

TOSHIBA FIELD EFFECT TRANSISTOR

2SK1717

SILICON N CHANNEL MOS TYPE (L² - π - MOS IV)

**HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
CHOPPER REGULATOR, DC-DC CONVERTER AND
MOTOR DRIVE APPLICATIONS**

**INDUSTRIAL
APPLICATIONS**
Unit in mm

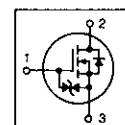
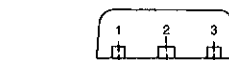
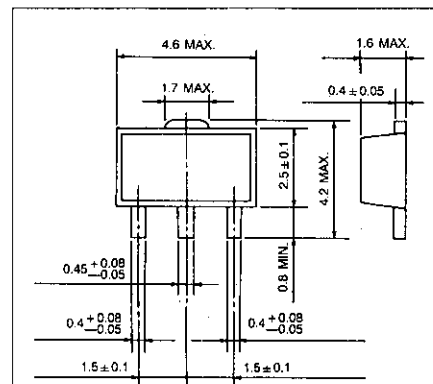
FEATURES:

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance: $R_{DS(ON)} = 0.28 \Omega$ (Typ.)
- High Forward Transfer Admittance: $|Y_{fs}| = 1.6 \text{ S}$ (Typ.)
- Low Leakage Current: $I_{DSS} = 100 \mu\text{A}$ (Max.) ($V_{DS} = 60 \text{ V}$)
- Enhancement-Mode: $V_{th} = 0.8 \sim 2.0 \text{ V}$ ($V_{DS} = 10 \text{ V}$, $I_D = 1 \text{ mA}$)

MAXIMUM RATINGS (Ta = 25 °C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} = 20 \text{ k}\Omega$)	V_{DGR}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current	DC	I_D	2
	Pulse	I_{DP}	6
Drain Power Dissipation ($T_a = 25 \text{ }^\circ\text{C}$)	P_D	0.5	W
Drain Power Dissipation	P_{D^*}	1.5	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range	T_{sig}	-55 ~ 150	$^\circ\text{C}$

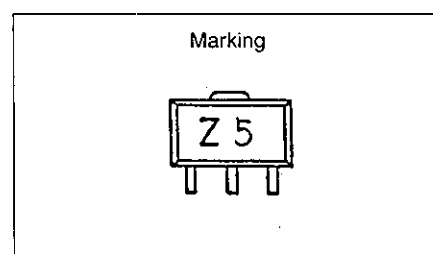
P_{D^*} : mounted on ceramic substrate (600 mm²x0.8 t)



1. GATE
2. DRAIN (HEAT SINK)
3. SOURCE

JEDEC	—
EIAJ	SC-62
TOSHIBA	2-5K1B

Weight: 0.05 g



THERMAL CHARACTERISTIC

CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Case	$R_{th(ch-c)}$	250	$^\circ\text{C/W}$

THIS TRANSISTOR IS AN ELECTROSTATIC DEVICE. PLEASE HANDLE WITH CAUTION.

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	TOSHIBA CORPORATION

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ELECTRICAL CHARACTERISTICS (Ta = 25 °C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GSS}	V _{GS} = ± 16 V, V _{DS} = 0 V	—	—	± 10	μA
Drain Cut-off Current		I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V	—	—	100	μA
Drain-Source Breakdown Voltage		V _{(BR)DSS}	I _D = 10 mA, V _{GS} = 0 V	60	—	—	V
Gate Threshold Voltage		V _{th}	V _{DS} = 10 V, I _D = 1 mA	0.8	—	2.0	V
Drain-Source ON Resistance		R _{DS(ON)}	V _{GS} = 4 V, I _D = 1 A	—	0.39	0.53	Ω
			V _{GS} = 10 V, I _D = 1 A	—	0.28	0.37	
Forward Transfer Admittance		Y _{fs}	V _{DS} = 10 V, I _D = 1 A	1.0	1.6	—	S
Input Capacitance		C _{iss}	V _{DS} = 10 V, V _{GS} = 0 V, f = 1 MHz	—	125	180	pF
Reverse Transfer Capacitance		C _{rss}		—	30	60	
Output Capacitance		C _{oss}		—	85	130	
Switching Time	Rise Time	t _r	<p>V_{IN}: t_r, t_f < 5ns, Duty ≤ 1%, t_w = 10 μs V_{DD} = 30 V</p>	—	30	60	nS
	Turn-on Time	t _{on}		—	60	120	
	Fall Time	t _f		—	40	80	
	Turn-off Time	t _{off}		—	135	270	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q _g	V _{DD} = 48 V, V _{GS} = 10 V, I _D = 2 A	—	6.5	13	nC
Gate-Source Charge		Q _{gs}		—	4.5	—	
Gate-Drain ("Miller") Charge		Q _{gd}		—	2.0	—	

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (Ta = 25 °C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I _{DR}	—	—	—	2	A
Pulse Drain Reverse Current	I _{DRP}	—	—	—	6	A
Diode Forward Voltage	V _{DSF}	I _{DR} = 2 A, V _{GS} = 0 V	—	—	-1.5	V
Reverse Recovery Time	t _{rr}	I _{DR} = 2 A, V _{GS} = 0 V	—	75	—	nS
Reverse Recovery Charge	Q _{rr}	di _{DR} /dt = 50 A/μs	—	75	—	μC

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