

TOSHIBA Field Effect Transistor Silicon N Channel Type

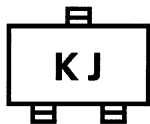
2SK2037

High Speed Switching Applications

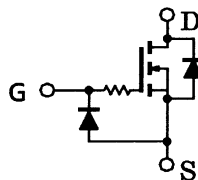
Analog Switching Applications

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

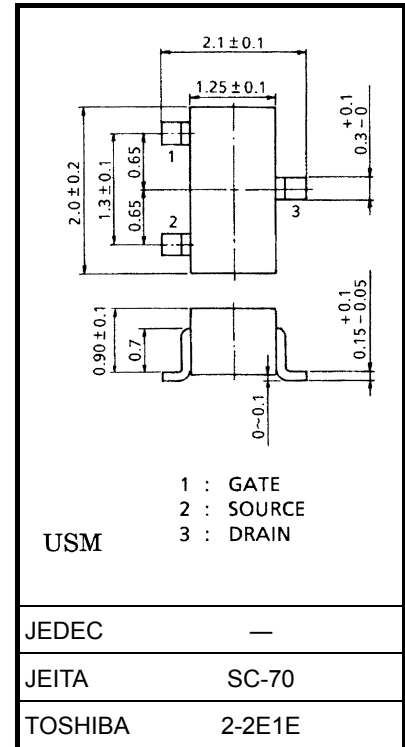
Marking



Equivalent Circuit



Unit: mm



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}	$-55 \sim 150$	$^\circ\text{C}$

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.

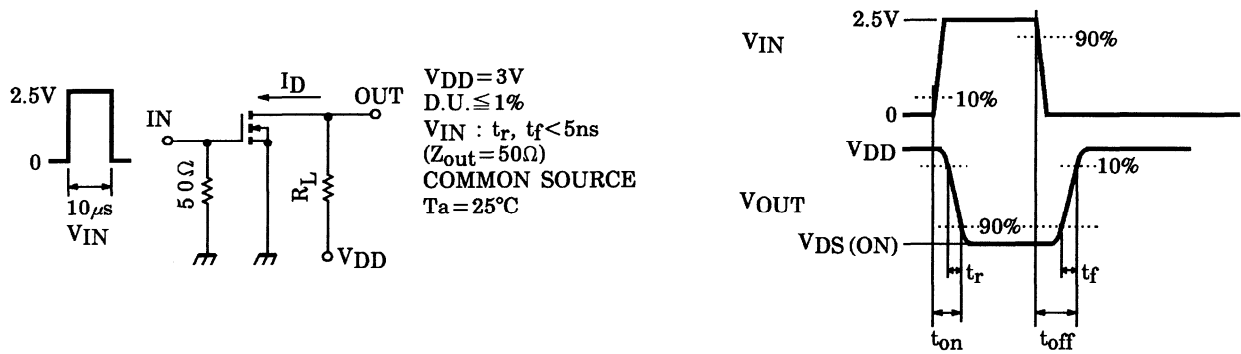
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

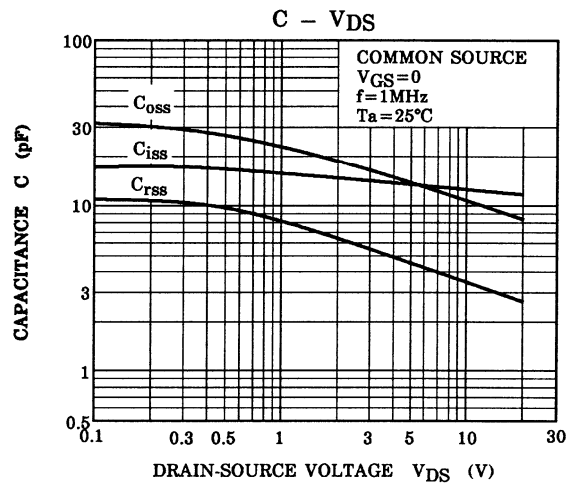
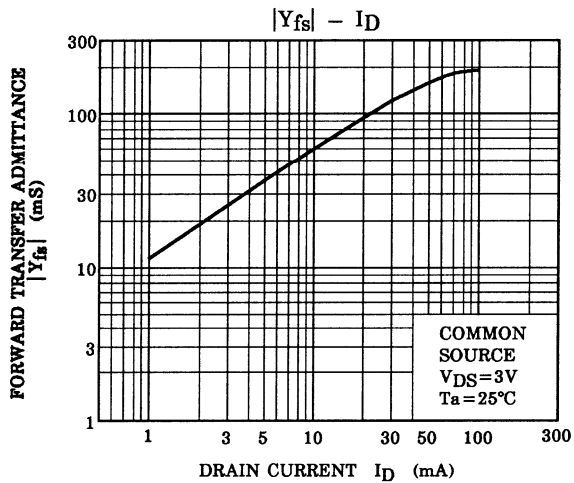
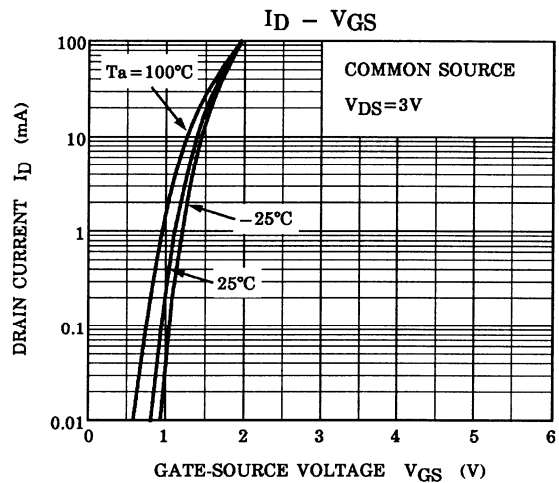
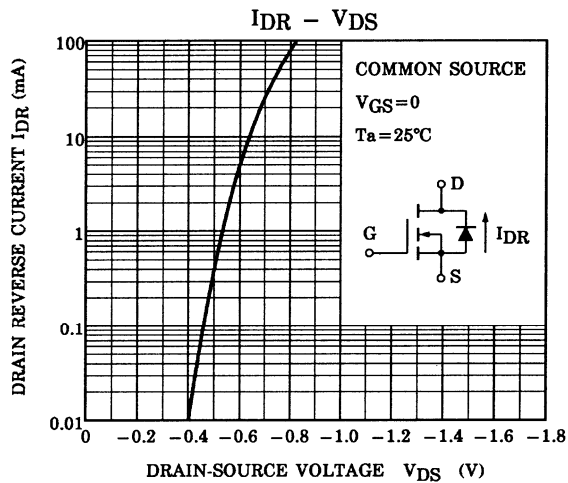
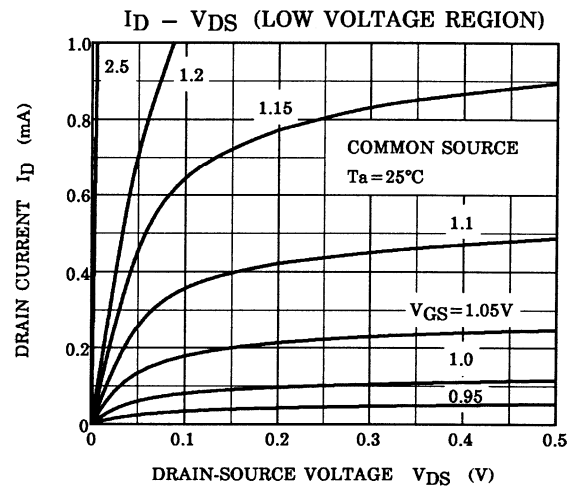
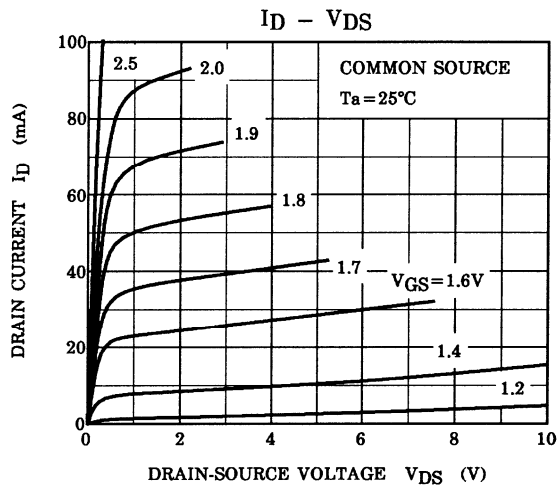
Note: This transistor is electrostatic sensitive device. Please handle with caution.

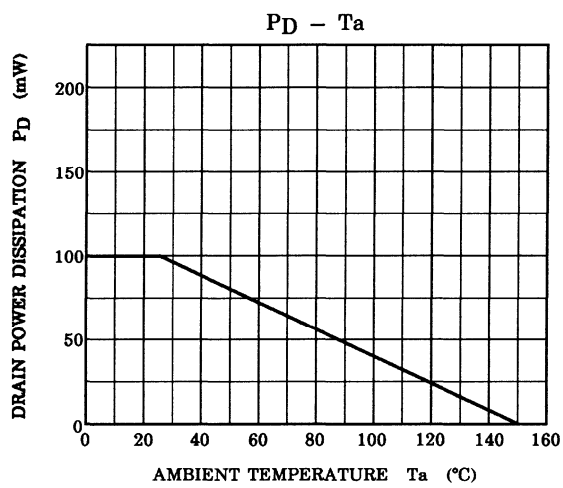
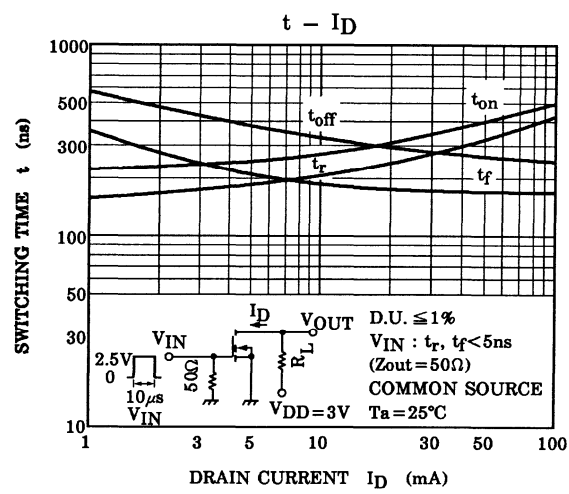
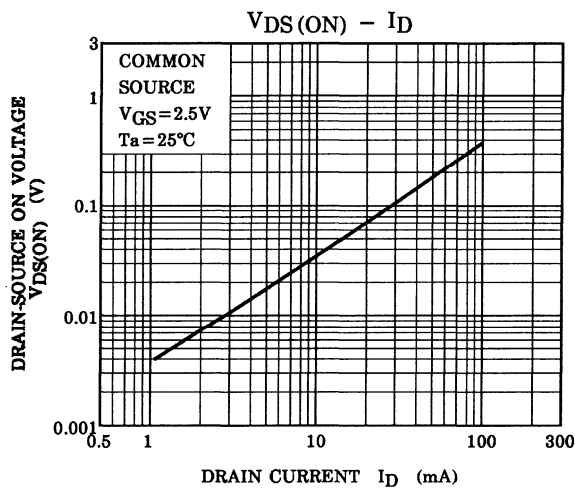
Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GSS}	$V_{GS} = 10\text{ V}, V_{DS} = 0$	—	—	1	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}	$V_{DS} = 3\text{ V}, I_D = 0.1\text{ mA}$	0.5	—	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	Ω
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	—	μs
	Turn-off time	t_{off}	$V_{DD} = 3\text{ V}, I_D = 10\text{ mA}$ $V_{GS} = 0 \sim 2.5\text{ V}$	—	0.34	—	

Switching Time Test Circuit







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