



SANYO Semiconductors

DATA SHEET

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 |

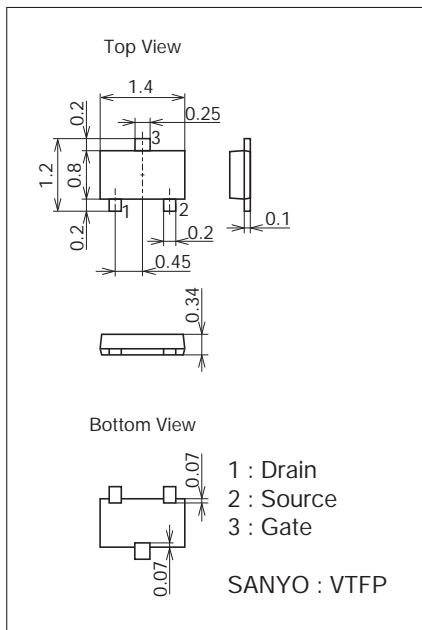
* : The TF202THC is classified by I_{DSS} as follows : (unit : μA)

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

Package Dimensions

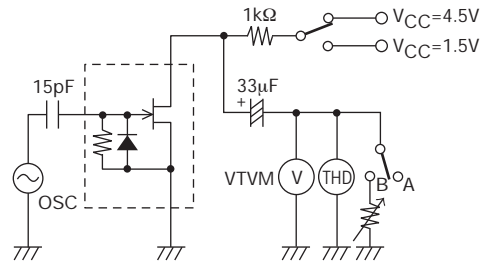
unit : mm (typ)

7031-001

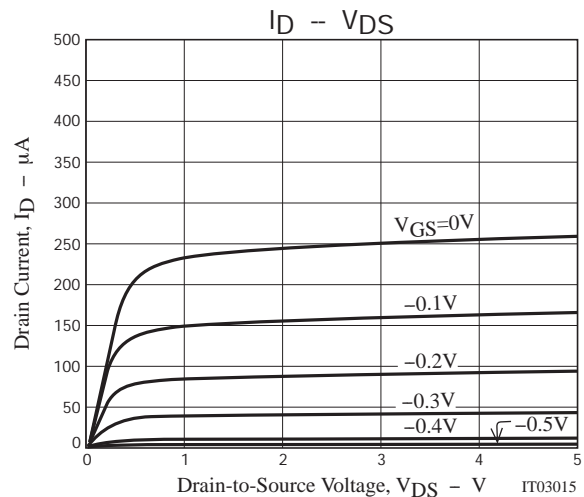
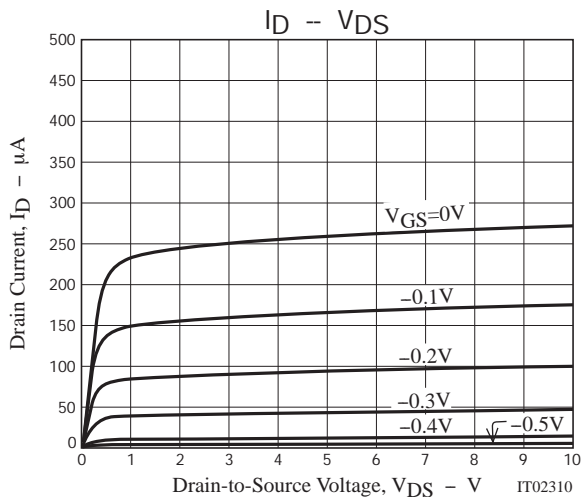


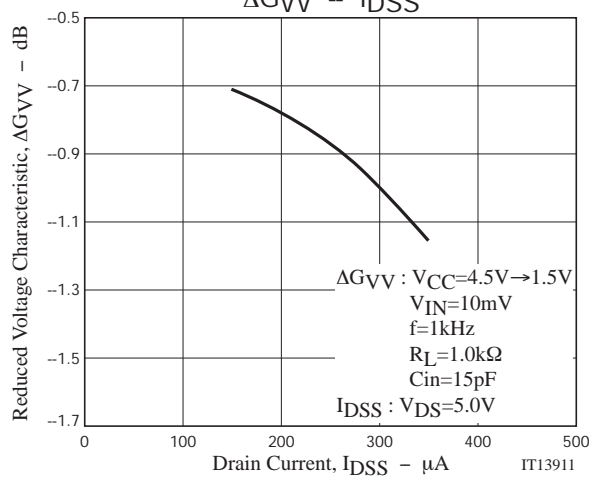
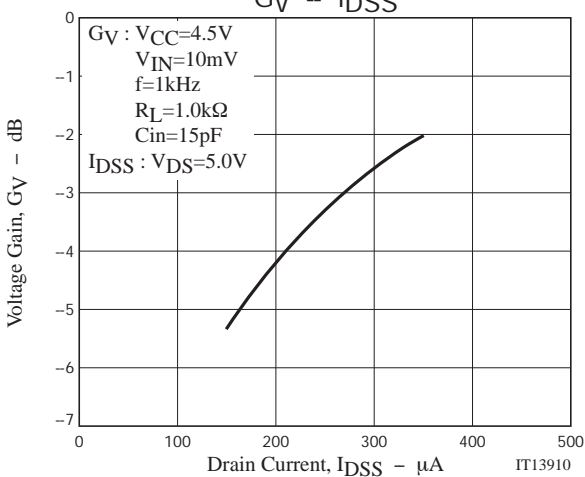
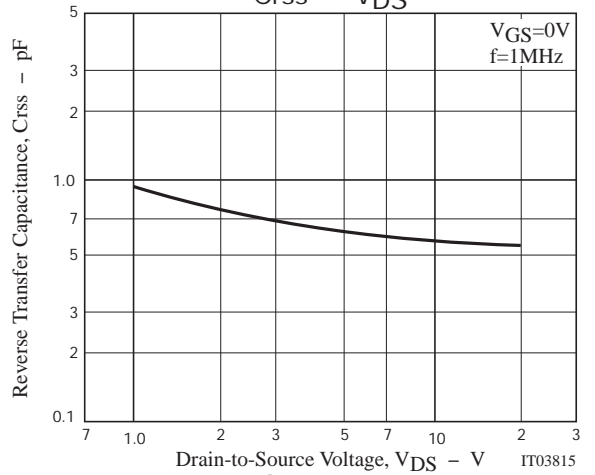
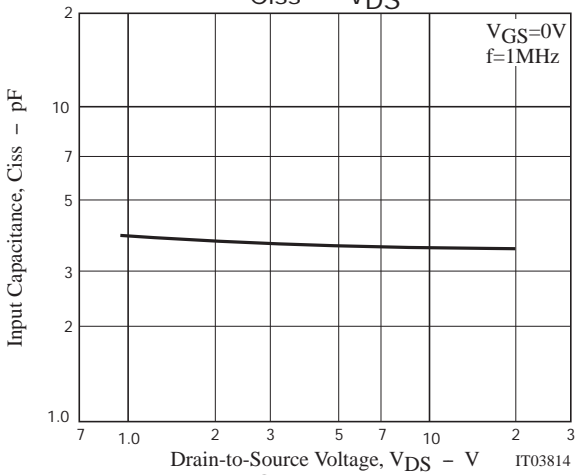
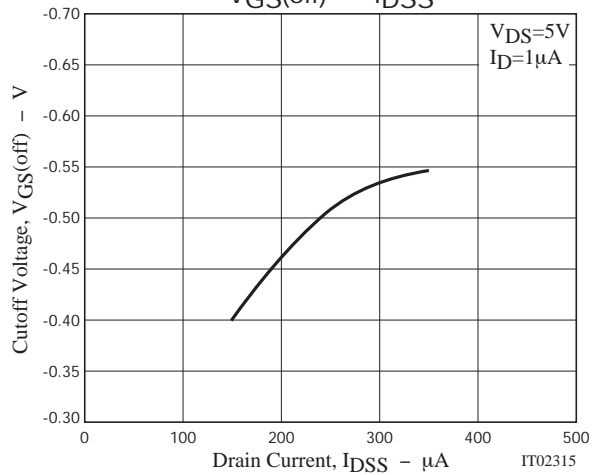
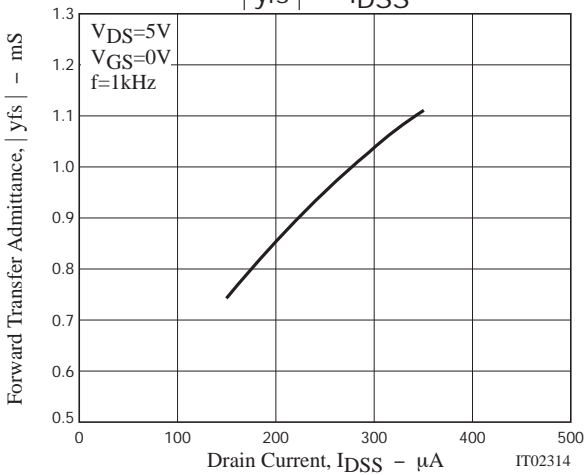
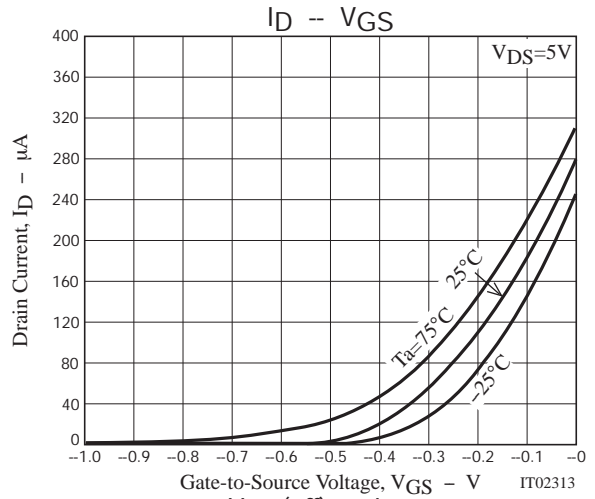
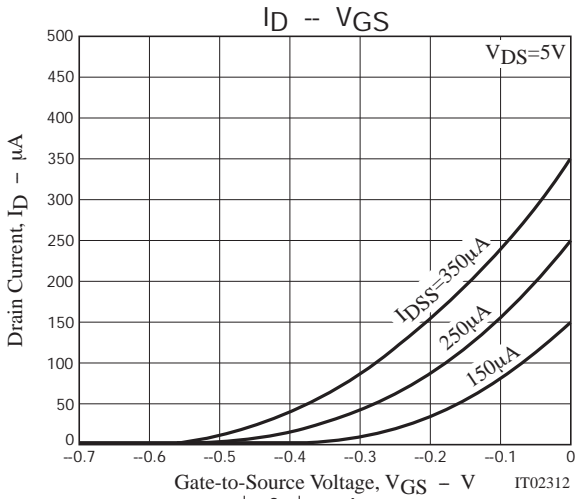
Test Circuit

Voltage gain
Frequency Characteristic
Distortion
Reduced Voltage Characteristic

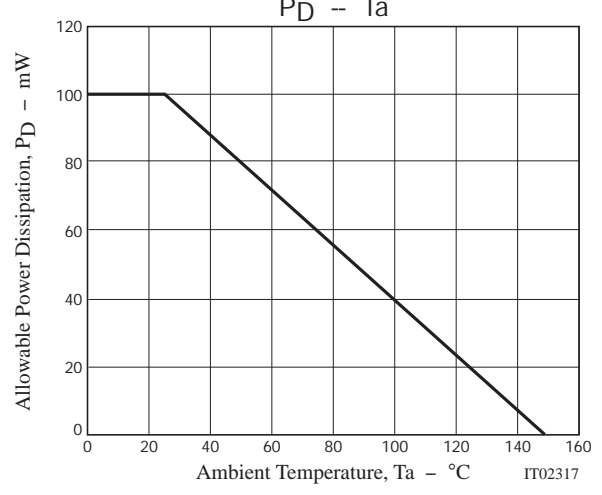
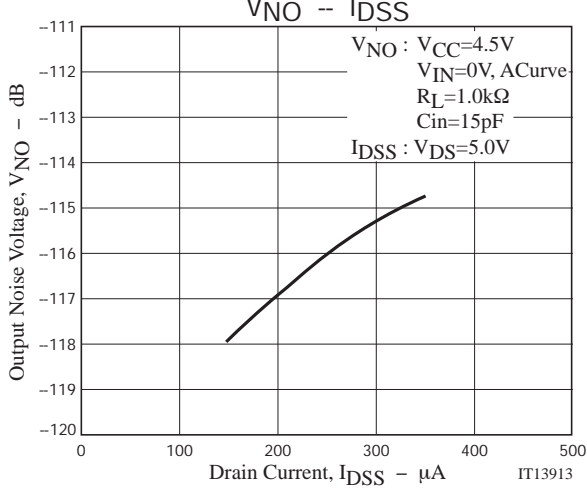
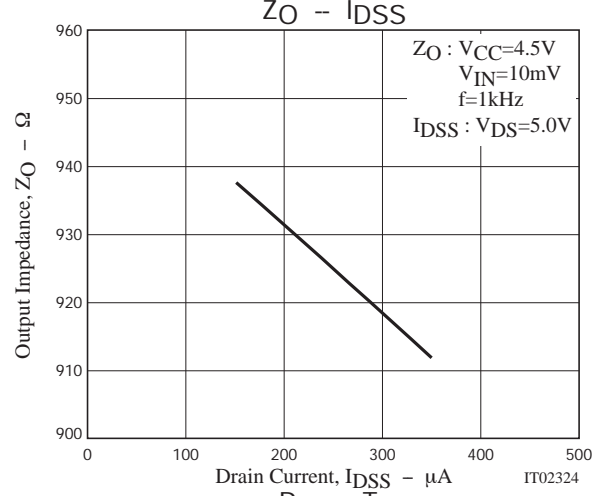
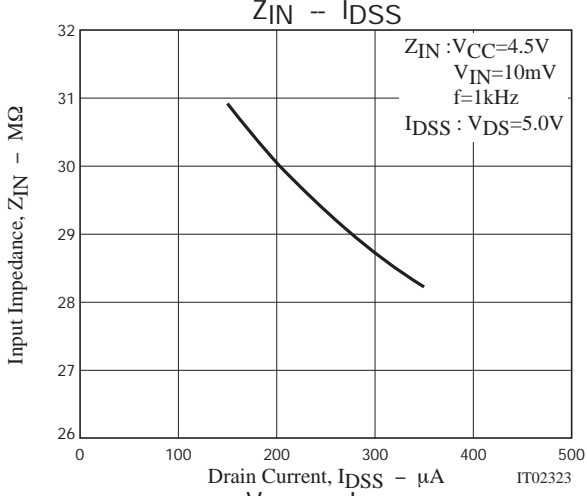
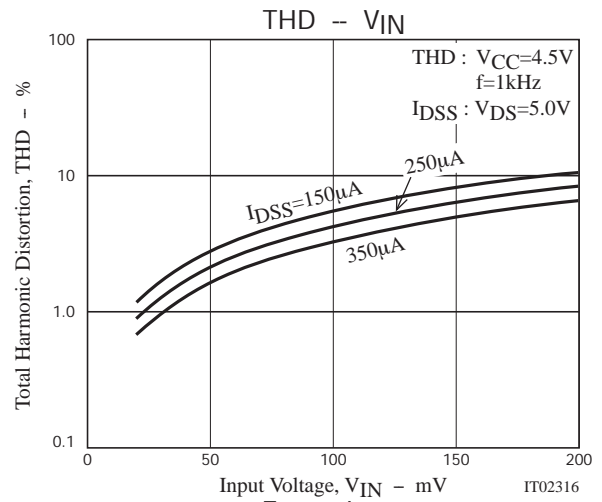
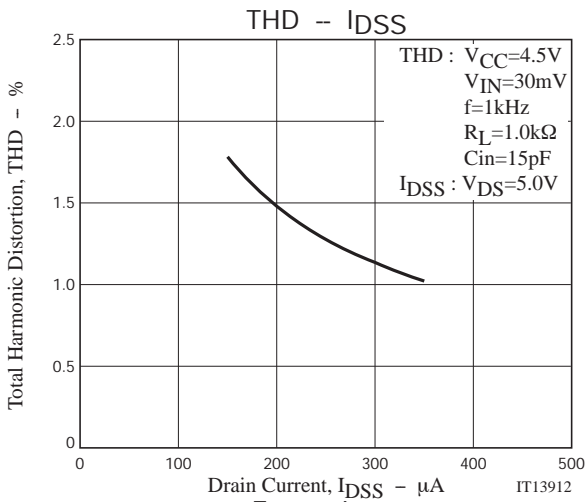


Output Impedance





TF202THC



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