### TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

# 2 S K 3 3 2 0

### FOR LOW NOISE AUDIO AMPLIFIER APPLICATIONS

• Two devices in a Ultra Super Mini (five pins) package

• High  $|Y_{fs}|$  :  $|Y_{fs}| = 15 \text{ mS (Typ.)}$ 

 $(V_{DS} = 10 \text{ V}, V_{GS} = 0)$ 

• High Breakdown Voltage :  $V_{GDS} = -50 V$ 

• Super Low Noise : NF = 1.0 dB (Typ.)

 $(V_{DS} = 10 \text{ V}, I_{D} = 0.5 \text{ mA},$ 

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 $f = 1 \text{ kHz}, R_G = 1 \text{ k}\Omega$ )

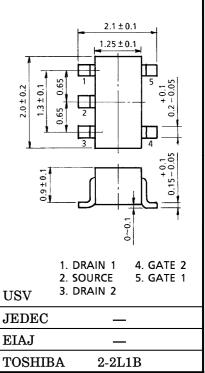
• High Input Impedance :  $I_{GSS} = -1 \text{ nA (Max.)} (V_{GS} = -30 \text{ V})$ 

#### MAXIMUM RATINGS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	$v_{\mathrm{GDS}}$	-50	V
Gate Current	$I_{\mathbf{G}}$	10	mA
Drain Power Dissipation	$P_{D}^{*}$	200	mW
Junction Temperature	$T_{ m j}$	125	°C
Storage Temperature Range	$\mathrm{T_{stg}}$	-55~125	$^{\circ}\mathrm{C}$

\* : Total Rating

Unit in mm



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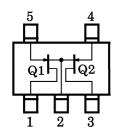
# ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Q1, Q2 COMMON)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	$I_{GSS}$	$V_{GS} = -30 \text{ V}, V_{DS} = 0$	_	_	-1.0	nA
Gate-Drain Breakdown Voltage	V (BR) GDS	$V_{ m DS} = 0,  I_{ m G} = -100  \mu  m A$	-50	_	_	V
Drain Current	I <sub>DSS</sub> (Note)	$V_{DS} = 10 \text{ V}, \ V_{GS} = 0$	1.2	_	14.0	mA
Gate-Source Cut-off Voltage	V <sub>GS</sub> (OFF)	$V_{DS} = 10 \text{ V}, I_{D} = 0.1 \mu\text{A}$	-0.2	_	-1.5	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10 \text{ V}, \ V_{GS} = 0, \ f = 1 \text{ kHz}$	4.0	15	_	mS
Input Capacitance	$C_{iss}$	$V_{DS} = 10 \text{ V}, \ V_{GS} = 0, \ f = 1 \text{ MHz}$	_	13		pF
Reverse Transfer Capacitance	$\mathrm{C}_{\mathrm{rss}}$	$V_{ m DG} = 10 \  m V, \ I_{ m D} = 0, \  m f = 1 \  m MHz$	_	3	_	pF
Noise Figure	NF (1)	$\begin{split} V_{DS} &= 10 \text{ V}, \text{ R}_G = 1 \text{ k}\Omega, \\ I_D &= 0.5 \text{ mA}, \text{ f} = 10 \text{ Hz} \end{split}$	_	5	_	dB
	NF (2)	$V_{\mathrm{DS}} = 10  \mathrm{V}, \; \mathrm{R}_{\mathrm{G}} = 1  \mathrm{k}\Omega,$ $I_{\mathrm{D}} = 0.5  \mathrm{mA}, \; \mathrm{f} = 1  \mathrm{kHz}$	_	1	_	иБ

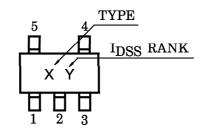
(Note) :  $I_{DSS}$  Classification  $Y(Y): 1.2\sim3.0 \, mA$ ,  $GR(G): 2.6\sim6.5 \, mA$ ,

 $\begin{array}{c} BL\left(L\right): \ 6.0{\sim}14.0 \ mA \\ (\quad) \cdots \ I_{DSS} \ Rank \ Marking \end{array}$ 

### PIN ASSIGNMENT (TOP VIEW)



#### MARKING

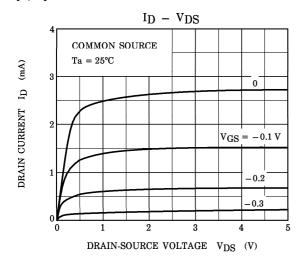


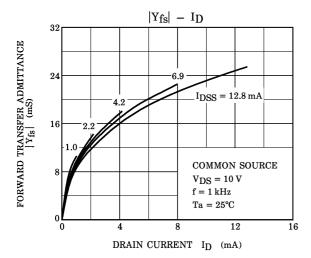
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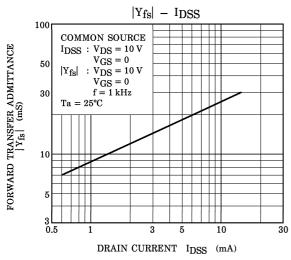
(mA)

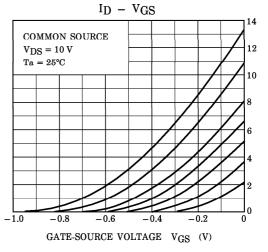
DRAIN CURRENT ID

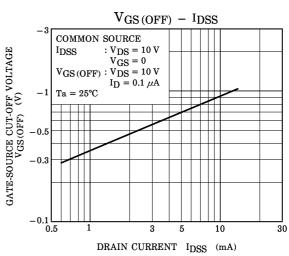
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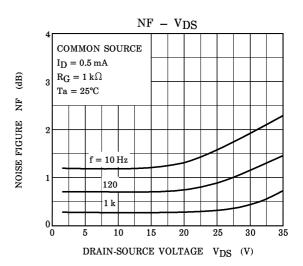






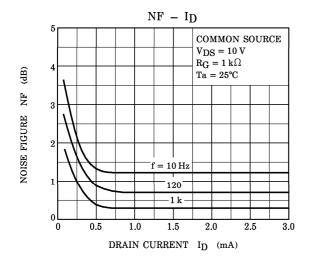


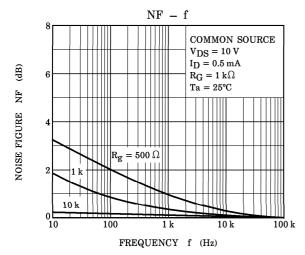


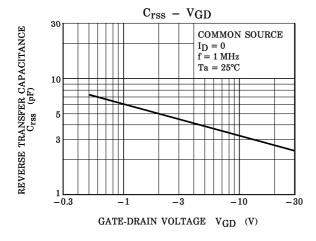


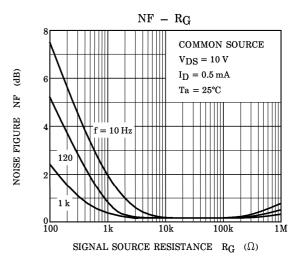
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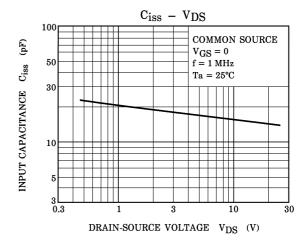
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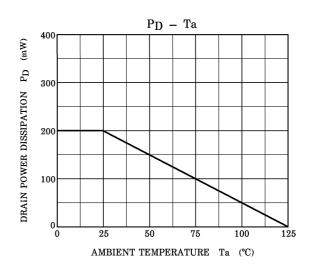












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