

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π -MOS π)

TK6A50D

Switching Regulator Applications

- Low drain-source ON-resistance: $R_{DS(ON)} = 1.2 \Omega$ (typ.)
- High forward transfer admittance: $|Y_{fs}| = 2.5 S$ (typ.)
- Low leakage current: $I_{DSS} = 10 \mu A$ (max) ($V_{DS} = 500 V$)
- Enhancement mode: $V_{th} = 2.4$ to $4.4 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

Absolute Maximum Ratings ($T_a = 25^\circ C$)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	500	V
Gate-source voltage		V_{GSS}	± 30	V
Drain current	DC (Note 1)	I_D	6	A
	Pulse ($t = 1 ms$) (Note 1)	I_{DP}	24	
Drain power dissipation ($T_c = 25^\circ C$)		P_D	35	W
Single pulse avalanche energy (Note 2)		E_{AS}	144	mJ
Avalanche current		I_{AR}	6	A
Repetitive avalanche energy (Note 3)		E_{AR}	3.5	mJ
Channel temperature		T_{ch}	150	$^\circ C$
Storage temperature range		T_{stg}	-55 to 150	$^\circ C$

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings. Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Thermal Characteristics

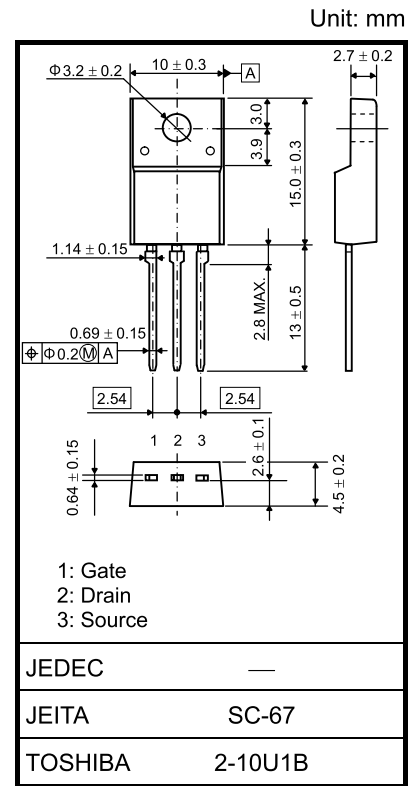
Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th(ch-c)}$	3.57	$^\circ C/W$
Thermal resistance, channel to ambient	$R_{th(ch-a)}$	62.5	$^\circ C/W$

Note 1: Ensure that the channel temperature does not exceed $150^\circ C$.

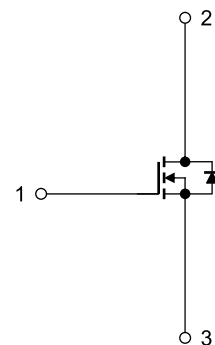
Note 2: $V_{DD} = 90 V, T_{ch} = 25^\circ C$ (initial), $L = 6.8 mH, R_G = 25 \Omega, I_{AR} = 6 A$

Note 3: Repetitive rating: pulse width limited by maximum channel temperature

This transistor is an electrostatic-sensitive device. Handle with care.



Weight: 1.7 g (typ.)



Start of commercial production
2009-04