



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 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

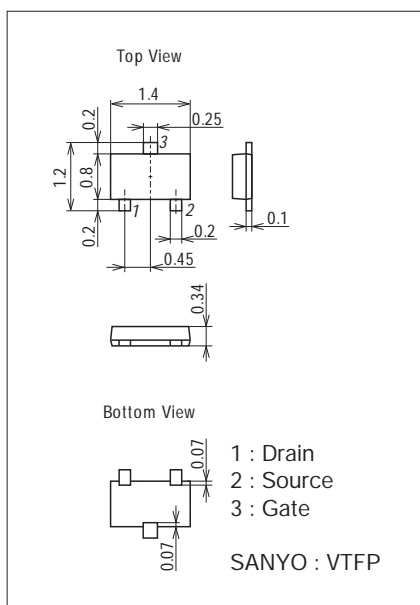
Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

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)

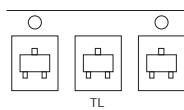
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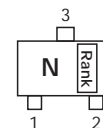
### Product & Package Information

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

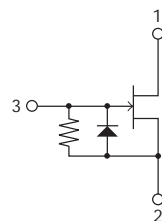
### Packing Type: TL



### Marking



### Electrical Connection



SANYO Semiconductor Co., Ltd.

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# TF256TH

## Electrical Characteristics at Ta=25°C

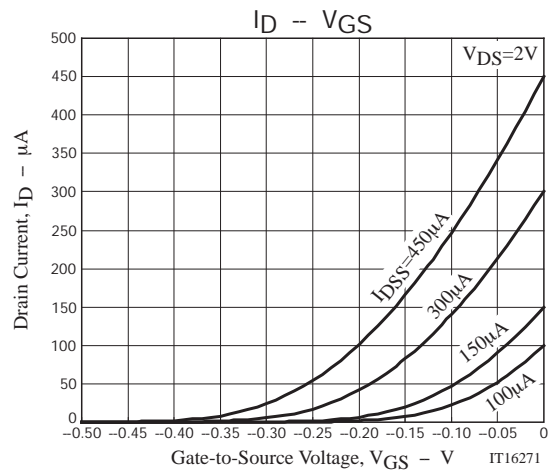
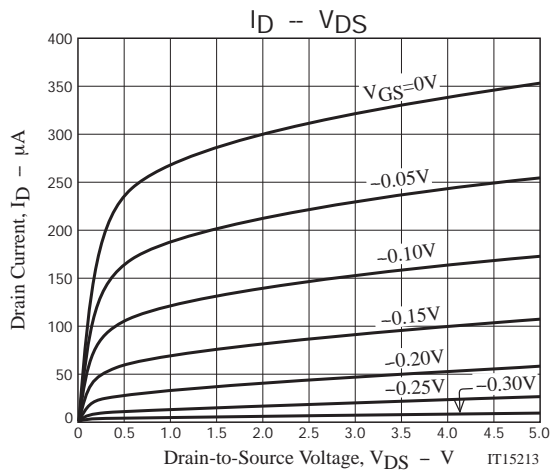
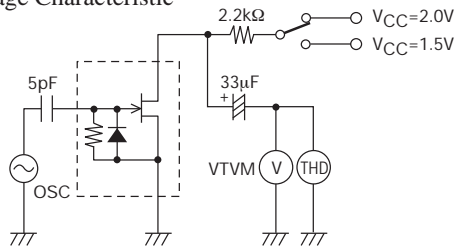
Parameter	Symbol	Conditions	Ratings			Unit	
			Rank	min	typ		max
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	$I_G = -100\mu A$		-20		V	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=2V, I_D=1\mu A$		-0.1	-0.35	-1.0	V
Drain Current	$I_{DSS}^*$	$V_{DS}=2V, V_{GS}=0V$	3	100		180	$\mu A$
			4	140		280	
			5	240		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	Gv	$V_{IN}=10mV, f=1kHz$	3		1.0		dB
			4		2.0		
			5		3.0		
Reduced Voltage Characteristic	$\Delta G_{VV}$	$V_{IN}=10mV, f=1kHz, V_{CC}=2.0V \rightarrow 1.5V$	3		-0.5	-1.0	dB
			4		-0.6	-1.3	
			5		-0.9	-2.0	
Frequency Characteristic	$\Delta G_{vf}$	$f=1kHz \text{ to } 110Hz$				-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

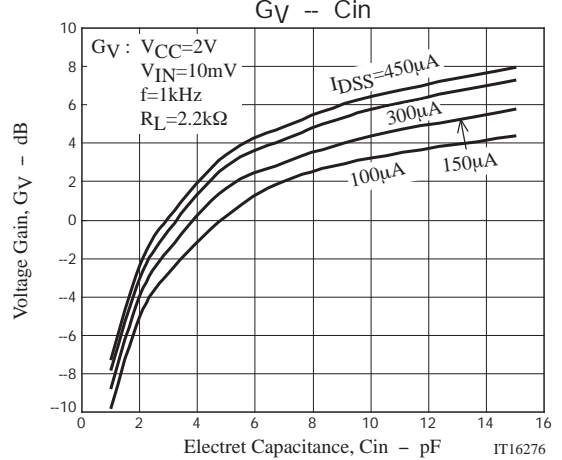
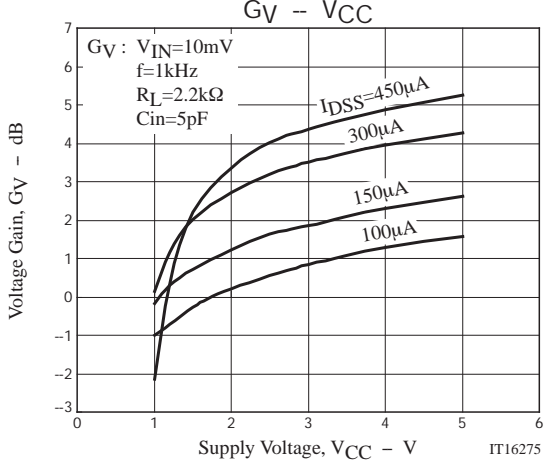
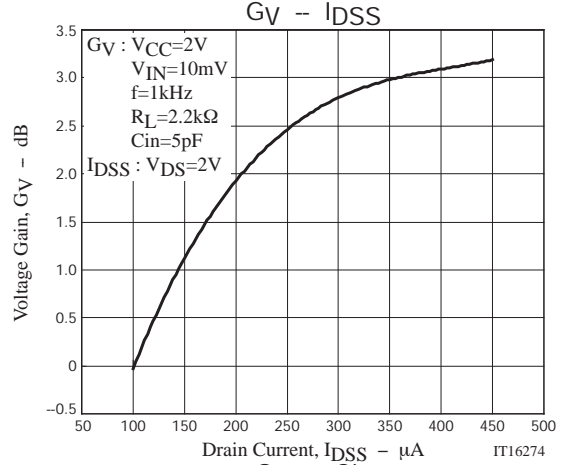
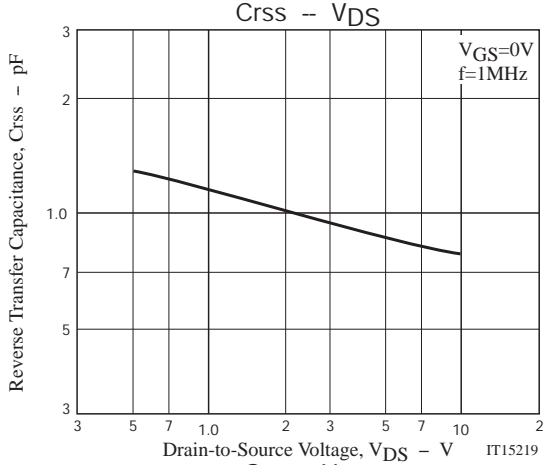
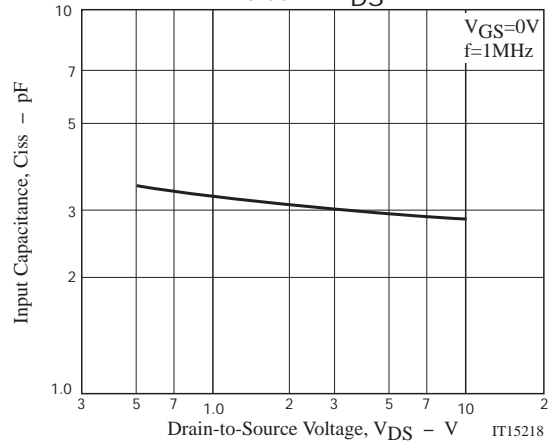
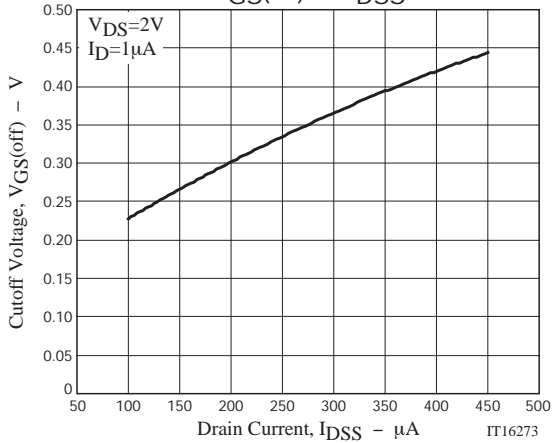
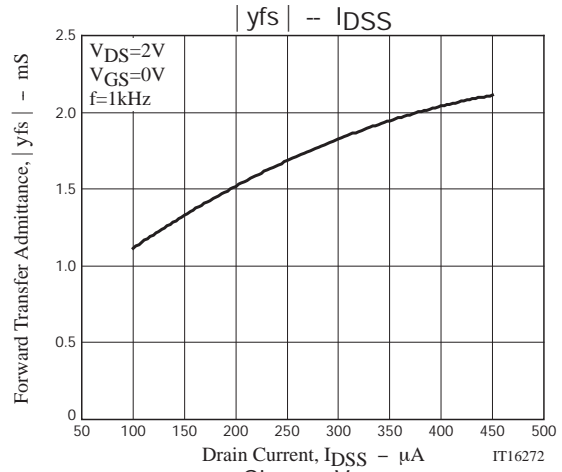
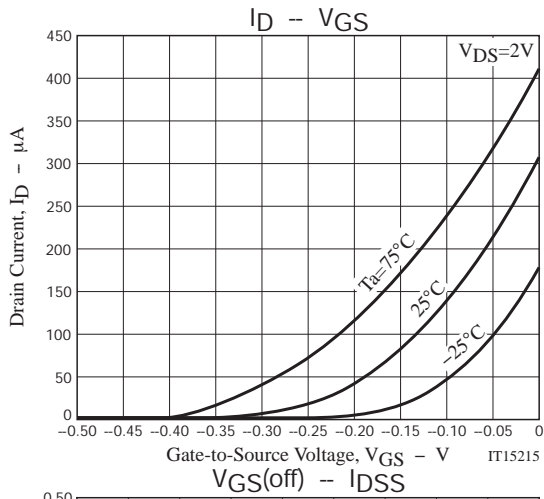
\* : The TF256TH is classified by  $I_{DSS}$  as follows : (unit :  $\mu A$ )

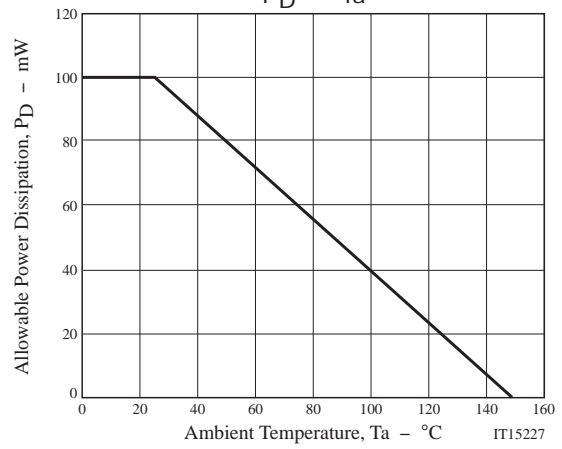
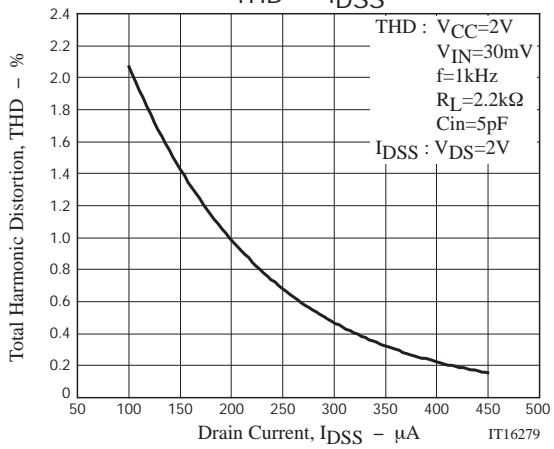
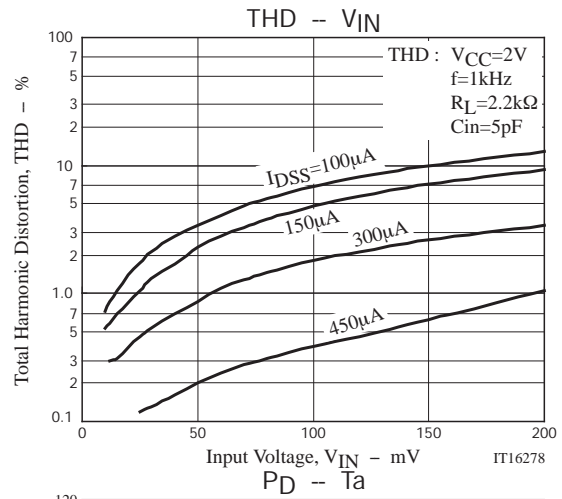
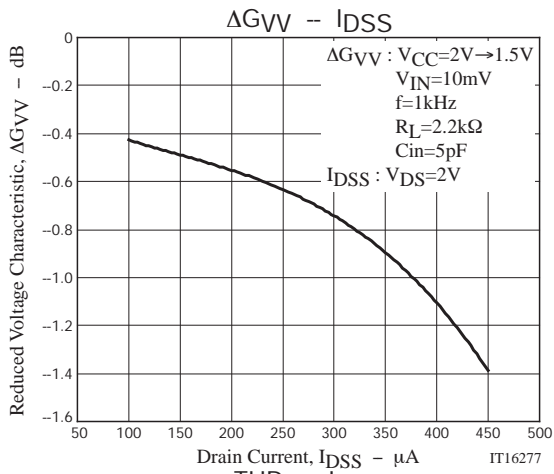
Marking	N3	N4	N5
Rank	3	4	5
$I_{DSS}$	100 to 180	140 to 280	240 to 450

## Test Circuit

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







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