

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

# 2SK2998

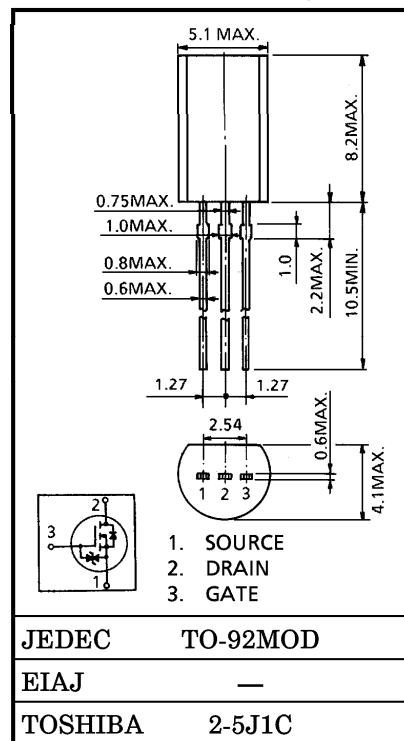
HIGH SPEED, HIGH VOLTAGE SWITCHING APPLICATIONS  
 CHOPPER REGULATOR, DC-DC CONVERTER APPLICATIONS

INDUSTRIAL APPLICATIONS  
 Unit in mm

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

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	$V_{DSS}$	500	V
Drain-Gate Voltage ( $R_{GS}=20k\Omega$ )	$V_{DGR}$	500	V
Gate-Source Voltage	$V_{GSS}$	$\pm 30$	V
Drain Current	DC	$I_D$	0.5
	Pulse	$I_{DP}$	1.5
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 : 0.36g (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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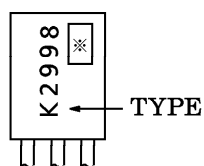
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = \pm 25V, V_{DS} = 0V$	—	—	$\pm 10$	$\mu A$
Gate-Source Breakdown Voltage		$V_{(BR)GSS}$	$I_D = \pm 10mA, V_{GS} = 0V$	$\pm 30$	—	—	V
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 500V, V_{GS} = 0V$	—	—	100	$\mu A$
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 10mA, V_{GS} = 0V$	500	—	—	V
Gate Threshold Voltage		$V_{th}$	$V_{DS} = 10V, I_D = 1mA$	2.0	—	4.0	V
Drain-Source ON Resistance		$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 0.25A$	—	11.5	18	$\Omega$
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 10V, I_D = 0.25A$	0.2	0.4	—	S
Input Capacitance		$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	—	75	—	pF
Reverse Transfer Capacitance		$C_{rss}$		—	7	—	
Output Capacitance		$C_{oss}$		—	25	—	
Switching Time	Rise Time	$t_r$	<p><math>V_{GS} = 10V, 0V</math>  <math>I_D = 0.25A</math>  <math>R_L = 1k\Omega</math>  <math>V_{DD} \doteq 250V</math></p>	—	11	—	ns
	Turn-on Time	$t_{on}$		—	18	—	
	Fall Time	$t_f$		—	54	—	
	Turn-off Time	$t_{off}$		$V_{IN} : t_r, t_f < 5ns,$ $Duty \leq 1\%, t_w = 10\mu s$	—	95	
Total Gate Charge (Gate-Source Plus Gate-Drain)		$Q_g$	$V_{DD} \doteq 400V, V_{GS} = 10V,$ $I_D = 0.5A$	—	3.8	—	nC
Gate-Source Charge		$Q_{gs}$		—	1.9	—	
Gate-Drain (“Miller”) Charge		$Q_{gd}$		—	1.9	—	

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

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Continuous Drain Reverse Current	$I_{DR}$	—	—	—	0.5	A
Pulse Drain Reverse Current	$I_{DRP}$	—	—	—	1.5	A
Diode Forward Voltage	$V_{DSF}$	$I_{DR} = 0.5A, V_{GS} = 0V$	—	—	-1.7	V
Reverse Recovery Time	$t_{rr}$	$I_{DR} = 0.5A, V_{GS} = 0V$	—	190	—	ns
Reverse Recovery Charge	$Q_{rr}$	$dI_{DR} / dt = 100A / \mu s$	—	380	—	nC

MARKING



※ Lot Number

□ □ — Month (Starting from Alphabet A)

— Year (Last Number of the Christian Era)

