

FJZ594J

Capacitor Microphone Applications

- Especially Suited for use in Audio, Telephone Capacitor Microphones
- Excellent Voltage Characteristic
- Excellent Transient Characteristic



1. Drain 2. Source 3. Gate

Si N-channel Junction FET

Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{GDO}	Gate-Drain Voltage	-20	V
I_G	Gate Current	10	mA
I_D	Drain Current	1	mA
P_D	Power Dissipation	100	mW
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{GDO}	Gate-Drain Breakdown Voltage	$I_G = -100\mu\text{A}$	-20			V
$V_{GS(off)}$	Gate-Source Cut-off Voltage	$V_{DS}=5\text{V}, I_D=1\mu\text{A}$		-0.6	-1.5	V
I_{DSS}	Drain Current	$V_{DS}=5\text{V}, V_{GS}=0$	150		350	μA
$ y_{fs} $	Forward Transfer Admittance	$V_{DS}=5\text{V}, V_{GS}=0, f=1\text{MHz}$	0.4	1.2		mS
C_{ISS}	Input Capacitance	$V_{DS}=5\text{V}, V_{GS}=0, f=1\text{MHz}$		3.5		pF
C_{RSS}	Output Capacitance	$V_{DS}=5\text{V}, V_{GS}=0, f=1\text{MHz}$		0.65		pF
$V_{CC}=4.5\text{V}, R_L=1\text{k}\Omega, C_{in}=15\text{pF}$, See the Specified Test Circuit						
G_V	Voltage Gain	$V_{IN}=10\text{mV}, f=1\text{KHz}$		-3		dB
ΔG_{VV}	Reduced Voltage Characteristic	$V_{IN}=10\text{mV}, f=1\text{KHz}$ $V_{CC}=4.5\text{V} \rightarrow 1.5\text{V}$		-1.2	-3.5	dB
ΔG_{Vf}	Frequency Characteristic	$f=1\text{KHz to } 110\text{Hz}$			-1	dB
Z_{IN}	Input Resistance	$f=1\text{KHz}$	25			$\text{M}\Omega$
Z_O	Output Resistance	$f=1\text{KHz}$			700	Ω
THD	Total Harmonic Distortion	$V_{IN}=10\text{mV}, f=1\text{KHz}$		1		%
V_{NO}	Output Noise Voltage	$V_{IN}=0, A \text{ curve}$			-110	dB

Thermal Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max	Units
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	1250	$^\circ\text{C/W}$

Typical Characteristics

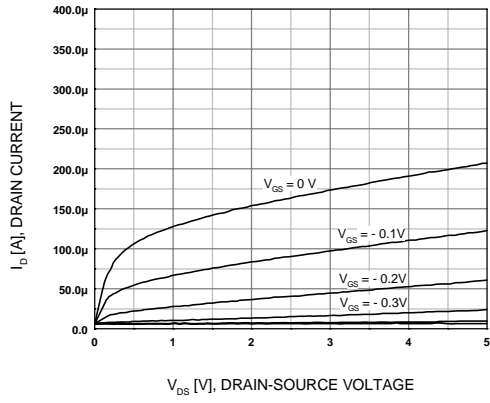


Figure 1. Static Characteristics

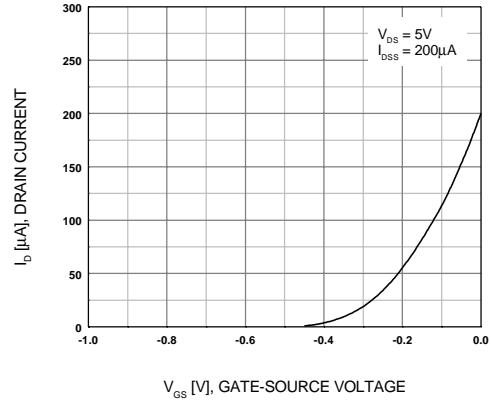


Figure 2. Transfer Characteristic

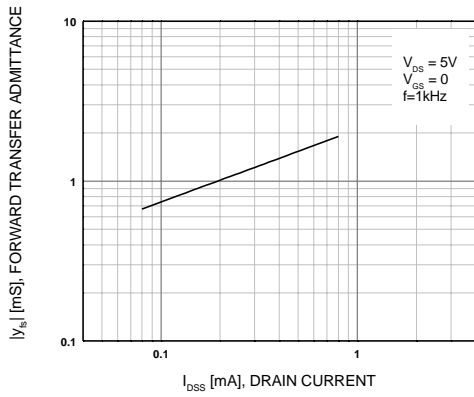


Figure 3. Forward Transfer Admittance

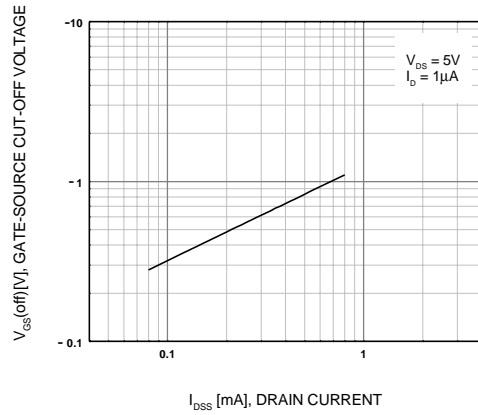


Figure 4. Cut-Off Voltage

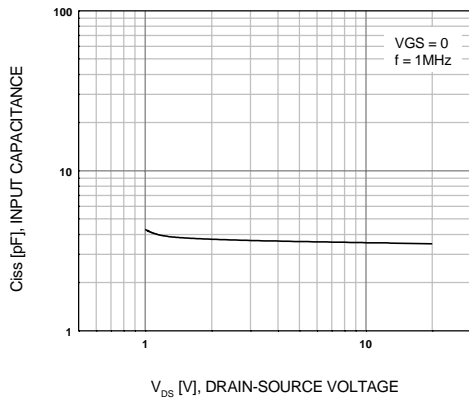


Figure 5. Input Capacitance

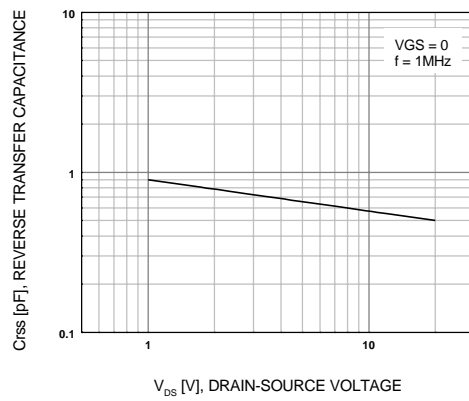


Figure 6. Reverse Transfer Capacitance

Typical Characteristics (Continued)

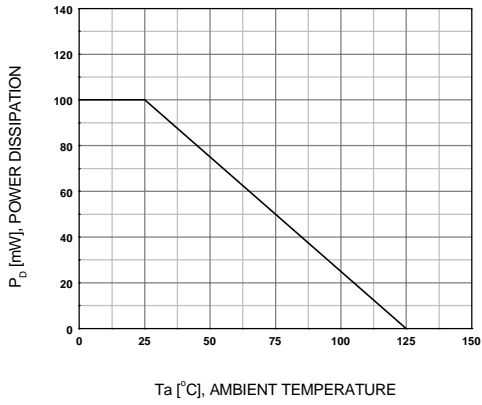


Figure 7. Power Derating

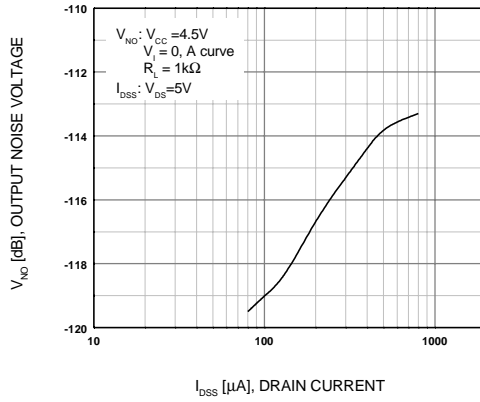


Figure 8. Output Noise Voltage

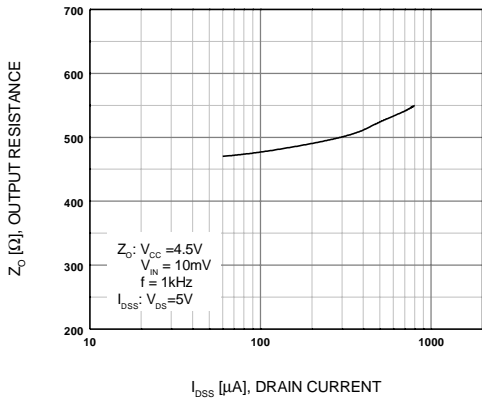


Figure 9. Output Resistance

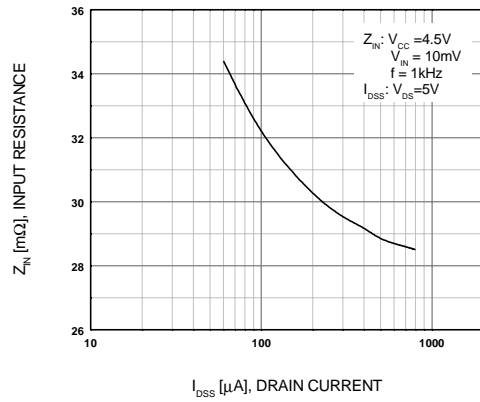


Figure 10. Input Resistance

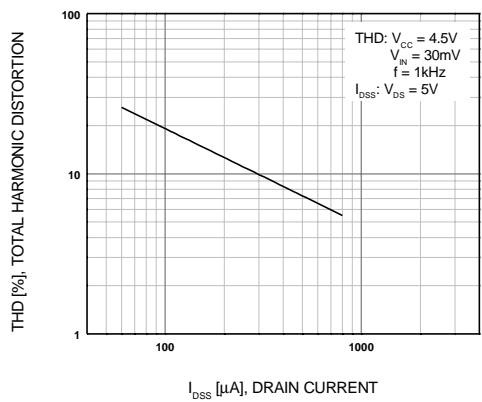


Figure 11. Total Harmonic Distortion vs. I_{DSS}

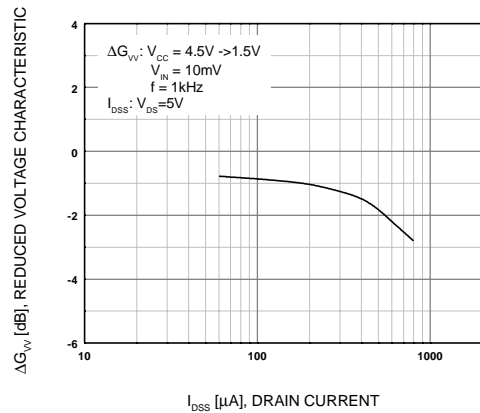


Figure 12. Reduced Voltage Characteristic

Typical Characteristics (Continued)

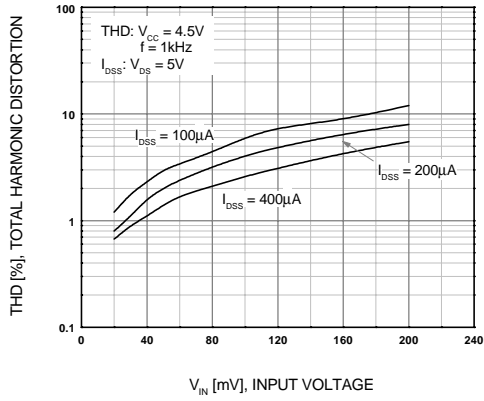


Figure 13. Total Harmonic Distortion vs. V_{IN}

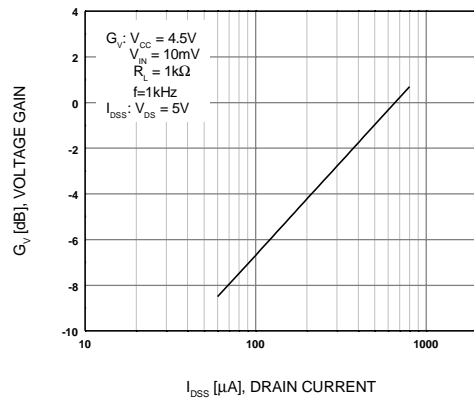
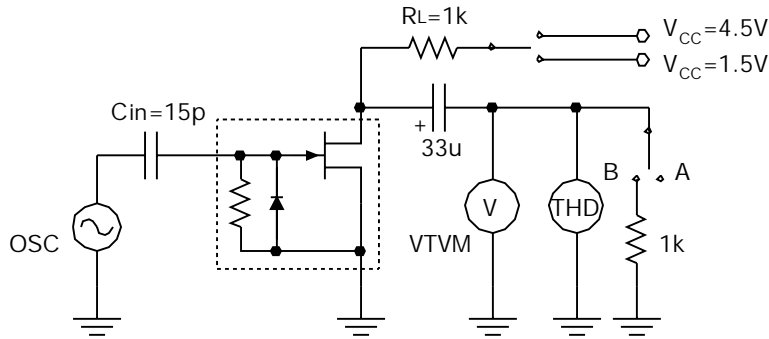


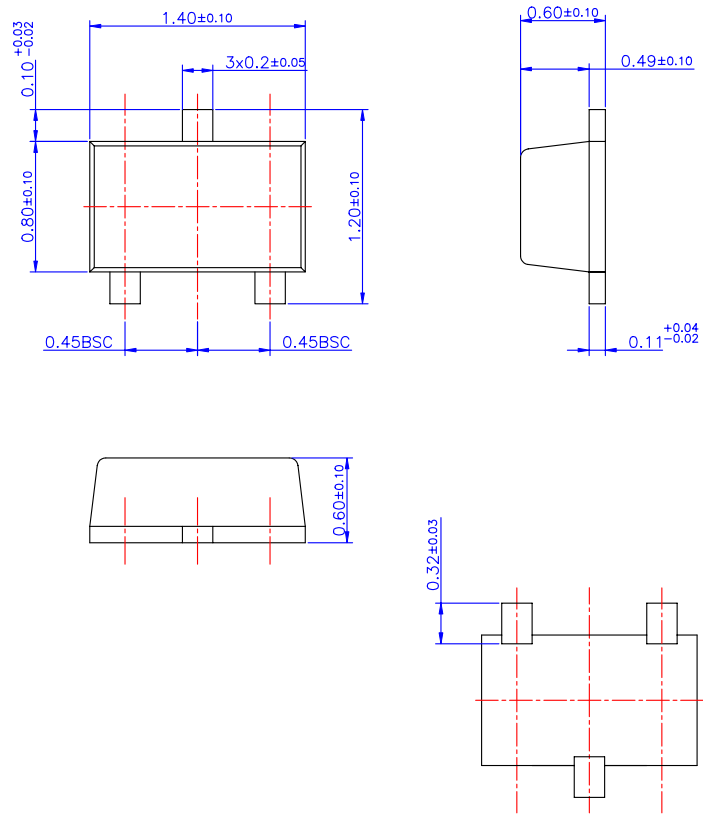
Figure 14. Voltage Gain



Specified Test Circuit

Package Dimensions

SOT-623F



Dimensions in Millimeters

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