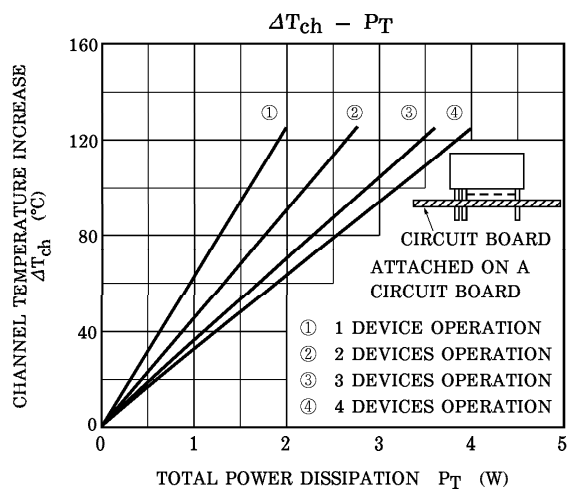
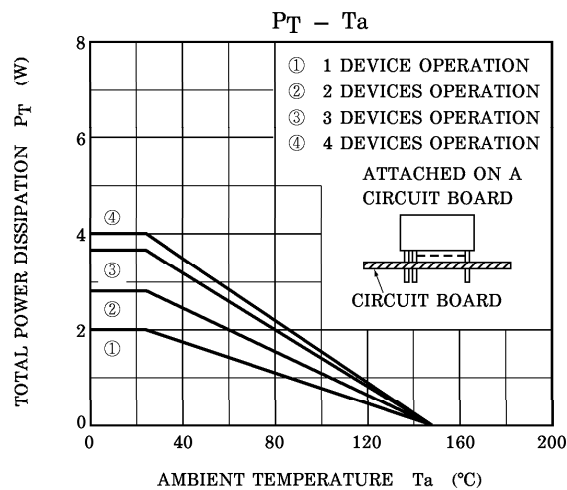
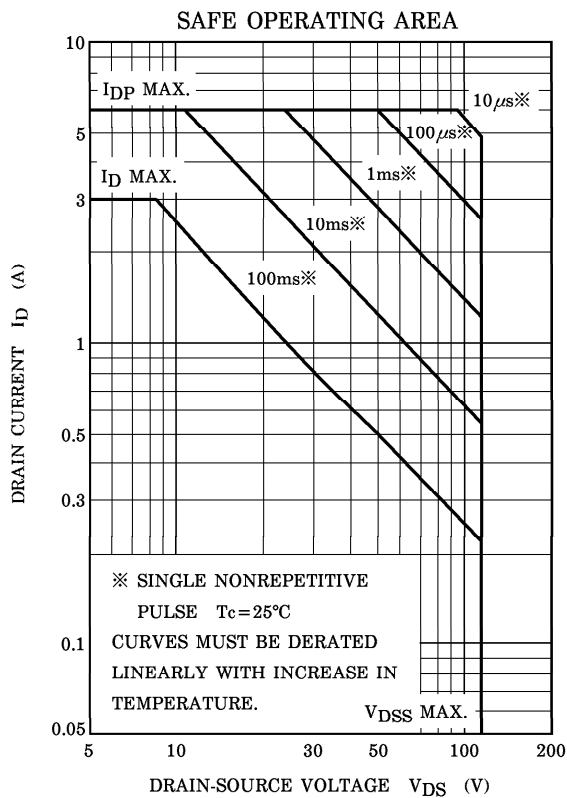
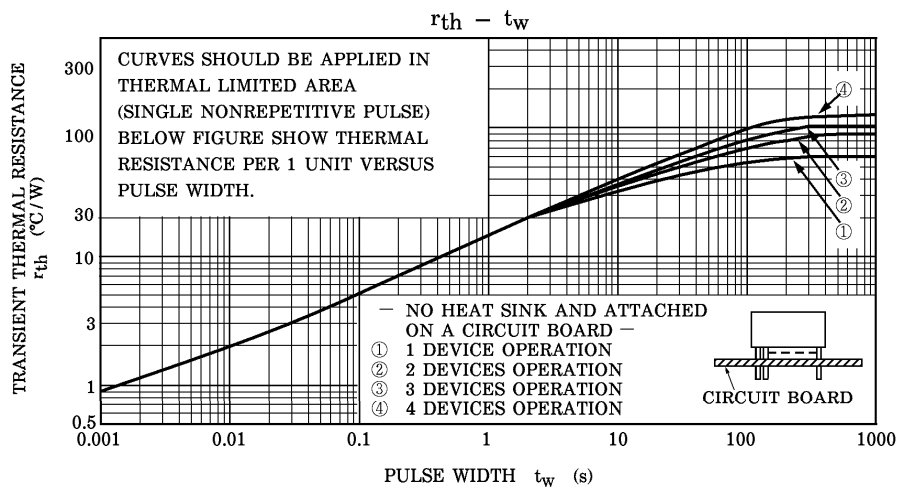
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$	—	—	± 5	μA
Drain Cut-off Current	I_{DSS}	$V_{DS} = 120\text{V}$, $V_{GS} = 0$	—	—	100	μA
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 10\text{mA}$, $V_{GS} = 0$	120	—	—	V
Gate Threshold Voltage	V_{th}	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	0.8	—	2.0	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 1.5\text{A}$	1.5	3.2	—	S
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D = 1.5\text{A}$, $V_{GS} = 4\text{V}$	—	0.42	0.74	Ω
	$R_{DS(ON)}$	$I_D = 1.5\text{A}$, $V_{GS} = 10\text{V}$	—	0.33	0.45	
Input Capacitance	C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	350	—	pF
Reverse Transfer Capacitance	C_{rss}		—	35	—	
Output Capacitance	C_{oss}		—	155	—	
Switching Time	Rise Time		—	6	—	ns
	Turn-on Time		—	12	—	
	Fall Time		—	40	—	
	Turn-off Time		—	100	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$I_D = 3\text{A}$, $V_{GS} = 10\text{V}$, $V_{DD} = 96\text{V}$	—	11	—	nC
Gate-Source Charge	Q_{gs}		—	7	—	
Gate-Drain ("Miller") Charge	Q_{gd}		—	4	—	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain Reverse Current	I_{DR}	—	—	—	3	A
Peak Drain Reverse Current	I_{DRP}	—	—	—	6	A
Diode Forward Voltage	V_{DSF}	$I_{DR} = 3\text{A}$, $V_{GS} = 0$	—	−0.9	−1.5	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 3\text{A}$, $V_{GS} = 0$,	—	130	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = -20\text{A} / \mu\text{s}$	—	0.14	—	μC







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