

TOSHIBA Field Effect Transistor Silicon N Channel MOS Type

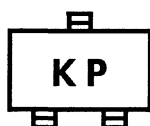
2SK2033

High Speed Switching Applications

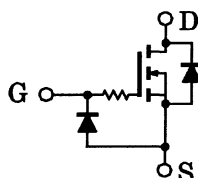
Analog Switch Applications

- High input impedance
- Low gate threshold voltage: $V_{th} = 0.5$ to 1.5 V
- Excellent switching times: $t_{on} = 0.16$ μ s (typ.)
 $t_{off} = 0.15$ μ s (typ.)
- Small package
- Enhancement-mode

Marking



Equivalent Circuit



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

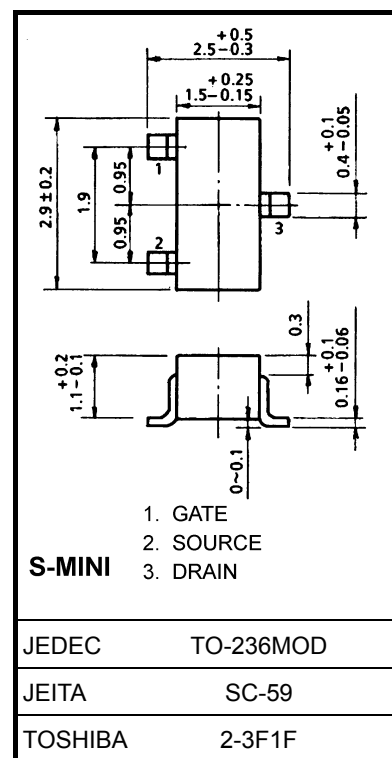
Characteristics	Symbol	Rating	Unit
Drain-source voltage	V_{DS}	20	V
Gate-source voltage	V_{GSS}	10	V
DC drain current	I_D	100	mA
Drain power dissipation	P_D	200	mW
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

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.

Unit: mm



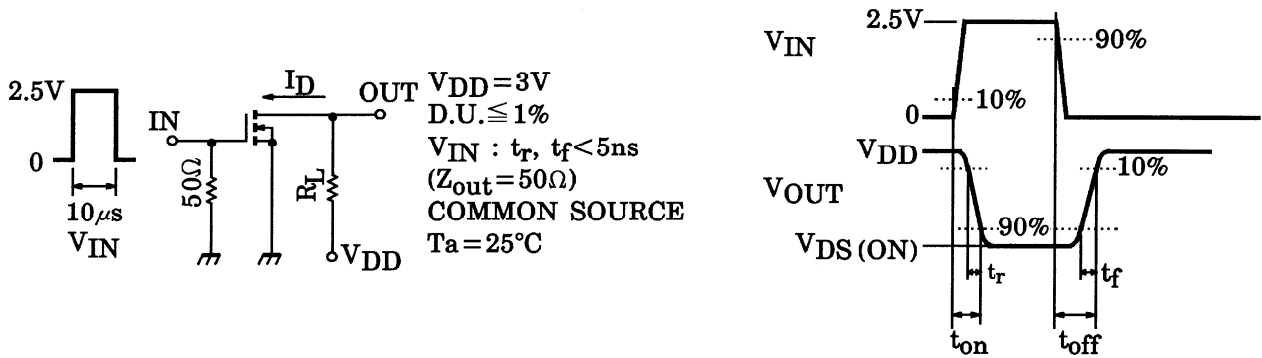
Weight: 0.012 g (typ.)

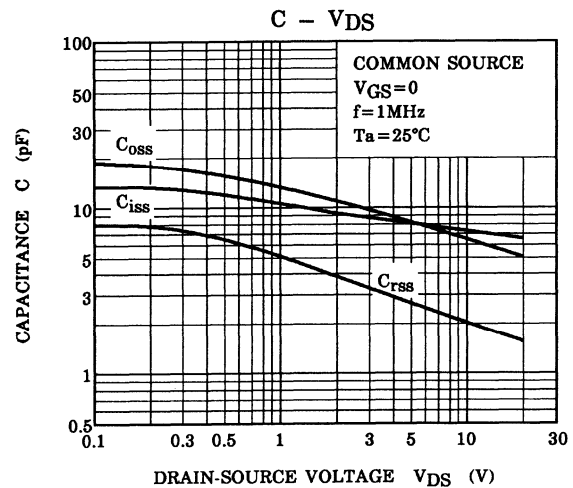
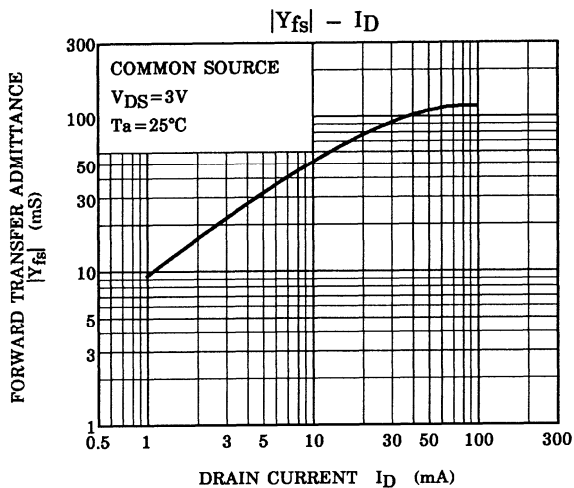
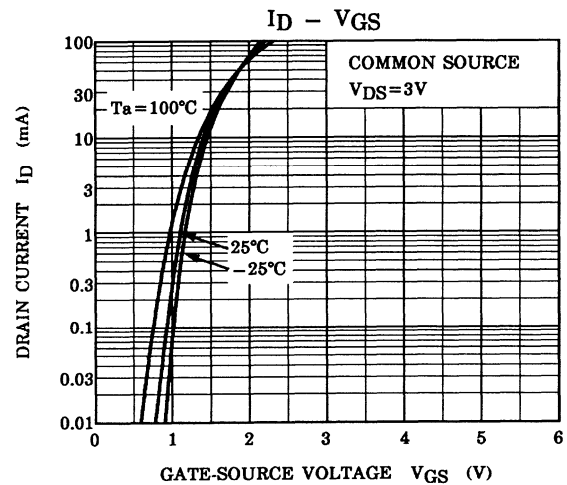
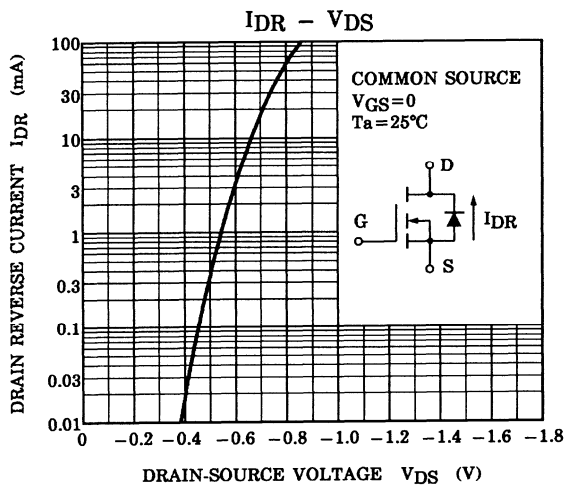
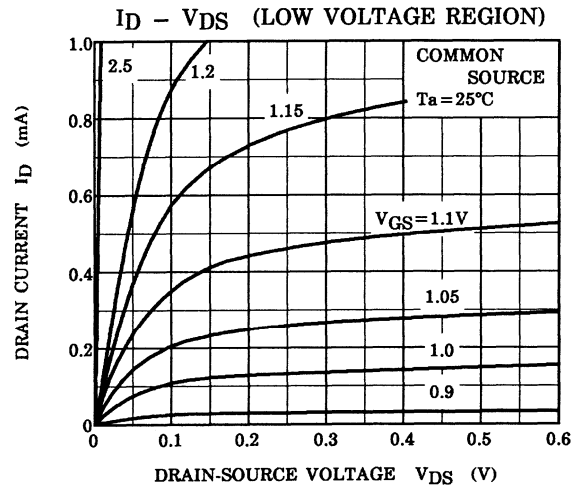
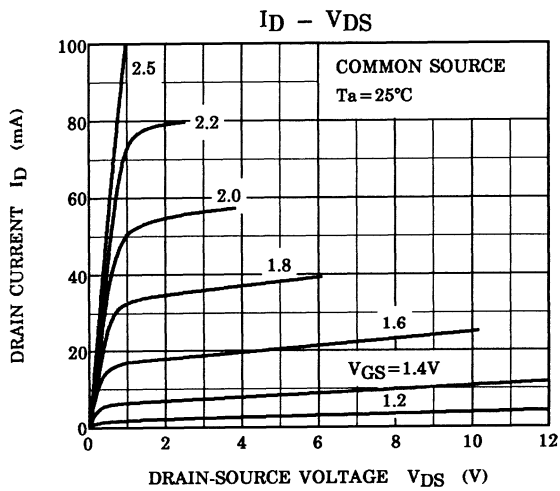
Start of commercial production
1992-05

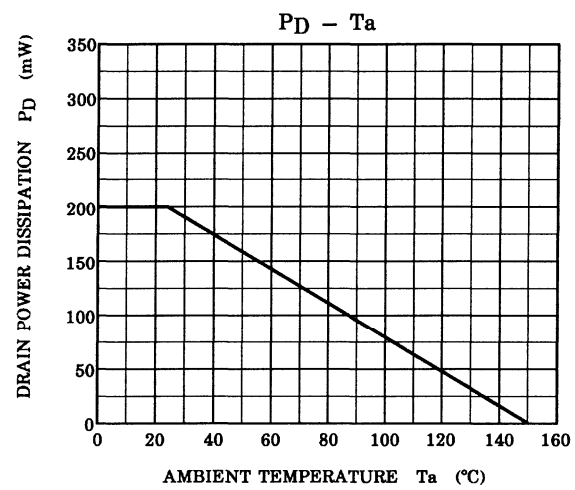
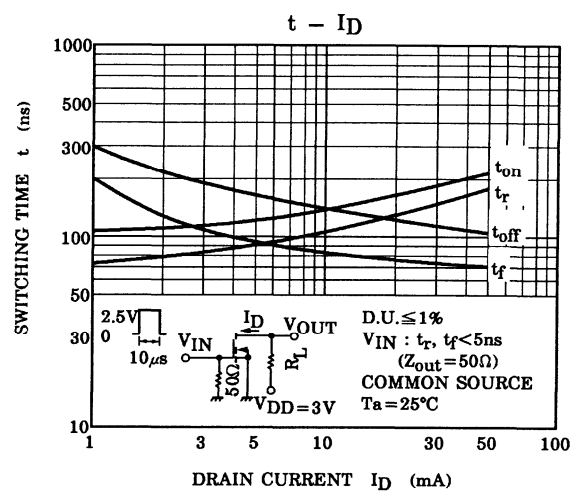
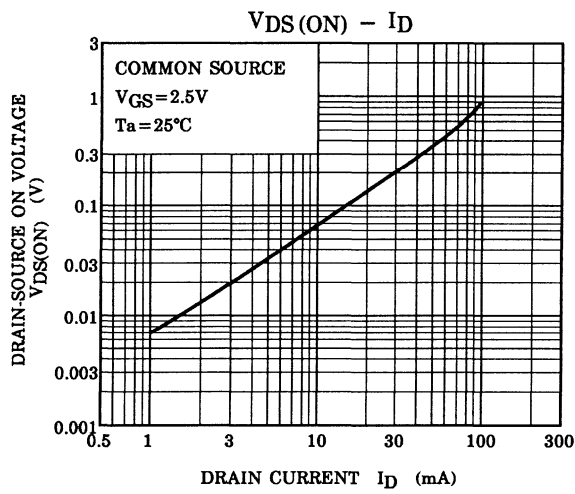
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	IGSS	VGS = 10 V, VDS = 0	—	—	1	μA
Drain-source breakdown voltage	V (BR) DSS	ID = 100 μA, VGS = 0	20	—	—	V
Drain cut-off current	IDSS	VDS = 20 V, VGS = 0	—	—	1	μA
Gate threshold voltage	Vth	VDS = 3 V, ID = 0.1 mA	0.5	—	1.5	V
Forward transfer admittance	Yfs	VDS = 3 V, ID = 10 mA	25	50	—	mS
Drain-source ON resistance	RDS (ON)	ID = 10 mA, VGS = 2.5 V	—	8	12	Ω
Input capacitance	Ciss	VDS = 3 V, VGS = 0, f = 1 MHz	—	8.5	—	pF
Reverse transfer capacitance	Crss	VDS = 3 V, VGS = 0, f = 1 MHz	—	3.3	—	pF
Output capacitance	Coss	VDS = 3 V, VGS = 0, f = 1 MHz	—	9.3	—	pF
Switching time	Turn-on time	t _{on}	VDD = 3 V, ID = 10 mA, VGS = 0 to 2.5 V	—	0.16	μs
	Turn-off time	t _{off}	VDD = 3 V, ID = 10 mA, VGS = 0 to 2.5 V	—	0.15	

Switching Time Test Circuit







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