Ordering number : ENA0727

SANYO Semiconductors
DATA SHEET

N-channel Silicon Junction FET

TF202C — Electret Condenser Microphone Applications

Features

- Especially suited for use in electret condenser microphone for audio equipments and telephones.
- Ultrasmall package permitting applied sets to be small and slim.
- Excellent voltage characteristics.
- Excellent transient characteristics.
- 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
Drain Current	I_{DSS}	V_{DS}=5V, V_{GS}=0V	140*		350*	μA

Marking: E

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* : The TF202C is classified by I_{DSS} as follows : (unit : μA)

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

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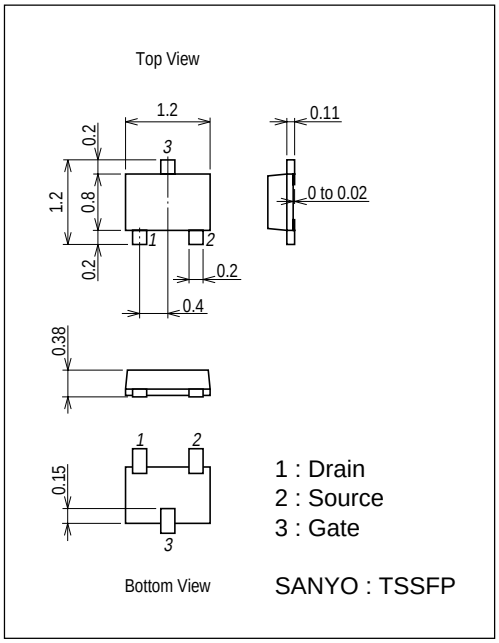
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	|yfs|	V_{DS}=5V, V_{GS}=0V, f=1kHz	0.5	1.2		mS
Input Capacitance	Ciss	V_{DS}=5V, V_{GS}=0V, f=1MHz		3.5		pF
Reverse Transfer Capacitance	Crss	V_{DS}=5V, V_{GS}=0V, f=1MHz		0.65		pF
[Ta=25°C, V_{CC}=4.5V, R_L=1kΩ, Cin=15pF, See specified Test Circuit.]						
Voltage Gain	G_V	V_{IN}=10mV, f=1kHz		–3.0		dB
Reduced Voltage Characteristic	ΔG_{VV}	V_{IN}=10mV, f=1kHz, V_{CC}=4.5→1.5V		–1.2	–3.5	dB
Frequency Characteristic	ΔGvf	f=1kHz to 110Hz			–1.0	dB
Input Impedance	Z_{IN}	f=1kHz	25			MΩ
Output Impedance	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

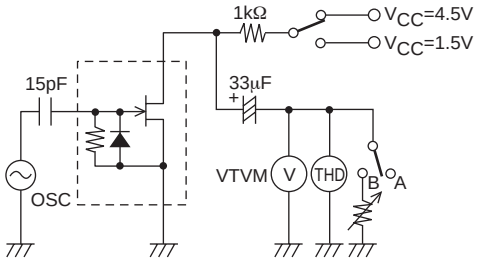
unit : mm (typ)

7048-001

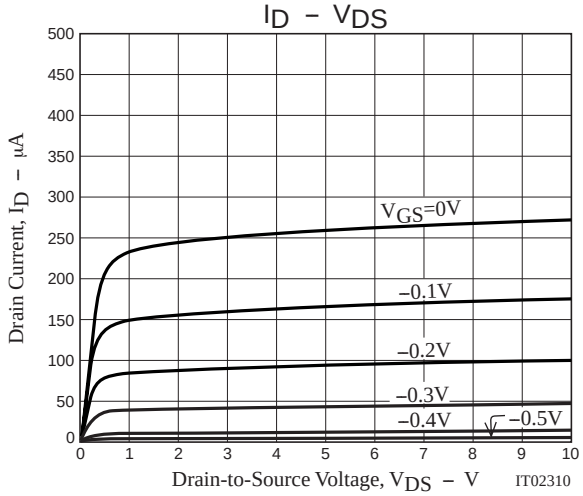


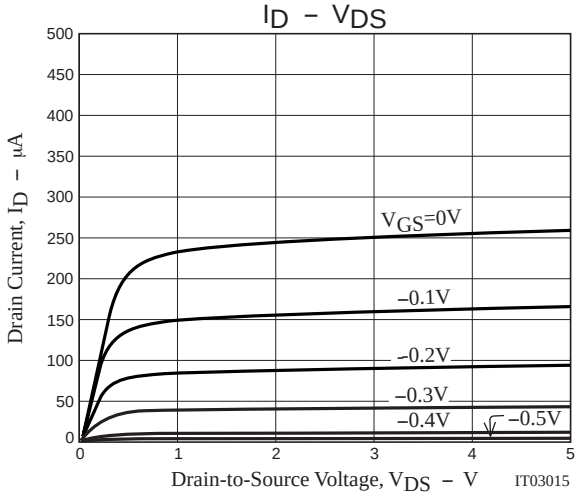
Test Circuit

Voltage gain
Frequency Characteristic
Distortion
Reduced Voltage Characteristic

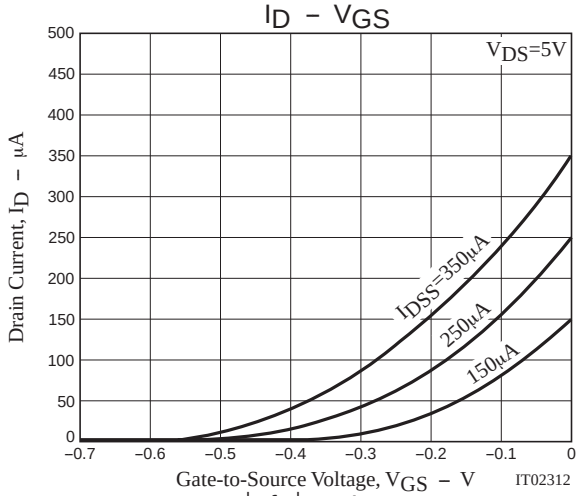


Output Impedance

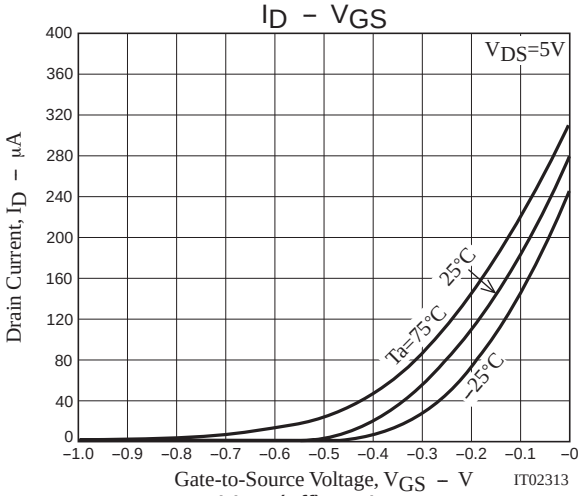




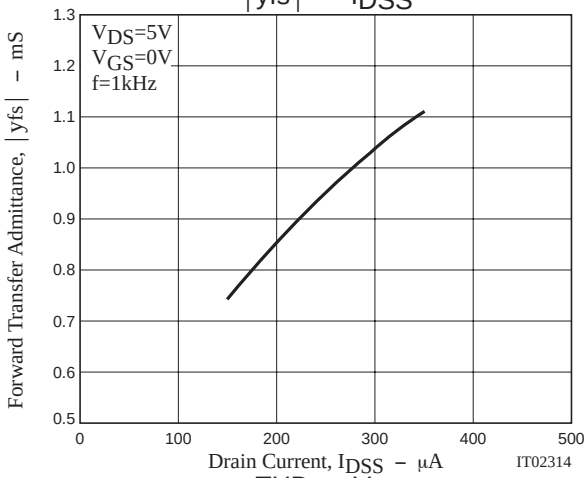
I_D – V_{GS}



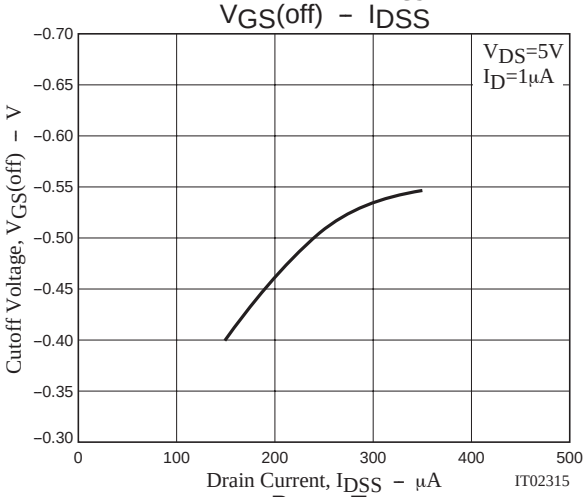
I_D – V_{GS}



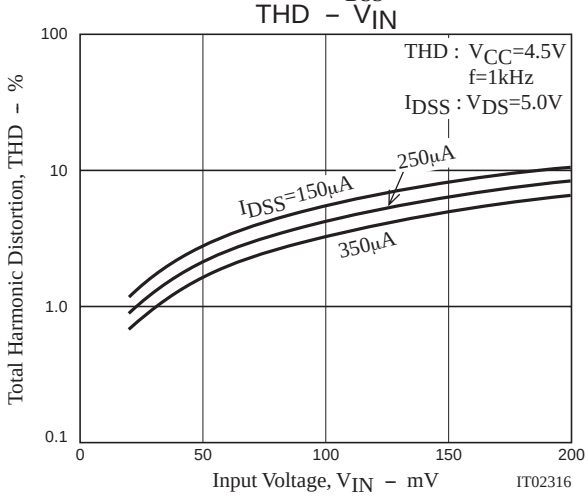
$|yfs|$ – I_{DSS}



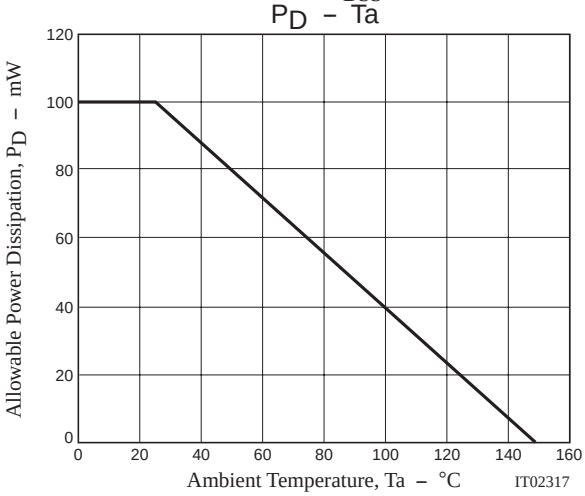
$V_{GS(off)}$ – I_{DSS}



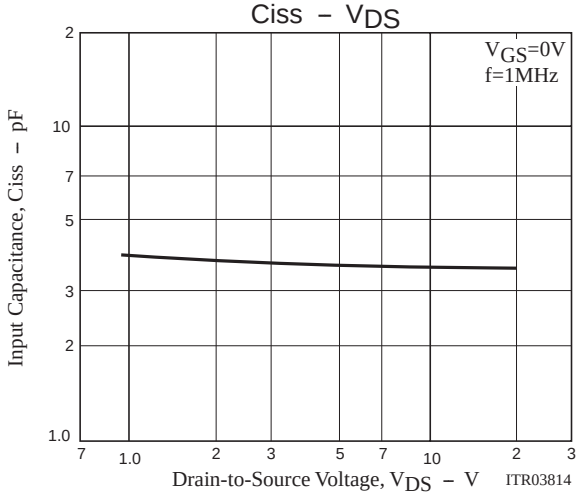
THD – V_{IN}



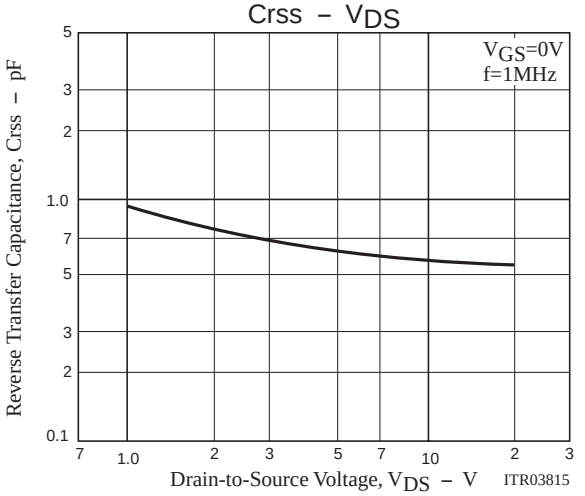
P_D – Ta

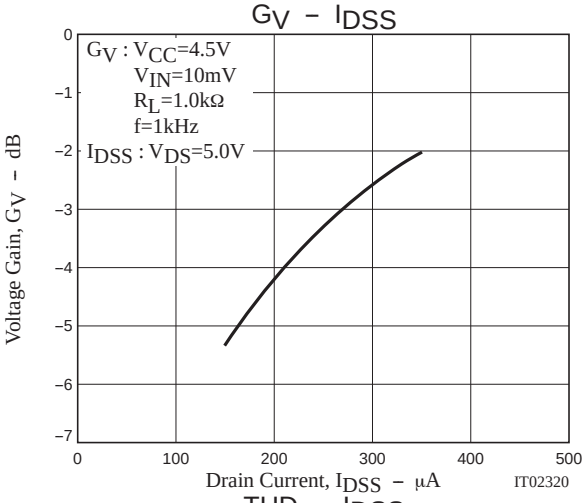


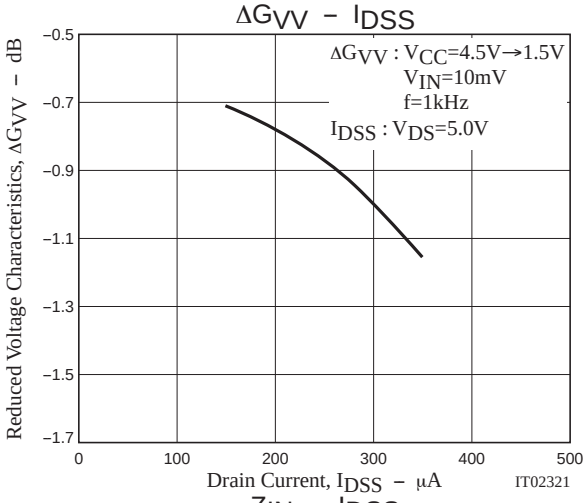
Ciss – V_{DS}

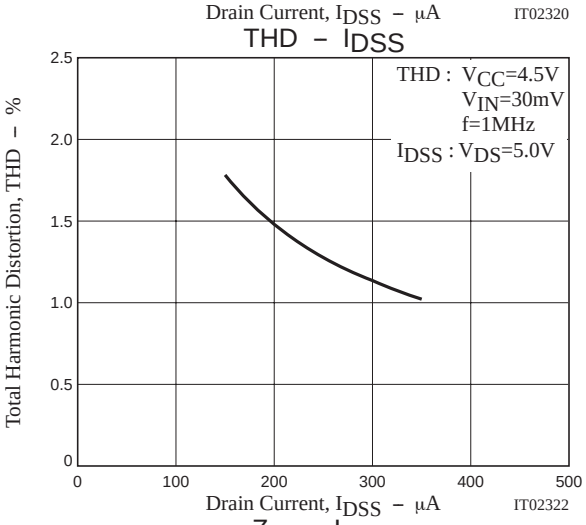


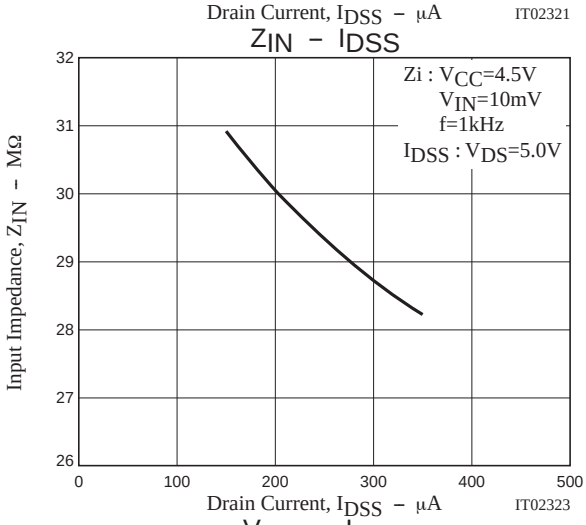
Crss – V_{DS}

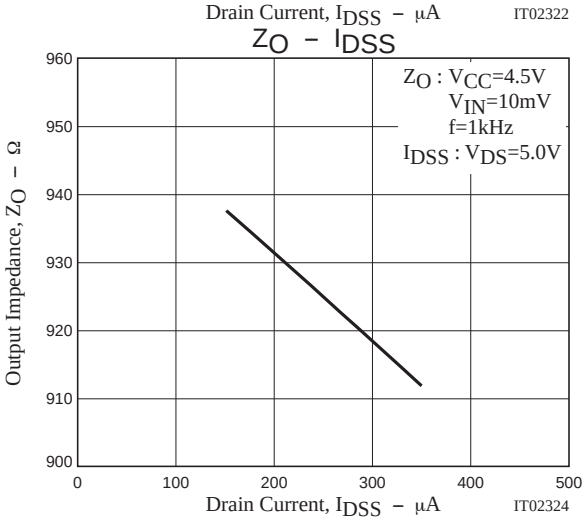


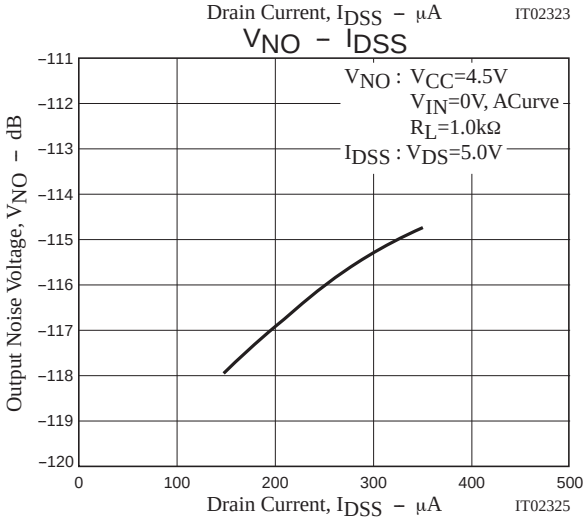

G_V – I_{DSS}
G_V : V_{CC}=4.5V
V_{IN}=10mV
R_L=1.0kΩ
f=1kHz
I_{DSS} : V_{DS}=5.0V
Voltage Gain, G_V – dB
Drain Current, I_{DSS} – μA
IT02320


ΔG_{VV} – I_{DSS}
ΔG_{VV} : V_{CC}=4.5V→1.5V
V_{IN}=10mV
f=1kHz
I_{DSS} : V_{DS}=5.0V
Reduced Voltage Characteristics, ΔG_{VV} – dB
Drain Current, I_{DSS} – μA
IT02321


THD – I_{DSS}
THD : V_{CC}=4.5V
V_{IN}=30mV
f=1MHz
I_{DSS} : V_{DS}=5.0V
Total Harmonic Distortion, THD – %
Drain Current, I_{DSS} – μA
IT02322


Z_{IN} – I_{DSS}
Zi : V_{CC}=4.5V
V_{IN}=10mV
f=1kHz
I_{DSS} : V_{DS}=5.0V
Input Impedance, Z_{IN} – MΩ
Drain Current, I_{DSS} – μA
IT02323


Z_O – I_{DSS}
Z_O : V_{CC}=4.5V
V_{IN}=10mV
f=1kHz
I_{DSS} : V_{DS}=5.0V
Output Impedance, Z_O – Ω
Drain Current, I_{DSS} – μA
IT02324


V_{NO} – I_{DSS}
V_{NO} : V_{CC}=4.5V
V_{IN}=0V, ACurve
R_L=1.0kΩ
I_{DSS} : V_{DS}=5.0V
Output Noise Voltage, V_{NO} – dB
Drain Current, I_{DSS} – μA
IT02325