

TENTATIVE TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE ( $\pi$ -MOS V)

# 2SK2998

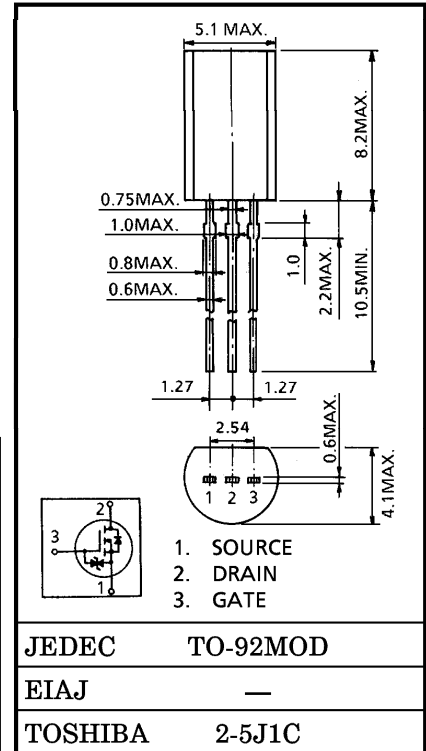
HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS  
 CHOPPER REGULATOR, DC-DC CONVERTER APPLICATIONS

INDUSTRIAL APPLICATIONS  
 Unit in mm

- Low Drain-Source ON Resistance :  $R_{DS(ON)} = 11.5 \Omega$  (Typ.)
- High Forward Transfer Admittance :  $|Y_{fs}| = 0.4 S$  (Typ.)
- Low Leakage Current :  $I_{DSS} = 100 \mu A$  (Max.) ( $V_{DS} = 500 V$ )
- Enhancement-Mode :  $V_{th} = 2.0 \sim 4.0 V$   
 ( $V_{DS} = 10 V, I_D = 1 mA$ )

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	500	V
Drain-Gate Voltage ( $R_{GS} = 20 k\Omega$ )	$V_{DGR}$	500	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	0.5 A
	Pulse	$I_{DP}$	1.5 A
Drain Power Dissipation ( $T_a = 25^\circ C$ )	$P_D$	0.9	W
Channel Temperature	$T_{ch}$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	$-55 \sim 150$	$^\circ C$



Weight : 0.36 g (Typ.)

THERMAL CHARACTERISTICS

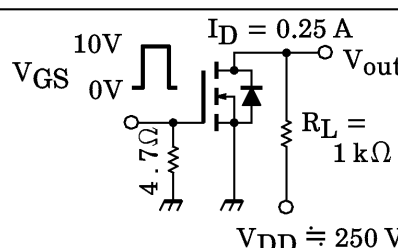
CHARACTERISTIC	SYMBOL	MAX.	UNIT
Thermal Resistance, Channel to Ambient	$R_{th(ch-a)}$	138	$^\circ C/W$

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

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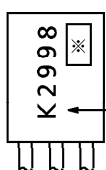
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±25 V, V <sub>DS</sub> = 0 V	—	—	±10	μA	
Gate-Source Breakdown Voltage	V <sub>(BR)GSS</sub>	I <sub>D</sub> = ±10 mA, V <sub>GS</sub> = 0 V	±30	—	—	V	
Drain Cut-off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 500 V, V <sub>GS</sub> = 0 V	—	—	100	μA	
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> = 10 mA, V <sub>GS</sub> = 0 V	500	—	—	V	
Gate Threshold Voltage	V <sub>th</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 1 mA	2.0	—	4.0	V	
Drain-Source ON Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.25 A	—	11.5	18	Ω	
Forward Transfer Admittance	Y <sub>fs</sub>	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 0.25 A	0.2	0.4	—	S	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0 V, f = 1 MHz	—	75	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>		—	7	—		
Output Capacitance	C <sub>oss</sub>		—	25	—		
Switching Time	Rise Time	t <sub>r</sub>		—	11	—	ns
	Turn-on Time	t <sub>on</sub>		—	18	—	
	Fall Time	t <sub>f</sub>		—	54	—	
	Turn-off Time	t <sub>off</sub>		V <sub>IN</sub> : t <sub>r</sub> , t <sub>f</sub> < 5 ns, Duty ≤ 1%, t <sub>w</sub> = 10 μs	—	95	
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q <sub>g</sub>	V <sub>DD</sub> ≐ 400 V, V <sub>GS</sub> = 10 V, I <sub>D</sub> = 0.5 A	—	3.8	—	nC	
Gate-Source Charge	Q <sub>gs</sub>		—	1.9	—		
Gate-Drain ("Miller") Charge	Q <sub>gd</sub>		—	1.9	—		

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>	—	—	—	0.5	A
Pulse Drain Reverse Current	I <sub>DRP</sub>	—	—	—	1.5	A
Diode Forward Voltage	V <sub>DSF</sub>	I <sub>DR</sub> = 0.5 A, V <sub>GS</sub> = 0 V	—	—	-1.7	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>DR</sub> = 0.5 A, V <sub>GS</sub> = 0 V	—	190	—	ns
Reverse Recovery Charge	Q <sub>rr</sub>	dI <sub>DR</sub> / dt = 100 A / μs	—	380	—	nC

MARKING



TYPE

※ Lot Number



Month (Starting from Alphabet A)

Year (Last Number of the Christian Era)

