

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

SSM3K17FU

High Speed Switching Applications

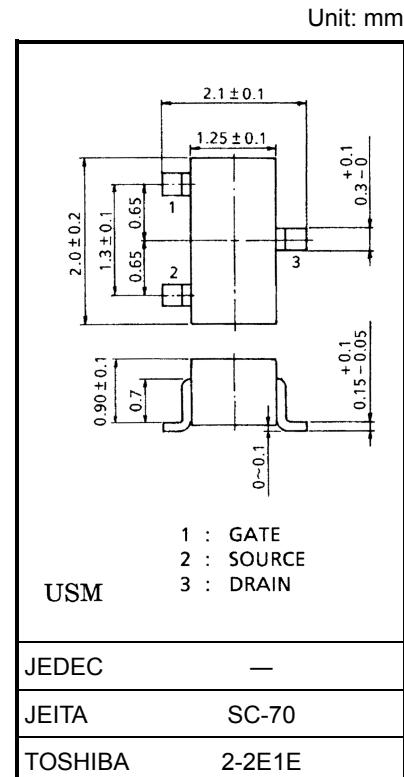
Analog Switch Applications

- Suitable for high-density mounting due to compact package
- High drain-source voltage
- High speed switching

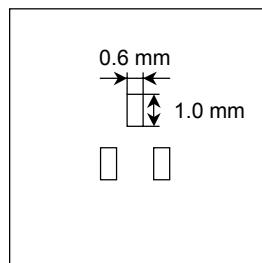
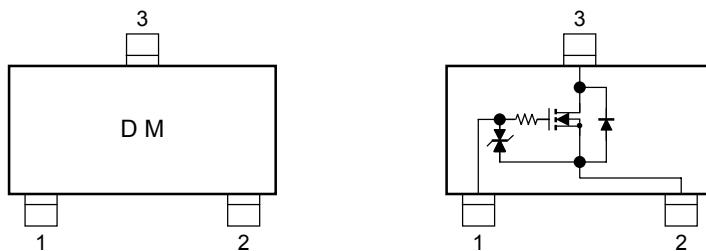
Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-Source voltage	V _{DS}	50	V
Gate-Source voltage	V _{GSS}	±7	V
Drain current	DC	I _D	mA
	Pulse	I _{DP}	
Drain power dissipation (Ta = 25°C)	P _D (Note)	150	mW
Channel temperature	T _{ch}	150	°C
Storage temperature range	T _{stg}	-55~150	°C

Note: Mounted on FR4 board
(25.4 mm × 25.4 mm × 1.6 t, Cu Pad: 0.6 mm² × 3)



Weight: 6 mg (typ.)

**Marking****Equivalent Circuit**

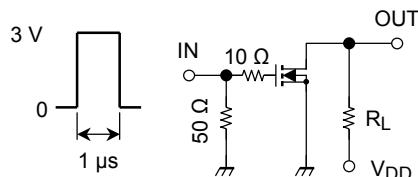
This transistor is a electrostatic sensitive device. Please handle with caution.

Electrical Characteristics (Ta = 25°C)

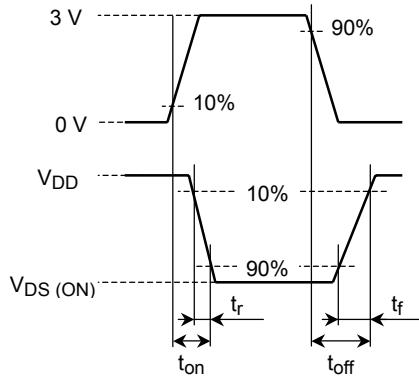
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	I_{GSS}	$V_{GS} = \pm 7 \text{ V}$, $V_{DS} = 0$	—	—	± 5	μA
Drain-Source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$I_D = 0.1 \text{ mA}$, $V_{GS} = 0$	50	—	—	V
Drain cut-off current	I_{DSS}	$V_{DS} = 50 \text{ V}$, $V_{GS} = 0$	—	—	1	μA
Gate threshold voltage	V_{th}	$V_{DS} = 3 \text{ V}$, $I_D = 1 \mu\text{A}$	0.9	—	1.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 3 \text{ V}$, $I_D = 10 \text{ mA}$	20	40	—	mS
Drain-Source ON resistance	$R_{DS(\text{ON})}$	$I_D = 10 \text{ mA}$, $V_{GS} = 4 \text{ V}$	—	12	20	Ω
		$I_D = 10 \text{ mA}$, $V_{GS} = 2.5 \text{ V}$	—	22	40	
Input capacitance	C_{iss}	$V_{DS} = 3 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	—	7	—	pF
Reverse transfer capacitance	C_{rss}	$V_{DS} = 3 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	—	3	—	pF
Output capacitance	C_{oss}	$V_{DS} = 3 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	—	7	—	pF
Switching time	Turn-on time	t_{on}	$V_{DD} = 3 \text{ V}$, $I_D = 20 \text{ mA}$, $V_{GS} = 0\text{--}3 \text{ V}$, $R_G = 10 \Omega$, $R_L = 150 \Omega$			ns
	Turn-off time	t_{off}	40			

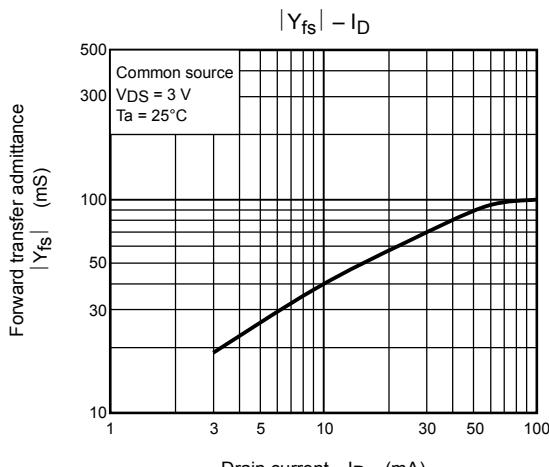
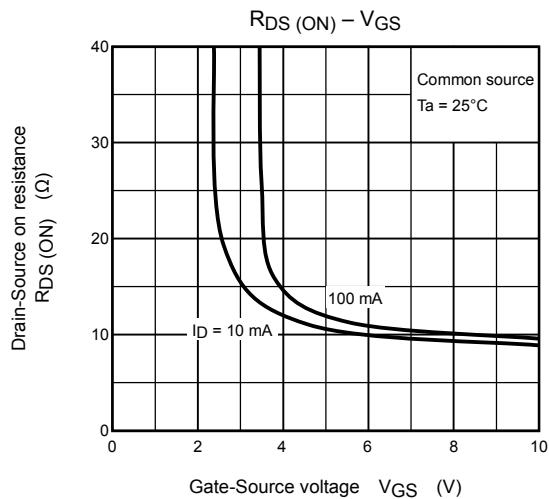
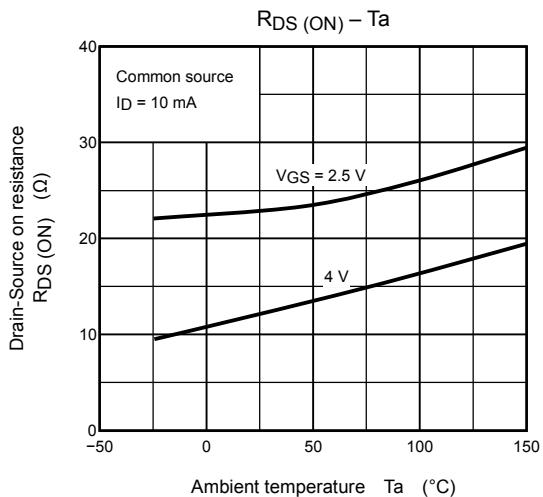
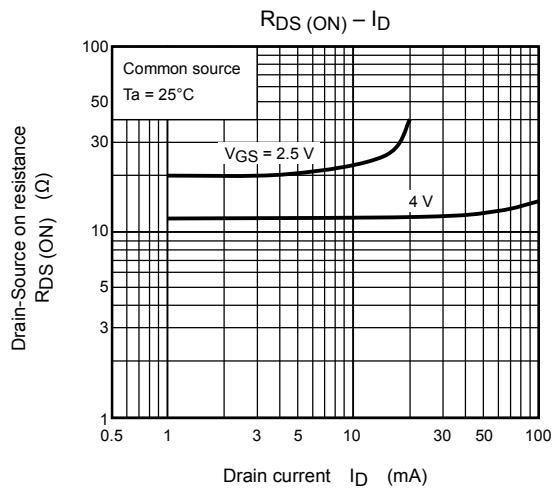
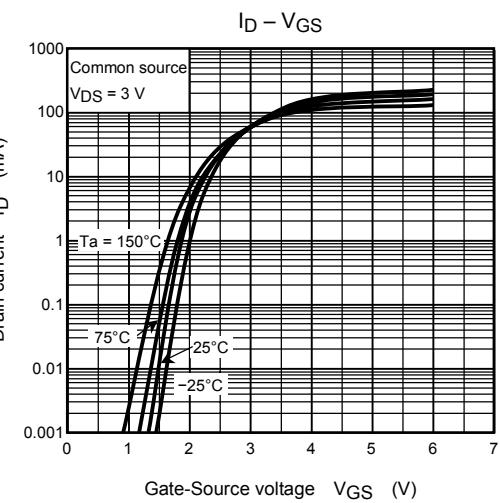
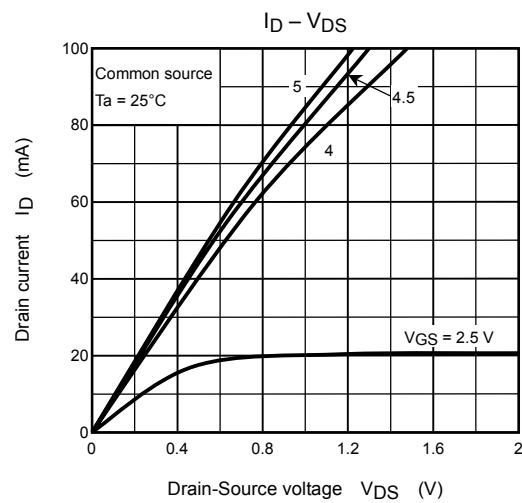
Switching Time Test Circuit

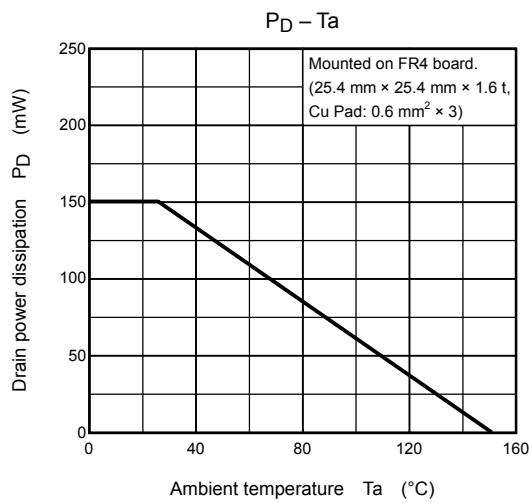
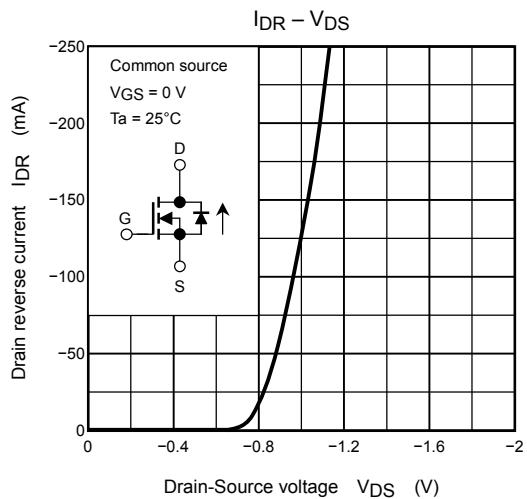
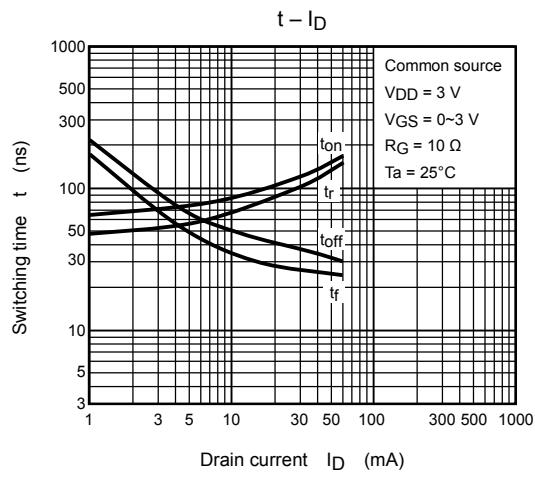
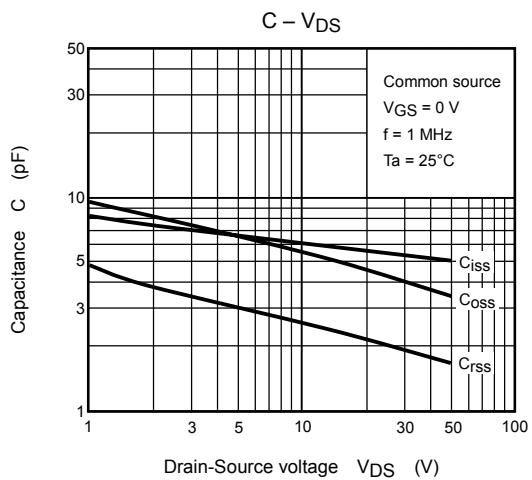
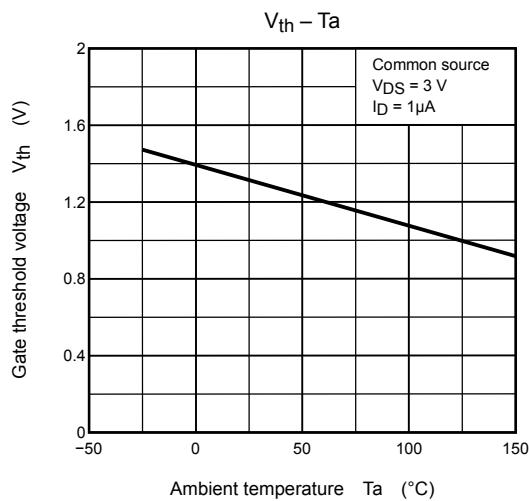
(a) Test circuit



$V_{DD} = 3 \text{ V}$
 Duty $\leq 1\%$
 V_{IN} : $t_r, t_f < 5 \text{ ns}$
 $(Z_{out} = 50 \Omega)$
 Common source
 $T_a = 25^\circ\text{C}$

(b) V_{IN} (c) V_{OUT} 





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