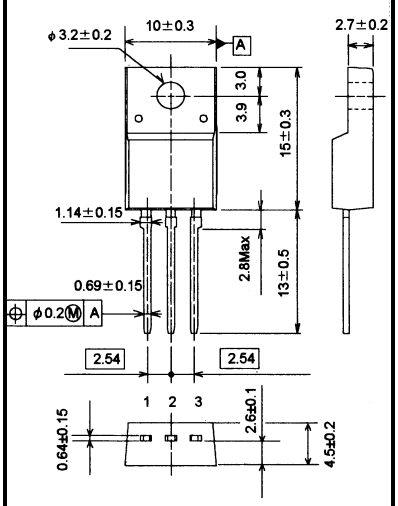
TK80A08K3

Switching Regulator Applications

- Low drain-source ON-resistance: $R_{DS\ (ON)}$ = 3.6 mΩ (typ.)
- High forward transfer admittance: $|Y_{fs}|$ = 200 S
- Low leakage current: I_{DSS} = 10 μA (max) (V_{DS} = 75 V)
- Enhancement mode: V_{th} = 2.0 to 4.0 V (V_{DS} = 10 V, I_D = 1 mA)

Unit: mm



1: Gate
2: Drain
3: Source

JEDEC	-
JEITA	SC-67
TOSHIBA	2-10U1B

Weight: 1.7 g (typ.)

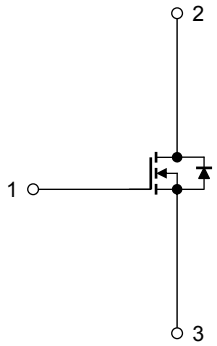
Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Drain-source voltage		V_{DSS}	75	V
Drain-gate voltage (R_{GS} = 20 kΩ)		V_{DGR}	75	V
Gate-source voltage		V_{GSS}	± 20	V
Drain current	DC (Note 1)	I_D	80	A
	Pulse (Note 1)	I_{DP}	320	
Drain power dissipation (Tc = 25°C)		P_D	40	W
Single pulse avalanche energy (Note 2)		E_{AS}	443	mJ
Avalanche current		I_{AR}	80	A
Repetitive avalanche energy (Note 3)		E_{AR}	4	mJ
Channel temperature		T_{ch}	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Thermal resistance, channel to case	$R_{th\ (ch-c)}$	3.125	°C/W
Thermal resistance, channel to ambient	$R_{th\ (ch-a)}$	62.5	°C/W

Internal Connection



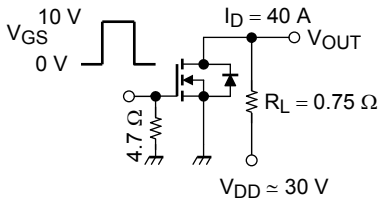
Note 1: Ensure that the channel and lead temperatures do not exceed 150°C.

Note 2: V_{DD} = 25 V, T_{ch} = 25°C, L = 100 μH, I_{AR} = 80 A, R_G = 1 Ω

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

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

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V	—	—	±1	μA
Drain cut-OFF current		I_{DSS}	V_{DS} = 75 V, V_{GS} = 0 V	—	—	10	μA
Drain-source breakdown voltage		$V_{(BR)\ DSS}$	I_D = 10 mA, V_{GS} = 0 V	75	—	—	V
		$V_{(BR)\ DSX}$	I_D = 10 mA, V_{GS} = -20 V	55	—	—	
Gate threshold voltage		V_{th}	V_{DS} = 10 V, I_D = 1 mA	2.0	—	4.0	V
Drain-source ON-resistance (Note 4)		$R_{DS\ (ON)}$	V_{GS} = 10 V, I_D = 40A	—	3.6	4.5	mΩ
Forward transfer admittance		$\lvert Y_{fs} \rvert$	V_{DS} = 10 V, I_D = 40 A	100	200	—	S
Input capacitance		C_{iss}	V_{DS} = 10V, V_{GS} = 0 V, f = 1 MHz	—	8200	—	pF
Reverse transfer capacitance		C_{rss}		—	770	—	
Output capacitance		C_{oss}		—	1140	—	
Switching time	Rise time	t_r	 Duty ≤ 1%, t_w = 10 μs	—	30	—	ns
	Turn-ON time	t_{on}		—	55	—	
	Fall time	t_f		—	33	—	
	Turn-OFF time	t_{off}		—	150	—	
Total gate charge (gate-source plus gate-drain)		Qg	V_{DD} ≃ 60 V, V_{GS} = 10 V, I_D = 80A	—	175	—	nC
Gate-source charge 1		Q_{gs1}		—	40	—	
Gate-drain ("miller") charge		Q_{gd}		—	65	—	
Gate switch charge		Q_{sw}		—	80	—	

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

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Continuous drain reverse current (Note 1)	I_{DR}	—	—	—	80	A
Pulse drain reverse current (Note 1)	I_{DRP}	—	—	—	320	A
Forward voltage (diode)	V_{DSF}	I_{DR} = 80 A, V_{GS} = 0 V	—	−0.9	−1.2	V
Reverse recovery time	t_{rr}	I_{DR} = 80 A, V_{GS} = 0 V,	—	60	—	ns
Reverse recovery charge	Q_{rr}	dI_{DR}/dt = 50 A/μs	—	60	—	nC

Marking