



TF256TH — N-channel Silicon Junction FET Electret Condenser Microphone Applications

Features

- High gain : $G_V=2.7\text{dB typ}$ ($V_{CC}=2\text{V}$, $R_L=2.2\text{k}\Omega$, $C_{in}=5\text{pF}$, $V_{IN}=10\text{mV}$, $f=1\text{kHz}$)
- Ultrasmall package facilitates miniaturization in end products
- Best suited for use in electret condenser microphone for audio equipments and telephones
- Excellent transient characteristics
- Adoption of FBET process
- Halogen free compliance

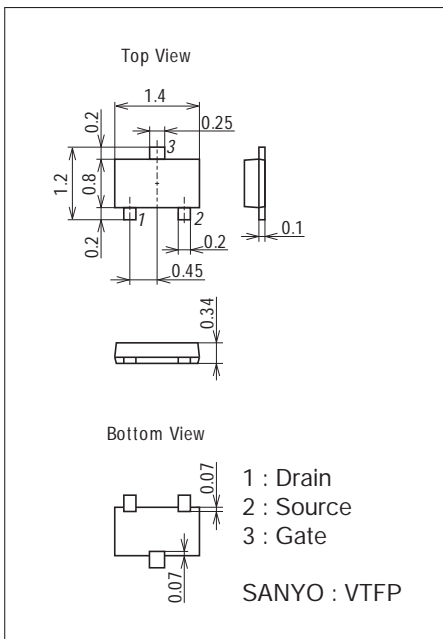
Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

| 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 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

Package Dimensions

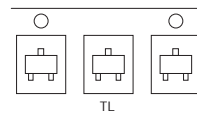
unit : mm (typ)
7031-001



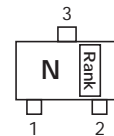
Product & Package Information

- Package : VTFP
- JEITA, JEDEC : SC-106A
- Minimum Packing Quantity : 8,000 pcs./real

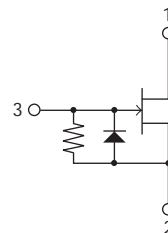
Packing Type: TL



Marking



Electrical Connection



TF256TH

Electrical Characteristics at Ta=25°C

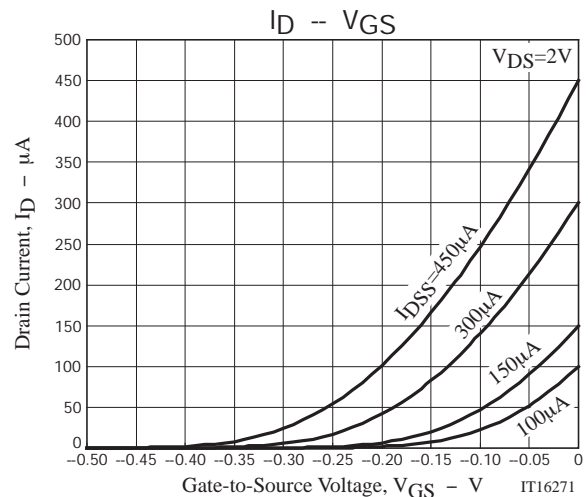
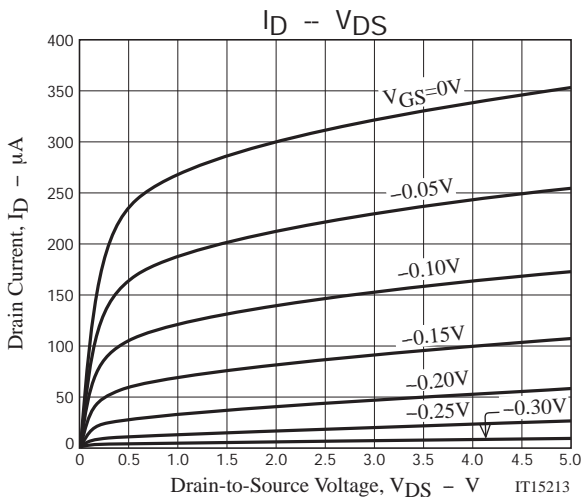
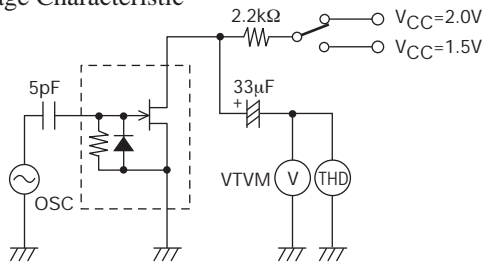
| Parameter | Symbol | Conditions | Ratings | | | Unit | |
|---|-----------------|---|---------|------|-------|------|---------|
| | | | Rank | min | typ | | max |
| Gate-to-Drain Breakdown Voltage | $V_{(BR)GDO}$ | $I_G = -100\mu A$ | | -20 | | V | |
| Cutoff Voltage | $V_{GS(off)}$ | $V_{DS} = 2V, I_D = 1\mu A$ | | -0.1 | -0.35 | -1.0 | V |
| Drain Current | I_{DSS}^* | $V_{DS} = 2V, V_{GS} = 0V$ | 3 | 100 | | 180 | μA |
| | | | 4 | 140 | | 280 | |
| | | | 5 | 240 | | 450 | |
| Forward Transfer Admittance | $ y_{fs} $ | $V_{DS} = 2V, V_{GS} = 0V, f = 1kHz$ | | 0.75 | 1.7 | mS | |
| Input Capacitance | C_{iss} | $V_{DS} = 2V, V_{GS} = 0V, f = 1MHz$ | | | 3.1 | pF | |
| Reverse Transfer Capacitance | C_{rss} | $V_{DS} = 2V, V_{GS} = 0V, f = 1MHz$ | | | 1.0 | pF | |
| [Ta=25°C, VCC=2.0V, RL=2.2kΩ, Cin=5pF, See specified Test Circuit.] | | | | | | | |
| Voltage Gain | G_V | $V_{IN} = 10mV, f = 1kHz$ | 3 | | 1.0 | | dB |
| | | | 4 | | 2.0 | | |
| | | | 5 | | 3.0 | | |
| Reduced Voltage Characteristic | ΔG_{VV} | $V_{IN} = 10mV, f = 1kHz, V_{CC} = 2.0V \rightarrow 1.5V$ | 3 | | -0.5 | -1.0 | dB |
| | | | 4 | | -0.6 | -1.3 | |
| | | | 5 | | -0.9 | -2.0 | |
| Frequency Characteristic | ΔG_{vf} | $f = 1kHz \text{ to } 110Hz$ | | | | -1.0 | dB |
| Total Harmonic Distortion | THD | $V_{IN} = 30mV, f = 1kHz$ | 3 | | 1.4 | | % |
| | | | 4 | | 0.9 | | |
| | | | 5 | | 0.35 | | |
| Output Noise Voltage | V_{NO} | $V_{IN} = 0V, A \text{ curve}$ | | | -105 | -100 | dB |

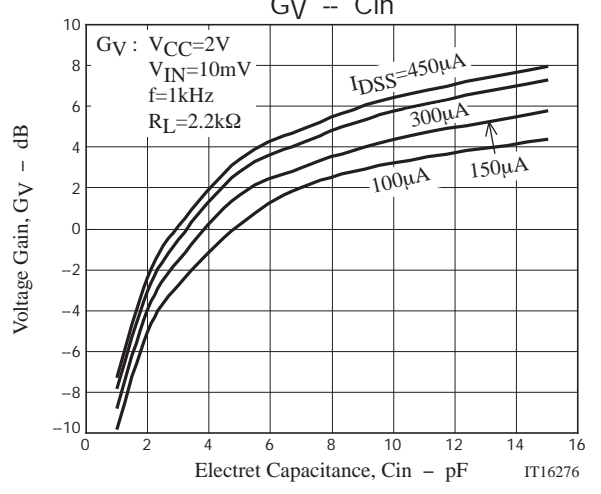
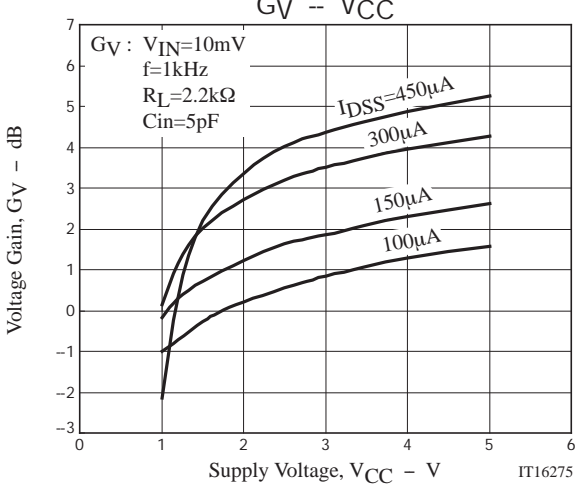
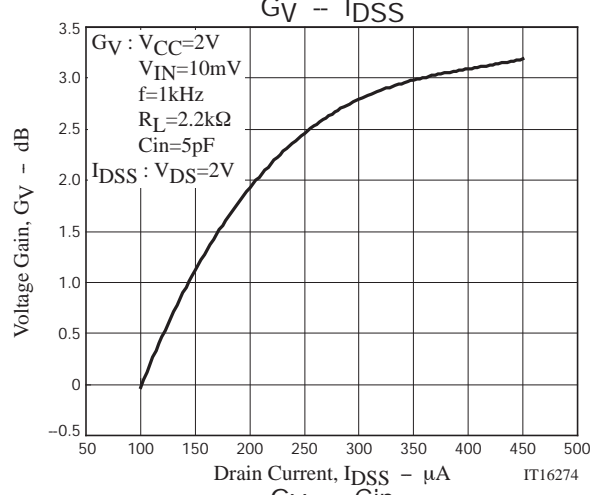
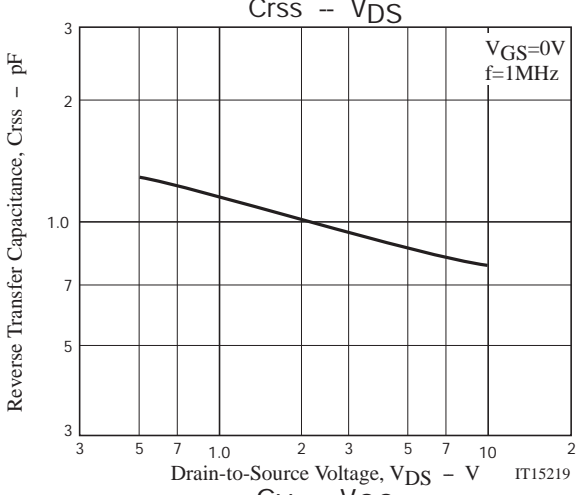
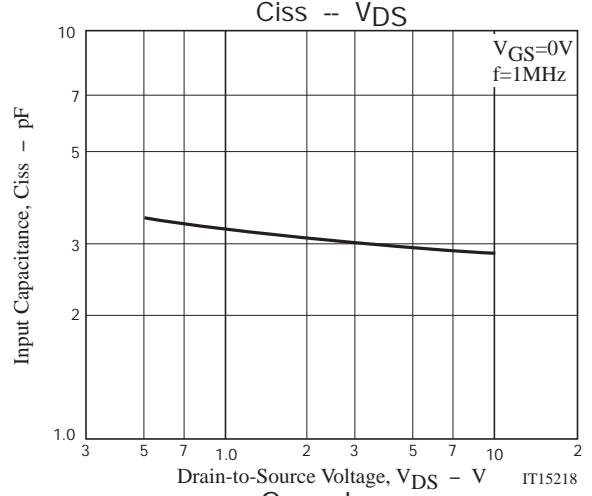
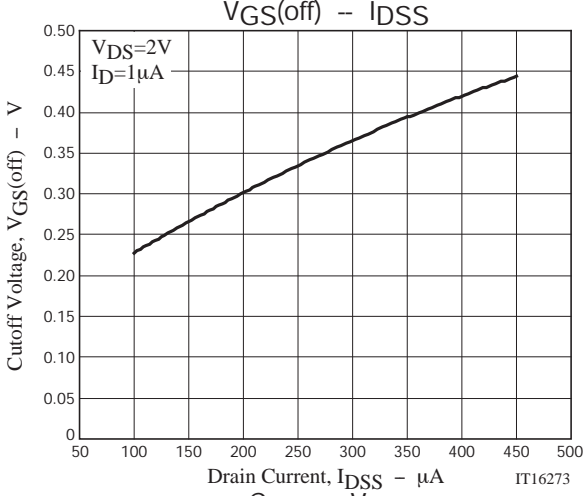
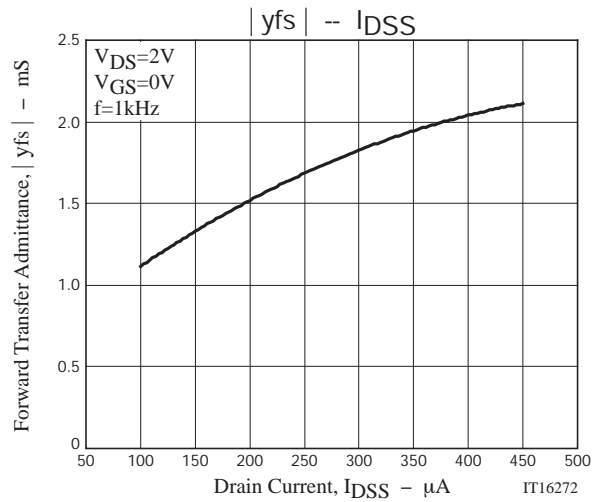
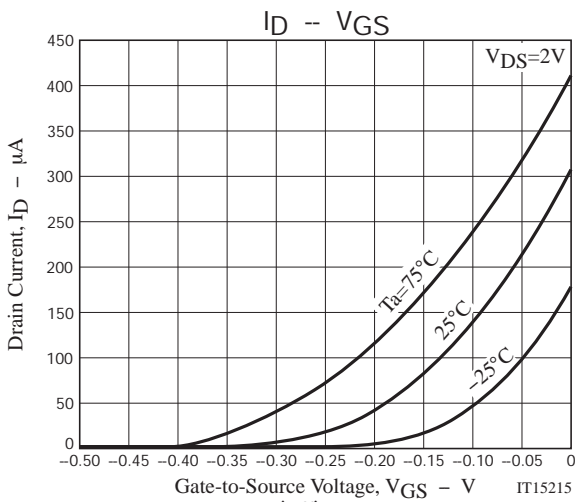
* : The TF256TH is classified by I_{DSS} as follows : (unit : μA)

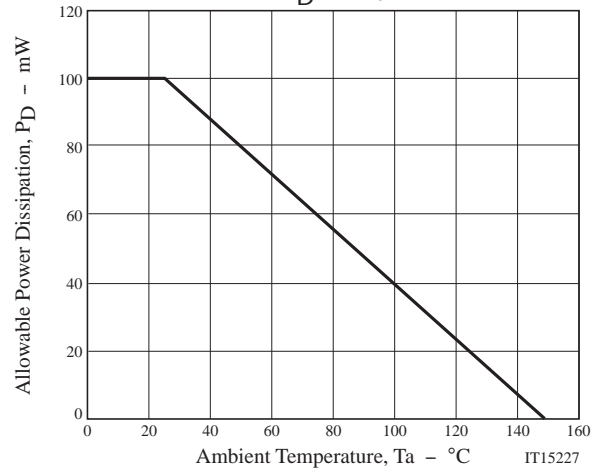
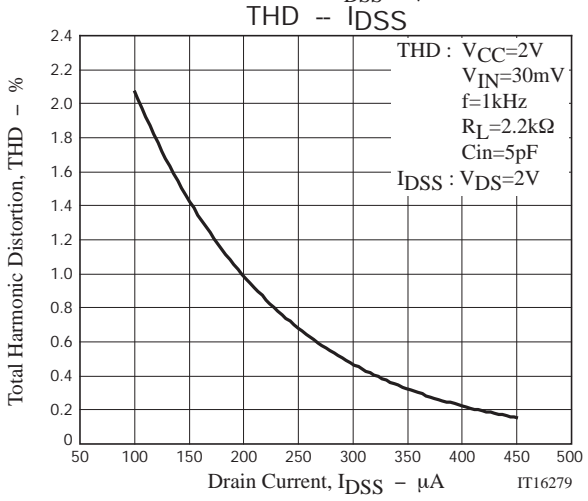
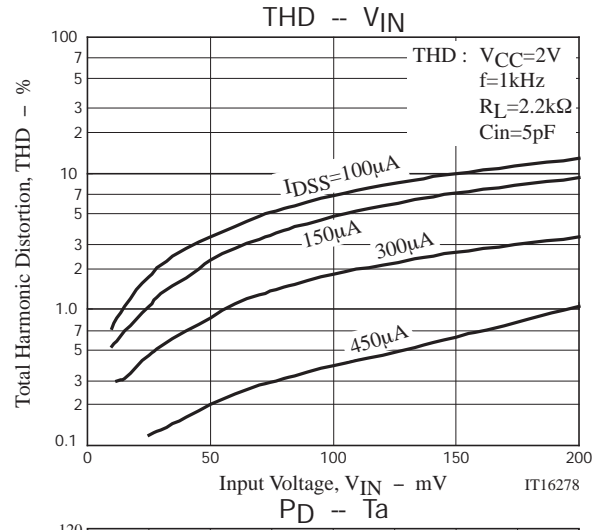
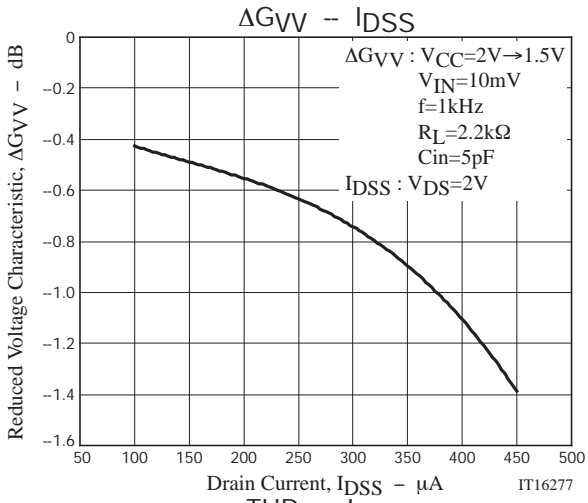
| Marking | N3 | N4 | N5 |
|-----------|------------|------------|------------|
| Rank | 3 | 4 | 5 |
| I_{DSS} | 100 to 180 | 140 to 280 | 240 to 450 |

Test Circuit

- Voltage gain
- Frequency Characteristic
- Distortion
- Reduced Voltage Characteristic







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