

TOSHIBA FIELD EFFECT TRANSISTOR SILICON N CHANNEL JUNCTION TYPE

# 2SK117

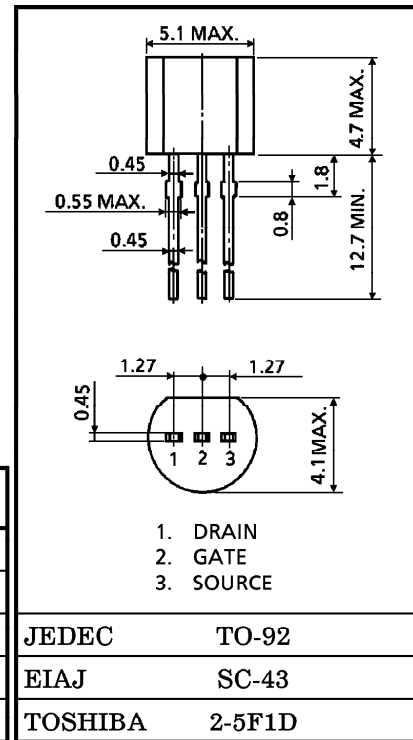
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- High  $|Y_{fs}|$  :  $|Y_{fs}| = 15\text{mS (Typ.)}$   
( $V_{DS} = 10\text{V}$ ,  $V_{GS} = 0$ )
- High Breakdown Voltage :  $V_{GDS} = -50\text{V}$
- Low Noise :  $NF = 1.0\text{dB (Typ.)}$  ( $V_{DS} = 10\text{V}$ ,  
 $I_D = 0.5\text{mA}$ ,  $f = 1\text{kHz}$ ,  $R_G = 1\text{k}\Omega$ )
- High Input Impedance :  $I_{GSS} = -1\text{nA (Max.)}$  ( $V_{GS} = -30\text{V}$ )

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Gate-Drain Voltage	$V_{GDS}$	-50	V
Gate Current	$I_G$	10	mA
Drain Power Dissipation	$P_D$	300	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ\text{C}$



Weight : 0.21g

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

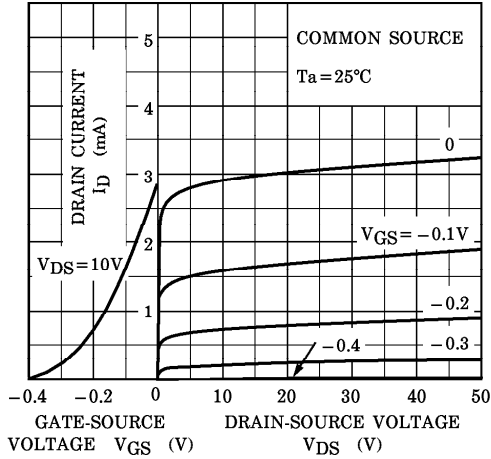
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Cut-off Current	$I_{GSS}$	$V_{GS} = -30\text{V}$ , $V_{DS} = 0$	—	—	-1.0	nA
Gate-Drain Breakdown Voltage	$V_{(BR)GDS}$	$V_{DS} = 0$ , $I_G = -100\mu\text{A}$	-50	—	—	V
Drain Current	$I_{DSS}$ (Note)	$V_{DS} = 10\text{V}$ , $V_{GS} = 0$	1.2	—	14	mA
Gate-Source Cut-off Voltage	$V_{GS(OFF)}$	$V_{DS} = 10\text{V}$ , $I_D = 0.1\mu\text{A}$	-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	$C_{rss}$	$V_{GD} = -10\text{V}$ , $I_D = 0$ , $f = 1\text{MHz}$	—	3	—	pF
Noise Figure	NF (1)	$V_{DS} = 10\text{V}$ , $R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}$ , $f = 10\text{Hz}$	—	5	10	dB
	NF (2)	$V_{DS} = 10\text{V}$ , $R_G = 1\text{k}\Omega$ $I_D = 0.5\text{mA}$ , $f = 1\text{kHz}$	—	1	2	

Note :  $I_{DSS}$  Classification Y : 1.2~3.0mA, GR : 2.6~6.5mA, BL : 6~14mA

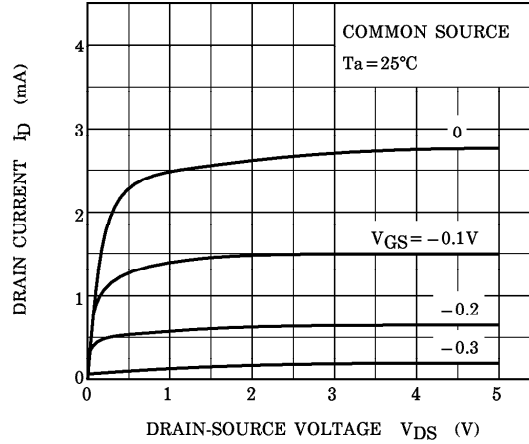
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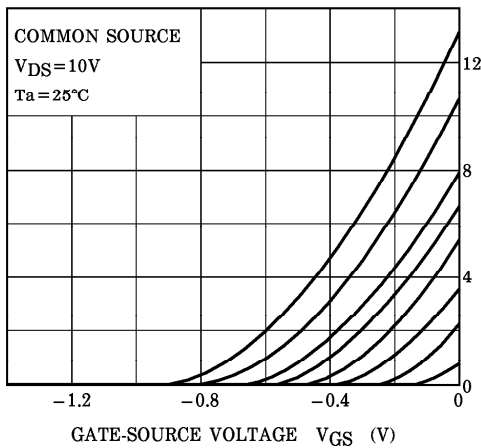
STATIC CHARACTERISTICS



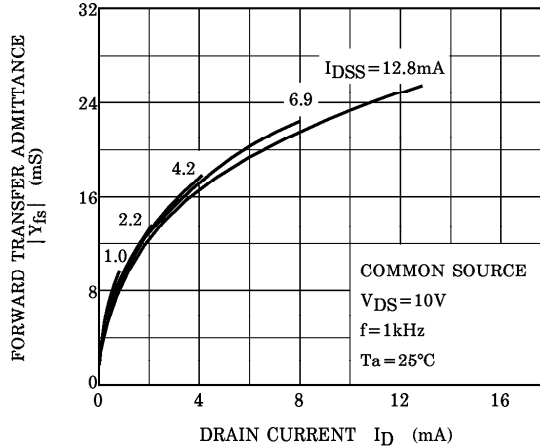
$I_D - V_{DS}$  (LOW VOLTAGE REGION)



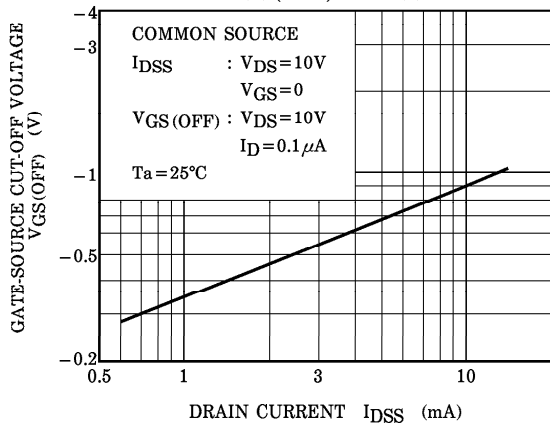
$I_D - V_{GS}$



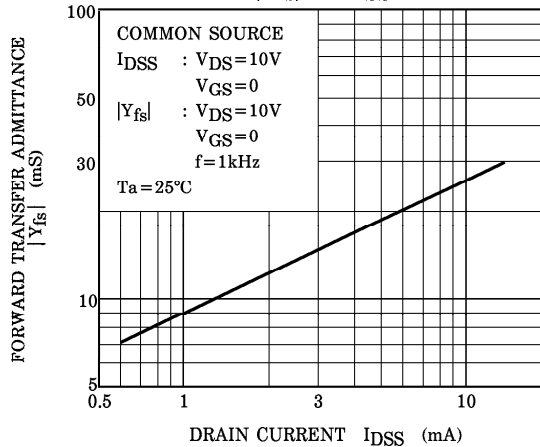
$|Y_{fs}| - I_D$



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



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



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