



N-channel Silicon Junction FET

# TF202FC — 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 <sub>GDO</sub>		-20	V
Gate Current	I <sub>G</sub>		10	mA
Drain Current	I <sub>D</sub>		1	mA
Allowable Power Dissipation	P <sub>D</sub>		100	mW
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	V <sub>(BR)GDO</sub>	I <sub>G</sub> =-100μA	-20			V
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =1μA	-0.2	-0.6	-1.0	V

Marking : E

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# TF202FC

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain Current	$I_{DSS}$	$V_{DS}=5V, V_{GS}=0V$	140*		350*	$\mu A$
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	$G_V$	$V_{IN}=10mV, f=1kHz$		-3.0		dB
Reduced Voltage Characteristic	$\Delta G_{VV}$	$V_{IN}=10mV, f=1kHz, V_{CC}=4.5V \rightarrow 1.5V$		-1.2	-3.5	dB
Frequency Characteristic	$\Delta G_{vf}$	$f=1kHz$ to 110Hz			-1.0	dB
Total Harmonic Distortion	THD	$V_{IN}=30mV, f=1kHz$		1.2		%
Output Noise Voltage	$V_{NO}$	$V_{IN}=0V, A$ Curve			-110	dB

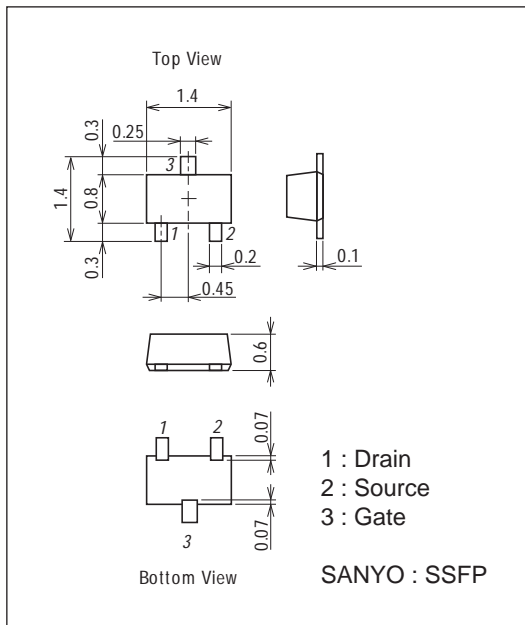
\* : The TF202FC is classified by  $I_{DSS}$  as follows : (unit :  $\mu A$ )

Rank	4	5
$I_{DSS}$	140 to 240	210 to 350

## Package Dimensions

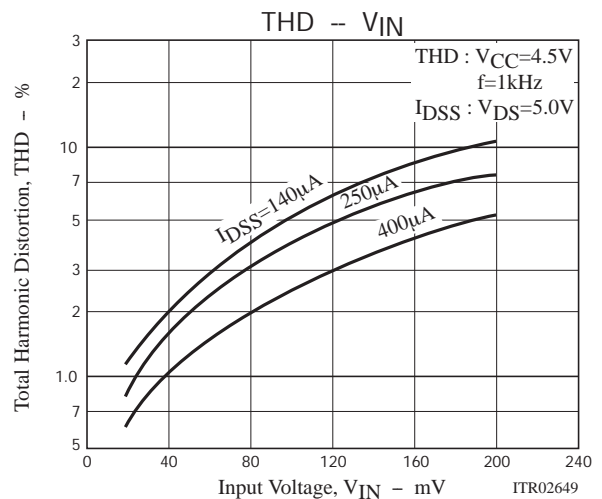
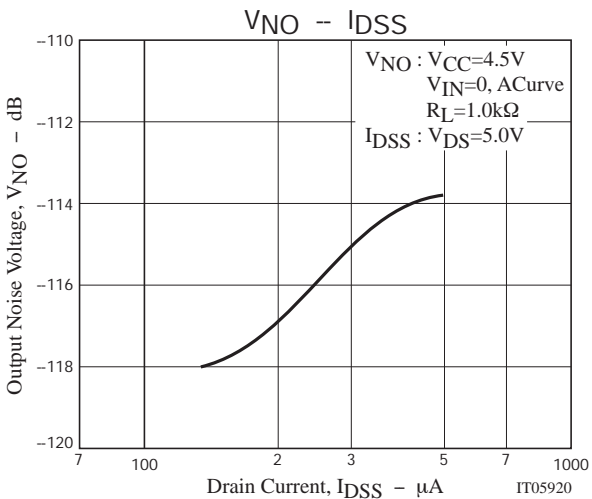
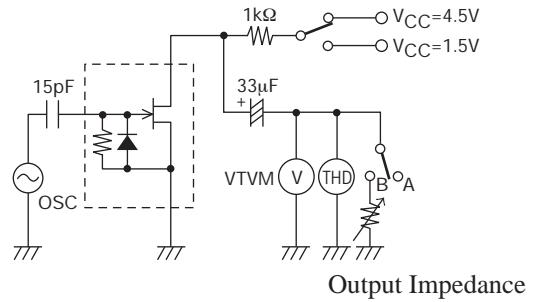
unit : mm (typ)

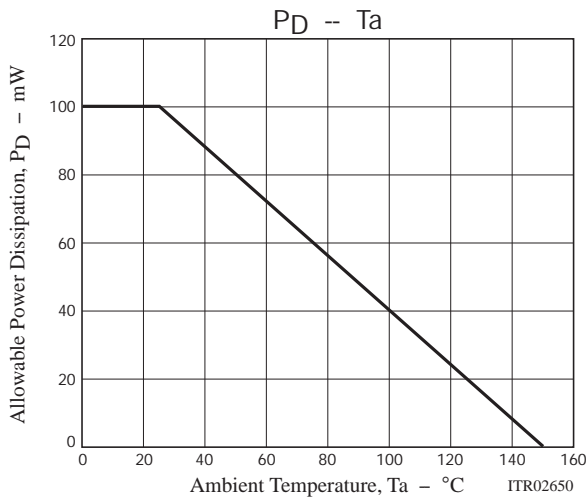
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## Test Circuit

Voltage gain  
Frequency Characteristic  
Distortion  
Reduced Voltage Characteristic





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