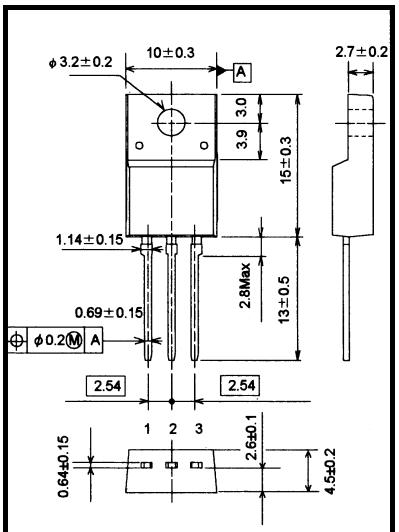
TOSHIBA Field Effect Transistor Silicon N Channel MOS Type (π-MOS VII)

TK13A60D

Switching Regulator Applications

- Low drain-source ON-resistance: $R_{DS\ (ON)}$ = 0.33 Ω (typ.)
- High forward transfer admittance: $|Y_{fs}|$ = 6.5 S (typ.)
- Low leakage current: I_{DSS} = 10 μA (max) (V_{DS} = 600 V)
- Enhancement mode: V_{th} = 2.0 to 4.0 V (V_{DS} = 10 V, I_D = 1 mA)

Unit: mm



JEDEC	—
JEITA	SC-67
TOSHIBA	2-10U1B

Weight : 1.7 g (typ.)

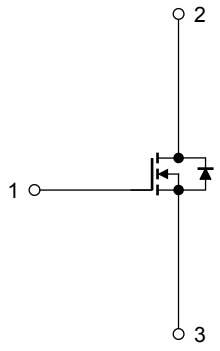
Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	600	V
Gate-source voltage		V_{GSS}	±30	V
Drain current	DC (Note 1)	I_D	13	A
	Pulse (Note 1)	I_{DP}	52	
Drain power dissipation (Tc = 25°C)		P_D	50	W
Single pulse avalanche energy (Note 2)		E_{AS}	511	mJ
Avalanche current		I_{AR}	13	A
Repetitive avalanche energy (Note 3)		E_{AR}	5.0	mJ
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	-55 to 150	°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	$R_{th\ (ch-c)}$	2.5	°C/W
Thermal resistance, channel to ambient	$R_{th\ (ch-a)}$	62.5	°C/W



Note 1: Ensure that the channel temperature does not exceed 150°C.

Note 2: V_{DD} = 90 V, T_{ch} = 25°C (initial), L = 5.3 mH, R_G = 25 Ω, I_{AR} = 13 A

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

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

Start of commercial production
2008-07