

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

SSM3K04FU

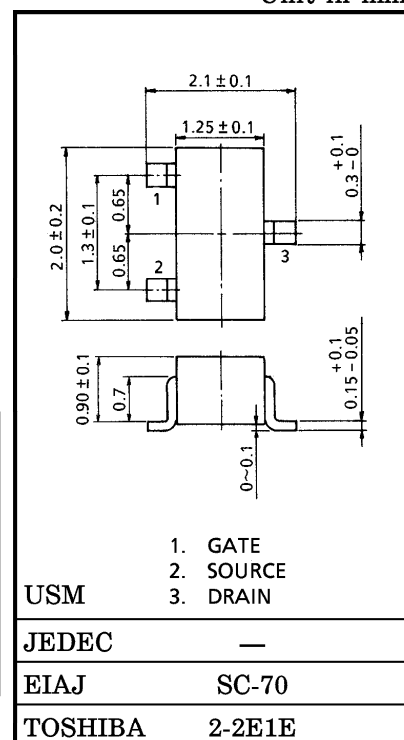
HIGH SPEED SWITCH APPLICATIONS

Unit in mm

- With Built-in Gate-Source Resistor : $R_{GS} = 1\text{ M}\Omega$ (Typ.)
- 2.5 V Gate Drive
- Low Gate Threshold Voltage : $V_{th} = 0.7\sim 1.3\text{ V}$
- Small Package

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GSS}	10	V
DC Drain Current	I_D	100	mA
Drain Power Dissipation	P_D	100	mW
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	$-55\sim 150$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Weight : 0.006 g

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GSS}	$V_{GS} = 10\text{ V}, V_{DS} = 0$	—	—	15	μA
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 100\text{ }\mu\text{A}, V_{GS} = 0$	20	—	—	V
Drain Cut-off Current		I_{DSS}	$V_{DS} = 20\text{ V}, V_{GS} = 0$	—	—	1	μA
Gate Threshold Voltage		V_{th}	$V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$	0.7	—	1.3	V
Forward Transfer Admittance		$ Y_{fs} $	$V_{DS} = 3\text{ V}, I_D = 10\text{ mA}$	25	50	—	mS
Drain-Source ON Resistance		$R_{DS(ON)}$	$I_D = 10\text{ mA}, V_{GS} = 2.5\text{ V}$	—	4	12	Ω
Input Capacitance		C_{iss}	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	11.0	—	pF
Reverse Transfer Capacitance		C_{rss}	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	3.3	—	pF
Output Capacitance		C_{oss}	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	9.3	—	pF
Switching Time	Turn-on Time	t_{on}	$V_{DD} = 3\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\sim 2.5\text{ V}$	—	0.16	—	μs
	Turn-off Time	t_{off}	$V_{DD} = 3\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\sim 2.5\text{ V}$	—	0.19	—	
Gate-Source Resistor		R_{GS}	$V_{GS} = 0\sim 10\text{ V}$	0.7	1.0	1.3	$\text{M}\Omega$

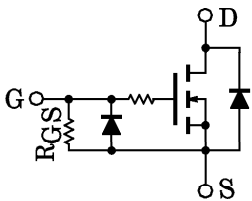
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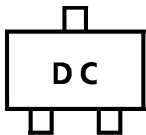
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EQUIVALENT CIRCUIT

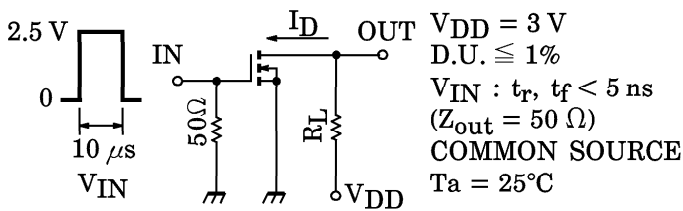


MARKING

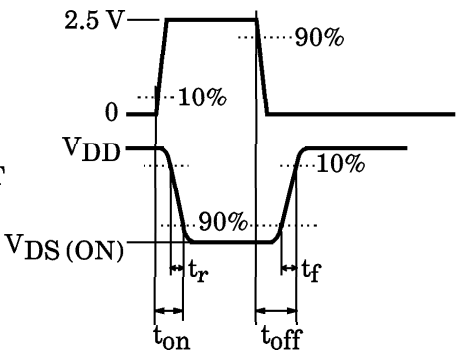


SWITCHING TIME TEST CIRCUIT

(a) TEST CIRCUIT



(b) V_{IN}
 V_{GS}



(c) V_{OUT}
 V_{DS}

