TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

2SK1875

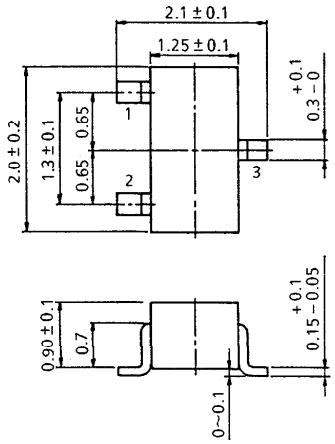
HIGH FREQUENCY AMPLIFIER APPLICATIONS

AM HIGH FREQUENCY AMPLIFIER APPLICATIONS

AUDIO FREQUENCY AMPLIFIER APPLICATIONS

- High $|Y_{fs}|$: $|Y_{fs}|$ = 25mS (Typ.)
- Low C_{iss} : C_{iss} = 7.5pF (Typ.)

Unit in mm



1. SOURCE
2. DRAIN
3. GATE

JEDEC	—
EIAJ	—
TOSHIBA	2-2E1B

Weight : 0.006 g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDS}	−20	V
Gate Current	I_G	10	mA
Drain Power Dissipation	P_D	100	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I_{GSS}	V_{GS} = −15V, V_{DS} = 0V	—	—	−1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR)GDS}$	V_{DS} = 0V, I_G = −100μA	−20	—	—	V
Drain Current	I_{DSS} (Note)	V_{DS} = 5V, V_{GS} = 0V	6	—	32	mA
Gate-Source Cut-off Voltage	$V_{GS(OFF)}$	V_{DS} = 5V, I_D = 1μA	—	—	−2.5	V
Forward Transfer Admittance	$\|Y_{fs}\|$	V_{DS} = 5V, V_{GS} = 0V, f = 1kHz	15	25	—	mS
Input Capacitance	C_{iss}	V_{DS} = 5V, V_{GS} = 0V, f = 1MHz	—	7.5	10	pF
Reverse Transfer Capcitance	C_{rss}	V_{DG} = 5V, I_D = 0V, f = 1MHz	—	2	3	pF

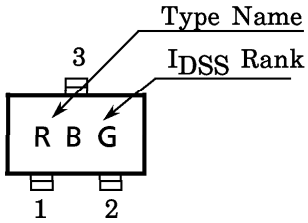
Note : I_{DSS} Classification

GR : 6~12mA, BL : 10~20mA, V : 16~32mA

(G) (L) (V)

( ) · · · · I_{DSS} Rank Marking

Marking



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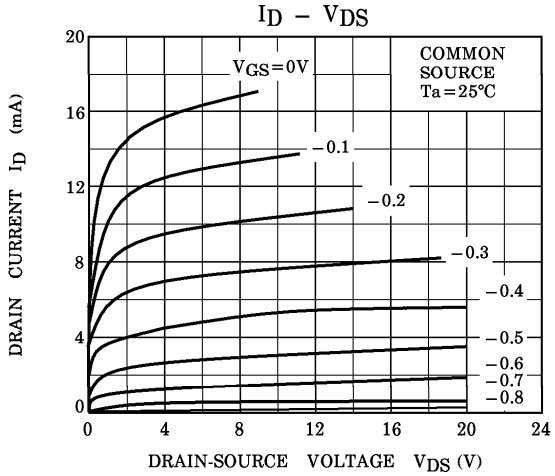
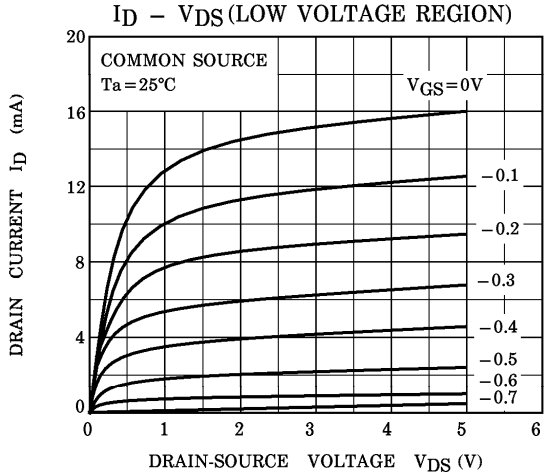
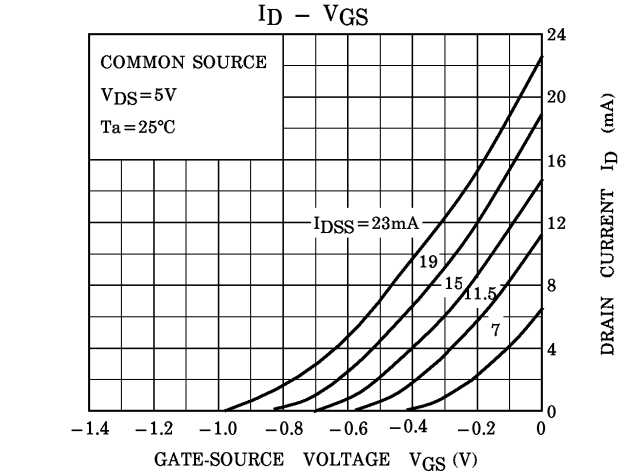
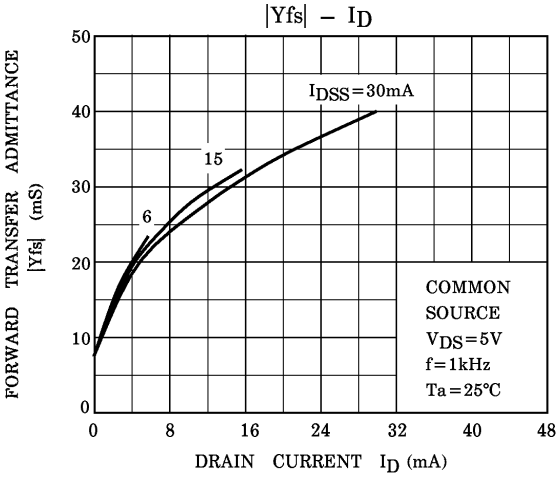
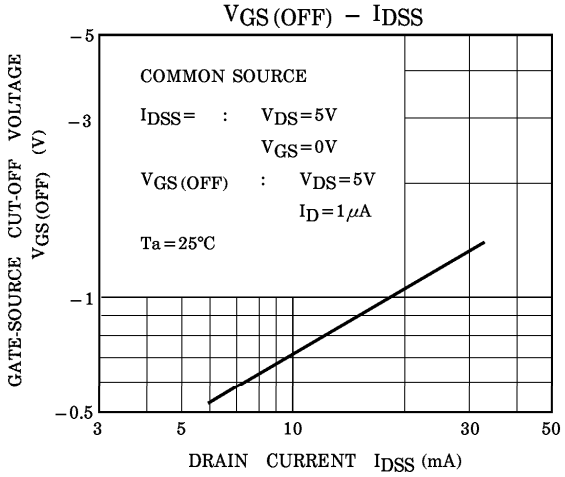
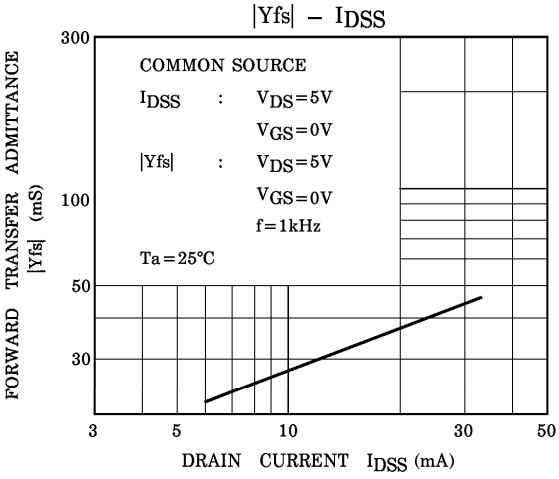

ID – VDS
COMMON SOURCE
Ta = 25°C
VGS = 0V
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
−0.8
DRAIN CURRENT ID (mA)
DRAIN-SOURCE VOLTAGE VDS (V)

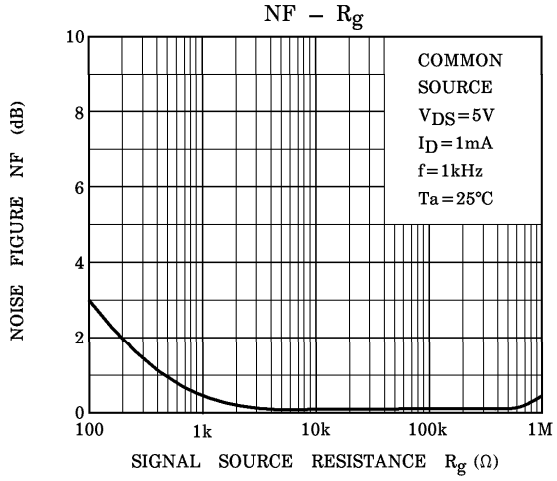

ID – VDS (LOW VOLTAGE REGION)
COMMON SOURCE
Ta = 25°C
VGS = 0V
−0.1
−0.2
−0.3
−0.4
−0.5
−0.6
−0.7
DRAIN CURRENT ID (mA)
DRAIN-SOURCE VOLTAGE VDS (V)

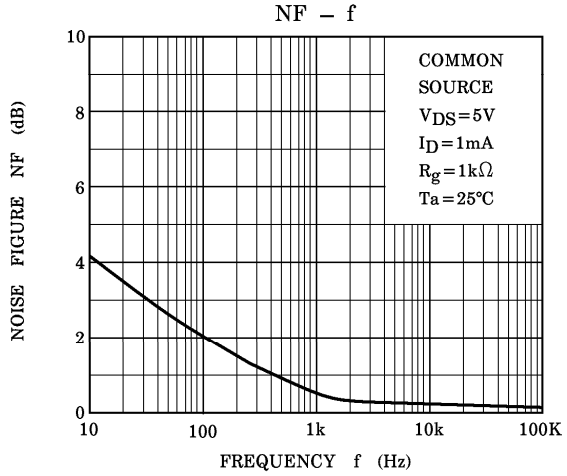

ID – VGS
COMMON SOURCE
VDS = 5V
Ta = 25°C
IDSS = 23mA
19
15
11.5
7
DRAIN CURRENT ID (mA)
GATE-SOURCE VOLTAGE VGS (V)

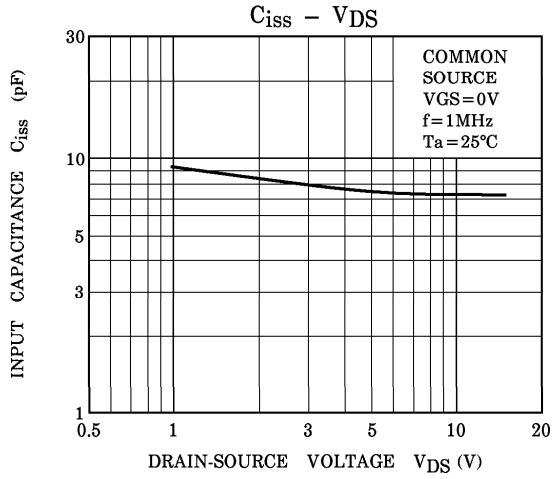

|Yfs| – ID
IDSS = 30mA
15
6
COMMON SOURCE
VDS = 5V
f = 1kHz
Ta = 25°C
FORWARD TRANSFER ADMITTANCE |Yfs| (mS)
DRAIN CURRENT ID (mA)

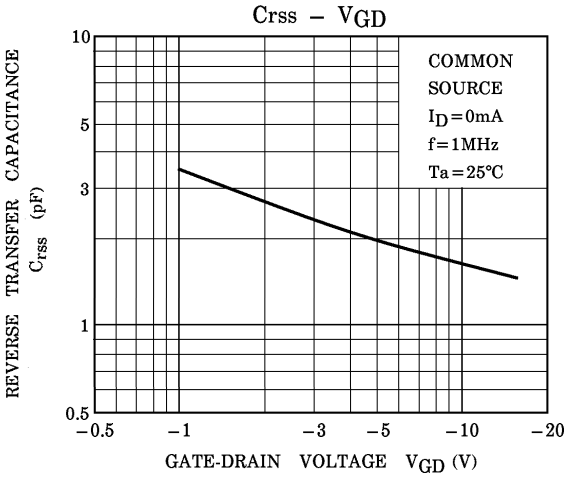

VGS (OFF) – IDSS
COMMON SOURCE
IDSS = : VDS = 5V
VGS = 0V
VGS (OFF) : VDS = 5V
ID = 1μA
Ta = 25°C
GATE-SOURCE CUT-OFF VOLTAGE VGS (OFF) (V)
DRAIN CURRENT IDSS (mA)

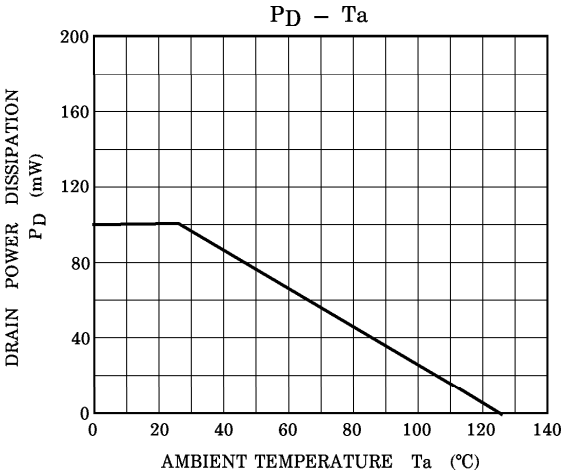

|Yfs| – IDSS
COMMON SOURCE
IDSS : VDS = 5V
VGS = 0V
|Yfs| : VDS = 5V
VGS = 0V
f = 1kHz
Ta = 25°C
FORWARD TRANSFER ADMITTANCE |Yfs| (mS)
DRAIN CURRENT IDSS (mA)


NF – Rg
COMMON
SOURCE
VDS=5V
ID=1mA
f=1kHz
Ta=25°C
NOISE FIGURE NF (dB)
SIGNAL SOURCE RESISTANCE Rg (Ω)
10
8
6
4
2
0
100
1k
10k
100k
1M


NF – f
COMMON
SOURCE
VDS=5V
ID=1mA
Rg=1kΩ
Ta=25°C
NOISE FIGURE NF (dB)
FREQUENCY f (Hz)
10
8
6
4
2
0
10
100
1k
10k
100K


Ciss – VDS
COMMON
SOURCE
VGS=0V
f=1MHz
Ta=25°C
INPUT CAPACITANCE Ciss (pF)
DRAIN-SOURCE VOLTAGE VDS (V)
30
10
5
3
1
0.5
1
3
5
10
20


Crss – VGD
COMMON
SOURCE
ID=0mA
f=1MHz
Ta=25°C
REVERSE TRANSFER CAPACITANCE
Crss (pF)
GATE-DRAIN VOLTAGE VGD (V)
10
5
3
1
0.5
−0.5
−1
−3
−5
−10
−20


PD – Ta
DRAIN POWER DISSIPATION
PD (mW)
AMBIENT TEMPERATURE Ta (°C)
200
160
120
80
40
0
0
20
40
60
80
100
120
140