

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

MP4208

HIGH POWER HIGH SPEED SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE AND INDUCTIVE LOAD SWITCHING

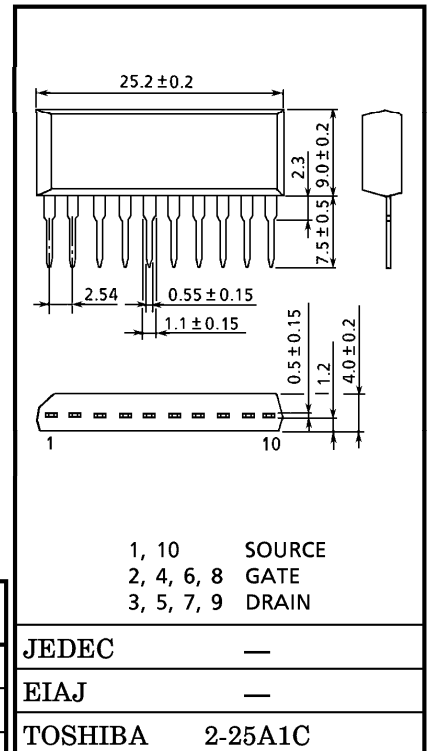
INDUSTRIAL APPLICATIONS

Unit in mm

- -4-Volt 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)} = 0.2Ω (Typ.)
- Low Leakage Current : I_{GSS} = ±10μA (Max.) (V_{GS} = ±16V)
I_{DSS} = -100μA (Max.) (V_{DS} = -60V)
- Enhancement-Mode : V_{th} = -0.8 ~ -2.0V (I_D = -1mA)

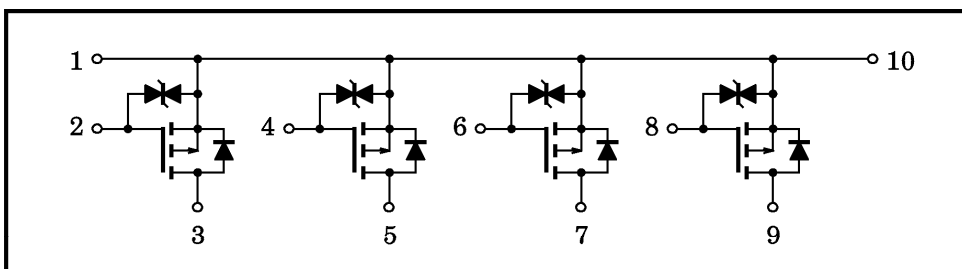
MAXIMUM RATINGS (T_a = 25°C)

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, T _a = 25°C)	P _D	2.0	W
Drain Power Dissipation (4 Devices Operation, T _a = 25°C)	P _{DT}	4.0	W
Channel Temperature	T _{ch}	150	°C
Storage Temperature Range	T _{stg}	-55~150	°C



Weight : 2.1g

ARRAY CONFIGURATION



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THERMAL CHARACTERISTICS

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance of Channel to Ambient (4 Devices Operation, Ta=25°C)	$\Sigma R_{th}(ch-a)$	31.3	°C/W
Maximum Lead Temperature for Soldering Purposes (3.2mm from Case for 10 Second)	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}	$V_{GS} = \mp 16V, V_{DS} = 0$	—	—	∓ 10	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	3	—	S	
Drain-Source ON Resistance	$R_{DS(ON)}$	$I_D = -2.5A, V_{GS} = -4V$	—	0.3	0.5	Ω	
	$R_{DS(ON)}$	$I_D = -2.5A, V_{GS} = -10V$	—	0.2	0.3		
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0, f = 1MHz$	—	630	—	pF	
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = -10V, V_{GS} = 0, f = 1MHz$	—	95	—		
Output Capacitance	C_{oss}	$V_{DS} = -10V, V_{GS} = 0, f = 1MHz$	—	290	—		
Switching Time	Rise Time	t_r		—	25	—	ns
	Turn-on Time	t_{on}		—	45	—	
	Fall Time	t_f		—	55	—	
	Turn-off Time	t_{off}		—	200	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_g	$I_D = -5A, V_{GS} = -10V, V_{DD} \hat{=} 48V$	—	22	—	nC	
Gate-Source Charge	Q_{gs}		—	16	—		
Gate-Drain (“Miller”) Charge	Q_{gd}		—	6	—		

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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	2.0	V
Reverse Recovery Time	t_{rr}	$I_{DR} = -5A, V_{GS} = 0$	—	80	—	ns
Reverse Recovery Charge	Q_{rr}	$dI_{DR} / dt = -50A / \mu s$	—	0.1	—	μC

