2SK940

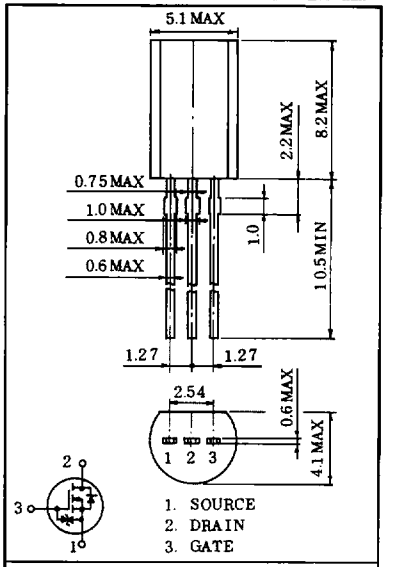
FIELD EFFECT TRANSISTOR
SILICON N CHANNEL MOS TYPE (L^2-π-MOSIII)

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

- 4-Volt Gate Drive
- Low Drain-Source ON Resistance : $R_{DS(ON)}$=0.4Ω(Typ.)
- High Forward Transfer Admittance : $|Y_{fs}|$ = 0.75S(Typ.)
- Low Leakage Current : I_{GSS}=±3μA(Max.) @V_{GS}=±16V
  I_{DSS}=300μA(Max.) @V_{DS}=60V
- Enhancement-Mode : Vth=0.8~2.0V @V_{DS}=10V, I_D=1mA

INDUSTRIAL APPLICATIONS

Unit in mm



JEDEC	TO-92MOD
EIAJ	—
TOSHIBA	2-5J1C

Weight : 0.36g

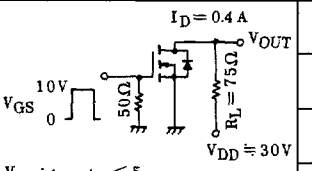
MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Drain-Gate Voltage (R_{GS}=20kΩ)		V_{DGR}	60	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current	DC	I_D	0.8	A
	Pulse	I_{DP}	2.4	
Drain Power Dissipation (Ta=25°C)		P_D	0.9	W
Channel Temperature		Tch	150	°C
Storage Temperature Range		Tstg	-55~150	°C

THERMAL CHARACTERISTICS

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

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	V_{GS}=±16V, V_{DS}=0V	–	–	±3	μA
Drain Cut-off Current		I_{DSS}	V_{DS}=60V, V_{GS}=0V	–	–	300	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	I_D=10mA, V_{GS}=0V	60	–	–	V
Gate Threshold Voltage		V_{th}	V_{DS}=10V, I_D=1mA	0.8	–	2.0	V
ON State Drain Current		$I_{D(ON)}$	V_{DS}=4V, V_{GS}=4V	0.8	–	–	A
Drain-Source ON Resistance		$R_{DS(ON)}$	V_{GS}=4V, I_D=0.4A	–	0.75	1.1	Ω
			V_{GS}=10V, I_D=0.4A	–	0.40	0.55	
Forward Transfer Admittance		$\|Y_{fs}\|$	V_{DS}=10V, I_D=0.4A	0.50	0.75	–	S
Input Capacitance		C_{iss}	V_{DS}=10V, V_{GS}=0V, f=1MHz	–	95	140	pF
Reverse Transfer Capacitance		C_{rss}		–	25	50	
Output Capacitance		C_{oss}		–	65	110	
Switching Time	Rise Time	t_r	 V_{IN}: t_r, t_f < 5ns Duty ≦ 1%, t_w=10μs	–	4	15	ns
	Turn-on Time	t_{on}		–	9	25	
	Fall Time	t_f		–	25	60	
	Turn-off Time	t_{off}		–	55	120	
Total Gate Charge (Gate-Source Plus Gate-Drain)		Qg	I_D=0.8A, V_{GS}=10V V_{DD}≒48V	–	3.3	6.6	nC
Gate-Source Charge		Qgs		–	1.9	–	
Gate-Drain ("Miller") Charge		Qgd		–	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}	–	–	–	0.8	A
Pulse Drain Reverse Current	I_{DRP}	–	–	–	2.4	A
Diode Forward Voltage	V_{DSF}	I_{DR}=0.8A, V_{GS}=0V	–	-0.9	-1.5	V
Reverse Recovery Time	t_{rr}	I_{DR}=0.8A, V_{GS}=0V	–	90	–	ns
Reverse Recovered Charge	Qrr	dI_{DR}/dt=20A/μs	–	35	–	nC