

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

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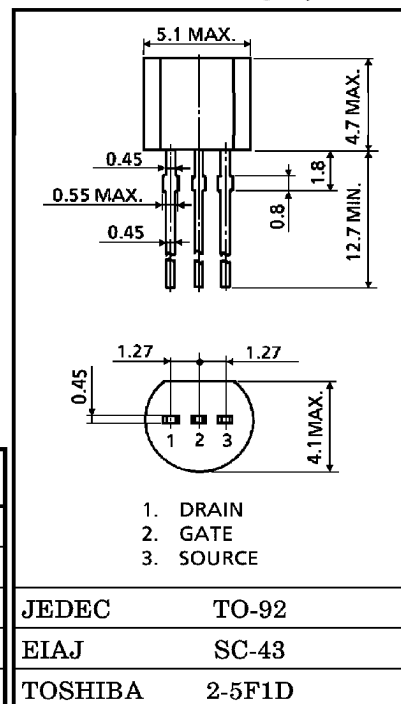
FOR LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- Suitable for Use as First Stage for Equalizer and MC Head Amplifiers.
- High $|Y_{fs}|$: $|Y_{fs}| = 40\text{mS (Typ.)}$
($V_{DS} = 10\text{V}$, $V_{GS} = 0$, $I_{DSS} = 5\text{mA}$)
- High Breakdown Voltage : $V_{GDS} = -40\text{V (Min.)}$
- Super Low Noise : $NF = 1.0\text{dB (Typ.)}$
($V_{DS} = 10\text{V}$, $I_D = 5\text{mA}$, $f = 1\text{kHz}$, $R_G = 100\Omega$)
- High Input Impedance : $I_{GSS} = -1\text{nA (Max.)}$ ($V_{GS} = -30\text{V}$)

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	V_{GDS}	-40	V
Gate Current	I_G	10	mA
Drain Power Dissipation	P_D	400	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

Weight : 0.21g (Typ.)

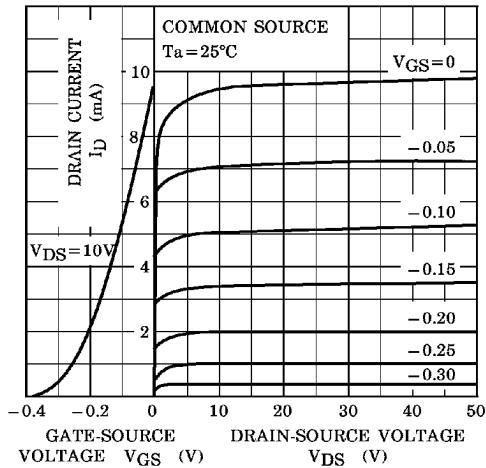
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	I_{GSS}	$V_{GS} = -30\text{V}$, $V_{DS} = 0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR) GDS}$	$V_{DS} = 0$, $I_G = -100\mu\text{A}$	-40	—	—	V
Drain Current	I_{DSS} (Note 1)	$V_{DS} = 10\text{V}$, $V_{GS} = 0$	5.0	—	30	mA
Gate-Source Cut-off Voltage	$V_{GS (OFF)}$	$V_{DS} = 10\text{V}$, $I_D = 0.1\mu\text{A}$	-0.3	—	-1.2	V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{kHz}$, ($I_{DSS} = 5\text{mA}$)	25	40	—	mS
Input Capacitance	C_{iss}	$V_{DS} = 10\text{V}$, $V_{GS} = 0$, $f = 1\text{MHz}$	—	75	—	pF
Reverse Transfer Capacitance	C_{rss}	$V_{GD} = -10\text{V}$, $I_D = 0$, $f = 1\text{MHz}$	—	15	—	pF
Noise Figure (Note 2)	NF (1)	$V_{DS} = 10\text{V}$, $R_G = 100\Omega$, $I_D = 5\text{mA}$, $f = 100\text{Hz}$	—	5	10	dB
	NF (2)	$V_{DS} = 10\text{V}$, $R_G = 100\Omega$, $I_D = 5\text{mA}$, $f = 1\text{kHz}$	—	1	2	

Note 1 : I_{DSS} Classification GR : 5.0~10.0mA, BL : 8.0~16.0mA, V : 14.0~30.0mANote 2 : Use this in the low voltage region ($V_{DS} < 15\text{V}$) for low noise applications.

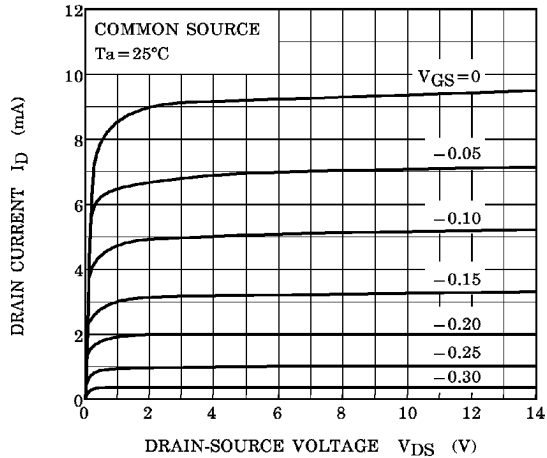
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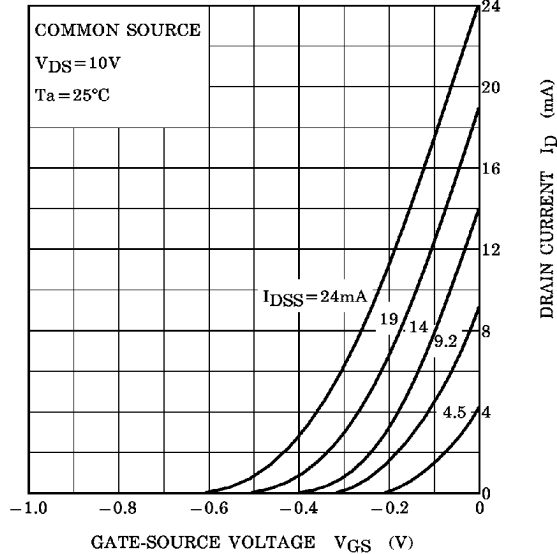
STATIC CHARACTERISTICS



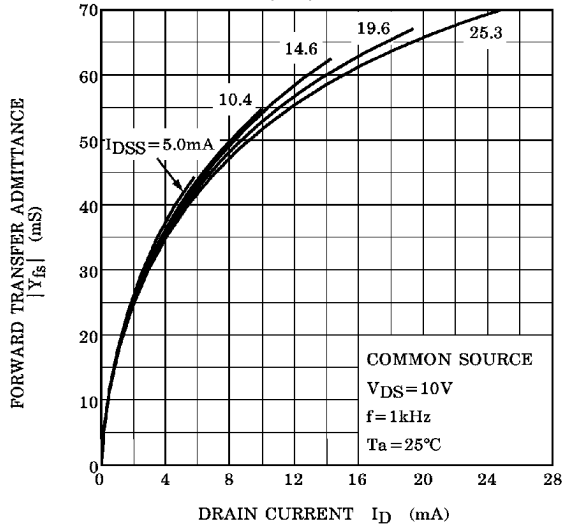
$I_D - V_{DS}$ (LOW VOLTAGE REGION)



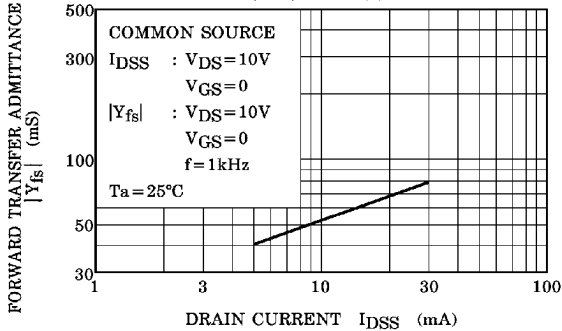
$I_D - V_{GS}$



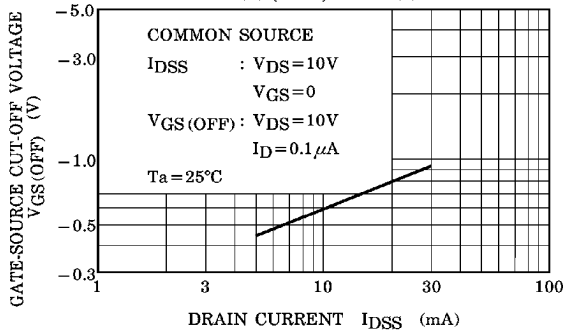
$|Y_{fs}| - I_D$



$|Y_{fs}| - I_{DSS}$



$V_{GS}(\text{OFF}) - I_{DSS}$



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