

# 2SJ305

High Speed Switching Applications  
Analog Applications

- High input impedance
- Low gate threshold voltage.:  $V_{th} = -0.5 \sim -1.5$  V
- Excellent switching times.:  $t_{on} = 0.06 \mu s$  (typ.)  
 $t_{off} = 0.15 \mu s$  (typ.)
- Low drain-source ON resistance:  $R_{DS(ON)} = 2.4 \Omega$  (typ.)
- Small package.
- Complementary to 2SK2009

### Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	-30	V
Gate-source voltage	$V_{GSS}$	$\pm 20$	V
DC drain current	$I_D$	-200	mA
Drain power dissipation	$P_D$	200	mW
Channel temperature	$T_{ch}$	150	°C
Storage temperature range	$T_{stg}$	-55~150	°C

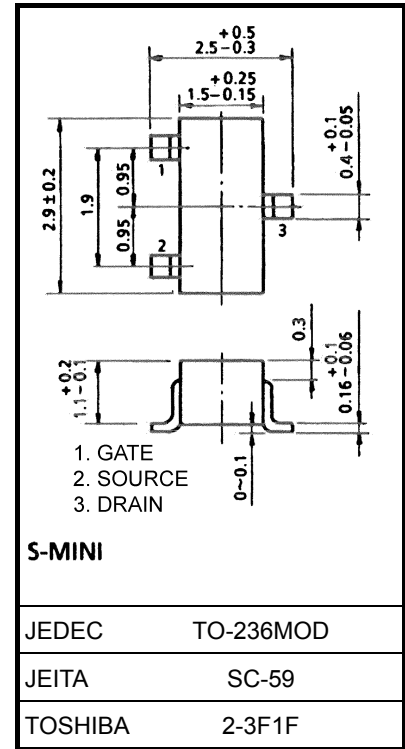
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

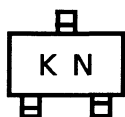
Please handle with caution.

Unit: mm

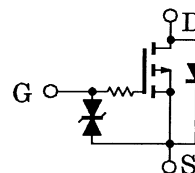


Weight: 0.012 g (typ.)

### Marking



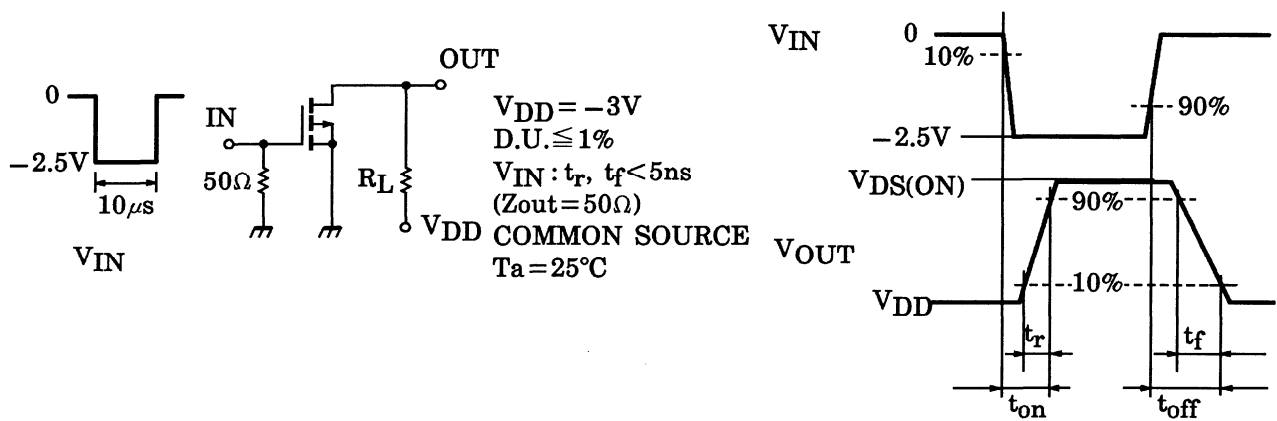
### Equivalent Circuit

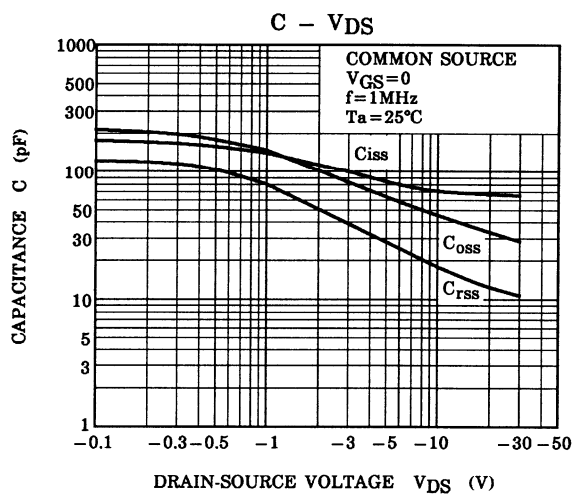
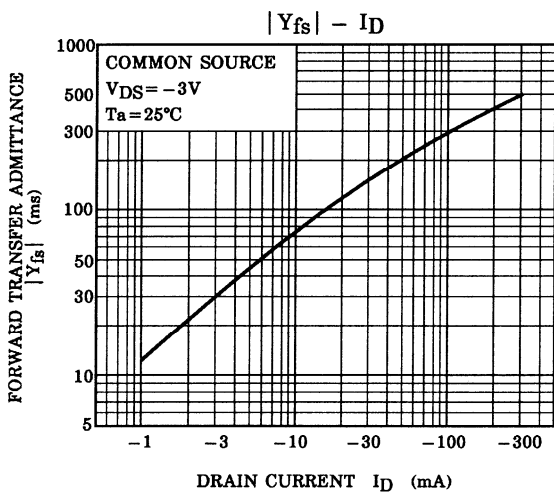
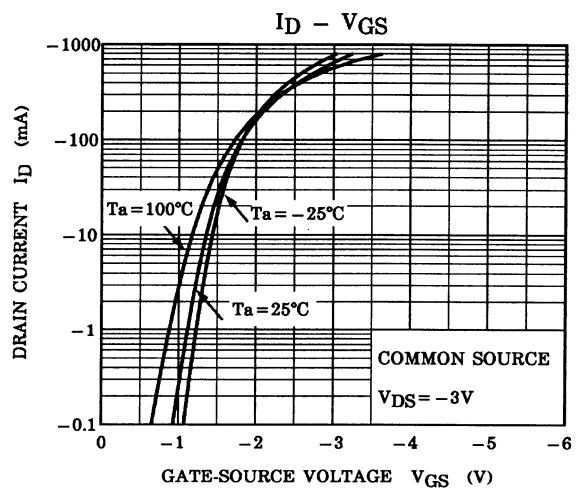
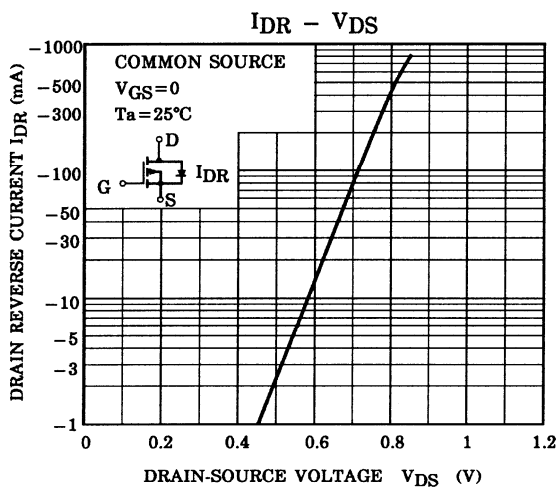
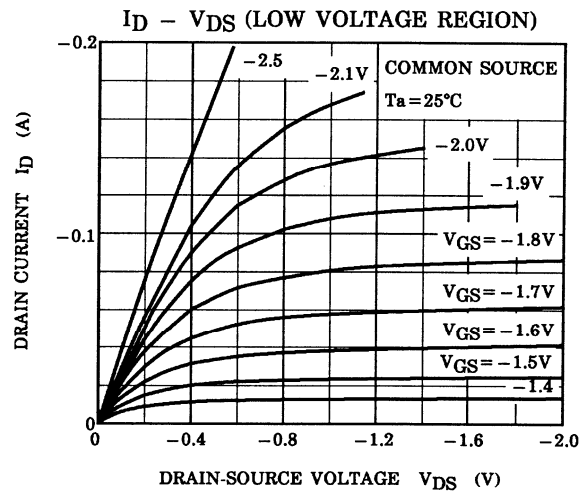
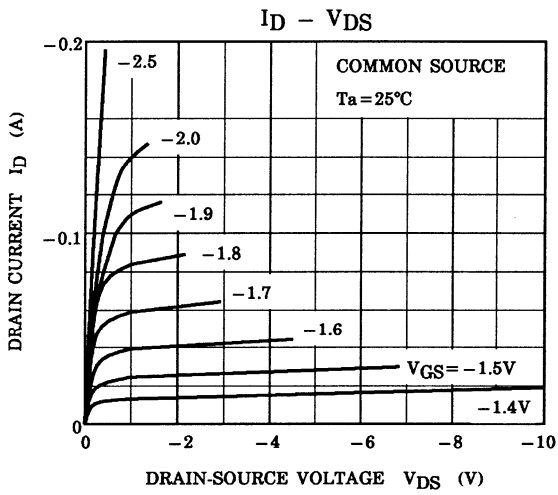


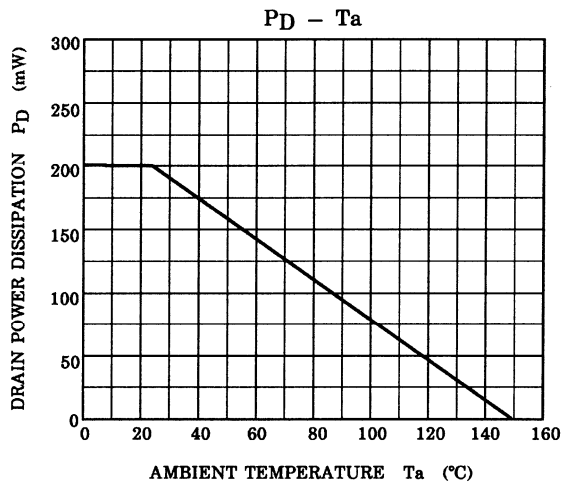
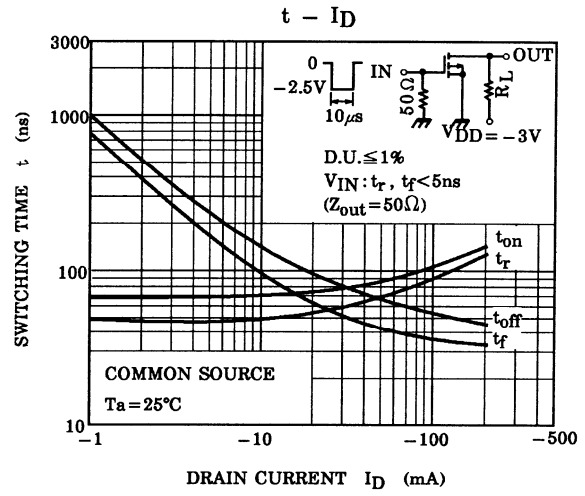
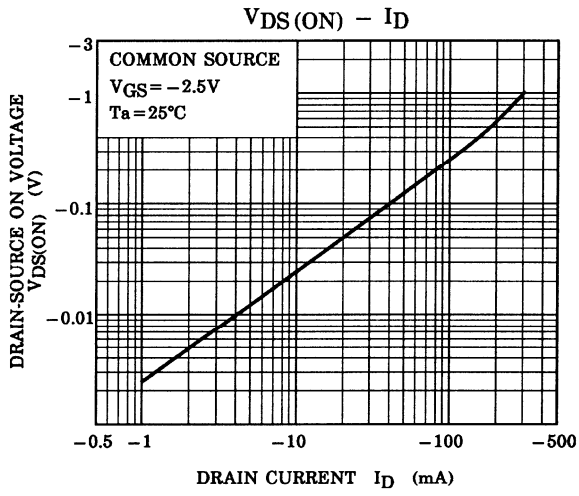
## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current	$I_{GSS}$	$V_{GS} = \pm 10\text{ V}, V_{DS} = 0$	—	—	$\pm 0.1$	$\mu\text{A}$
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = -1\text{ mA}, V_{GS} = 0$	-30	—	—	V
Drain cut-off current	$I_{DSS}$	$V_{DS} = -30\text{ V}, V_{GS} = 0$	—	—	-10	$\mu\text{A}$
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} $	$V_{DS} = -3\text{ V}, I_D = -50\text{ mA}$	100	—	—	mS
Drain-source ON resistance	$R_{DS(ON)}$	$I_D = -50\text{ mA}, V_{GS} = -2.5\text{ V}$	—	2.4	4	$\Omega$
Input capacitance	$C_{iss}$	$V_{DS} = -3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	92	—	pF
Reverse transfer capacitance	$C_{rss}$	$V_{DS} = -3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	36	—	pF
Output capacitance	$C_{oss}$	$V_{DS} = -3\text{ V}, V_{GS} = 0, f = 1\text{ MHz}$	—	80	—	pF
Switching time	Turn-on time	$V_{DD} = -3\text{ V}, I_D = -10\text{ mA}$ $V_{GS} = 0 \sim -2.5\text{ V}$	—	0.06	—	$\mu\text{s}$
	Turn-off time	$V_{DD} = -3\text{ V}, I_D = -10\text{ mA}$ $V_{GS} = 0 \sim -2.5\text{ V}$	—	0.15	—	

## Switching Time Test Circuit







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