Ordering number : ENA0201

SANYO Semiconductors
DATA SHEET

TF202B — N-channel Silicon Junction FET Condenser Microphone Applications

Features

- Especially suited for use in condenser microphone for audio equipments and telephones.
- TF202B is possible to make applied sets smaller and thinner
- Excellent voltage characteristic.
- Excellent transient characteristic.
- Adoption of FBET process.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Gate-to-Drain Voltage	V_{GDO}		−20	V
Gate Current	I_G		10	mA
Drain Current	I_D		1	mA
Allowable Power Dissipation	P_D		100	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	I_G=−100μA	−20			V
Cutoff Voltage	V_{GS}(off)	V_{DS}=5V, I_D=1μA	−0.2	−0.6	−1.2	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=5V, V_{GS}=0V	140*		350*	μA
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=5V, V_{GS}=0V, f=1kHz	0.5	1.2		mS
Input Capacitance	Ciss	V_{DS}=5V, V_{GS}=0V, f=1MHz		3.5		pF
Reverse Transfer Capacitance	Crss	V_{DS}=5V, V_{GS}=0V, f=1MHz		0.65		pF
[Ta=25°C, V_{CC}=4.5V, R_L=1kΩ, Cin=15pF, See specified Test Circuit.]						
Voltage Gain	G_V	V_{IN}=10mV, f=1kHz		−3.0		dB
Reduced Voltage Characteristics	ΔG_{VV}	V_{IN}=10mV, f=1kHz, V_{CC}=4.5→1.5V		−1.2	−3.5	dB

Continued on next page.

* : The TF202B is classified by I_{DSS} as follows : (unit : μA)

Rank	E4	E5
I_{DSS}	140 to 240	210 to 350

Marking : E

SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

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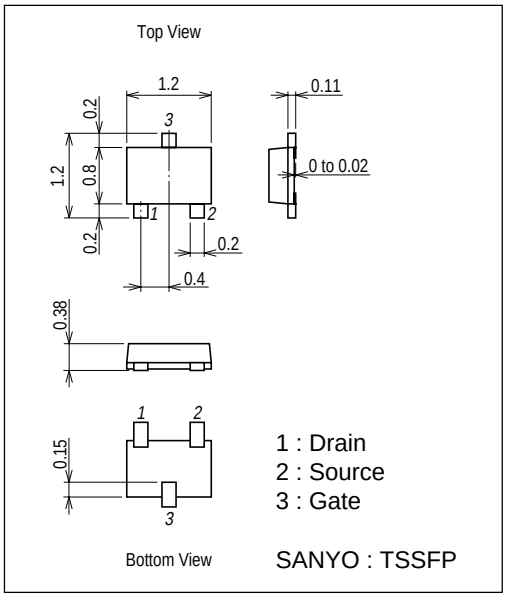
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Frequency Characteristics	ΔGvf	f=1kHz to 110Hz			−1.0	dB
Input Resistance	Z_{IN}	f=1kHz	25			MΩ
Output Resistance	Z_O	f=1kHz		1000		Ω
Total Harmonic Distortion	THD	V_{IN}=30mV, f=1kHz		1.0		%
Output Noise Voltage	V_{NO}	V_{IN}=0V, A curve			−110	dB

Package Dimensions

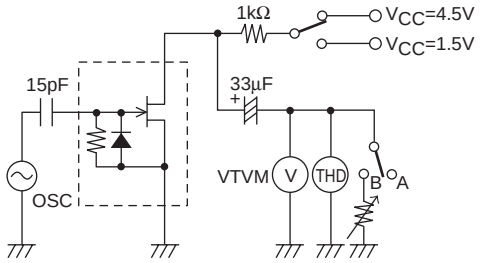
unit : mm

7048-001

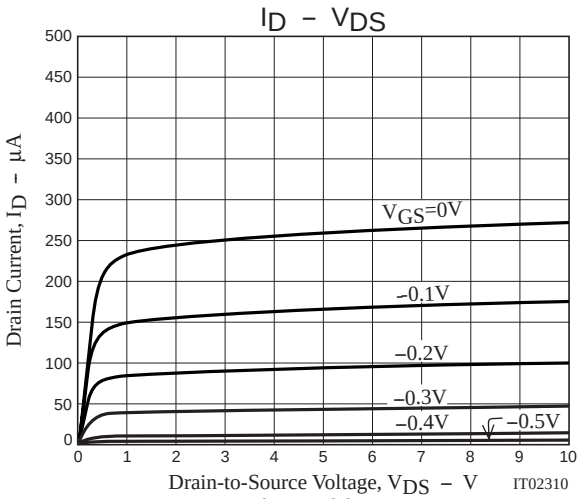


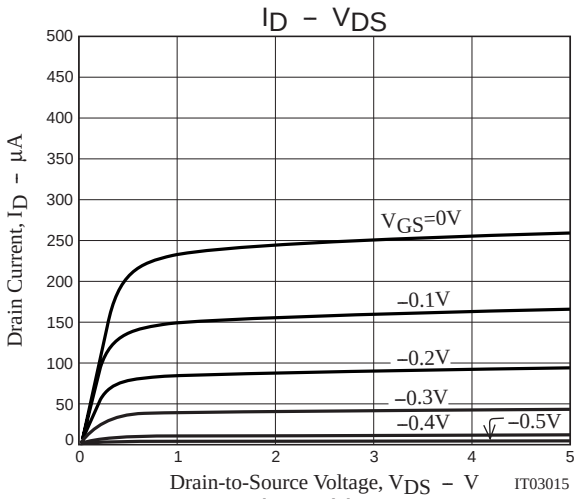
Test Circuit

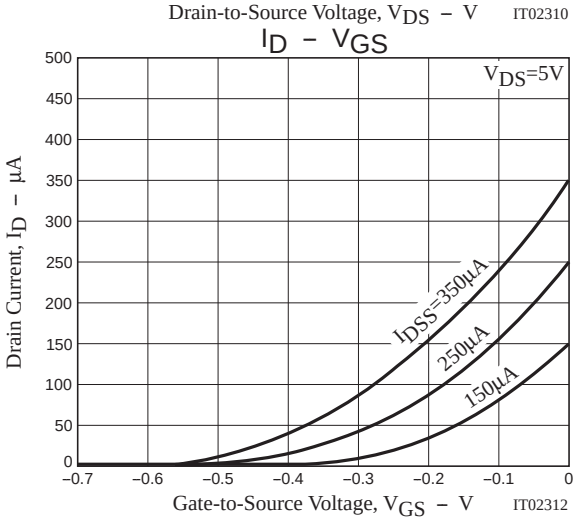
Voltage gain
Frequency Characteristics
Distortion
Reduced Voltage Characteristics

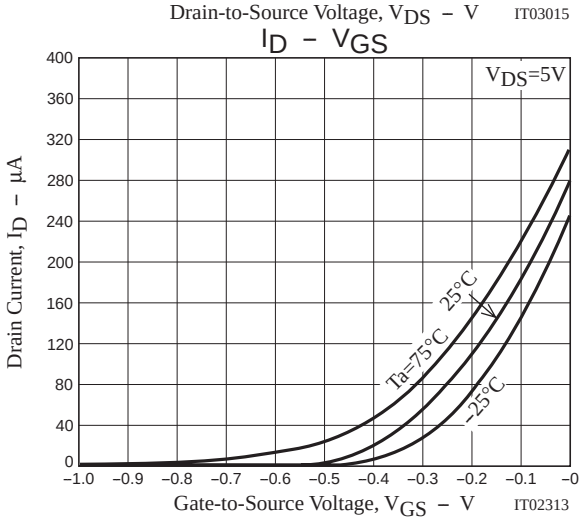


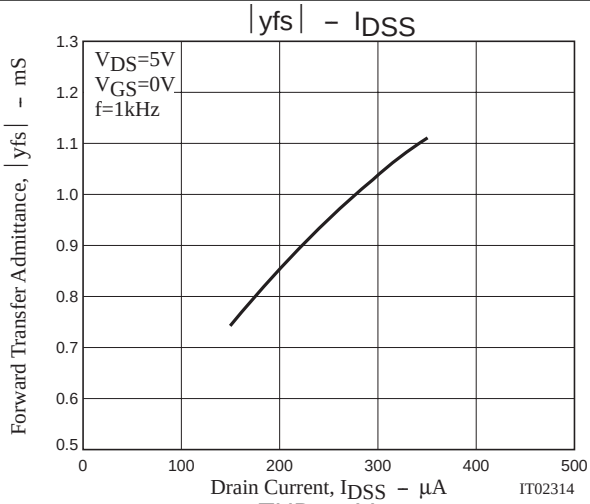
Output Impedance

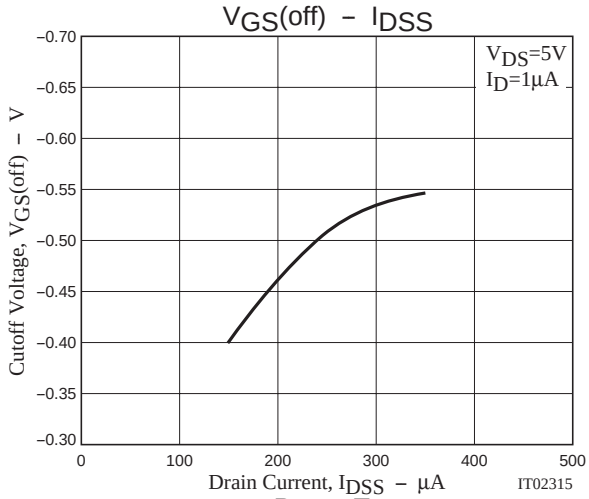


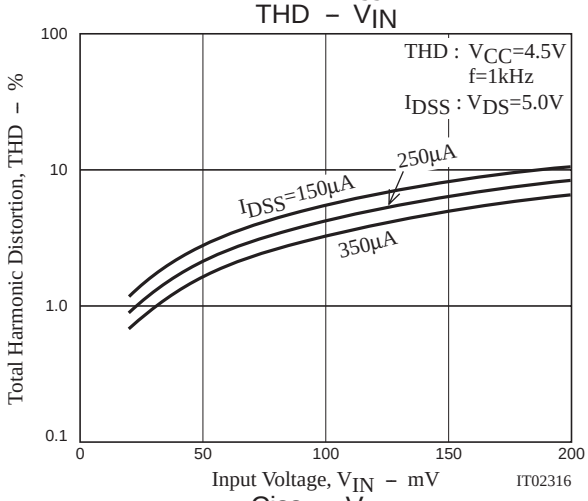


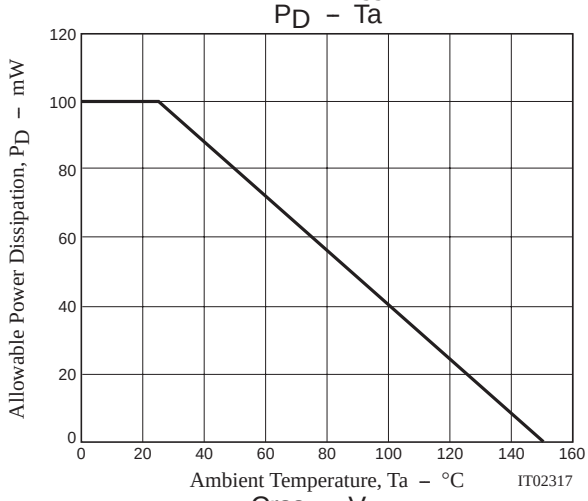


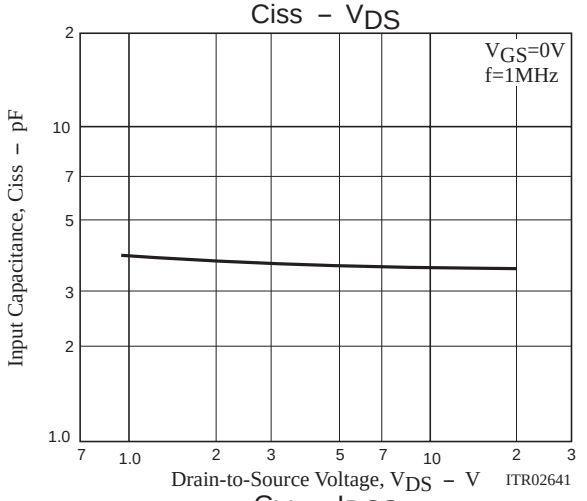


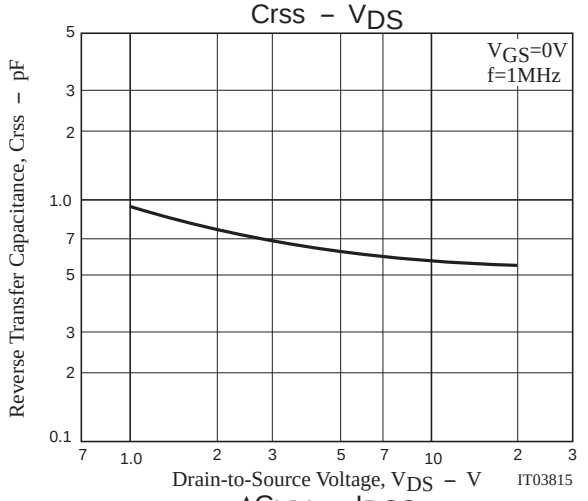

|yfs| – IDSS
VDS=5V
VGS=0V
f=1kHz
Forward Transfer Admittance, |yfs| – mS
Drain Current, IDSS – µA
IT02314

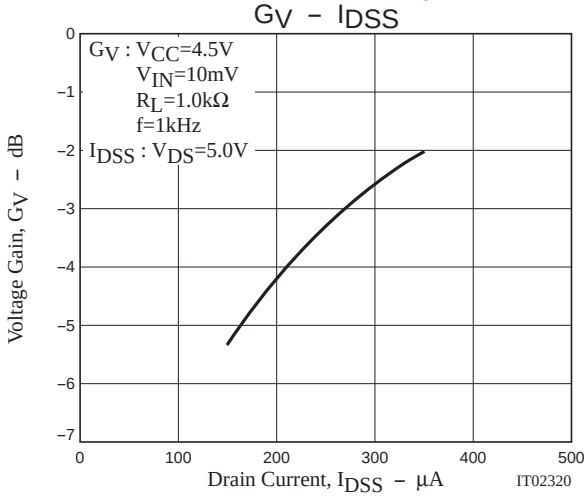

VGS(off) – IDSS
VDS=5V
ID=1µA
Cutoff Voltage, VGS(off) – V
Drain Current, IDSS – µA
IT02315

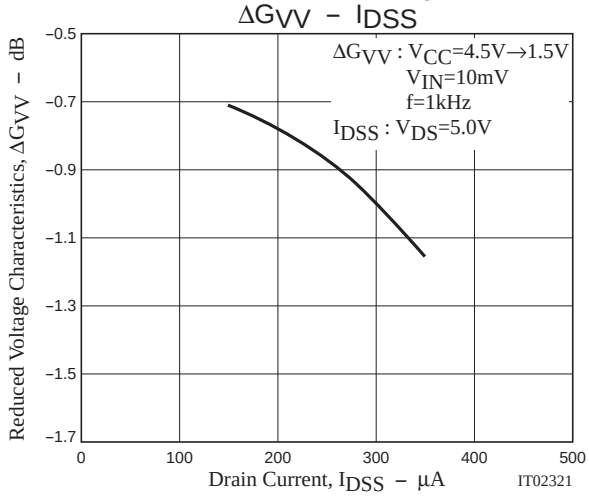

THD – VIN
THD : VCC=4.5V
f=1kHz
IDSS : VDS=5.0V
250µA
IDSS=150µA
350µA
Total Harmonic Distortion, THD – %
Input Voltage, VIN – mV
IT02316


PD – Ta
Allowable Power Dissipation, PD – mW
Ambient Temperature, Ta – °C
IT02317


Ciss – VDS
VGS=0V
f=1MHz
Input Capacitance, Ciss – pF
Drain-to-Source Voltage, VDS – V
ITR02641


Crss – VDS
VGS=0V
f=1MHz
Reverse Transfer Capacitance, Crss – pF
Drain-to-Source Voltage, VDS – V
IT03815


GV – IDSS
GV : VCC=4.5V
VIN=10mV
RL=1.0kΩ
f=1kHz
IDSS : VDS=5.0V
Voltage Gain, GV – dB
Drain Current, IDSS – µA
IT02320


ΔGVV – IDSS
ΔGVV : VCC=4.5V→1.5V
VIN=10mV
f=1kHz
IDSS : VDS=5.0V
Reduced Voltage Characteristics, ΔGVV – dB
Drain Current, IDSS – µA
IT02321