Ordering number : ENN7698A

SANYO Semiconductors
DATA SHEET

N-channel Silicon Junction FET

TF208TH — 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.

Specifications

Absolute Maximum Ratings at Ta=25°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		100	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C (Value per element)

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	I_G=−100μA	−20			V
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=2V, I_D=1μA	−0.1		−1.0	V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=2V, V_{GS}=0V	140*		350*	μA
Forward Transfer Admittance	$\|yfs\|$	V_{DS}=2V, V_{GS}=0V, f=1kHz	0.5	1.4		mS
Input Capacitance	Ciss	V_{DS}=2V, V_{GS}=0V, f=1MHz		5.0		pF
Reverse Transfer Capacitance	Crss	V_{DS}=2V, V_{GS}=0V, f=1MHz		1.1		pF
[Ta=25°C, V_{CC}=2.0V, R_L=2.2kΩ, Cin=5pF, See specified Test Circuit.]						
Voltage Gain	G_V	V_{IN}=10mV, f=1kHz		−2.0		dB
Reduced Voltage Characteristic	ΔG_{VV}	V_{IN}=10mV, f=1kHz, V_{CC}=2.0→1.5V		−0.6	−2.0	dB
Frequency Characteristic	ΔG_{Vf}	f=1kHz to 110Hz			−1.0	dB

Continued on next page.

* : The TF208TH is classified by I_{DSS} as follows : (unit : μA)

Rank	B4	B5
I_{DSS}	140 to 240	210 to 350

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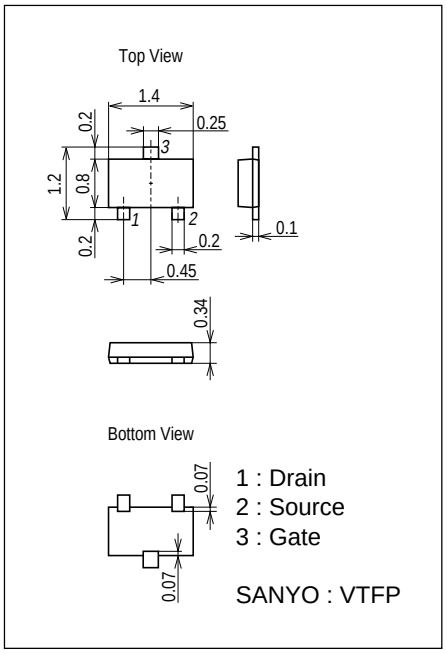
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Harmonic Distortion	THD	V_{IN}=30mV, f=1kHz		0.7		%
Output Noise Voltage	V_{NO}	V_{IN}=0V, A curve			-102	dB

Package Dimensions

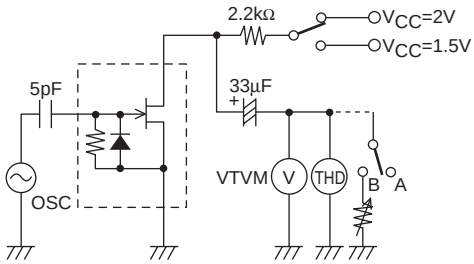
unit : mm

7031-001

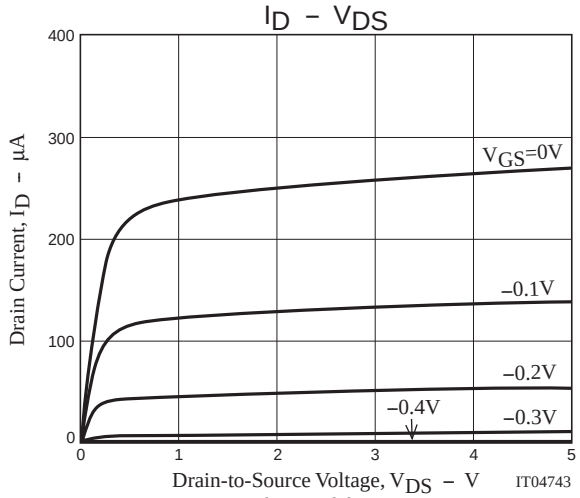


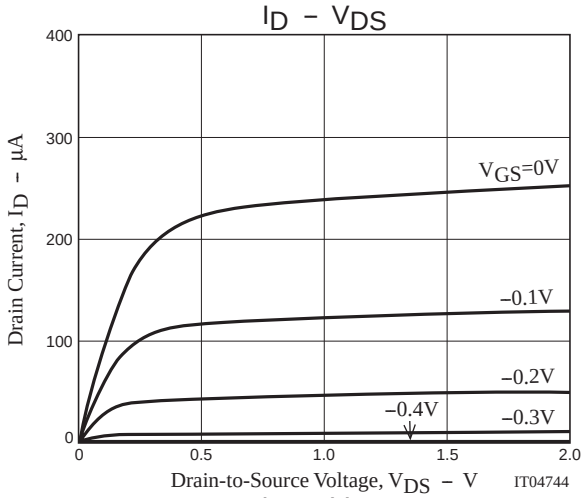
Test Circuit

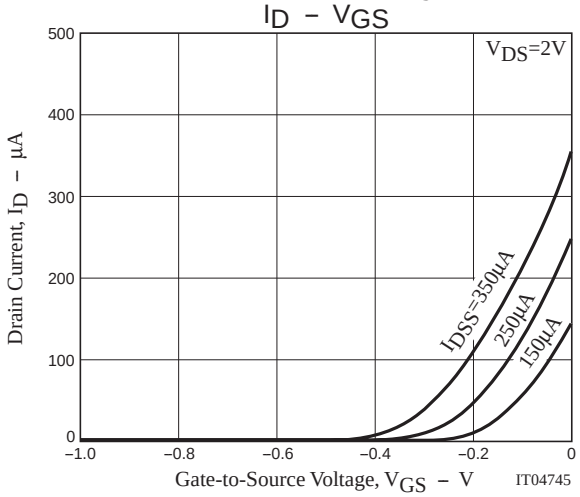
Voltage gain
Frequency Characteristic
Distortion
Reduced Voltage Characteristic

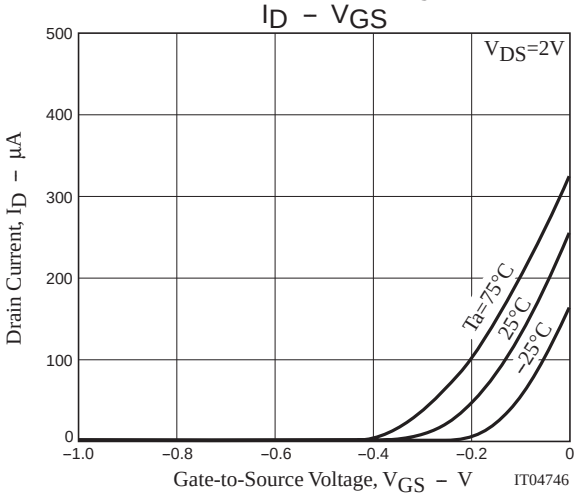


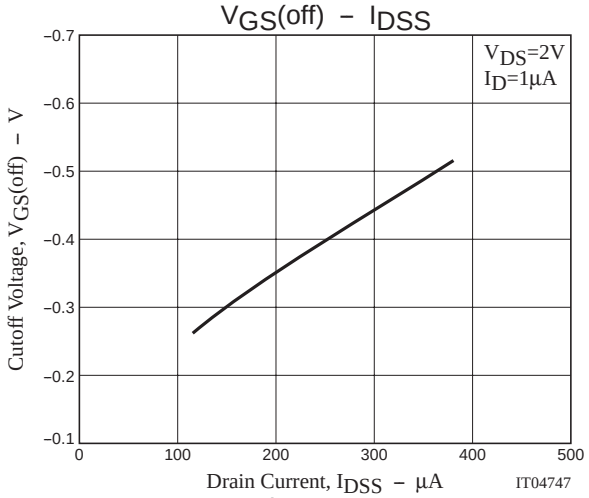
Output Impedance

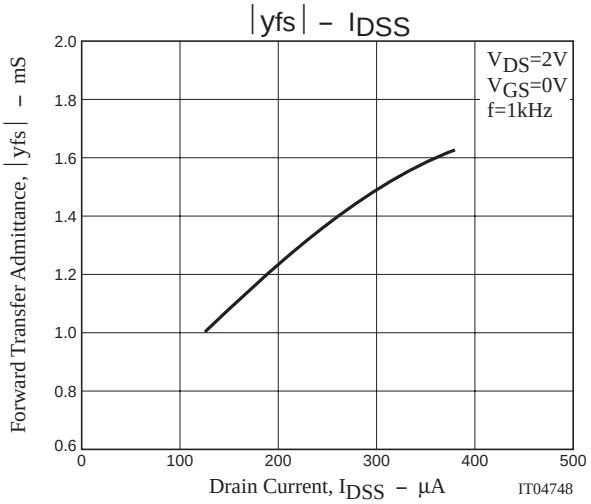


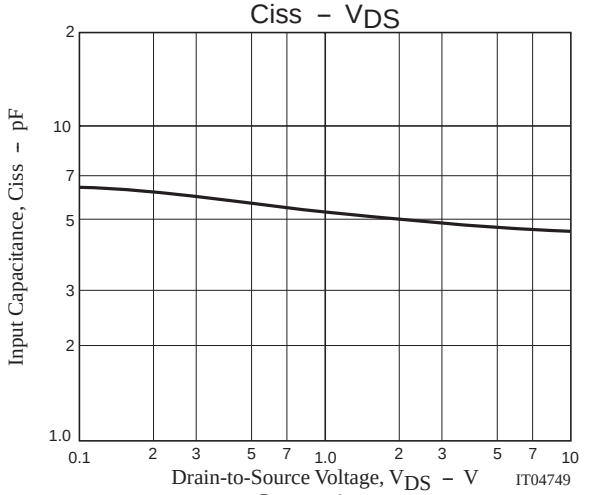


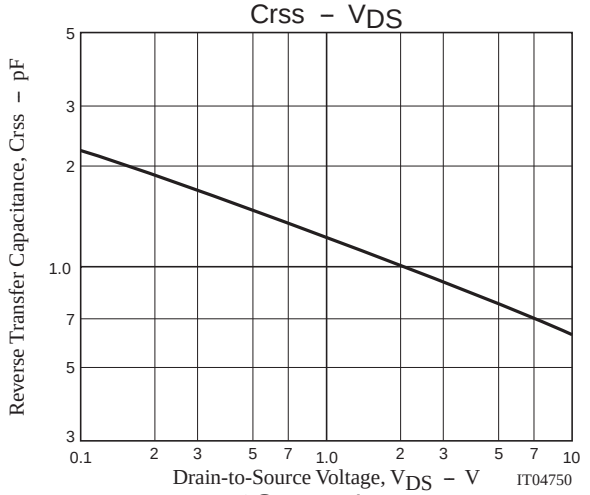


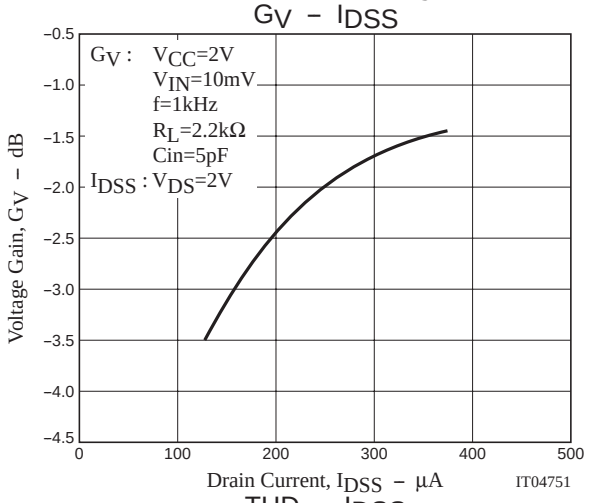


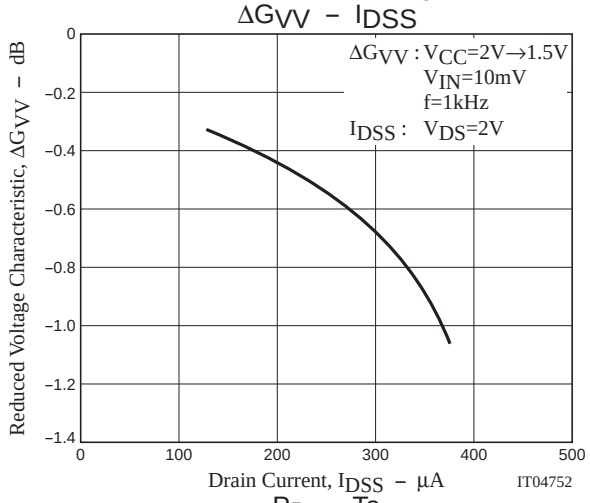

VGS(off) – IDSS
VDS=2V
ID=1μA
Cutoff Voltage, VGS(off) – V
Drain Current, IDSS – μA
IT04747

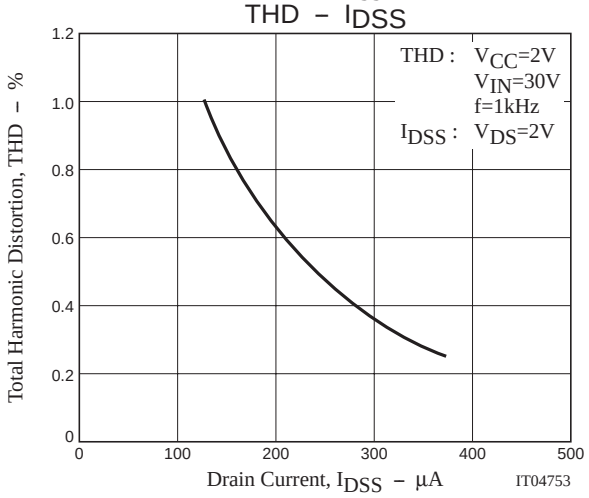

|yfs| – IDSS
VDS=2V
VGS=0V
f=1kHz
Forward Transfer Admittance, |yfs| – mS
Drain Current, IDSS – μA
IT04748

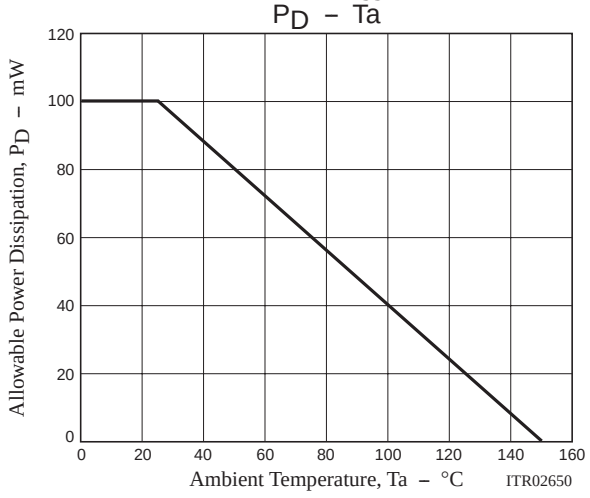

Ciss – VDS
Input Capacitance, Ciss – pF
Drain-to-Source Voltage, VDS – V
IT04749


Crss – VDS
Reverse Transfer Capacitance, Crss – pF
Drain-to-Source Voltage, VDS – V
IT04750


GV – IDSS
GV : VCC=2V
VIN=10mV
f=1kHz
RL=2.2kΩ
Cin=5pF
IDSS : VDS=2V
Voltage Gain, GV – dB
Drain Current, IDSS – μA
IT04751


ΔGVV – IDSS
ΔGVV : VCC=2V→1.5V
VIN=10mV
f=1kHz
IDSS : VDS=2V
Reduced Voltage Characteristic, ΔGVV – dB
Drain Current, IDSS – μA
IT04752


THD – IDSS
THD : VCC=2V
VIN=30V
f=1kHz
IDSS : VDS=2V
Total Harmonic Distortion, THD – %
Drain Current, IDSS – μA
IT04753


PD – Ta
Allowable Power Dissipation, PD – mW
Ambient Temperature, Ta – °C
ITR02650

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