



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-channel Silicon Junction FET

TF202THC — Electret Condenser Microphone Applications

Features

- Ultrasmall package facilitates miniaturization in end products.
- Especially suited for use in electret condenser microphone for audio equipments and telephones.
- Excellent voltage characteristics.
- Excellent transient characteristics.
- Adoption of FBET process.
- Halogen free compliance.

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	T _J		150	°C
Storage Temperature	T _{stg}		-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	-1.0	V

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TF202THC

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain Current	I_{DSS}	$V_{DS}=5V, V_{GS}=0V$	140*		350*	μA
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=5V, V_{GS}=0V, f=1kHz$	0.5	1.0		mS
Input Capacitance	C_{iss}	$V_{DS}=5V, V_{GS}=0V, f=1MHz$		3.5		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS}=5V, V_{GS}=0V, f=1MHz$		0.65		pF
[$T_a=25^\circ C, V_{CC}=4.5V, R_L=1k\Omega, C_{in}=15pF$, See specified Test Circuit.]						
Voltage Gain	GV	$V_{IN}=10mV, f=1kHz$		-3.0		dB
Reduced Voltage Characteristic	ΔGW	$V_{IN}=10mV, f=1kHz, V_{CC}=4.5V \rightarrow 1.5V$		-1.2	-3.5	dB
Frequency Characteristic	ΔGvf	$f=1kHz$ to 110Hz			-1.0	dB
Input Impedance	Z_{IN}	$f=1kHz$	25			$M\Omega$
Output Impedance	Z_O	$f=1kHz$		1000		Ω
Total Harmonic Distortion	THD	$V_{IN}=30mV, f=1kHz$		1.2		%
Output Noise Voltage	V_{NO}	$V_{IN}=0V, A$ Curve			-110	dB

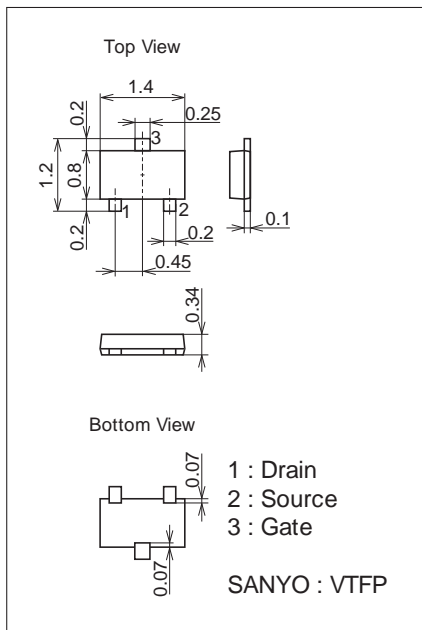
* : The TF202THC is classified by I_{DSS} as follows : (unit : μA)

Marking	E4	E5
Rank	4	5
I_{DSS}	140 to 240	210 to 350

Package Dimensions

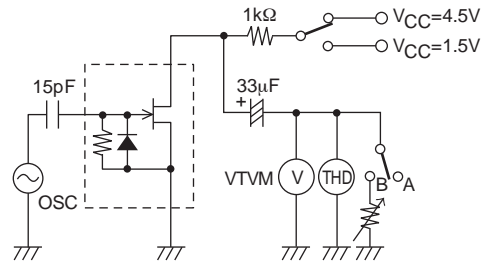
unit : mm (typ)

7031-001

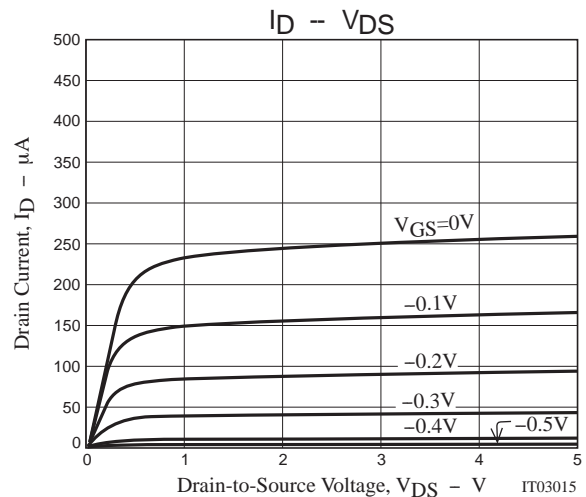
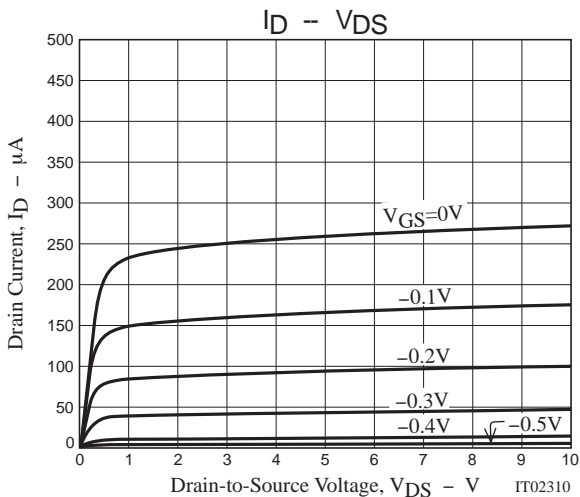


Test Circuit

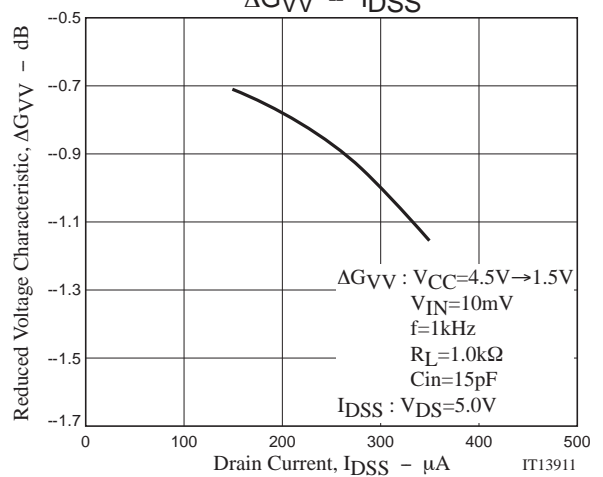
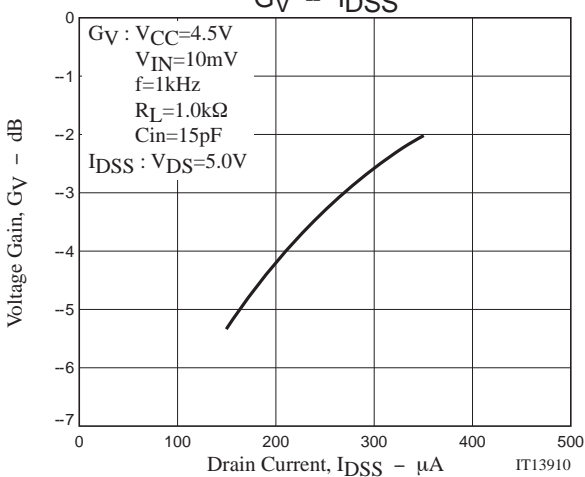
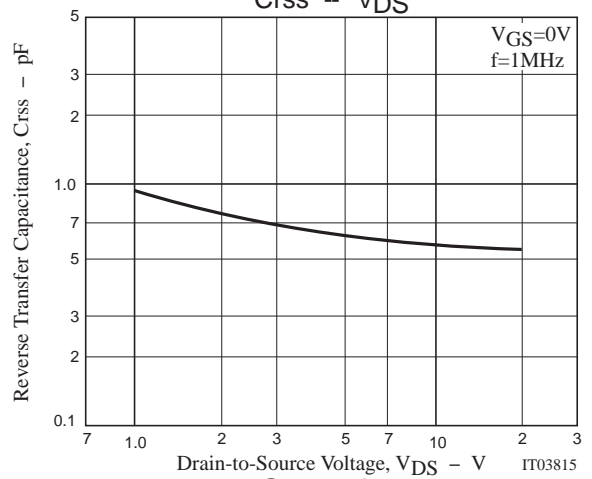
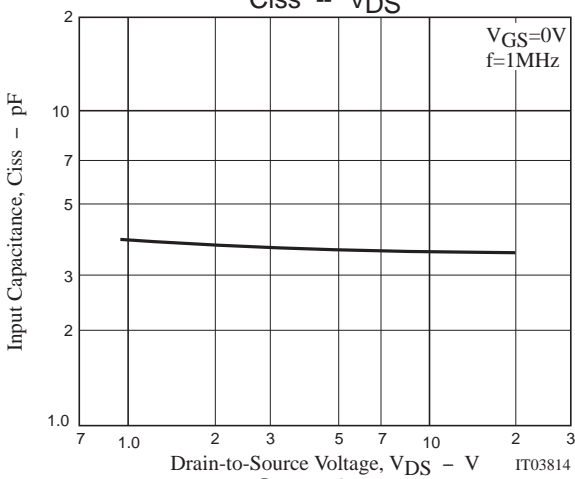
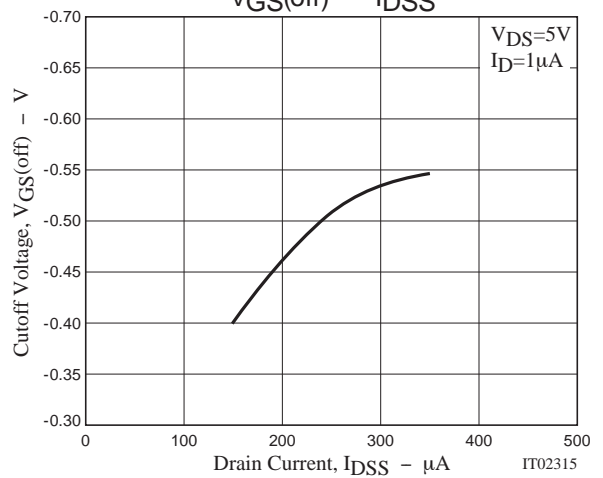
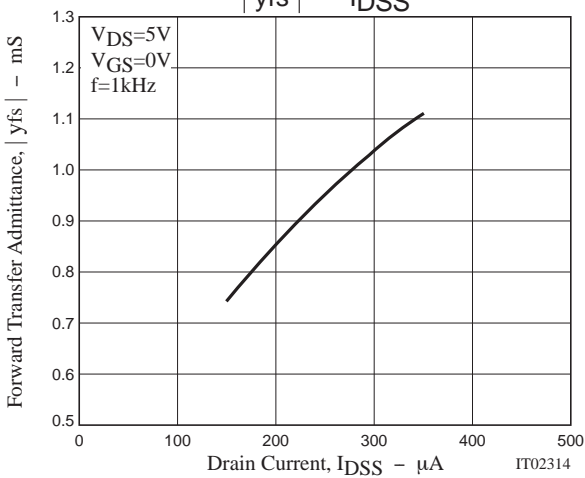
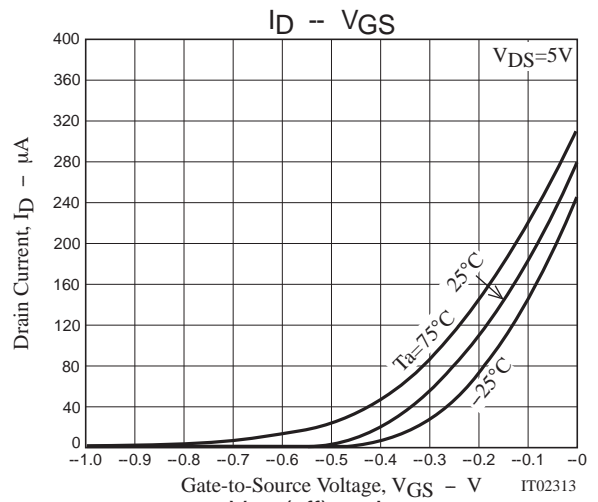
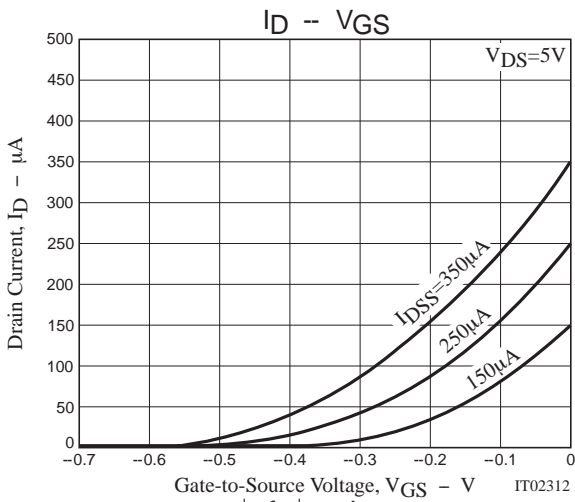
Voltage gain
Frequency Characteristic
Distortion
Reduced Voltage Characteristic



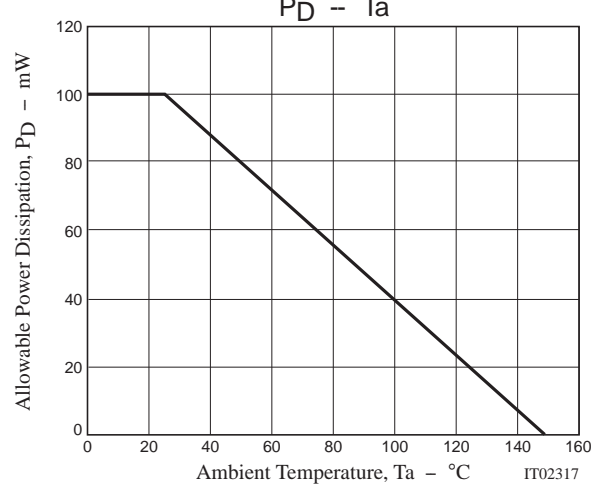
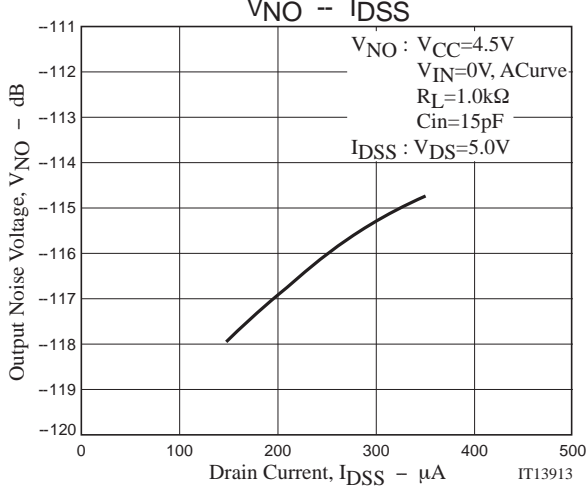
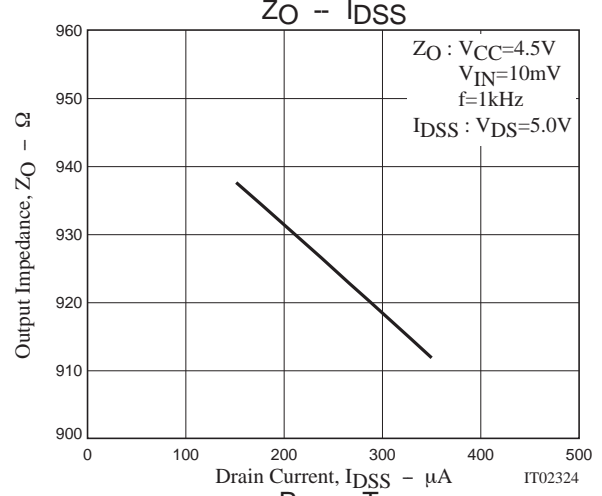
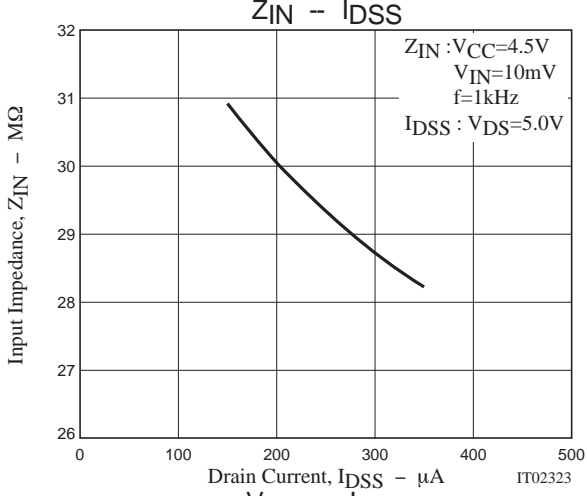
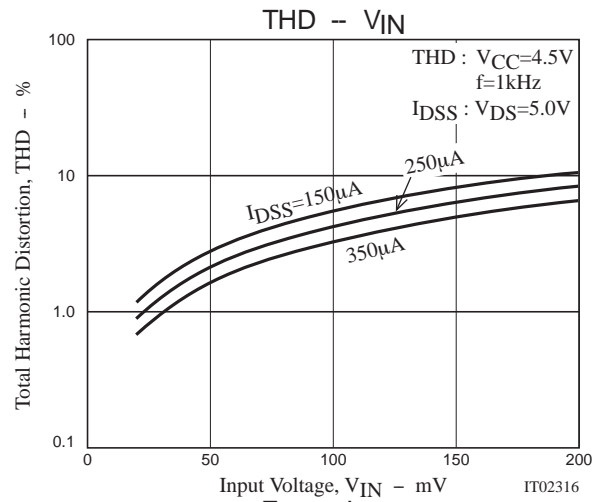
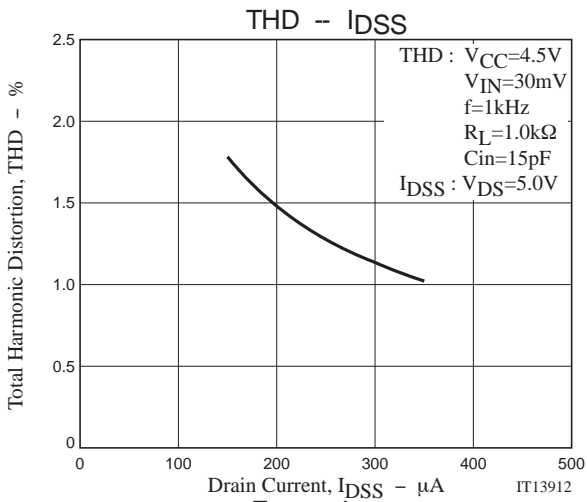
Output Impedance



TF202THC



TF202THC



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