



# TF2123

## N-CHANNEL JFET

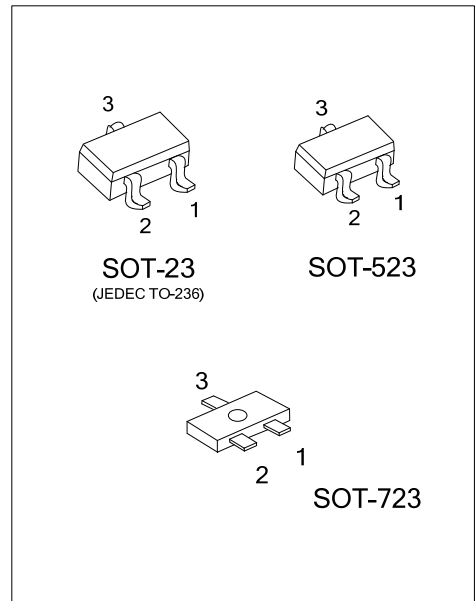
### N-CHANNEL JFET CAPACITOR MICROPHONE APPLICATIONS

■ DESCRIPTION

The UTC **TF2123** uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with low gate voltages. This device is suitable for use in capacitor microphone applications.

■ FEATURES

- \*Suited for use in audio, telephone capacitor microphones.
- \*Good voltage characteristic.
- \*Good transient characteristic.



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
TF2123L-x-AE3-R	TF2123G-x-AE3-R	SOT-23	S	D	G	Tape Reel
TF2123L-x-AN3-R	TF2123G-x-AN3-R	SOT-523	S	D	G	Tape Reel
TF2123L-x-AQ3-R	TF2123G-x-AQ3-R	SOT-723	S	D	G	Tape Reel

<p>TF2123L-x-AE3-R</p> <p>(1)Packing Type (2)Package Type (3)Rank (4)Lead Free</p>	<p>(1) R: Tape Reel (2) AE3: SOT-23, AN3: SOT-523, AQ3: SOT-723 (3) x: refer to CLASSIFICATION OF <math>I_{DSS}</math> (4) L: Lead Free, G: Halogen Free</p>
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■ MARKING

TF2123-A	TF2123-B	TF2123-C
<p>L: Lead Free G: Halogen Free</p>	<p>L: Lead Free G: Halogen Free</p>	<p>L: Lead Free G: Halogen Free</p>

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

PARAMETER	SYMBOL	RATING	UNIT
Gate Drain Voltage	$V_{GDO}$	-20	V
Gate Current	$I_G$	10	mA
Drain Current	$I_D$	10	mA
Power Dissipation	$P_D$	100	mW
Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^{\circ}\text{C}$

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.

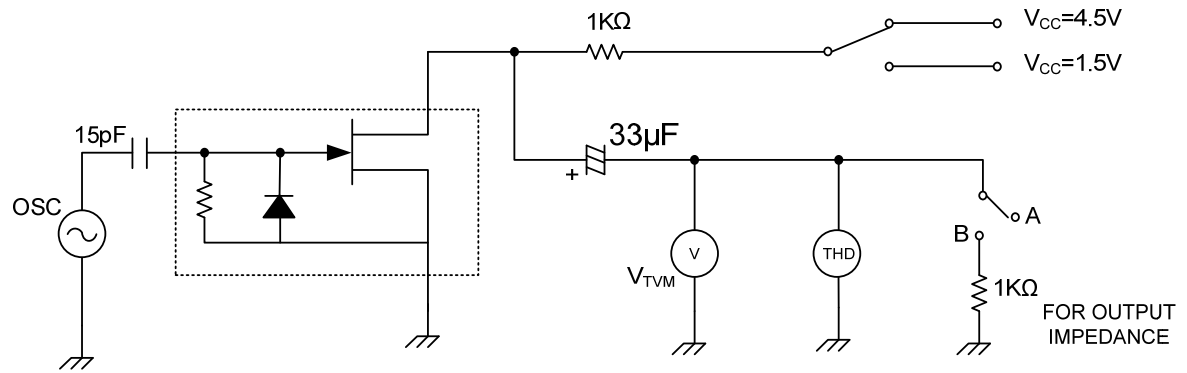
■ ELECTRICAL CHARACTERISTICS (  $T_A=25^{\circ}\text{C}$ , unless otherwise specified )

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Gate Drain Breakdown Voltage	$BV_{GDO}$	$I_G=-100\mu\text{A}$	-20			V
Gate Source Cut off Voltage	$V_{GS(OFF)}$	$V_{DS}=2\text{V}, I_D=1\mu\text{A}$		-0.38		V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=2\text{V}, V_{GS}=0\text{V}$	TF2123-A	100	170	$\mu\text{A}$
			TF2123-B	150	270	$\mu\text{A}$
			TF2123-C	210	350	$\mu\text{A}$
Drain Current	$I_D$	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}$	$I_{DSS}=100\mu\text{A}$	98		$\mu\text{A}$
			$I_{DSS}=250\mu\text{A}$	244		$\mu\text{A}$
			$I_{DSS}=350\mu\text{A}$	337		$\mu\text{A}$
Forward Transfer Admittance	$Y_{fs}$	$V_{DS}=2\text{V}, V_{GS}=0\text{V}$		1.43		mS
Input Capacitance	$C_{ISS}$	$V_{DS}=2, V_{GS}=0, f=1\text{MHz}$		5.0		pF
Voltage Gain	$G_V$	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=10\text{mV}$	$I_{DSS}=100\mu\text{A}$	0.1		dB
			$I_{DSS}=250\mu\text{A}$	1.95		dB
			$I_{DSS}=350\mu\text{A}$	2.25		dB
Delta Voltage Gain	$\Delta G_V$	$V_{IN}=10\text{mV}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{DD}=2\text{V to }1.5\text{V}$		-0.5		dB
Frequency Characteristic	$\Delta G_V(f)$	$V_{IN}=10\text{mV}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, V_{DD}=2\text{V}, f=1\text{kHz to }110\text{kHz}$		-0.2		dB
Output Noise Voltage	$V_{NO}$	$V_{DD}=2\text{V}, C_g=5\text{pF}, A\text{-curve filter}$	$R_L=1\text{k}\Omega$	-107		dB
			$R_L=2.2\text{k}\Omega$	-102		dB
Total Harmonic distortion	THD	$V_{DD}=2\text{V}, R_L=2.2\text{k}\Omega, C_g=5\text{pF}, f=1\text{kHz}, V_{IN}=50\text{mV}$		0.9		%

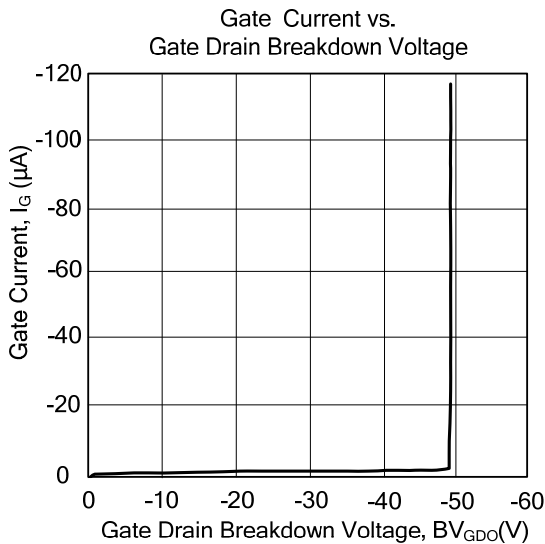
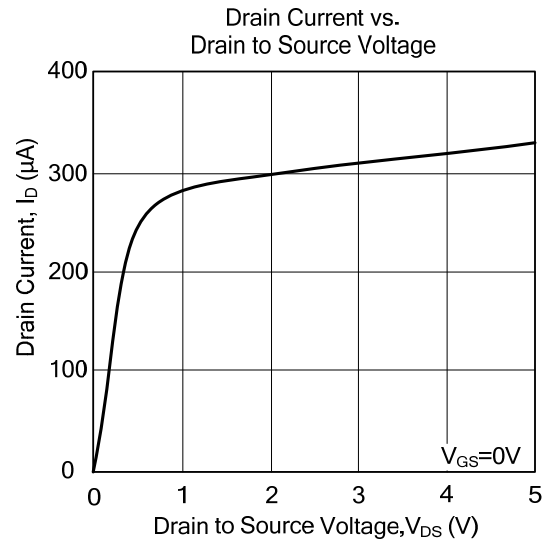
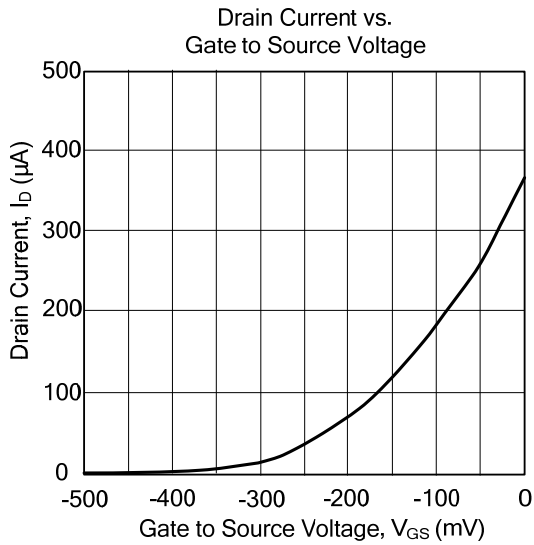
■ CLASSIFICATION OF  $I_{DSS}$

RANK	A	B	C
RANGE	100-170	150-270	210-350

■ TEST CIRCUIT ( $T_A=25^\circ\text{C}$ )



■ TYPICAL CHARACTERISTICS



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