

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL MOS TYPE

# SSM3K04FE

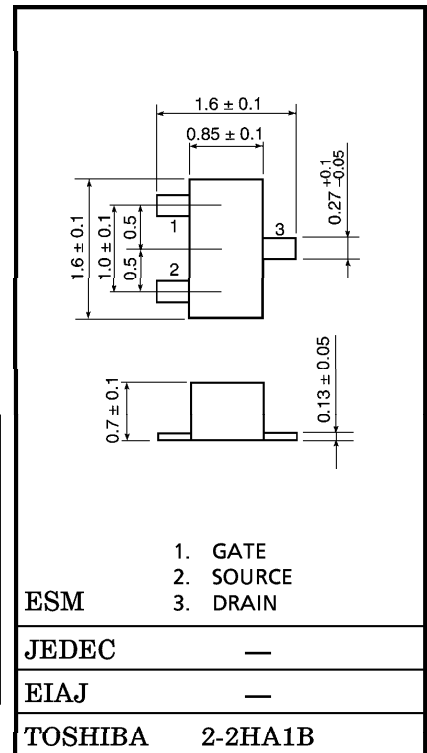
HIGH SPEED SWITCH APPLICATIONS

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	$T_{stg}$	-55~150	$^\circ\text{C}$



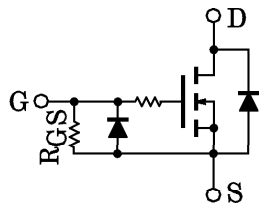
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GSS}$	$V_{GS} = 10\text{ V}, V_{DS} = 0$	—	—	15	$\mu\text{A}$
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$I_D = 100\ \mu\text{A}, V_{GS} = 0$	20	—	—	V
Drain Cut-off Current		$I_{DSS}$	$V_{DS} = 20\text{ V}, V_{GS} = 0$	—	—	1	$\mu\text{A}$
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	$\Omega$
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	—	$\mu\text{s}$
	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	$\text{M}\Omega$

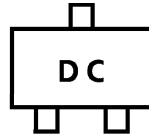
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EQUIVALENT CIRCUIT

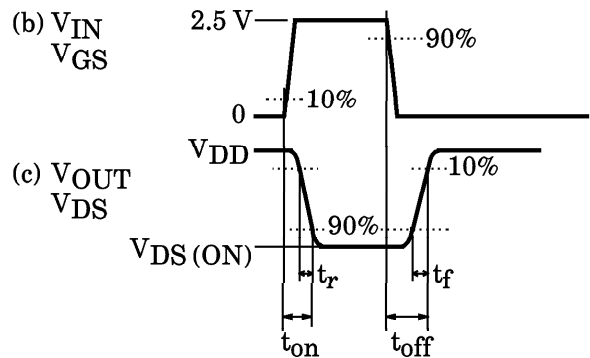
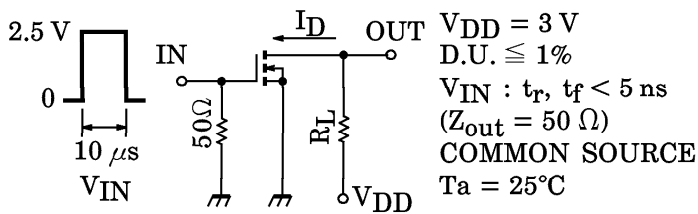


MARKING



SWITCHING TIME TEST CIRCUIT

(a) TEST CIRCUIT



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