

**TOSHIBA****2SK2037**

TOSHIBA Field Effect Transistor Silicon N Channel Type

# 2SK2037

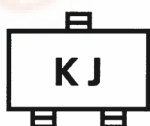
High Speed Switching Applications

Analog Switching Applications

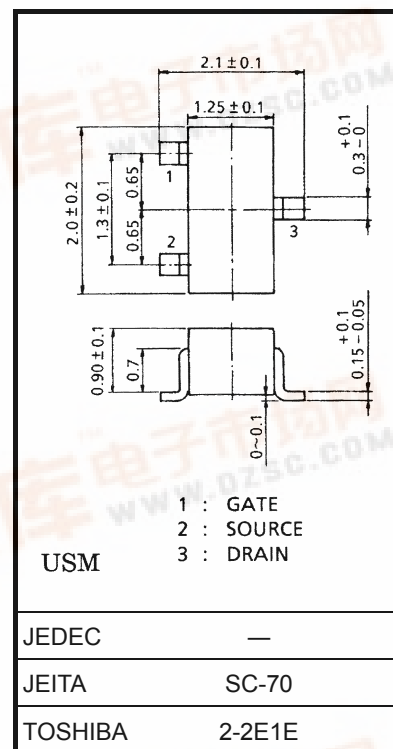
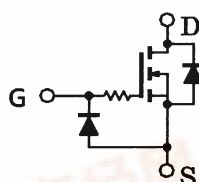
Unit: mm

- High input impedance.
- Low gate threshold voltage:  $V_{th} = 0.5 \sim 1.5 \text{ V}$
- Excellent switching times:  $t_{on} = 0.28 \mu\text{s}$  (typ.)  
 $t_{off} = 0.34 \mu\text{s}$  (typ.)
- Small package.
- Enhancement-mode

## Marking



## Equivalent Circuit



Weight: 0.006 g (typ.)

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

Characteristics	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	$^\circ\text{C}$

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.

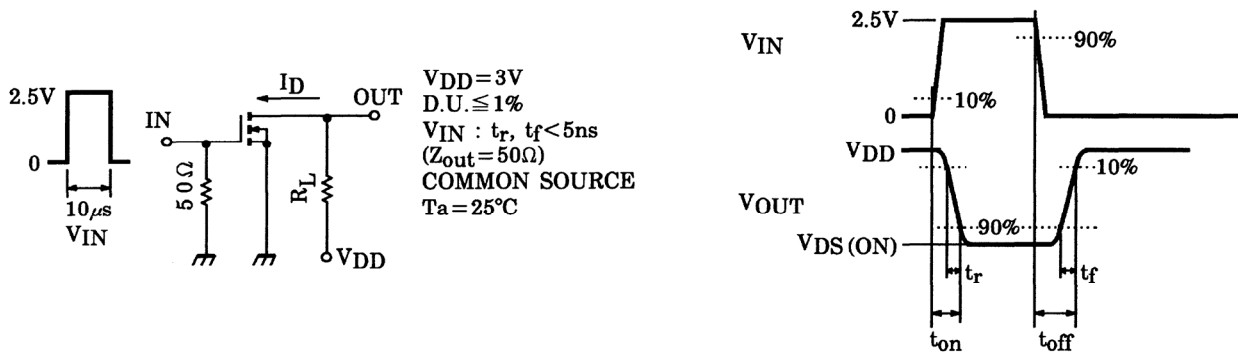
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

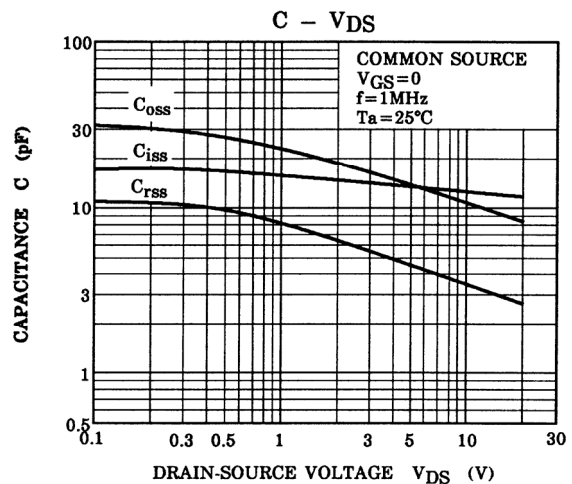
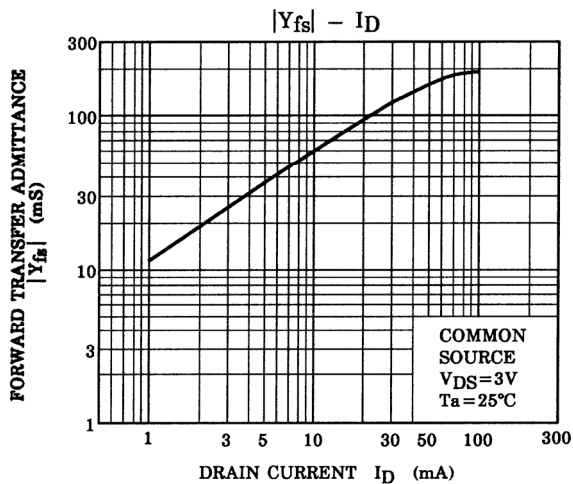
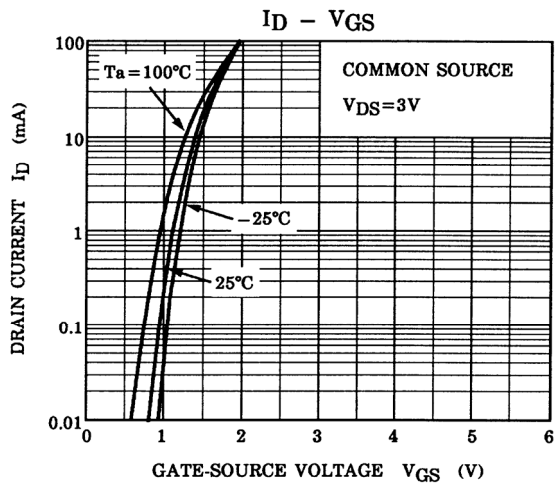
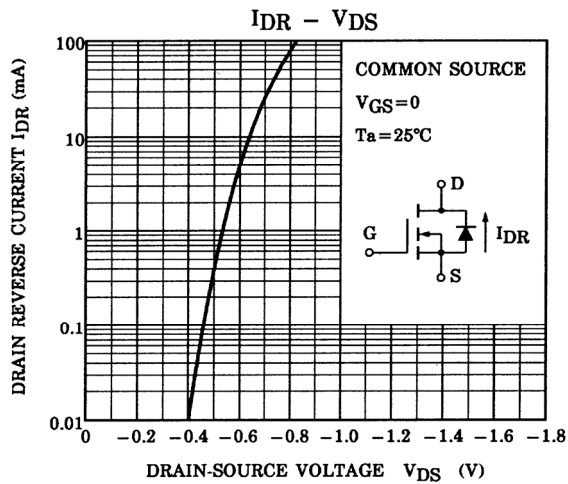
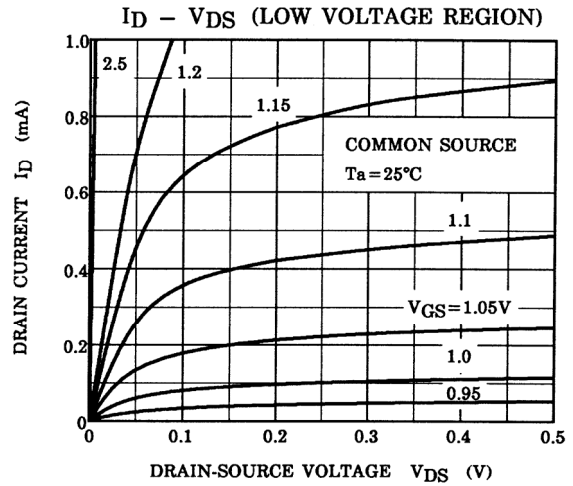
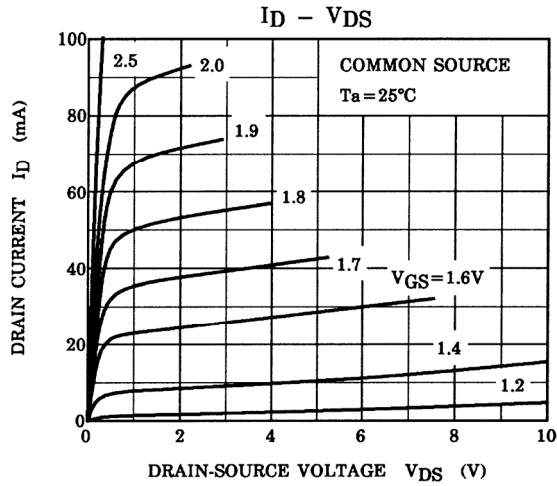
Note: This transistor is electrostatic sensitive device. Please handle with caution.

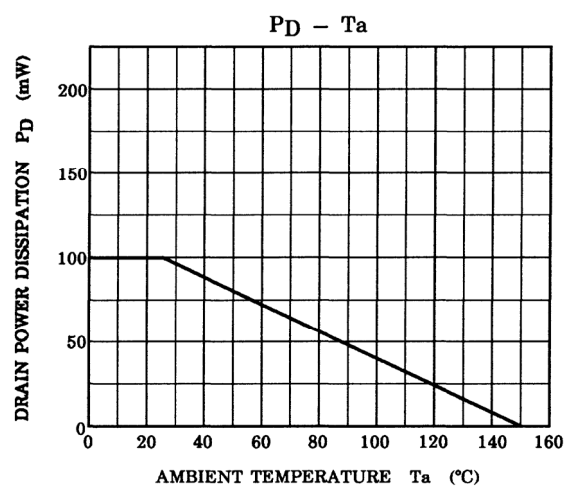
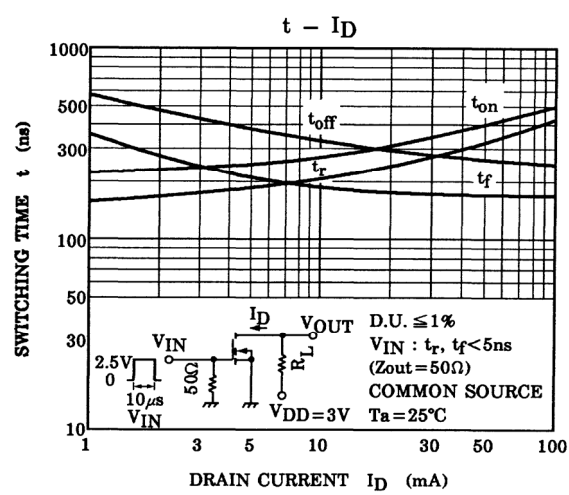
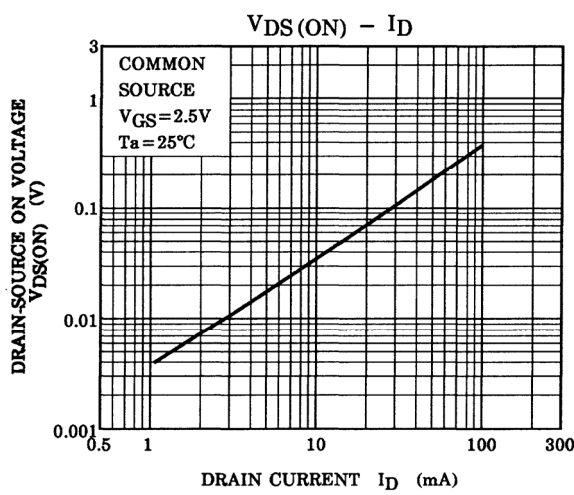
## Electrical Characteristics (Ta = 25°C)

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		$V_{(BR)DSS}$	$I_D = 100\text{ }\mu\text{A}, V_{GS} = 0$	20	—	—	V
Drain cut-off current		$I_{DSS}$	$V_{DS} = 20\text{ V}, V_{GS} = 0$	—	—	1	$\mu\text{A}$
Gate threshold voltage		$V_{th}$	$V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$	0.5	—	1.5	V
Forward transfer admittance		$ Y_{fs} $	$V_{DS} = 3\text{ V}, I_D = 10\text{ mA}$	35	62	—	mS
Drain-source ON resistance		$R_{DS(ON)}$	$I_D = 10\text{ mA}, V_{GS} = 2.5\text{ V}$	—	3.5	6	$\Omega$
Input capacitance		$C_{iss}$	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	14	—	pF
Reverse transfer capacitance		$C_{rss}$	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	5.3	—	pF
Output capacitance		$C_{oss}$	$V_{DS} = 3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	16	—	pF
Switching time	Turn-on time	$t_{on}$	$V_{DD} = 3\text{ V}, I_D = 10\text{ mA}$ $V_{GS} = 0 \sim 2.5\text{ V}$	—	0.28	—	$\mu\text{s}$
	Turn-off time	$t_{off}$	$V_{DD} = 3\text{ V}, I_D = 10\text{ mA}$ $V_{GS} = 0 \sim 2.5\text{ V}$	—	0.34	—	

## Switching Time Test Circuit







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20070701-EN GENERAL

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