TOSHIBA Field Effect Transistor Silicon N Channel Junction Type

# 2SK369

#### For Low Noise Audio Amplifier Applications

- Suitable for use as first stage for equalizer and MC head amplifiers.
- High  $|Y_{fs}|$ :  $|Y_{fs}| = 40 \text{ mS}$  (typ.) (V<sub>DS</sub> = 10 V, V<sub>GS</sub> = 0, I<sub>DSS</sub> = 5 mA)
- High breakdown voltage:  $V_{GDS} = -40 V (min)$
- Super low noise: NF = 1.0dB (typ.)

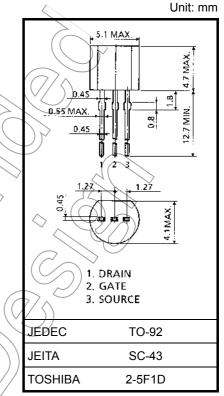
$$(V_{DS} = 10 \text{ V}, \text{ I}_D = 5 \text{ mA}, \text{ f} = 1 \text{ kHz}, \text{ R}_G = 100 \Omega)$$

• High input impedance:  $I_{GSS} = -1 nA (max) (V_{GS} = -30 V)$ 

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

Characteristics	Symbol	Rating	Unit	//
Gate-drain voltage	V <sub>GDS</sub>	-40	V	
Gate current	lG	10	mA	
Drain power dissipation	PD	400	mW	
Junction temperature	Tj	125	°C	
Storage temperature range	T <sub>stg</sub>	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.



Weight: 0.21 g (typ.)

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).

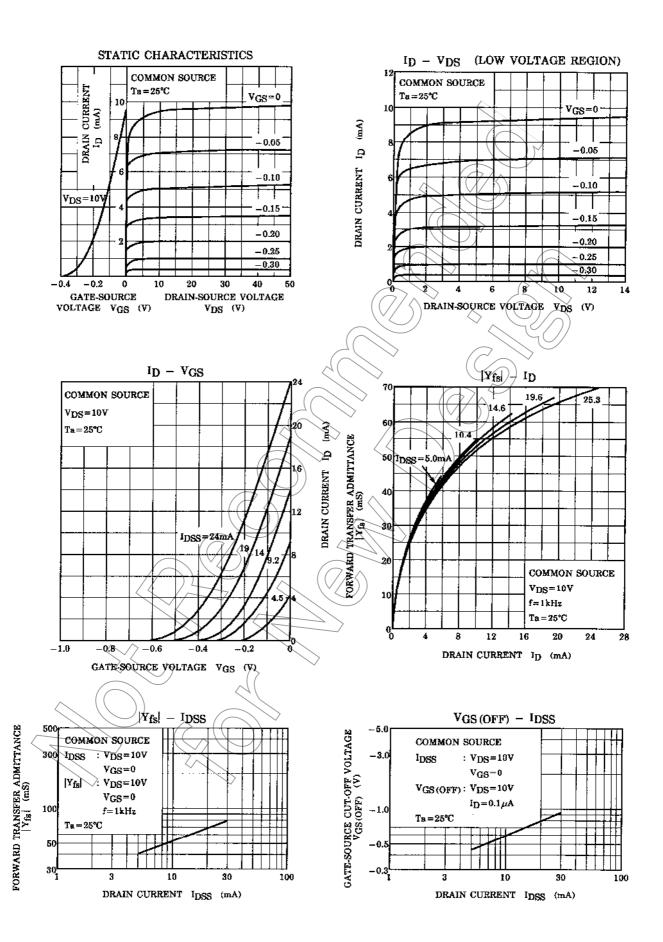
### Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Gate cut-off current	I <sub>GSS</sub>	$V_{GS} = -30 \text{ V}, \text{ V}_{DS} = 0$	_	_	-1.0	nA
Gate-drain breakdown voltage	V (BR) GDS	$V_{DS} = 0$ , $I_G = -100 \ \mu A$	-40	_	_	V
Drain current	UDSS (Note ♪)	$V_{DS} = 10 \text{ V}, \text{ V}_{GS} = 0$	5.0	_	30	mA
Gate-source cut-off voltage	VGS (OFF)	$V_{DS} = 10 \text{ V}, \text{ I}_{D} = 0.1 \mu\text{A}$	-0.3	_	-1.2	V
Forward transfer admittance	Y <sub>fs</sub>	V <sub>DS</sub> = 10 V, V <sub>GS</sub> = 0, f = 1 kHz, (I <sub>DSS</sub> = 5 mA)	25	40	_	mS
Input capacitance	∼ C <sub>iss</sub>	$V_{DS} = 10 \text{ V}, \text{ V}_{GS} = 0, \text{ f} = 1 \text{ MHz}$	—	75	_	pF
Reverse transfer capacitance	C <sub>rss</sub>	$V_{GD} = -10 V, I_D = 0, f = 1 MHz$	—	15	_	pF
Noise figure (Note 2) -	NF (1)	$V_{DS}$ = 10 V, $R_G$ = 100 $\Omega,$ $I_D$ = 5 mA, $f$ = 100 Hz	_	5	10	dB
	NF (2)	$V_{DS}$ = 10 V, $R_G$ = 100 $\Omega,~I_D$ = 5 mA, $f$ = 1 kHz		1	2	

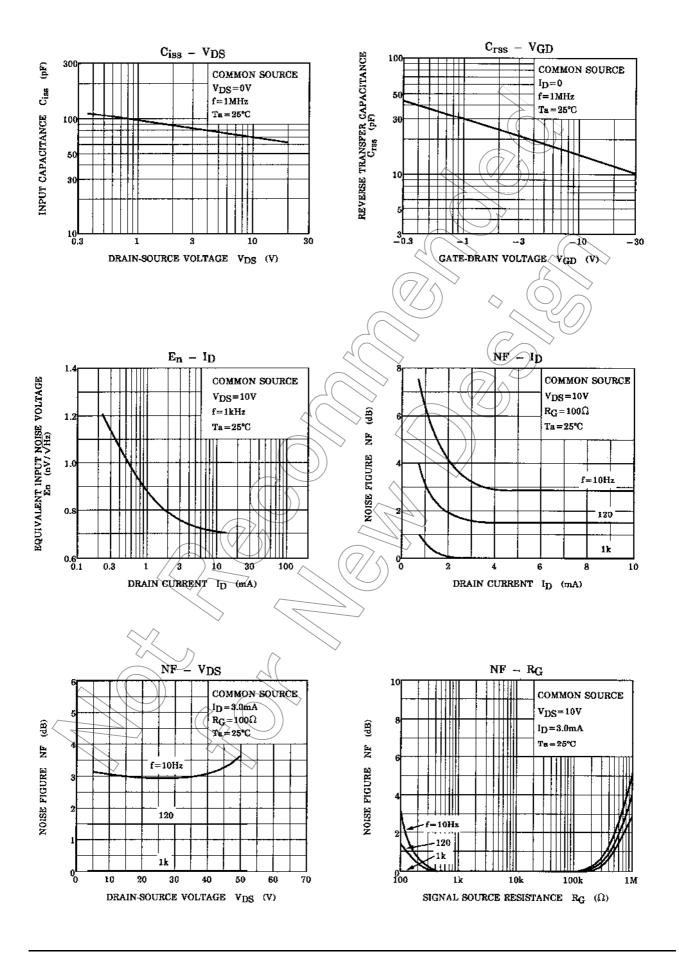
Note 1: I<sub>DSS</sub> classification GR: 5.0~10.0 mA, BL: 8.0~16.0 mA, V: 14.0~30.0 mA

Note 2: Use this in the low voltage region (VDS < 15 V) for low noise applications.

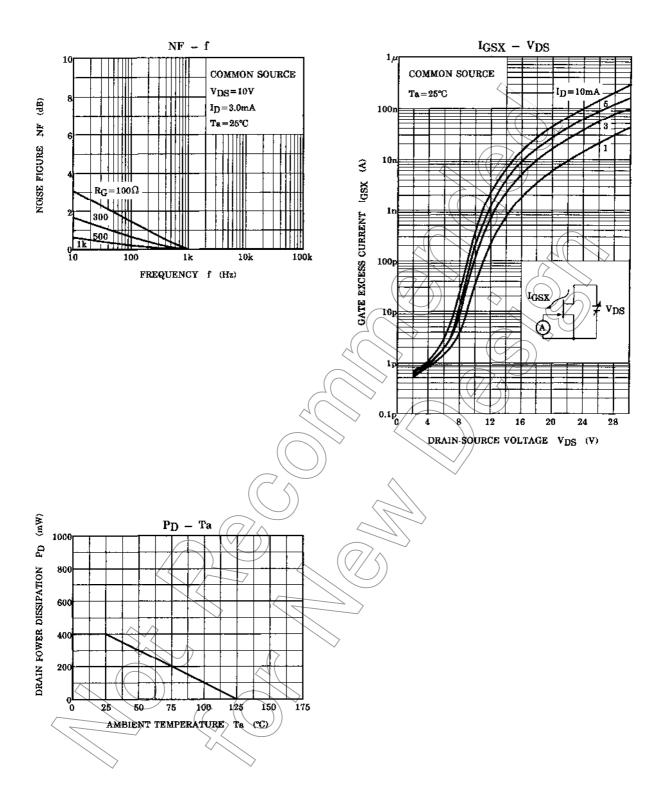
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