

TOSHIBA FIELD EFFECT TRANSISTOR SILICON P CHANNEL MOS TYPE (L<sup>2</sup>-π-MOS V)

# 2SJ465

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

INDUSTRIAL APPLICATIONS

Unit in mm

- 2.5V Gate Drive
- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 0.54\Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 1.7S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = -100\mu A$  (Max.) ( $V_{DS} = -16V$ )
- Enhancement-Mode :  $V_{th} = -0.5 \sim -1.1V$   
 ( $V_{DS} = -10V, I_D = -200\mu A$ )

**MAXIMUM RATINGS (Ta = 25°C)**

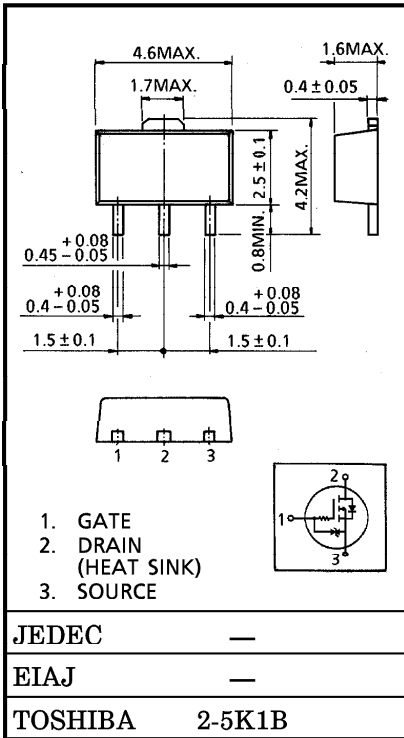
CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		$V_{DSS}$	-16	V
Drain-Gate Voltage ( $R_{GS} = 20k\Omega$ )		$V_{DGR}$	-16	V
Gate-Source Voltage		$V_{GSS}$	±8	V
Drain Current	DC	$I_D$	-2	A
	Pulse	$I_{DP}$	-6	
Drain Power Dissipation (Ta = 25°C)		$P_D$	0.5	W
Drain Power Dissipation*		$P_D$	1.5	W
Channel Temperature		$T_{ch}$	150	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C

\* : Mounted on ceramic substrate (600mm<sup>2</sup>×0.8t)

**THERMAL CHARACTERISTICS**

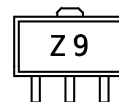
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	250	°C/W

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



Weight : 0.05g (Typ.)

**MARKING**



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I <sub>GSS</sub>	V <sub>GS</sub> = ±6.5V, V <sub>DS</sub> = 0V	—	—	±10	μA
Drain Cut-off Current		I <sub>DSS</sub>	V <sub>DS</sub> = -16V, V <sub>GS</sub> = 0V	—	—	-100	μA
Drain-Source Breakdown Voltage		V <sub>(BR)DSS</sub>	I <sub>D</sub> = -10mA, V <sub>GS</sub> = 0V	-16	—	—	V
Gate Threshold Voltage		V <sub>th</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -200μA	-0.5	—	-1.1	V
Drain-Source ON Resistance		R <sub>DS(ON)</sub>	V <sub>GS</sub> = -2.5V, I <sub>D</sub> = -0.5A	—	0.86	1.0	Ω
			V <sub>GS</sub> = -4V, I <sub>D</sub> = -1A	—	0.54	0.71	
Forward Transfer Admittance		Y <sub>fs</sub>	V <sub>DS</sub> = -10V, I <sub>D</sub> = -1A	0.8	1.7	—	S
Input Capacitance		C <sub>iss</sub>	V <sub>DS</sub> = -10V, V <sub>GS</sub> = 0V, f = 1MHz	—	270	—	pF
Reverse Transfer Capacitance		C <sub>rss</sub>		—	25	—	
Output Capacitance		C <sub>oss</sub>		—	115	—	
Switching Time	Rise Time	t <sub>r</sub>		—	200	—	ns
	Turn-on Time	t <sub>on</sub>		—	250	—	
	Fall Time	t <sub>f</sub>		—	200	—	
	Turn-off Time	t <sub>off</sub>		—	500	—	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Q <sub>g</sub>	V <sub>DD</sub> = -16V, V <sub>GS</sub> = -5V, I <sub>D</sub> = -2A	—	5	—	nC
Gate-Source Charge		Q <sub>gs</sub>		—	3.2	—	
Gate-Drain ("Miller") Charge		Q <sub>gd</sub>		—	1.8	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	I <sub>DR</sub>	—	—	—	-2	A
Pulse Drain Reverse Current	I <sub>DRP</sub>	—	—	—	-6	A
Diode Forward Voltage	V <sub>DSF</sub>	I <sub>DR</sub> = -2A, V <sub>GS</sub> = 0V	—	—	1.7	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>DR</sub> = -2A, V <sub>GS</sub> = 0V	—	130	—	ns
Reverse Recovered Charge	Q <sub>rr</sub>	dI <sub>DR</sub> / dt = 50A / μs	—	0.13	—	μC

