TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (U-MOSⅢ)

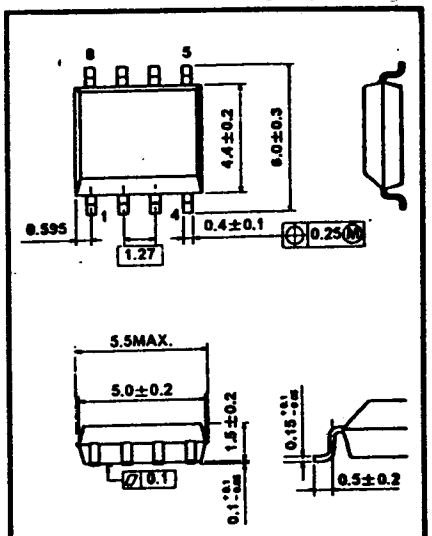
TPC8109

TENTATIVE

LITHIUM ION BATTEERY
POREABLE MACHINES AND TOOLS
NOTE BOOK PC

- Compact and thin package, and a small mounting area
- Low drain-source ON resistance :$R_{DS(ON)}$= 14 mΩ(typ.)
- High forward transfer admittance :$|Y_{fs}|$= 19 S(typ.)
- Low leakage current :I_{DSS}= −10 μA(max.)(V_{DS}=−30V)
- Enhancement mode :V_{th}=−0.8～−2.0V (V_{DS}=−10V,I_D=−1mA)

Unit in mm



1, 2, 3 SOURCE
4 GATE
5, 6, 7, 8 DRAIN

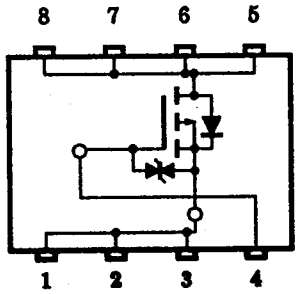
JEDEC	—
JEITA	—
TOSHIBA	2-6J1B

Weight:0.080g(typ.)

Maximum Ratings (T_a=25°C)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	−30	V
Drain-gate voltage(R_{GS}=20kΩ)		V_{DGR}	−30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	DC (Note 1)	I_D	−10	A
	Pulse (Note 1)	I_{DP}	−40	
Drain power dissipation(t=10s) (Note 2a)		P_D	1.9	W
Drain power dissipation(t=10s) (Note 2b)		P_D	1.0	
Single pulse avalanche energy (Note 3)		E_{AS}	130	mJ
Avalanche current		I_{AR}	−10	A
Repetitive avalanche energy (Note 2a)(Note 4)		E_{AR}	0.19	mJ
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55～150	°C

CIRCUIT CONFIGURATION



Note:(Note 1),(Note 2),(Note 3),(Note 4) Please see next page.
This transistor is an electrostatic sensitive device. Please handle with caution.

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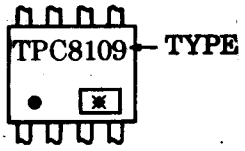
Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to ambient (t=10s) (Note 2a)	$R_{th(ch-a)}$	65.8	°C/W
Thermal resistance, channel to ambient (t=10s) (Note 2b)	$R_{th(ch-a)}$	125	°C/W

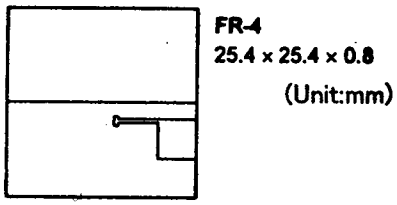
Marking(Note 5)



Note 1:Please use devices on condition that the channel temperature is below 150°C.

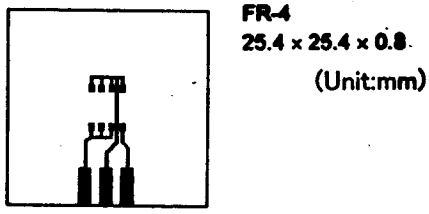
Note 2:

a)Device mounted on a glass-epoxy board(a)



(a)

b)Device mounted on glass-epoxy board(b)



(b)

Note 3:V_{DD}=−24V,T_{ch}=25°C(initial),L=1.0mH,R_G=25Ω,I_{AR}=−10A

Note 4:Reptitve rating; pulse width limited by max channel temperature.

Note 5: ● on lower left of the marking indicates Pin 1.
※ shows Lot number .(Year of manufacture: last decimal digit of the year of manufacture, Month of manufacture : January to December are denoted by letters A to L respectively)

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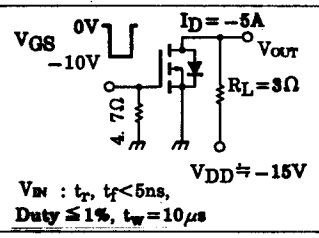
Electrical Characteristics (T_a=25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	V_{GS}=±16V,V_{DS}=0V	–	–	±10	μA
Drain cut-OFF current		I_{DSS}	V_{DS}=−30V,V_{GS}=0V	–	–	−10	μA
Drain-source breakdown voltage		$V_{(BR)DSS}$	I_D=−10mA,V_{GS}=0V	−30	–	–	V
		$V_{(BR)DSX}$	I_D=−10mA,V_{GS}=20V	−15	–	–	
Gate threshold voltage		V_{th}	V_{DS}=−10V,I_D=−1mA	−0.8	–	−2.0	V
Drain-source ON resistance		$R_{DS(ON)}$	V_{GS}=−4V,I_D=−5A	–	24	30	mΩ
			V_{GS}=−10V,I_D=−5A	–	14	20	
Forward transfer admittance		$\|Y_{fs}\|$	V_{DS}=−10V,I_D=−5A	9	19	–	S
Input capacitance		C_{iss}	V_{DS}=−10V,V_{GS}=0V,f=1MHz	–	2260	–	pF
Reverse transfer capacitance		C_{rss}		–	290	–	
Output capacitance		C_{oss}		–	350	–	
Switching time	Rise time	t_r		–	5	–	ns
	Turn-ON time	t_{on}		–	13	–	
	Fall time	t_f		–	34	–	
	Turn-OFF time	t_{off}		–	143	–	
Total gate charge (gate-source plus gate-drain)		Q_g	V_{DD}≒−24V,V_{GS}=−10V,I_D=−10A	–	45	–	nC
Gate-source charge 1		Q_{gs1}		–	6.5	–	
Gate-Drain("miller")charge		Q_{gd}		–	10	–	

Source-Drain Diode Ratings and Characteristics (T_a=25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Drain reverse current	Pulse (Note 1)	I_{DRP}	–	–	–	−40	A
Diode foward voltage		V_{DSF}	I_{DR}=−10A,V_{GS}=0V	–	–	1.2	V

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RESTRICTIONS ON PRODUCT USE

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