



# N-CHANNEL JUNCTION FIELD EFFECT TRANSISTOR

### DESCRIPTION

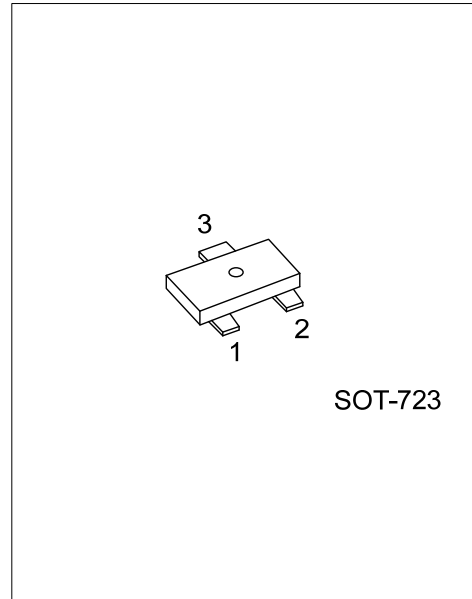
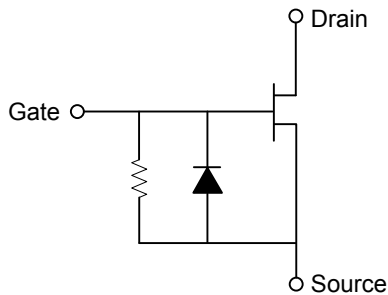
The UTC **TF219** is an N-Channel Junction FET, it uses UTC's advanced technology to provide the customers with high voltage gain, etc.

The UTC **TF219** is suitable for electret capacitor microphone applications.

### FEATURES

\* High voltage gain

### EQUIVALENT CIRCUIT



SOT-723

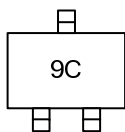
### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
TF219L-x-AQ3-R	TF219G-x-AQ3-R	SOT-723	D	S	G	Tape Reel

Note: Pin Assignment: D: Drain S: Source G: Gate

<p>TF219G-x-AQ3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Green Package</p>	<p>(1) R: Tape Reel (2) AQ3: SOT-723 (3) x: Refer to Classification of <math>I_{DSS}</math> (4) G: Halogen Free and Lead Free, L: Lead Free</p>
---	---

### MARKING



■ ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Gate to Drain Voltage	$V_{GDO}$	-20	V
Drain Current	$I_D$	10	mA
Gate Current	$I_G$	10	mA
Allowable Power Dissipation	$P_D$	100	mW
Junction Temperature	$T_J$	+125	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +125	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

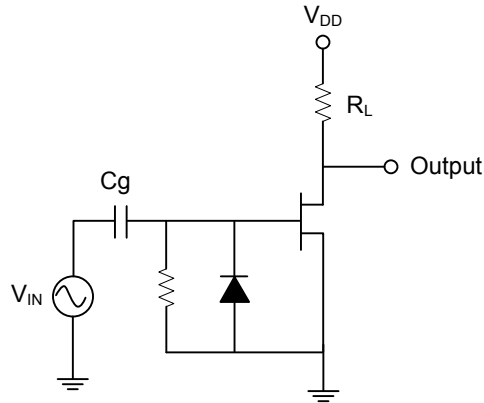
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate to Drain Breakdown Voltage	$V_{(BR)GDO}$	$I_G=-100\mu\text{A}$	-20			V
Drain Current	$I_{DSS}$	$V_{DS}=2\text{V}, V_{GS}=0\text{V}$	210		350	$\mu\text{A}$
Gate Off Voltage	$V_{GS(OFF)}$	$V_{DS}=2\text{V}, I_D=1\mu\text{A}, I_{DSS}=250\mu\text{A}$		-0.3		V
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS}=2\text{V}, V_{GS}=0\text{V}, I_{DSS}=250\mu\text{A}$		2.1		mS
Input Capacitance	$C_{ISS}$	$V_{DS}=2\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		9.0		pF
Voltage Gain	$G_V$	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=10\text{mV}, I_{DSS}=100\mu\text{A}$		1.3		dB
		$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=10\text{mV}, I_{DSS}=250\mu\text{A}$		3.4		dB
		$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=10\text{mV}, I_{DSS}=350\mu\text{A}$		3.6		dB
Delta Voltage Gain	$\Delta G_V(V)$	$V_{DD}=2\text{V}\sim 1.5\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=10\text{mV}$		-0.7		dB
Frequency Characteristics	$\Delta G_V(f)$	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}\sim 110\text{Hz}, V_{IN}=10\text{mV}$		-0.2		dB
Output Noise Voltage	$V_{NO}$	$V_{DD}=3\text{V}, C_g=5\text{pF}, \text{A-Curve Filter}, R_L=1.0\text{k}\Omega, I_{DSS}=250\mu\text{A}$		-106		dB
		$V_{DD}=3\text{V}, C_g=5\text{pF}, \text{A-Curve Filter}, R_L=2.2\text{k}\Omega, I_{DSS}=250\mu\text{A}$		-103		dB
Total Harmonic Distortion	THD	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=30\text{mV}, I_{DSS}=250\mu\text{A}$		1.0		%

■ CLASSIFICATION OF  $I_{DSS}$

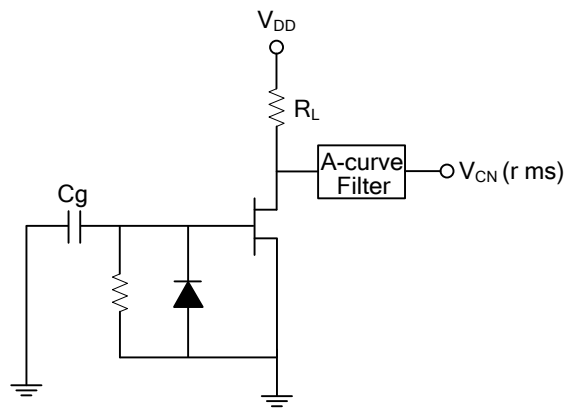
RANK	C
$I_{DSS} (\mu\text{A})$	210 ~ 350

■ TEST CIRCUITS

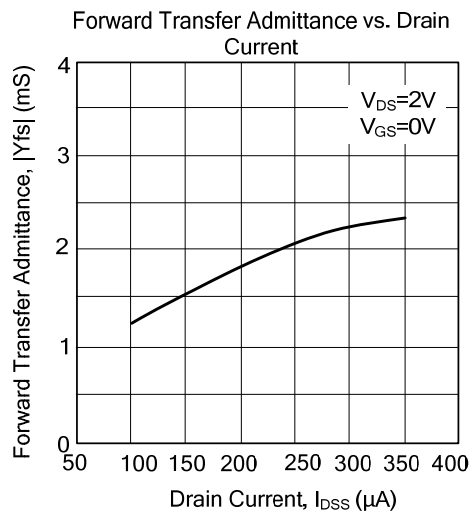
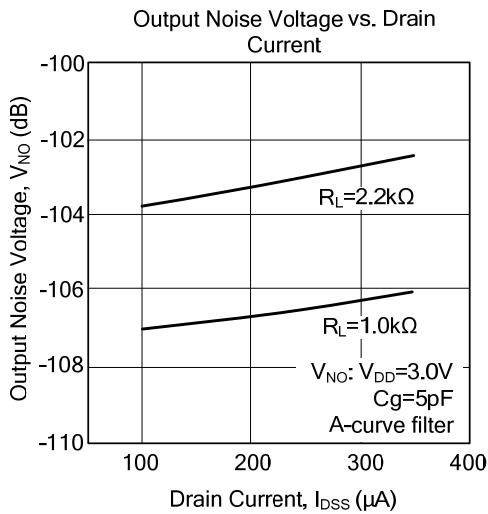
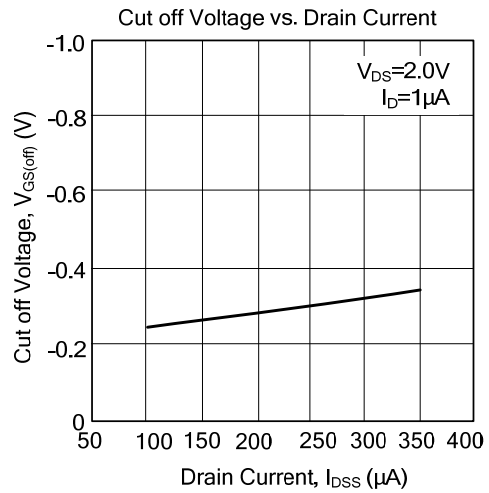
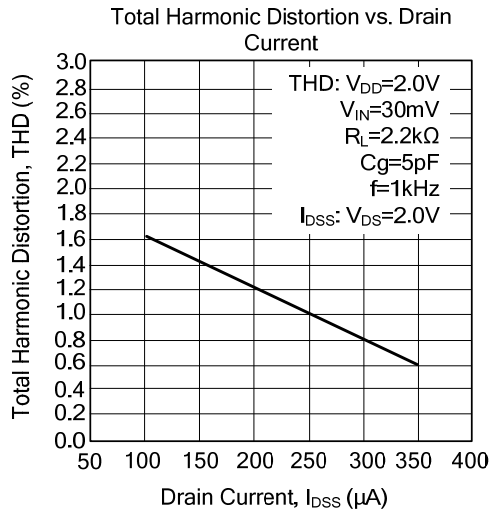
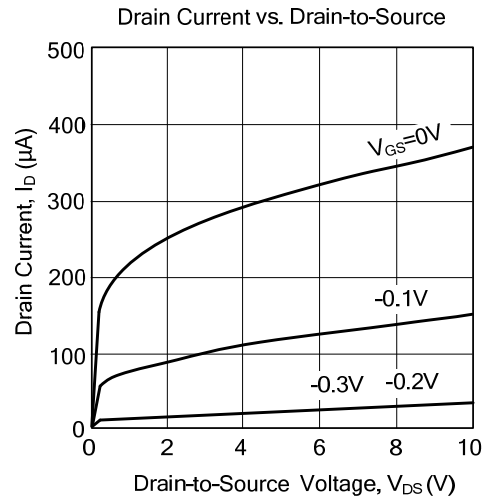
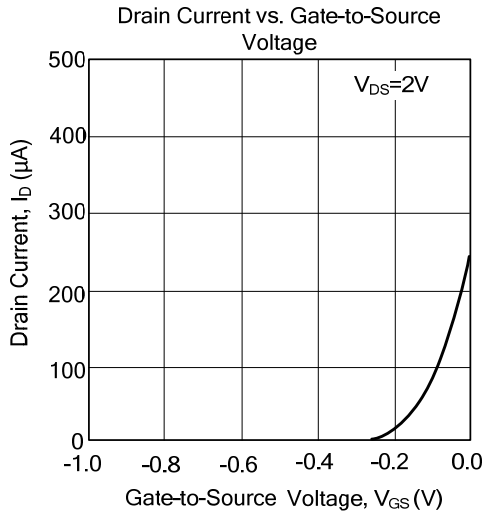
Voltage Gain  
 Frequency Characteristics  
 Total Harmonic Distortion



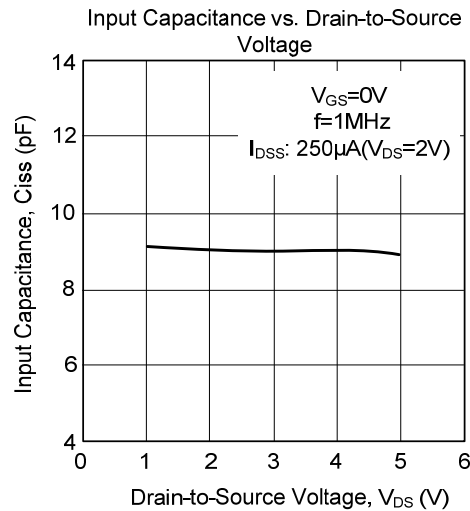
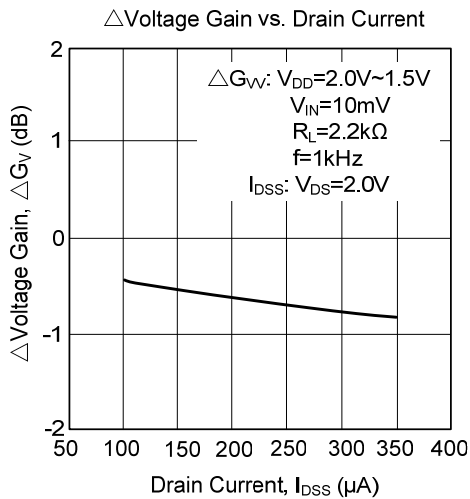
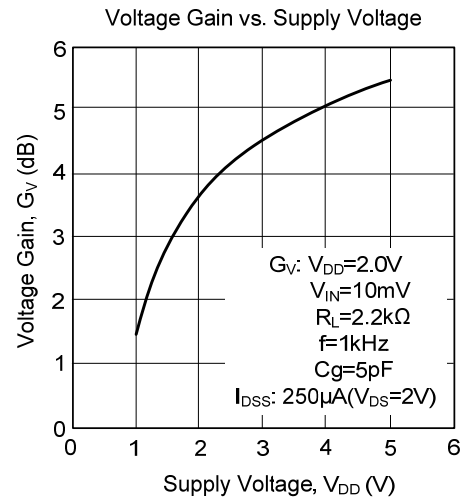
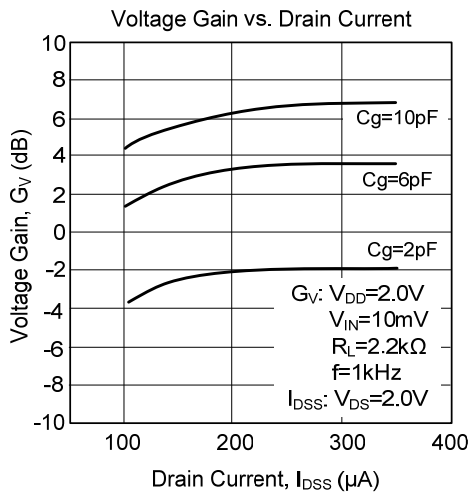
Output Noise Voltage



■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. UTC reserves the right to make changes to information published in this document, including without limitation specifications and product descriptions, at any time and without notice. This document supersedes and replaces all information supplied prior to the publication hereof.