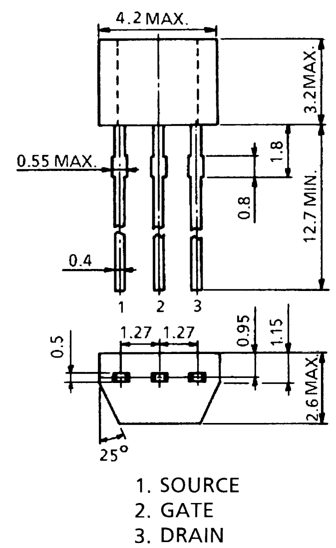
TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

2SK367

For Audio, High Voltage Amplifier and Constant Current Applications

Unit: mm

- High breakdown voltage: V_{GDS} = −100 V (min)
- High input impedance: I_{GSS} = −1.0 nA (max) (V_{GS} = −80 V)
- Small package



JEDEC	―
JEITA	―
TOSHIBA	2-4E1B

Weight: 0.13 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

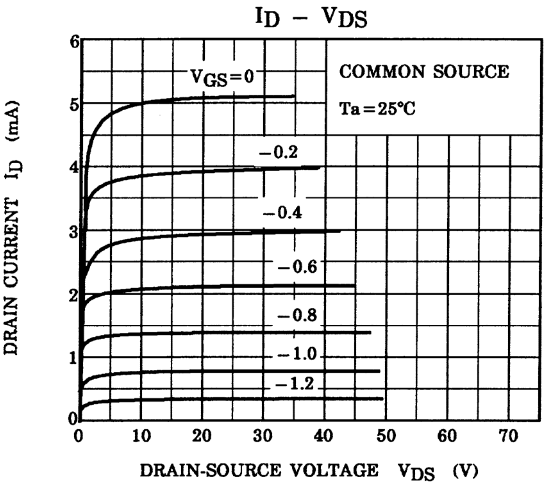
Characteristics	Symbol	Rating	Unit
Gate-drain voltage	V_{GDS}	−100	V
Gate current	I_G	10	mA
Drain power dissipation	P_D	200	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125	°C

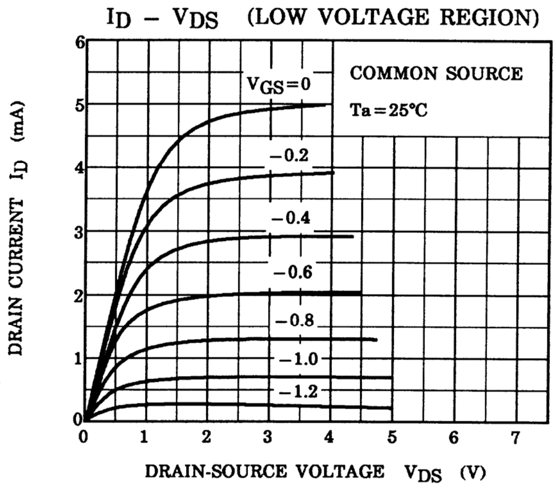
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

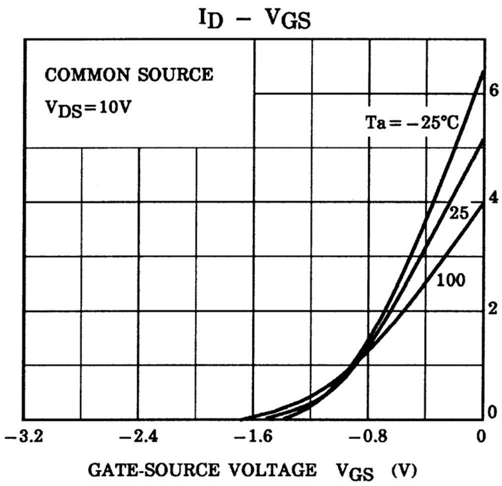
Electrical Characteristics (Ta = 25°C)

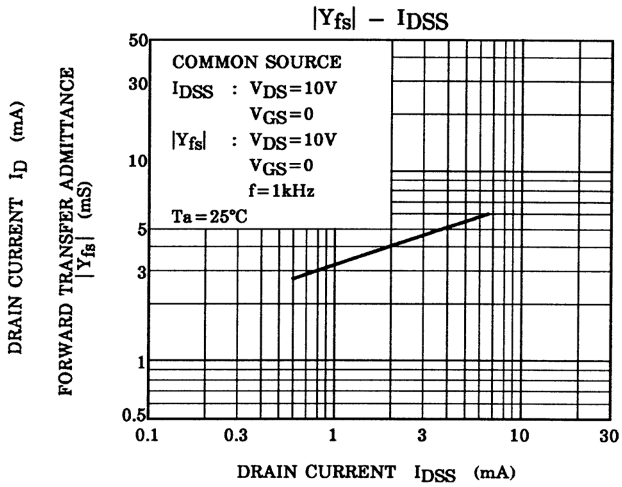
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Gate cut-off current	I_{GSS}	V_{GS} = −80 V, V_{DS} = 0	―	―	−1.0	nA
Gate-drain breakdown voltage	$V_{(BR)\ GDS}$	V_{DS} = 0, I_G = −100 μA	−100	―	―	V
Drain current	I_{DSS} (Note)	V_{DS} = 10 V, V_{GS} = 0	0.6	―	6.5	mA
Gate-source cut-off voltage	$V_{GS\ (OFF)}$	V_{DS} = 10 V, I_D = 0.1 μA	−0.4	―	−3.5	V
Forward transfer admittance	$\lvert Y_{fs}\rvert$	V_{DS} = 10 V, V_{GS} = 0, f = 1 kHz	1.5	4.6	―	mS
Input capacitance	C_{iss}	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz	―	13	―	pF
Reverse transfer capacitance	C_{rss}	V_{DS} = 10 V, I_D = 0, f = 1 MHz	―	3	―	pF
Noise figure	NF	V_{DS} = 10 V, V_{GS} = 0, R_G = 100 kΩ, f = 100 Hz	―	0.5	―	dB

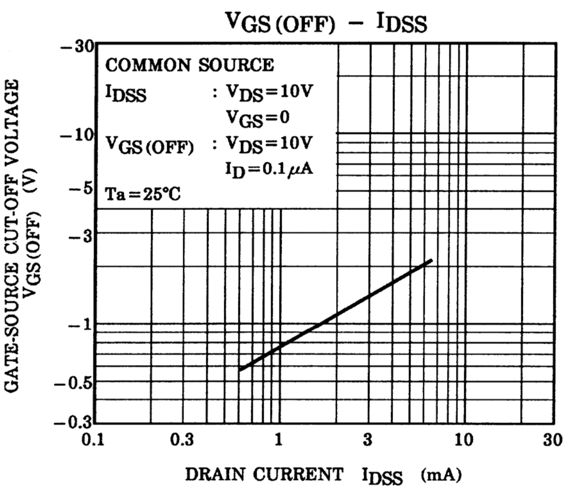
Note: I_{DSS} classification O: 0.6~1.4 mA, Y: 1.2~3.0 mA, GR: 2.6~6.5 mA

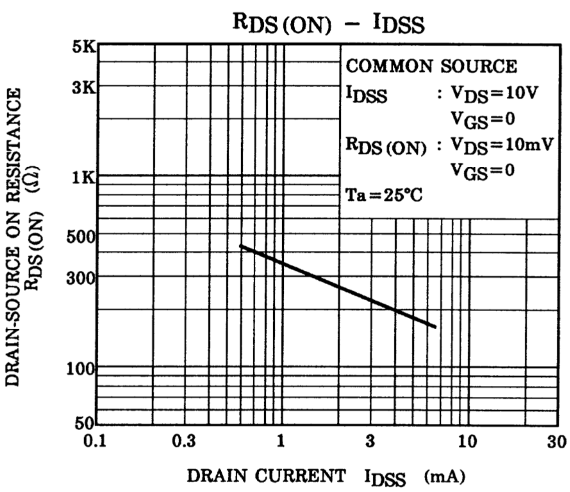

ID – VDS
COMMON SOURCE
Ta = 25°C
VGS = 0
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
DRAIN CURRENT ID (mA)
DRAIN-SOURCE VOLTAGE VDS (V)

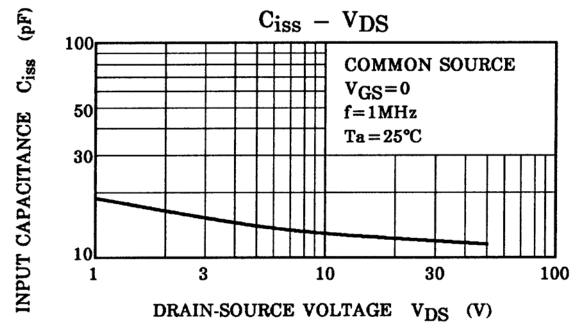

ID – VDS (LOW VOLTAGE REGION)
COMMON SOURCE
Ta = 25°C
VGS = 0
−0.2
−0.4
−0.6
−0.8
−1.0
−1.2
DRAIN CURRENT ID (mA)
DRAIN-SOURCE VOLTAGE VDS (V)

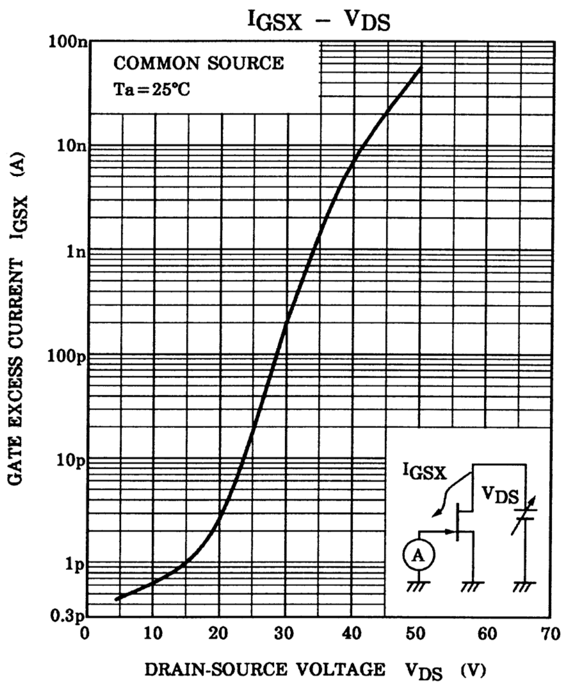

ID – VGS
COMMON SOURCE
VDS = 10V
Ta = −25°C
25
100
DRAIN CURRENT ID (mA)
GATE-SOURCE VOLTAGE VGS (V)

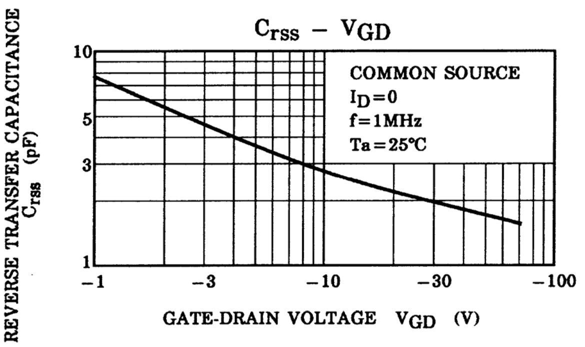

|Yfs| – IDSS
COMMON SOURCE
IDSS : VDS = 10V
VGS = 0
|Yfs| : VDS = 10V
VGS = 0
f = 1kHz
Ta = 25°C
FORWARD TRANSFER ADMITTANCE |Yfs| (mS)
DRAIN CURRENT IDSS (mA)

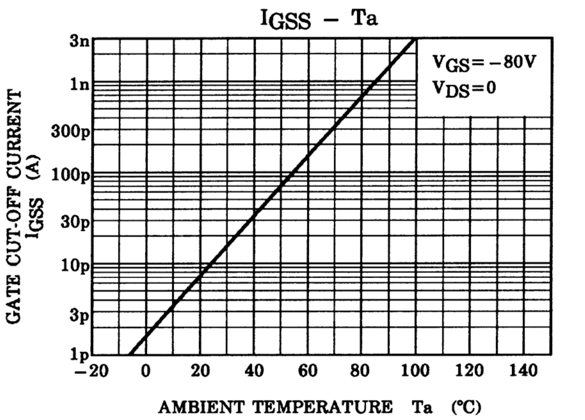

VGS (OFF) – IDSS
COMMON SOURCE
IDSS : VDS = 10V
VGS = 0
VGS (OFF) : VDS = 10V
ID = 0.1μA
Ta = 25°C
GATE-SOURCE CUT-OFF VOLTAGE VGS (OFF) (V)
DRAIN CURRENT IDSS (mA)

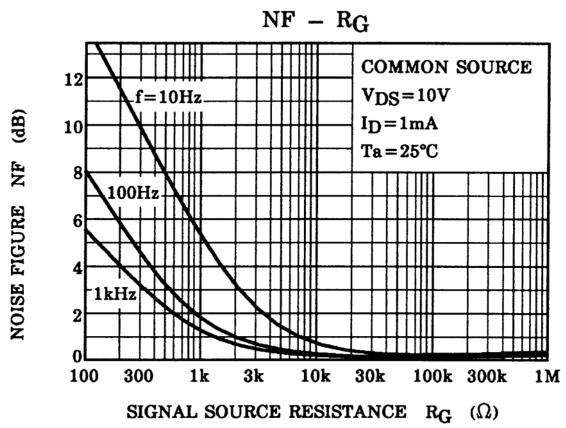

RDS (ON) – IDSS
COMMON SOURCE
IDSS : VDS = 10V
VGS = 0
RDS (ON) : VDS = 10mV
VGS = 0
Ta = 25°C
DRAIN-SOURCE ON RESISTANCE RDS (ON) (Ω)
DRAIN CURRENT IDSS (mA)

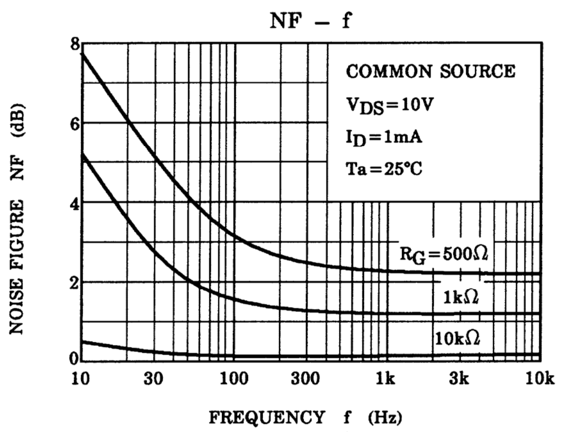

Ciss – VDS
COMMON SOURCE
VGS=0
f=1MHz
Ta=25°C
INPUT CAPACITANCE Ciss (pF)
DRAIN-SOURCE VOLTAGE VDS (V)

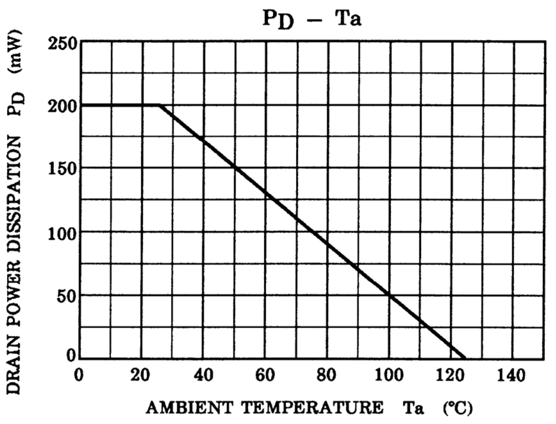

IGSX – VDS
COMMON SOURCE
Ta=25°C
GATE EXCESS CURRENT IGSX (A)
DRAIN-SOURCE VOLTAGE VDS (V)
IGSX
VDS
A


Crss – VGD
COMMON SOURCE
ID=0
f=1MHz
Ta=25°C
REVERSE TRANSFER CAPACITANCE Crss (pF)
GATE-DRAIN VOLTAGE VGD (V)


IGSS – Ta
VGS=−80V
VDS=0
GATE CUT-OFF CURRENT IGSS (A)
AMBIENT TEMPERATURE Ta (°C)


NF – RG
COMMON SOURCE
VDS=10V
ID=1mA
Ta=25°C
f=10Hz
100Hz
1kHz
NOISE FIGURE NF (dB)
SIGNAL SOURCE RESISTANCE RG (Ω)


NF – f
COMMON SOURCE
VDS=10V
ID=1mA
Ta=25°C
RG=500Ω
1kΩ
10kΩ
NOISE FIGURE NF (dB)
FREQUENCY f (Hz)


PD – Ta
DRAIN POWER DISSIPATION PD (mW)
AMBIENT TEMPERATURE Ta (°C)