



# TF256 — 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 [1.0mm×0.6mm×0.27mm (max 0.3mm)]
- Best suited for use in electret condenser microphone for audio equipments and telephones
- Excellent transient characteristics
- Adoption of FBET process
- Halogen free compliance

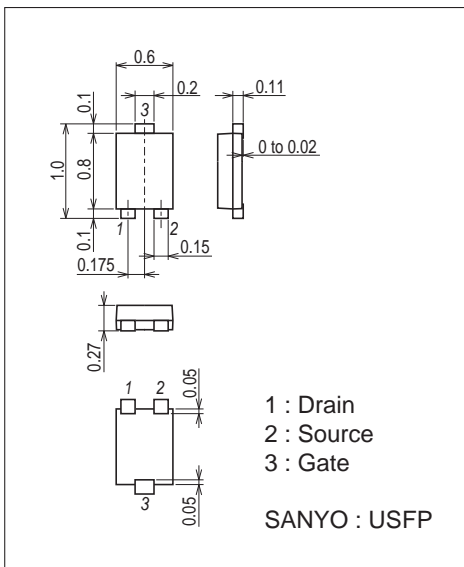
## Specifications

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	$P_D$		30	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

## Package Dimensions

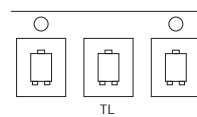
unit : mm (typ)  
7055-001



## Product & Package Information

- Package : USFP
- JEITA, JEDEC : -
- Minimum Packing Quantity : 10,000 pcs./real

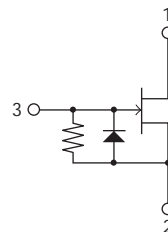
## Packing Type: TL



## Marking



## Electrical Connection



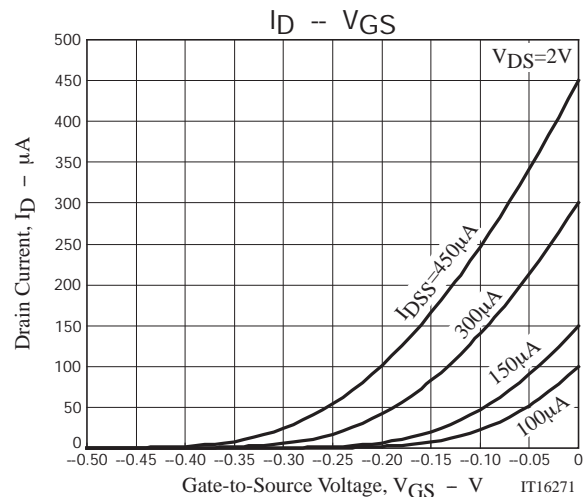
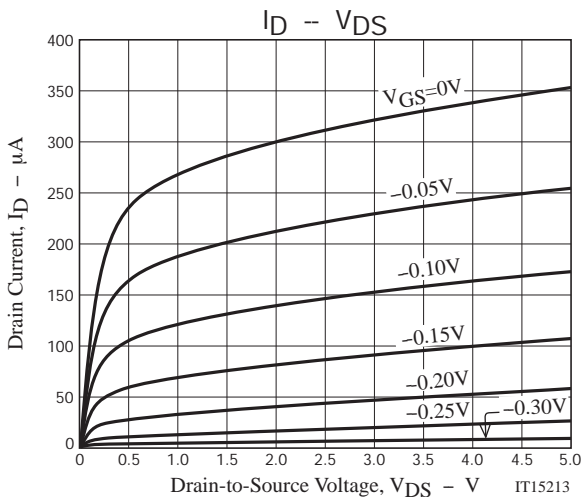
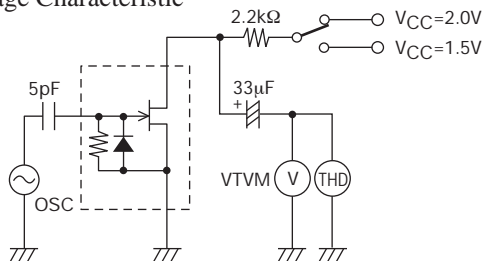
# TF256

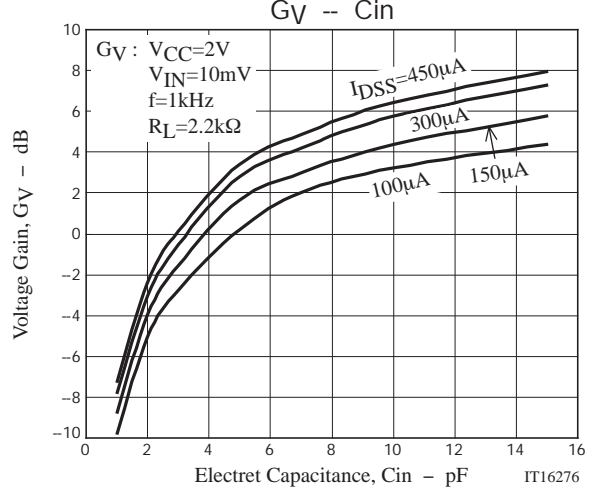
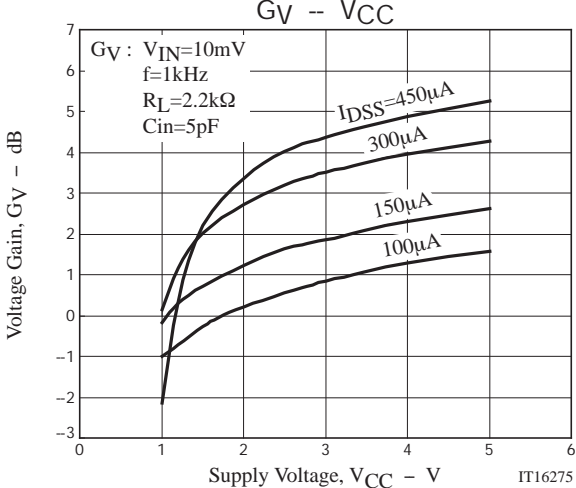
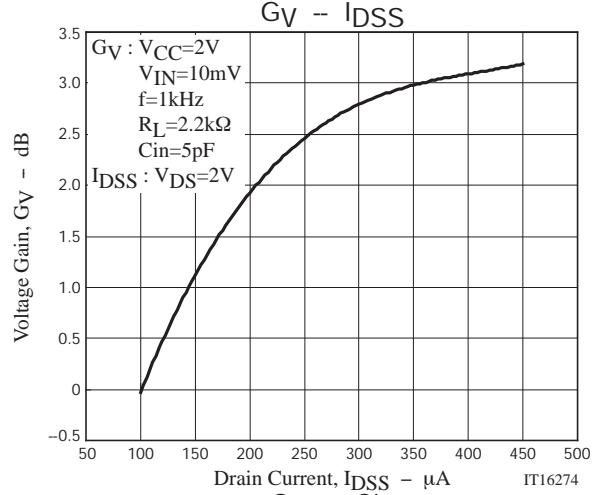
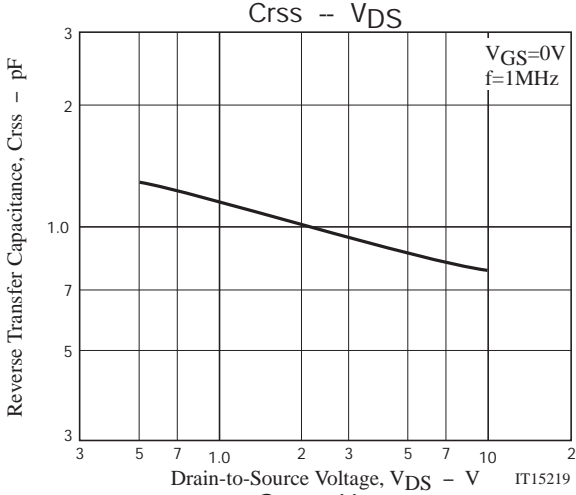
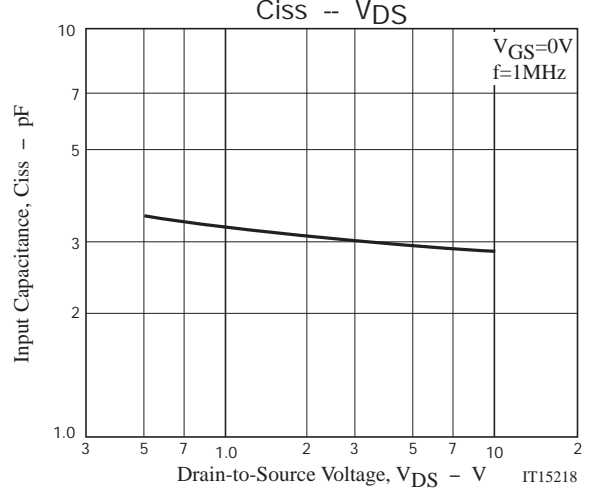
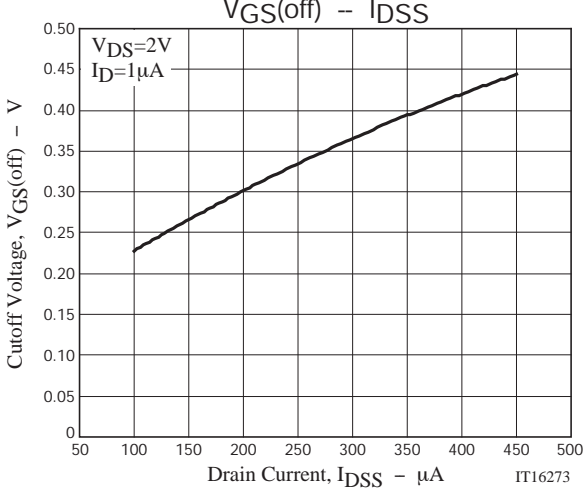
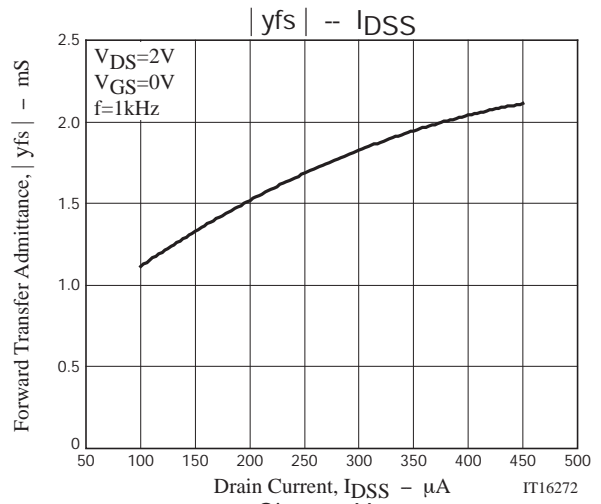
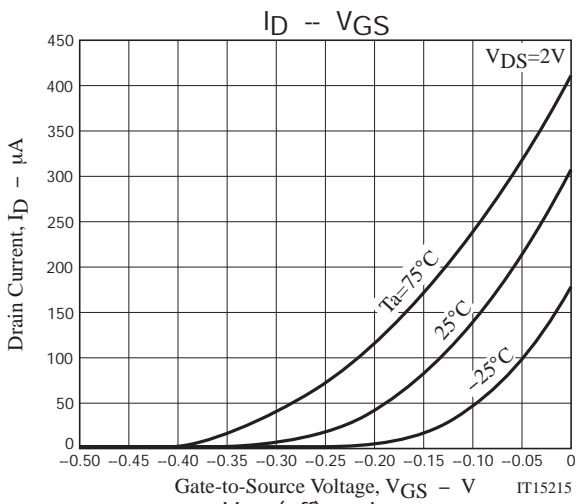
## Electrical Characteristics at $T_a=25^\circ\text{C}$

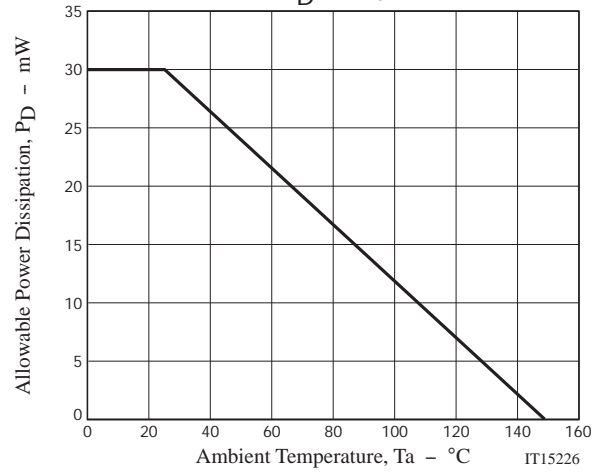
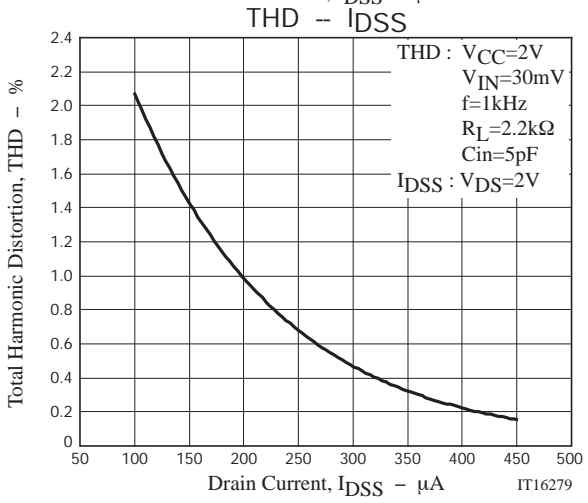
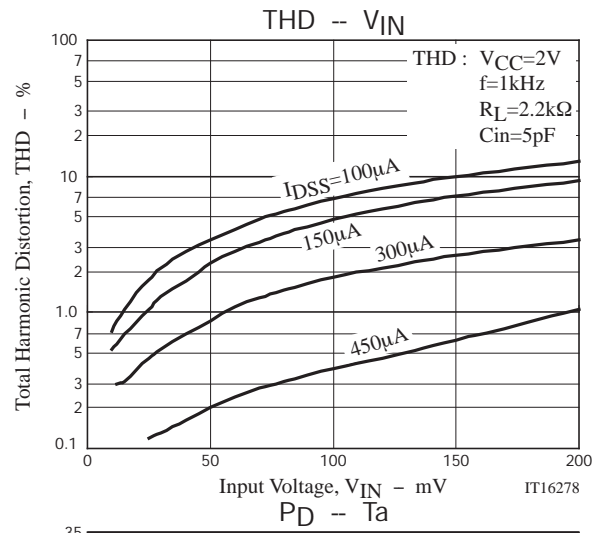
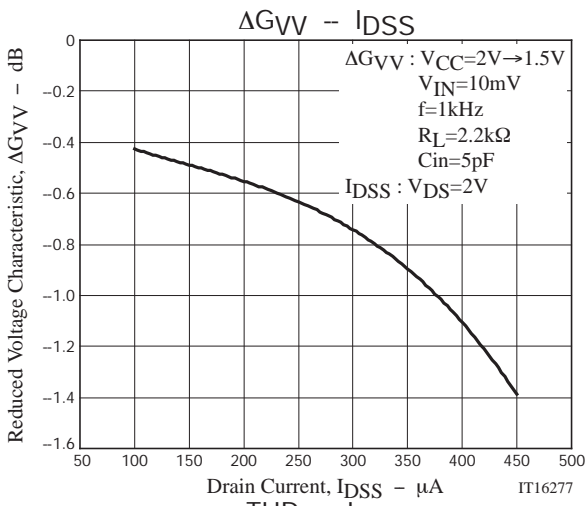
Parameter	Symbol	Conditions	Ratings			Unit	
			Rank	min	typ		max
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	$I_G=-100\mu\text{A}$		-20		V	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=2\text{V}, I_D=1\mu\text{A}$		-0.1	-0.35	-1.0	V
Drain Current	$I_{DSS}$	$V_{DS}=2\text{V}, V_{GS}=0\text{V}$	3	100		180	$\mu\text{A}$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

## Test Circuit

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







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