



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 <sub>GDO</sub>		-20	V
Gate Current	I <sub>G</sub>		10	mA
Drain Current	I <sub>D</sub>		1	mA
Allowable Power Dissipation	P <sub>D</sub>		100	mW
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

**Electrical Characteristics** at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	V <sub>(BR)GDO</sub>	I <sub>G</sub> =-100μA	-20			V
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =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*	$\mu A$
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	$\Delta GW$	$V_{IN}=10mV, f=1kHz, V_{CC}=4.5V \rightarrow 1.5V$		-1.2	-3.5	dB
Frequency Characteristic	$\Delta Gvf$	$f=1kHz$ to 110Hz			-1.0	dB
Input Impedance	$Z_{IN}$	$f=1kHz$	25			$M\Omega$
Output Impedance	$Z_O$	$f=1kHz$		1000		$\Omega$
Total Harmonic Distortion	THD	$V_{IN}=30mV, f=1kHz$		1.2		%
Output Noise Voltage	$V_{NO}$	$V_{IN}=0V, A$ Curve			-110	dB

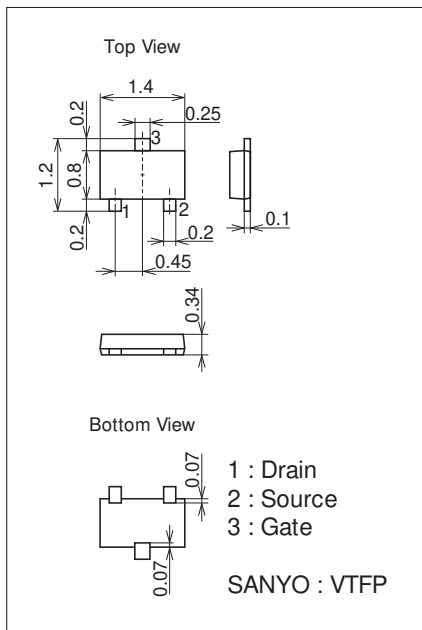
\* : The TF202THC is classified by  $I_{DSS}$  as follows : (unit :  $\mu A$ )

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

## Package Dimensions

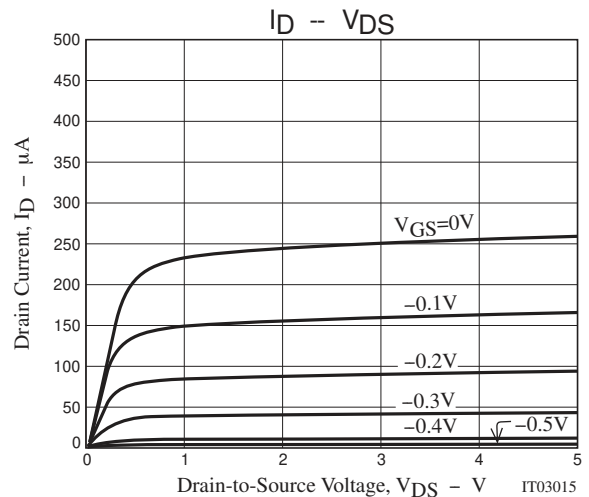
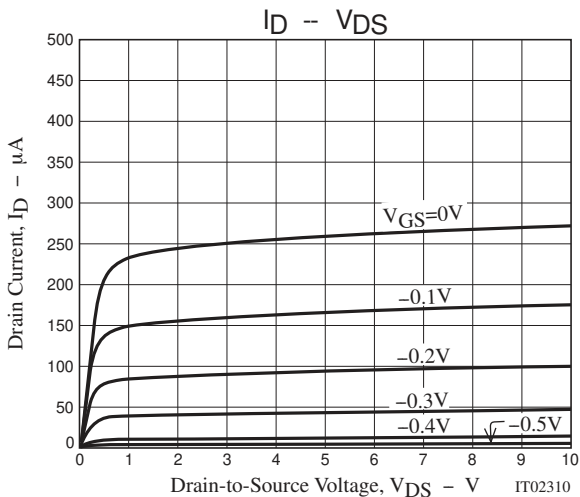
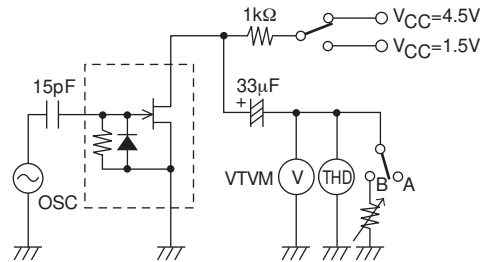
unit : mm (typ)

7031-001

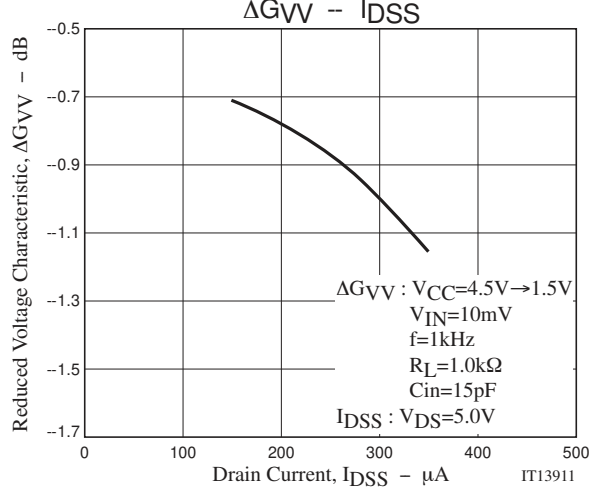
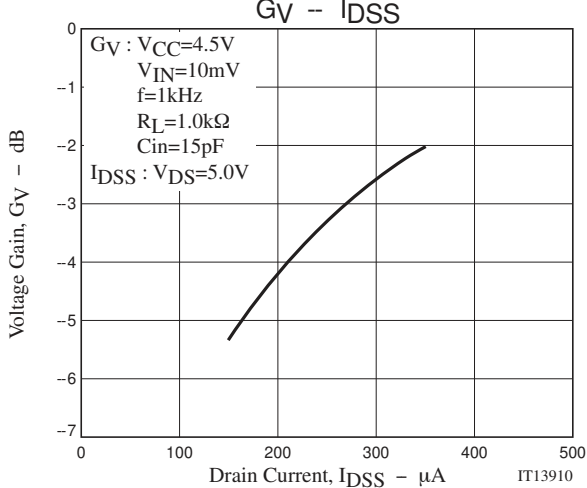
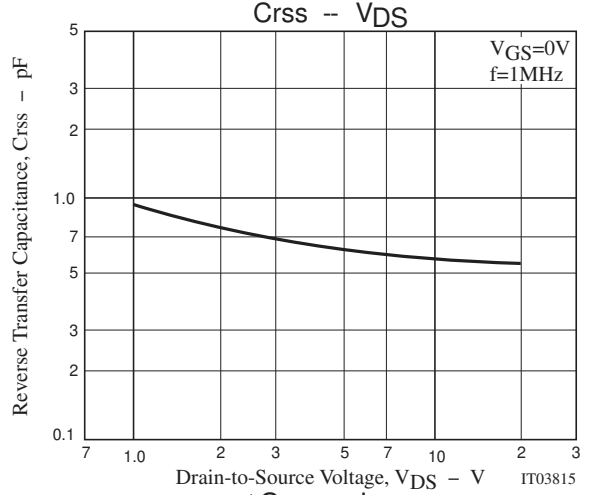
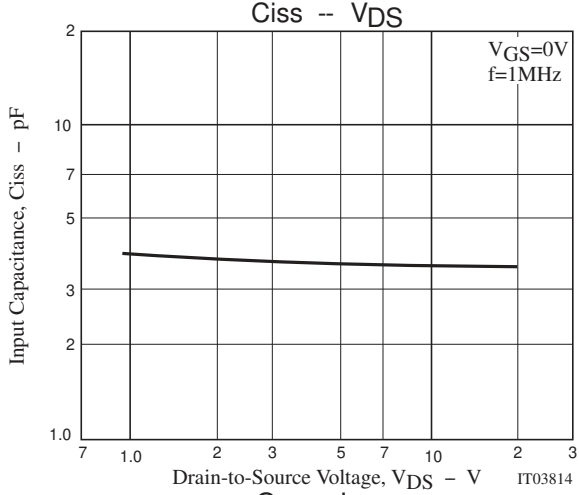
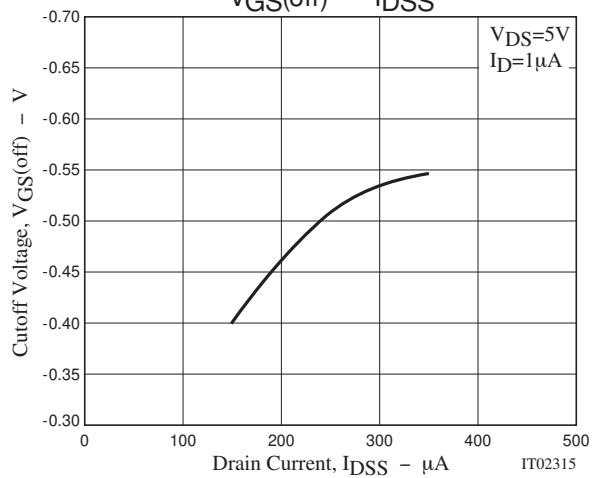
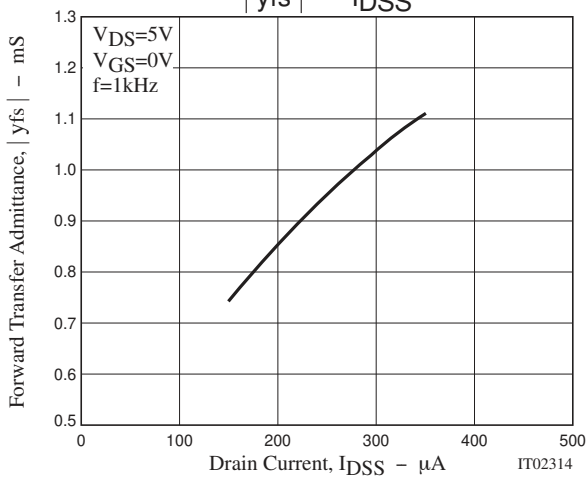
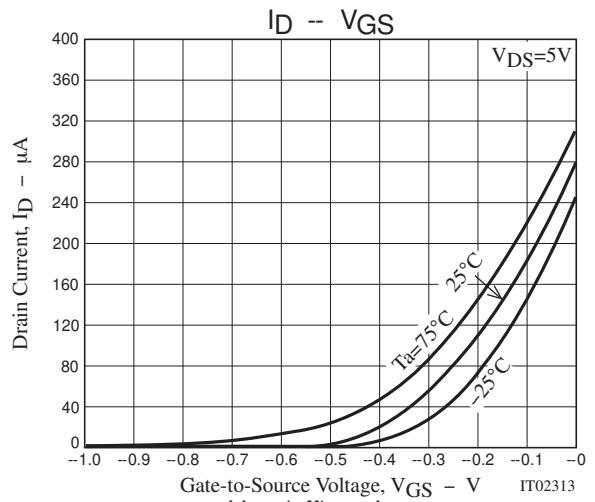
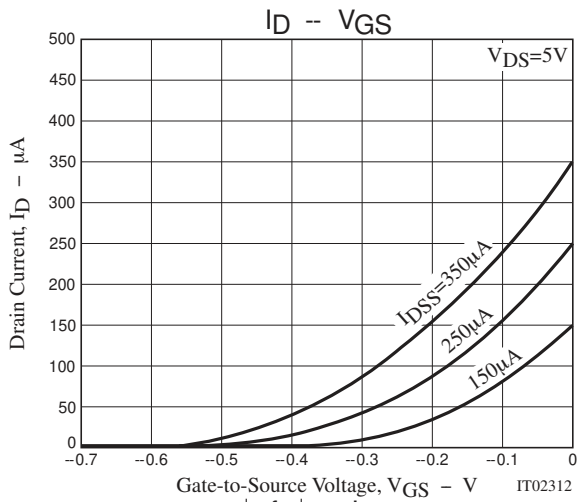


## Test Circuit

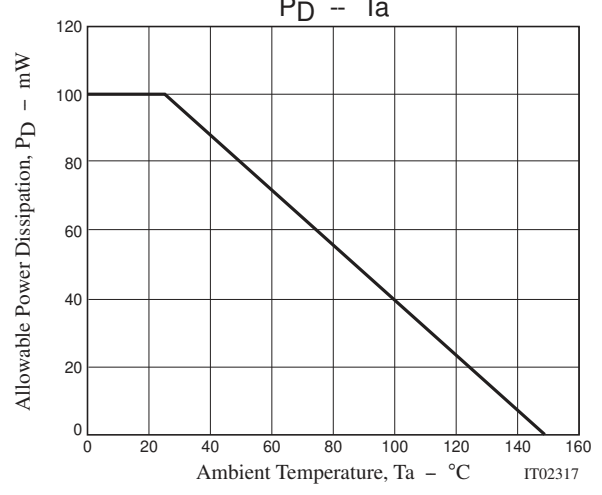
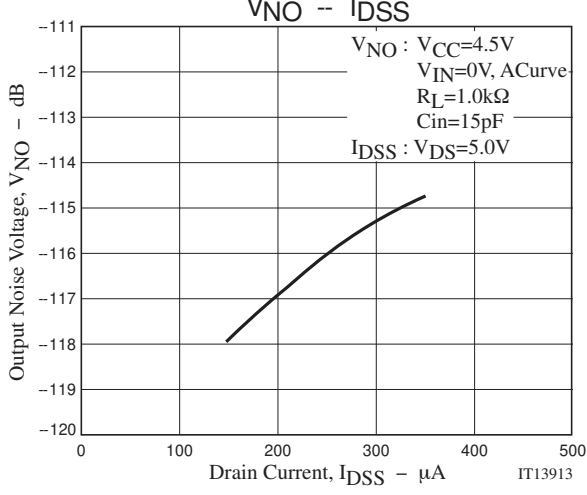
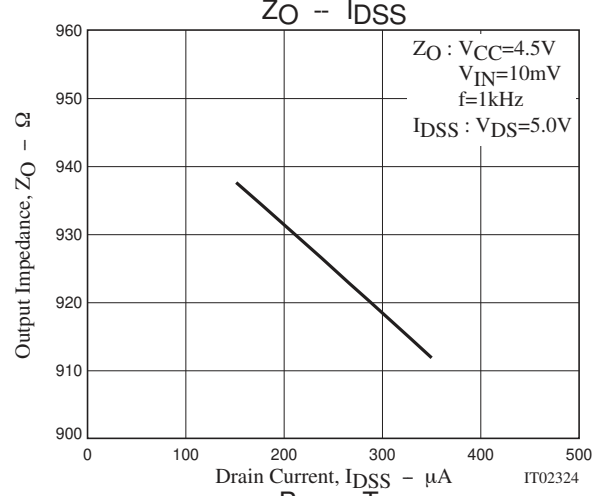
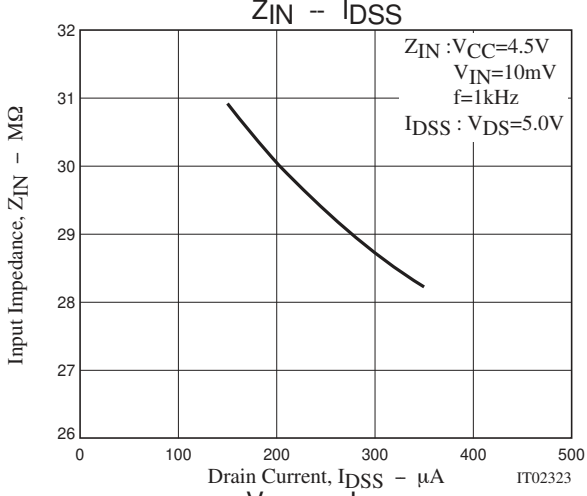
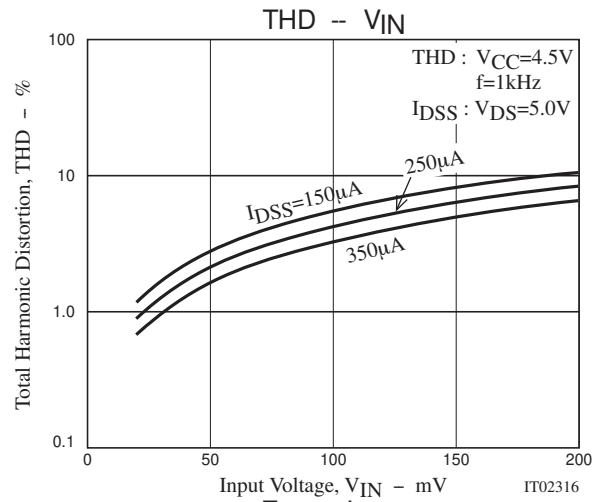
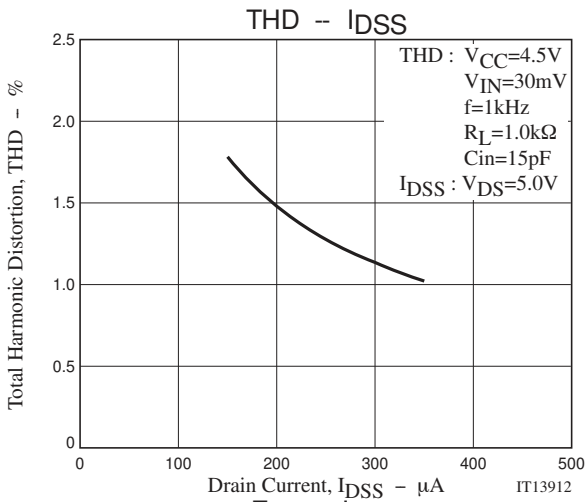
Voltage gain  
Frequency Characteristic  
Distortion  
Reduced Voltage Characteristic



# TF202THC



# TF202THC



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