

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

## 2SK1827

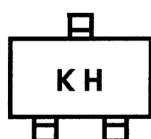
High Speed Switching Applications

Analog Switch Applications

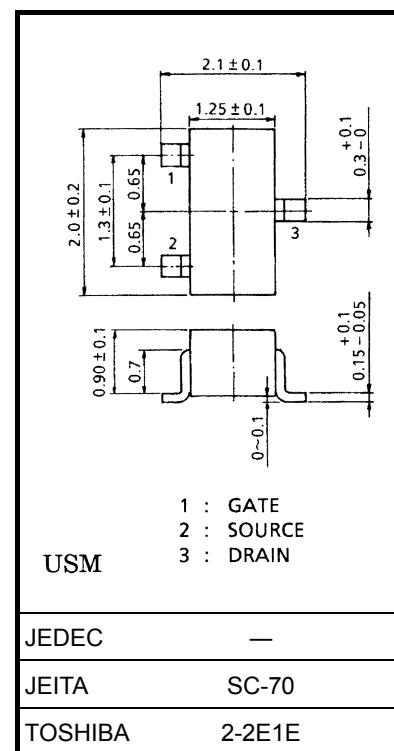
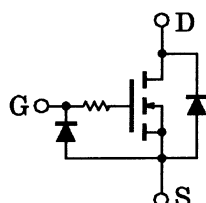
Unit: mm

- 4 V gate drive
- Low threshold voltage:  $V_{th} = 0.8 \sim 2.5$  V
- High speed
- Enhancement mode
- Small package

### Marking



### Equivalent Circuit



### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	50	V
Gate-source voltage	$V_{GSS}$	10	V
DC drain current	$I_D$	50	mA
Drain power dissipation	$P_D$	100	mW
Channel temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	$-55 \sim 150$	$^\circ\text{C}$

JEDEC	—
JEITA	SC-70
TOSHIBA	2-2E1E

Weight: 0.006 g (typ.)

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

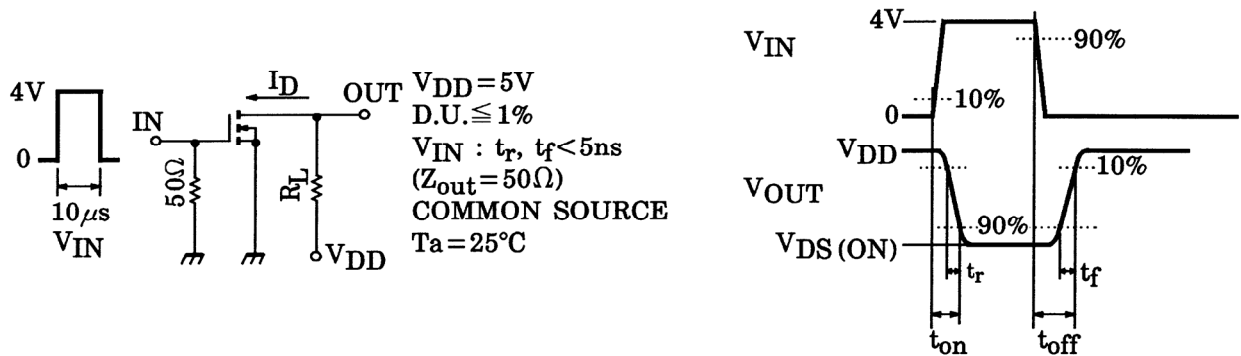
Note: This transistor is electrostatic sensitive device.

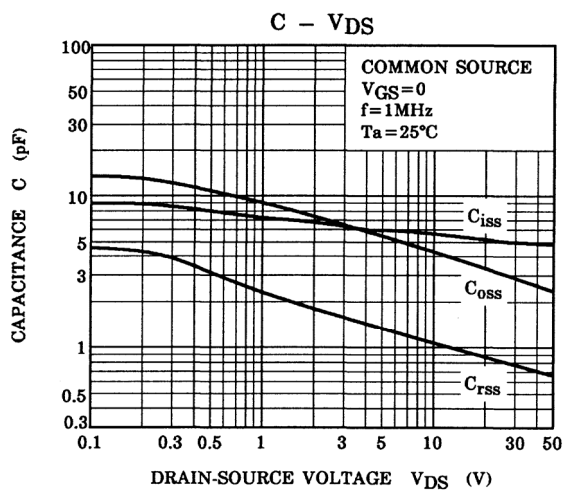
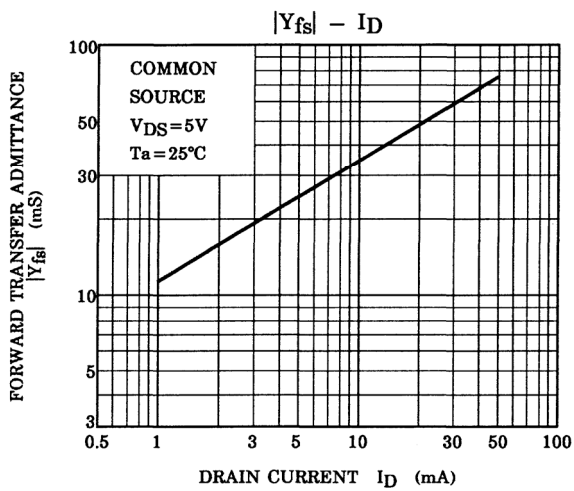
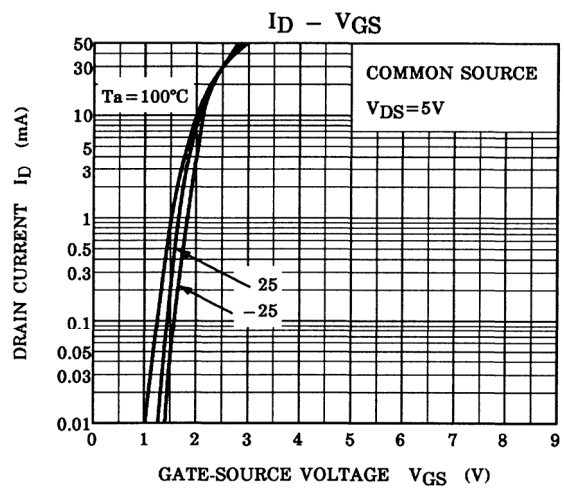
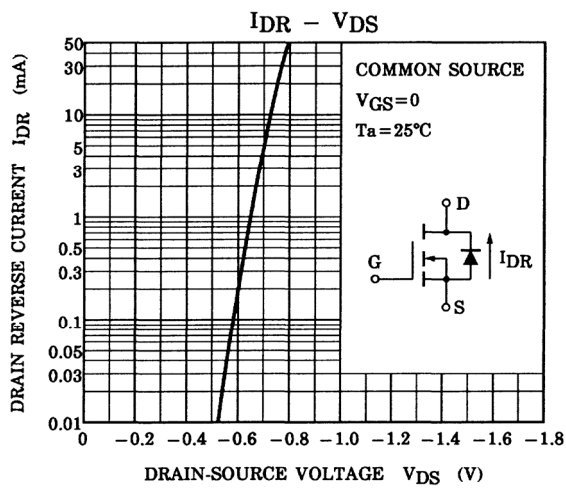
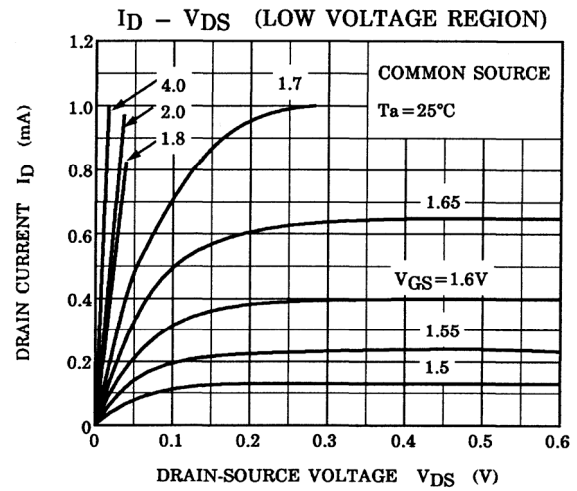
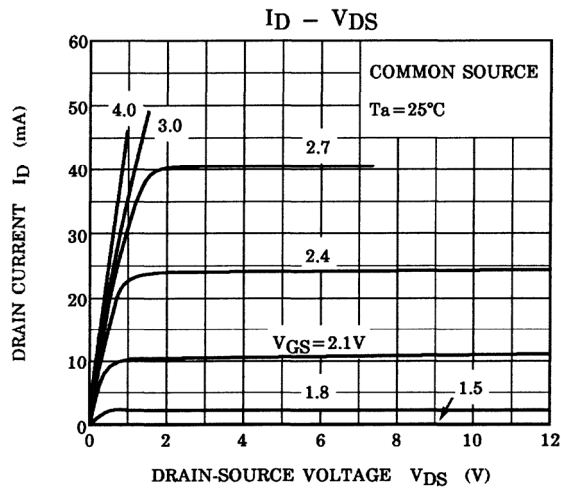
Please handle with caution.

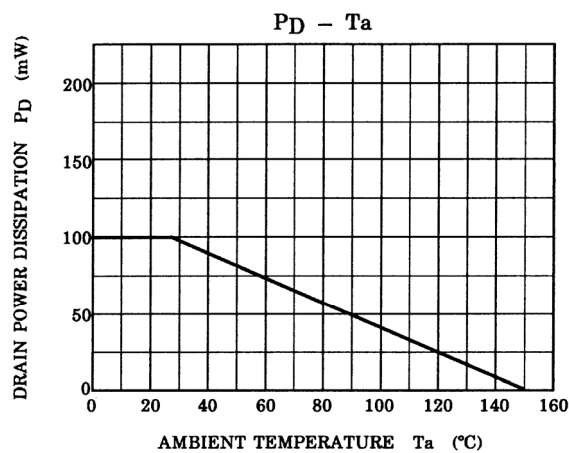
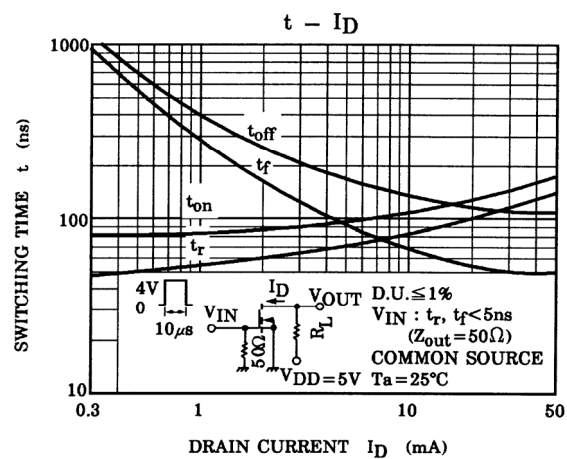
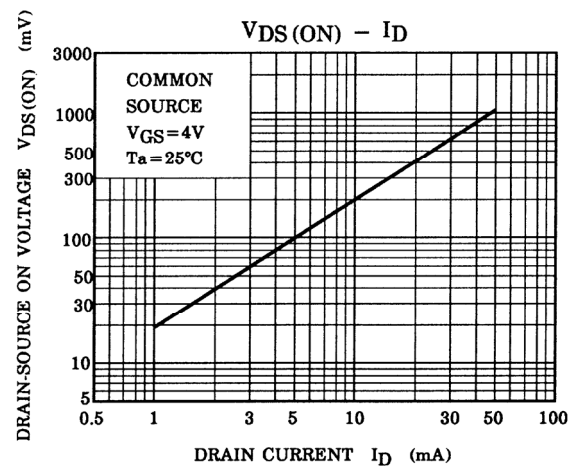
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	$I_{GSS}$	$V_{GS} = 10\text{ V}, V_{DS} = 0$	—	—	1	$\mu\text{A}$
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 100\text{ }\mu\text{A}, V_{GS} = 0$	50	—	—	V
Drain cut-off current	$I_{DSS}$	$V_{DS} = 50\text{ V}, V_{GS} = 0$	—	—	1	$\mu\text{A}$
Gate threshold voltage	$V_{th}$	$V_{DS} = 5\text{ V}, I_D = 0.1\text{ mA}$	0.8	—	2.5	V
Forward transfer admittance	$ Y_{fs} $	$V_{DS} = 5\text{ V}, I_D = 10\text{ mA}$	20	—	—	mS
Drain-source ON resistance	$R_{DS(ON)}$	$I_D = 10\text{ mA}, V_{GS} = 4.0\text{ V}$	—	20	50	$\Omega$
Input capacitance	$C_{iss}$	$V_{DS} = 5\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	6.3	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{DS} = 5\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	1.3	—	pF
Output capacitance	$C_{oss}$	$V_{DS} = 5\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	5.7	—	pF
Switching time	Turn-on time	$t_{on}$	$V_{DD} = 5\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\sim 4.0\text{ V}$	—	0.11	$\mu\text{s}$
	Turn-off time	$t_{off}$	$V_{DD} = 5\text{ V}, I_D = 10\text{ mA}, V_{GS} = 0\sim 4.0\text{ V}$	—	0.15	

Switching Time Test Circuit







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20070701-EN GENERAL

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