

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

MP4403

HIGH POWER, HIGH SPEED SWITCHING APPLICATIONS.

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING.

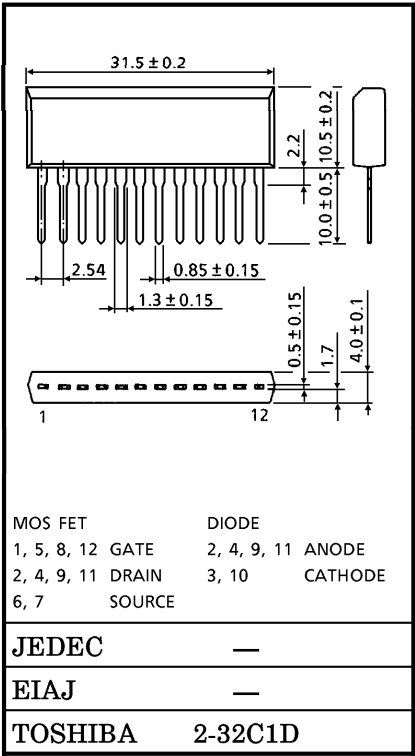
- 4-Volt Gate Drive Available
- Small Package by Full Molding (SIP 12 Pin)
- High Drain Power Dissipation (4 Devices Operation)
: P_T=28W (T_c=25°C)
- Low Drain-Source ON Resistance : R_{DS (ON)}=0.20Ω (Typ.)
- Low Leakage Current : I_{GSS}=±10μA (Max.) (V_{GS}=±16V)
I_{DSS}=100μA (Max.) (V_{DS}=120V)
- Enhancement-Mode : V_{th}=0.8~2.0V (I_D=1mA)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V _{DSS}	120	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	2.2	W
Drain Power Dissipation (4 Devices Operation)	Ta = 25°C	P _T	4.4	W
	Tc = 25°C		28	
Channel Temperature		T _{ch}	150	°C
Storage Temperature Range		T _{stg}	-55~150	°C

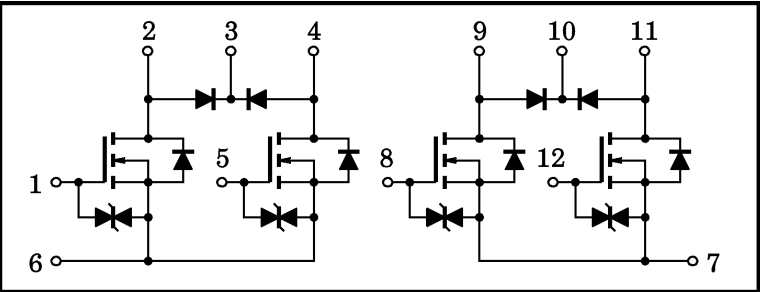
INDUSTRIAL APPLICATIONS

Unit in mm



Weight : 3.9g

ARRAY CONFIGURATION

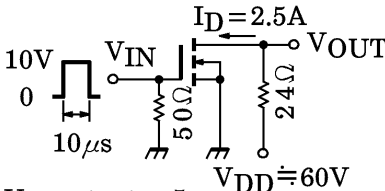


THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Channel to Ambient (4 Devices Operation, $T_a = 25^\circ\text{C}$)	$\Sigma R_{th(ch-a)}$	28.4	$^\circ\text{C} / \text{W}$
Thermal Resistance of Channel to Case (4 Devices Operation, $T_c = 25^\circ\text{C}$)	$\Sigma R_{th(ch-c)}$	4.46	$^\circ\text{C} / \text{W}$
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 ($T_a = 25^\circ\text{C}$)

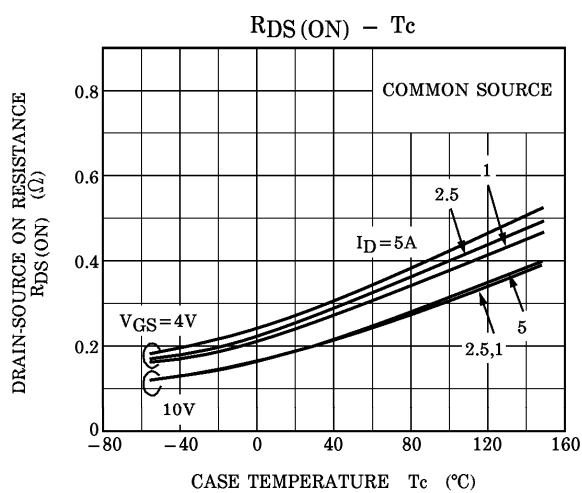
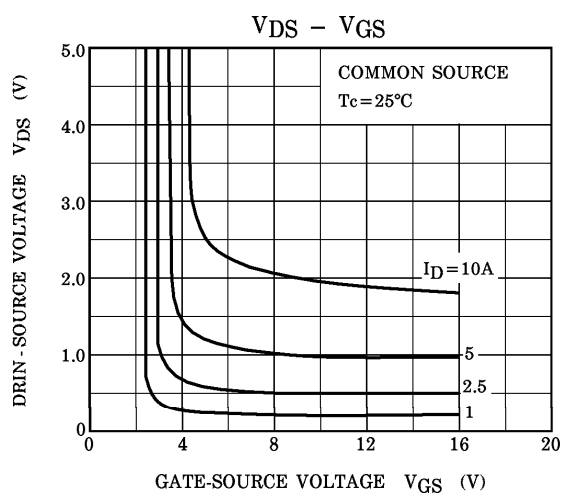
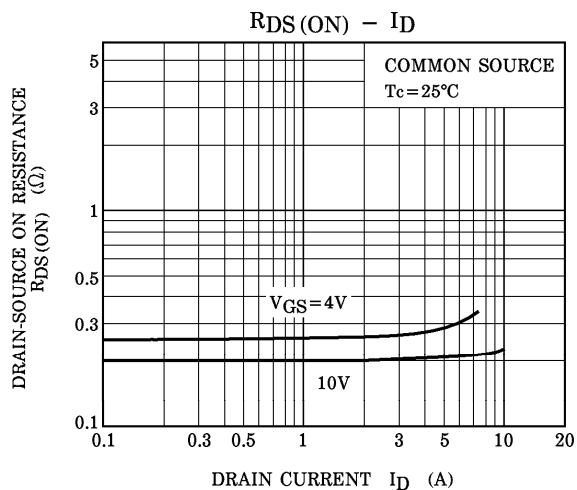
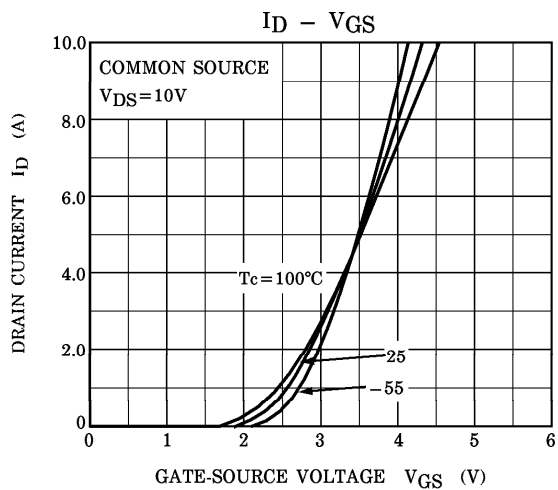
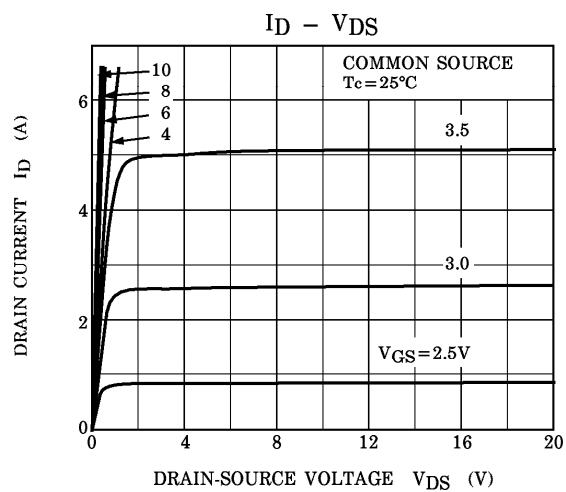
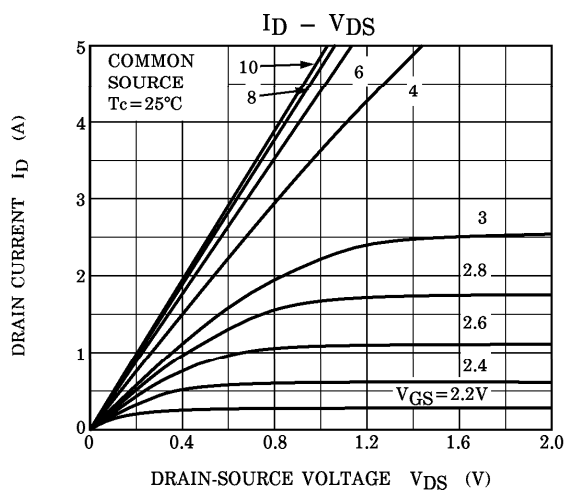
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 120\text{V}$, $V_{GS} = 0$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10\text{mA}$, $V_{GS} = 0$	120	—	—	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} $	$V_{DS} = 10\text{V}$, $I_D = 2.5\text{A}$	2.0	4.0	—	S
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 2.5\text{A}$, $V_{GS} = 4\text{V}$	—	0.28	0.44	Ω
		$R_{DS(ON)}$	$I_D = 2.5\text{A}$, $V_{GS} = 10\text{V}$	—	0.20	0.3	
Input Capacitance		C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	540	—	pF
Reverse Transfer Capacitance		C_{rss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	47	—	pF
Output Capacitance		C_{oss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	180	—	pF
Switching Time	Rise Time	t_r	 $I_D = 2.5\text{A}$ $V_{IN} : t_r, t_f < 5\text{ns}$, $D_u \leq 1\%$ ($Z_{OUT} = 50\Omega$) $V_{DD} = 60\text{V}$	—	15	—	ns
	Turn-on Time	t_{on}		—	50	—	
	Fall Time	t_f		—	40	—	
	Turn-off Time	t_{off}		—	280	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$I_D = 5\text{A}$, $V_{GS} = 10\text{V}$, $V_{DD} = 96\text{V}$	—	27	—	nC
Gate-Source Charge		Q_{gs}		—	18	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	9	—	

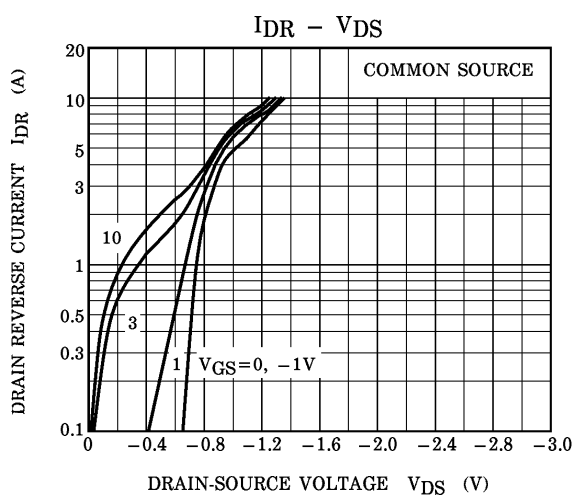
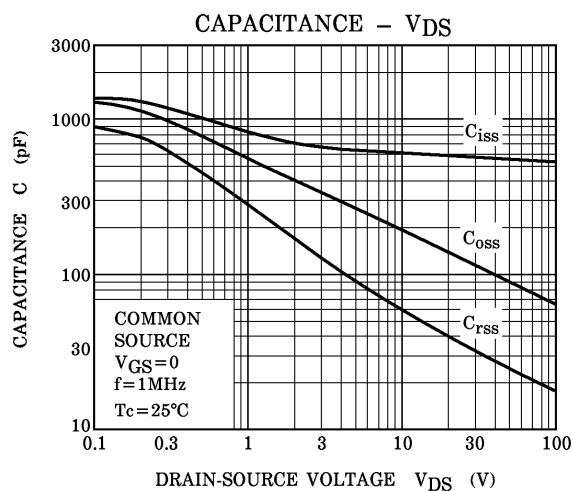
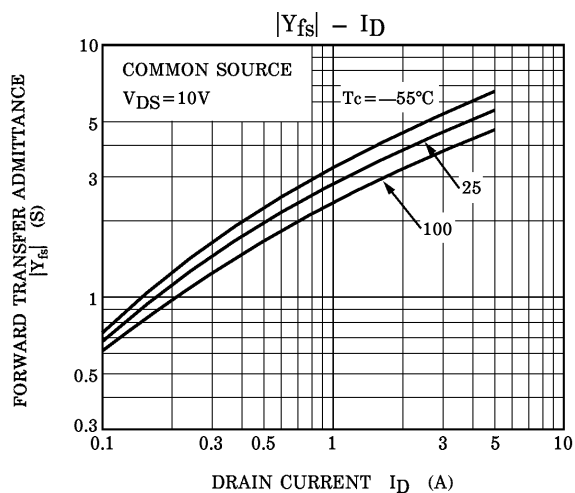
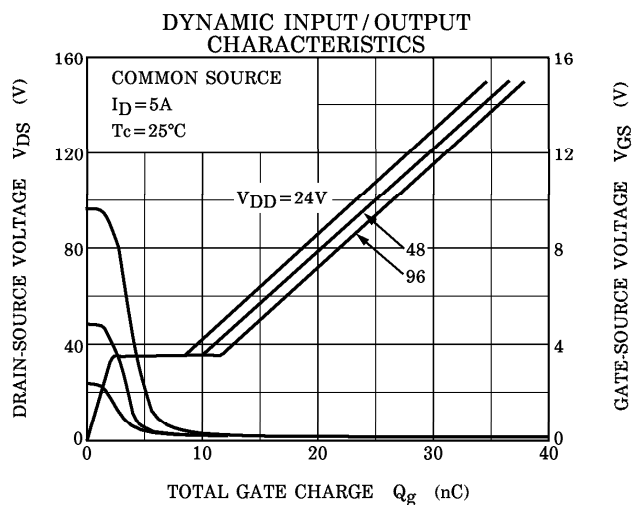
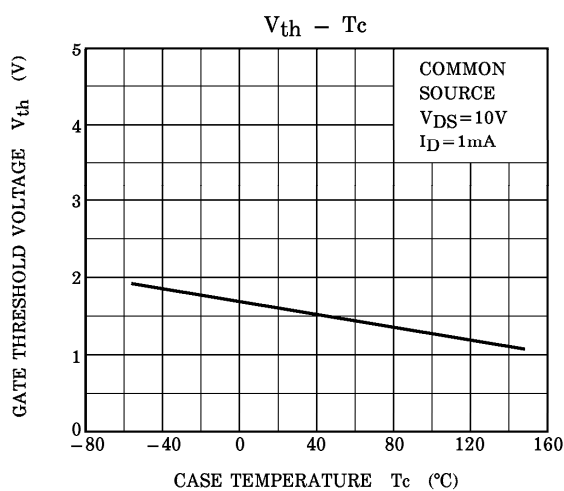
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25°C)

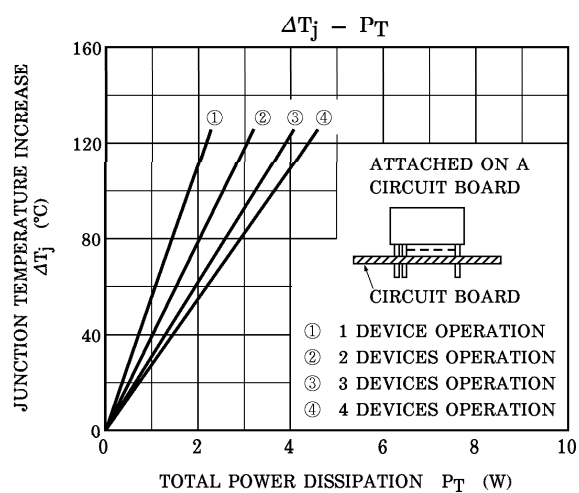
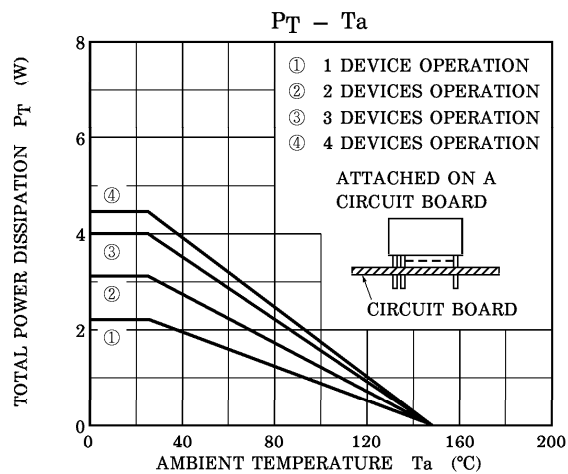
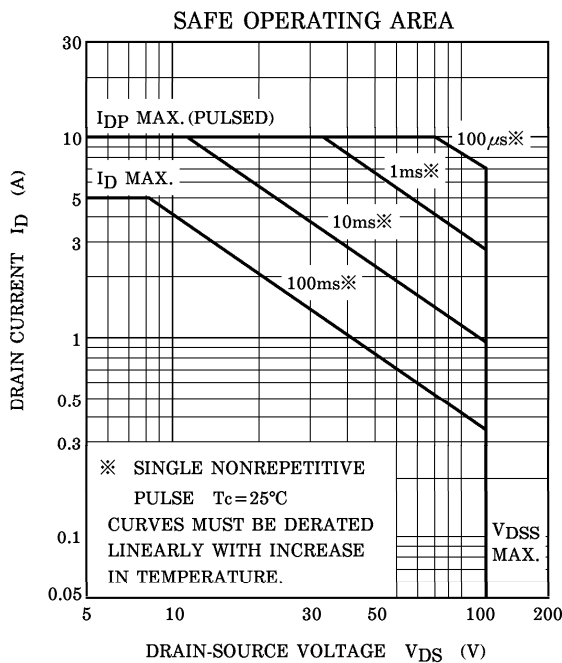
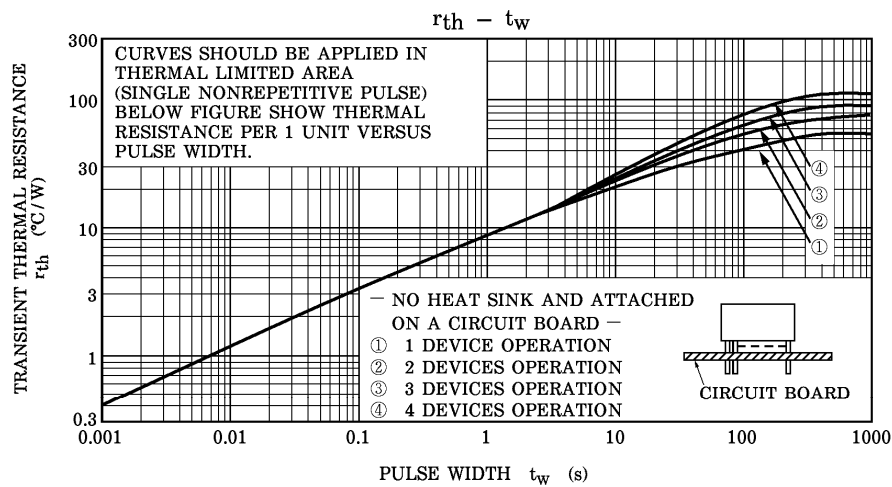
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Drain Reverse Current	I_{DR}	—	—	—	5	A
Peak Drain Reverse Current	I_{DRP}	—	—	—	10	A
Diode Forward Voltage	V_{DSF}	$I_{DR}=5A, V_{GS}=0$	—	-1.0	-1.5	V
Reverse Recovery Time	t_{rr}	$I_{DR}=5A, V_{GS}=0,$ $dI_{DR}/dt = -50A/\mu s$	—	180	—	ns
Reverse Recovery Charge	Q_{rr}		—	0.54	—	μC

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Maximum Forward Current	I_{FM}	—	—	—	5	A
Reverse Current	I_R	$V_R=120V$	—	—	0.4	μA
Reverse Voltage	V_R	$I_R=100\mu A$	120	—	—	V
Forward Voltage	V_F	$I_F=2A$	—	—	2.3	V







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