



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

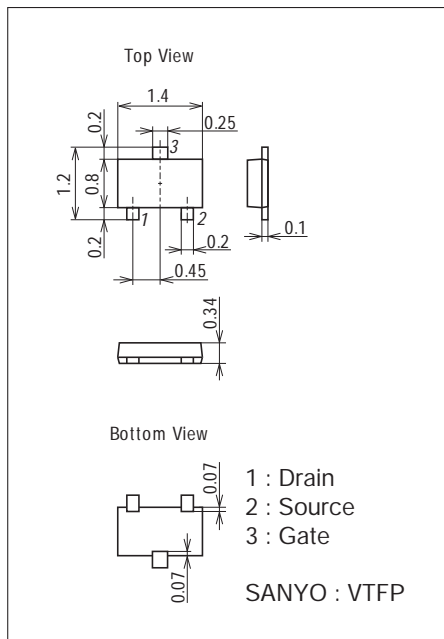
Specifications

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

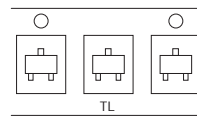
unit : mm (typ)
7031-001



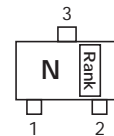
Product & Package Information

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

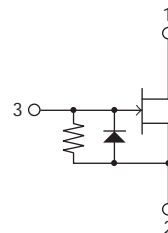
Packing Type: TL



Marking



Electrical Connection



TF256TH

Electrical Characteristics at Ta=25°C

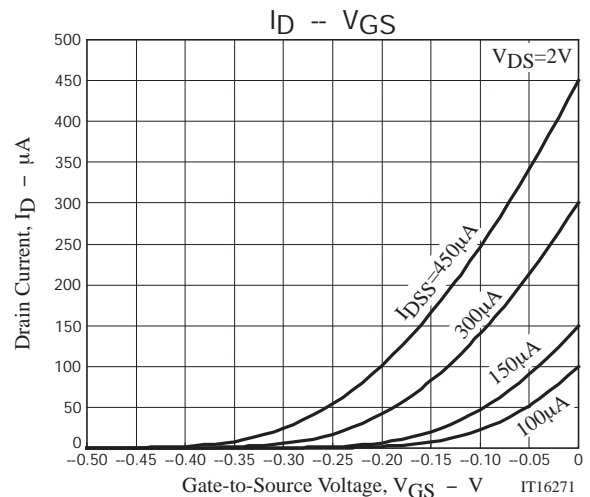
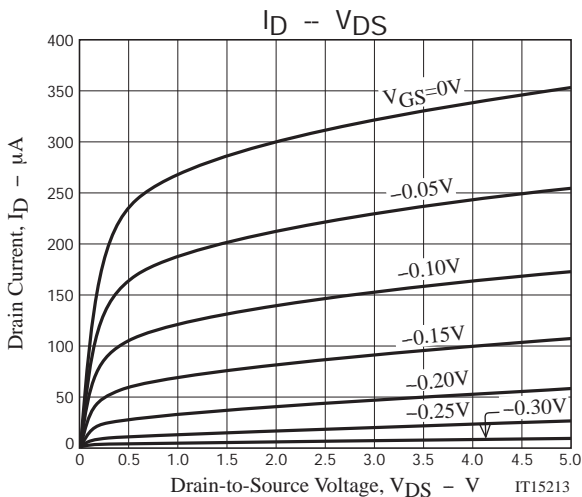
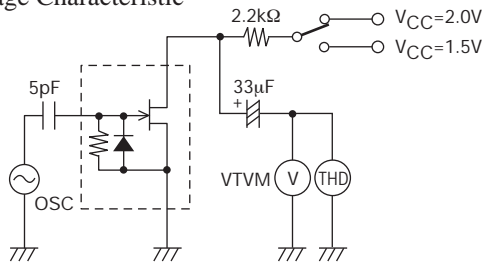
Parameter	Symbol	Conditions	Ratings			Unit	
			Rank	min	typ		max
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	$I_G = -100\mu A$		-20		V	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 2V, I_D = 1\mu A$		-0.1	-0.35	-1.0	V
Drain Current	I_{DSS}^*	$V_{DS} = 2V, V_{GS} = 0V$	3	100		180	μA
			4	140		280	
			5	240		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

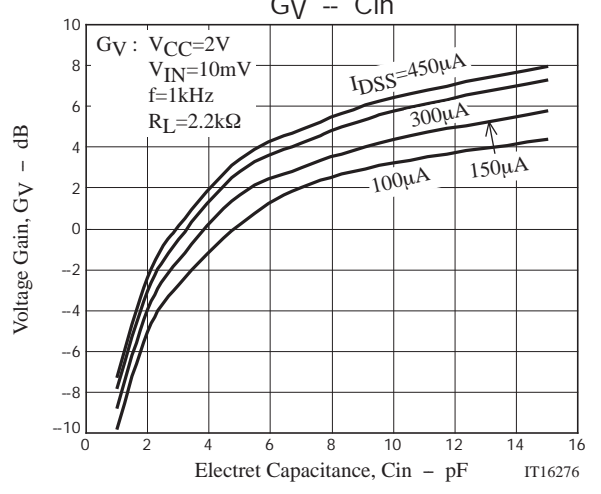
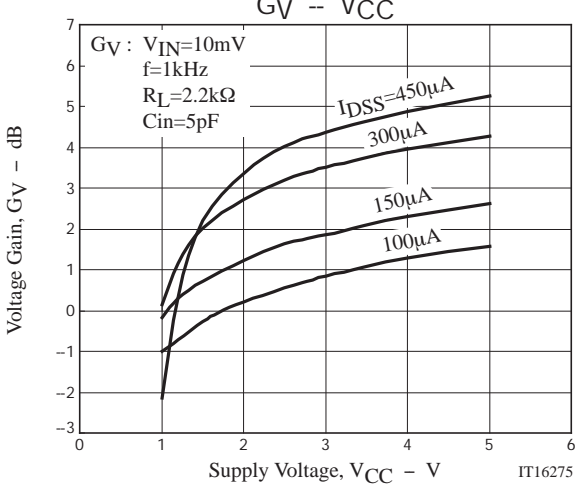
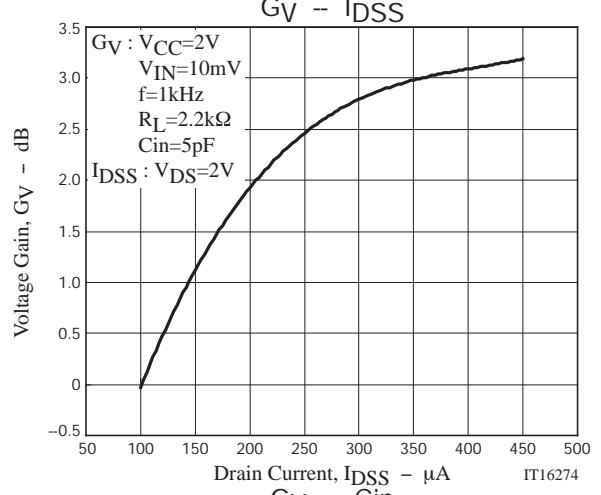
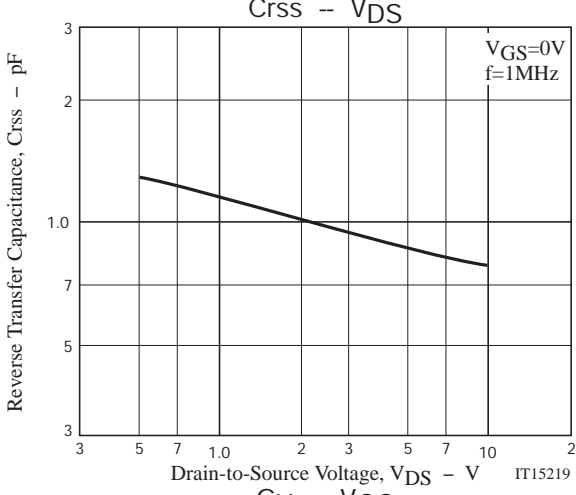
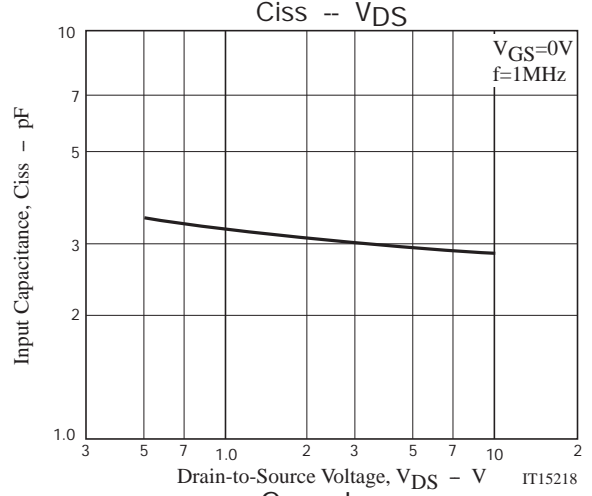
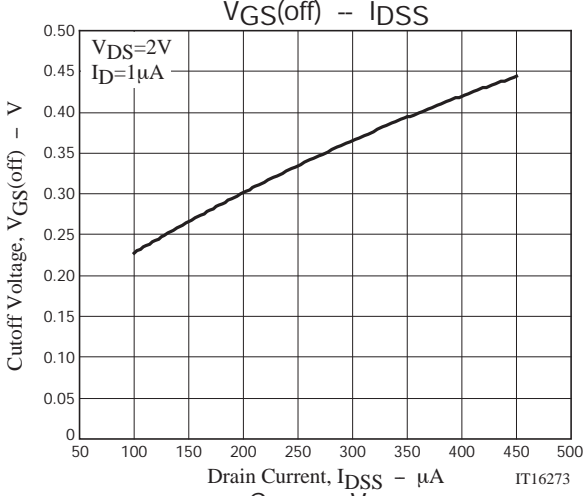
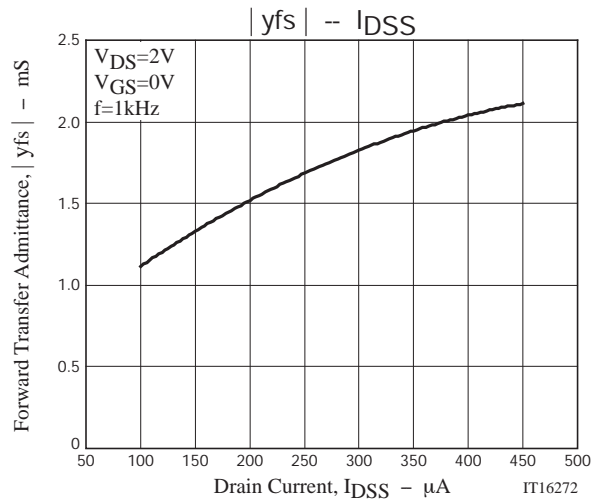
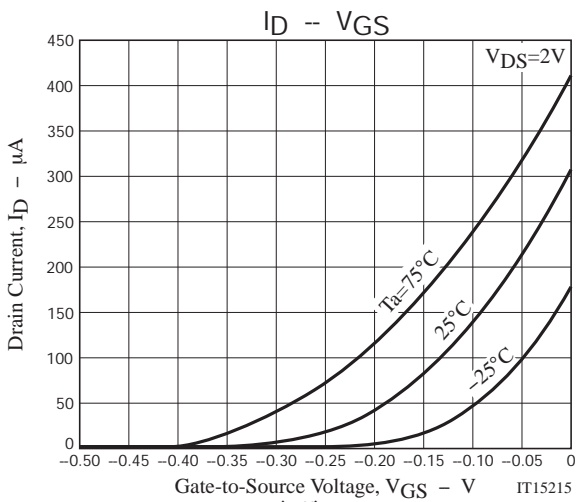
* : The TF256TH is classified by I_{DSS} as follows : (unit : μA)

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

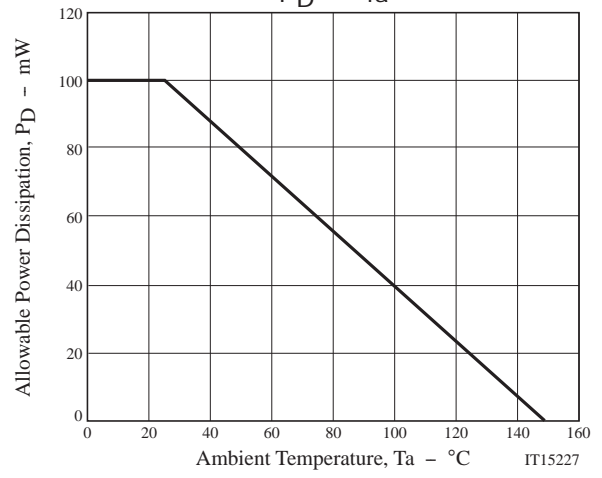
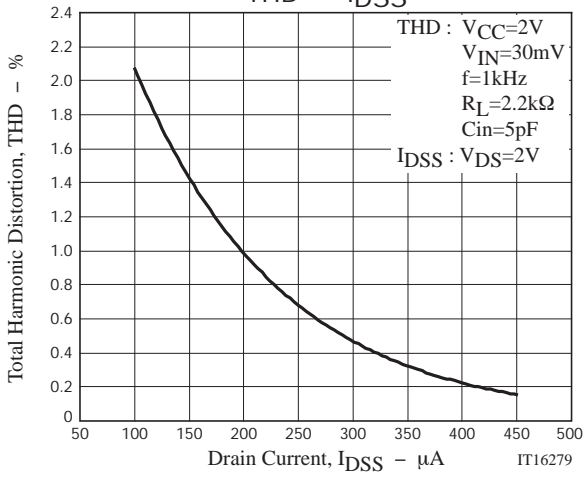
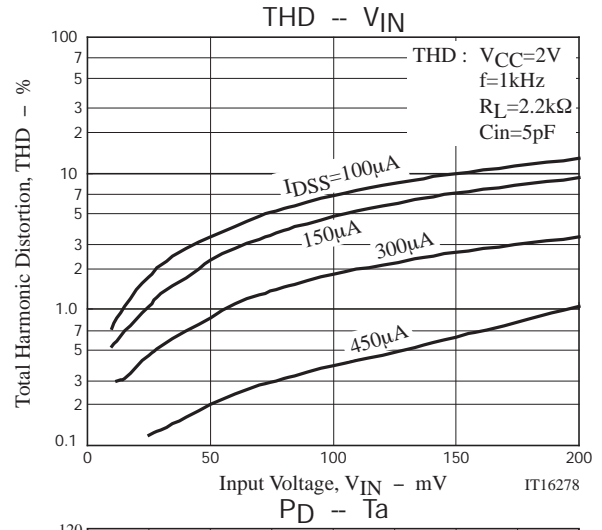
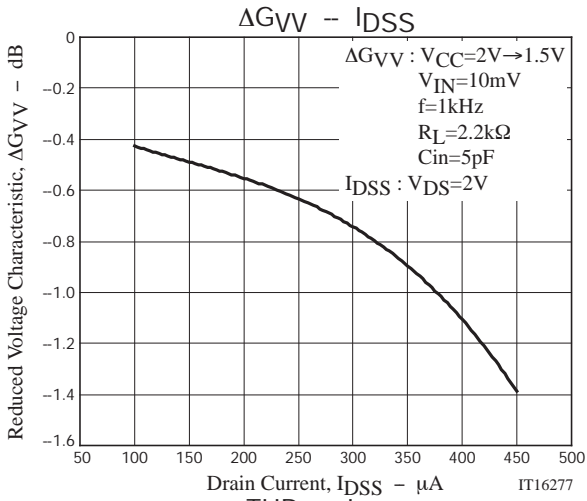
Test Circuit

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





TF256TH



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