

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE (L²-π-MOSV)

2SK2615

HIGH SPEED, HIGH CURRENT SWITCHING APPLICATIONS
DC-DC CONVERTER, RELAY DRIVE AND MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

- Low Drain-Source ON Resistance : $R_{DS(ON)} = 0.23 \Omega$ (Typ.)
- High Forward Transfer Admittance : $|Y_{fs}| = 2.0 S$ (Typ.)
- Low Leakage Current : $I_{DSS} = 100 \mu A$ (Max.) ($V_{DS} = 60 V$)
- Enhancement-Mode : $V_{th} = 0.8 \sim 2.0 V$ ($V_{DS} = 10 V, I_D = 1 mA$)

MAXIMUM RATINGS (Ta = 25°C)

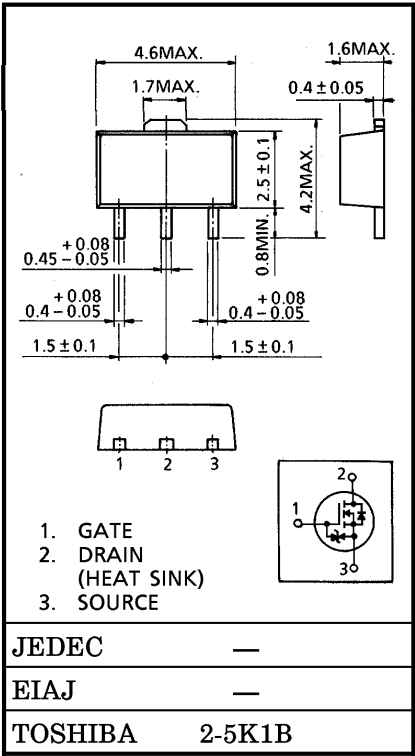
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} = 20k\Omega$)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current	DC	I_D	2	A
	Pulse	I_{DP}	6	
Drain Power Dissipation (Ta = 25°C)		P_D	0.5	W
Drain Power Dissipation		P_D^*	1.5	W
Channel Temperature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

* : Mounted on ceramic substrate (600 mm² × 0.8 t)

THERMAL CHARACTERISTICS

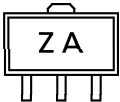
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	250	°C / W

This transistor is an electrostatic sensitive device.
Please handle with caution.



Weight : 0.05 g (Typ.)

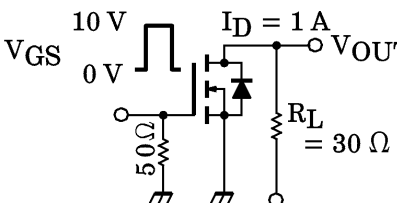
MARKING



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = \pm 16 \text{ V}, V_{DS} = 0 \text{ V}$	—	—	± 10	μA
Drain Cut-off Current		I_{DSS}	$V_{DS} = 60 \text{ V}, V_{GS} = 0 \text{ V}$	—	—	100	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10 \text{ mA}, V_{GS} = 0 \text{ V}$	60	—	—	V
Gate Threshold Voltage		V_{th}	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ mA}$	0.8	—	2.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 4 \text{ V}, I_D = 1 \text{ A}$	—	0.33	0.44	Ω
			$V_{GS} = 10 \text{ V}, I_D = 1 \text{ A}$	—	0.23	0.30	
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10 \text{ V}, I_D = 1 \text{ A}$	1.0	2.0	—	S
Input Capacitance		C_{iss}	$V_{DS} = 10 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$	—	150	—	pF
Reverse Transfer Capacitance		C_{rss}		—	25	—	
Output Capacitance		C_{oss}		—	70	—	
Switching Time	Rise Time	t_r	 $V_{GS} = 10 \text{ V}, 0 \text{ V}$ $I_D = 1 \text{ A}$ $R_L = 30 \Omega$ $V_{DD} \approx 30 \text{ V}$	—	25	—	ns
	Turn-on Time	t_{on}		—	30	—	
	Fall Time	t_f		—	50	—	
	Turn-off Time	t_{off}		—	150	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q_g	$V_{DD} \approx 48 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 2 \text{ A}$	—	6.0	—	nC
Gate-Source Charge		Q_{gs}		—	4.6	—	
Gate-Drain ("Miller") Charge		Q_{gd}		—	1.4	—	

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}	$I_{DR} = 2 \text{ A}, V_{GS} = 0 \text{ V}$	—	—	—1.5	V
Reverse Recovery Time	t_{rr}	$I_{DR} = 2 \text{ A}, V_{GS} = 0 \text{ V}$	—	100	—	ns
Reverse Recovered Charge	Q_{rr}	$dI_{DR}/dt = 50 \text{ A}/\mu\text{s}$	—	40	—	μC

