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

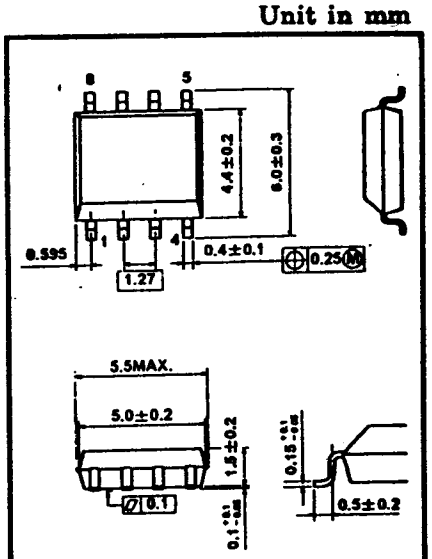
TPC8109

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



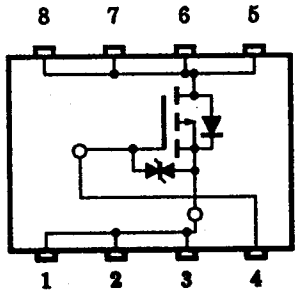
1, 2, 3	SOURCE
4	GATE
5, 6, 7, 8	DRAIN
JEDEC	—
JEITA	—
TOSHIBA	2-6J1B

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



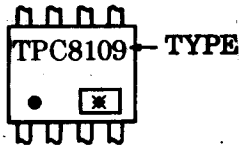
Note:(Note 1),(Note 2),(Note 3),(Note 4) Please see next page.
This transistor is an electrostatic sensitive device. Please handle with caution.

TENTATIVE

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

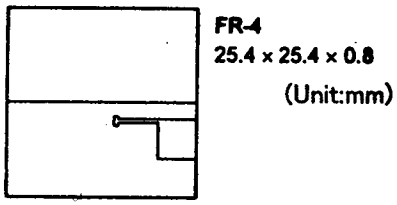
Marking(Note 5)



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

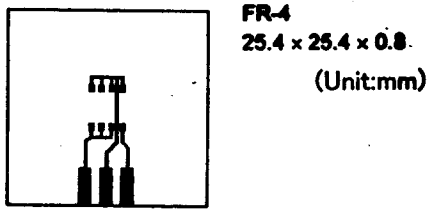
Note 2:

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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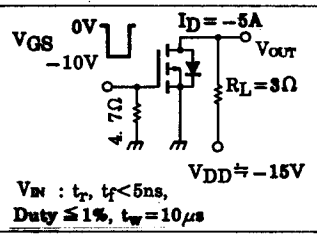
Electrical Characteristics (T_a=25°C)

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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