2SK596S

JFET
20V, 150 to 350μA, 1.0mS, N-Channel

ON Semiconductor®

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Features

- Low output noise voltage : V_{NO}=–110dB max (V_{CC}=4.5V, R_L=1kΩ, Cin=15pF, V_{IN}=0V, A curve)
- Especiallysuited for use in condenser microphone for audio equipments and telephones
- Excellent transient characteristic
- Adoption of FBET process

Specifications

Absolute Maximum Ratings at Ta=25°C

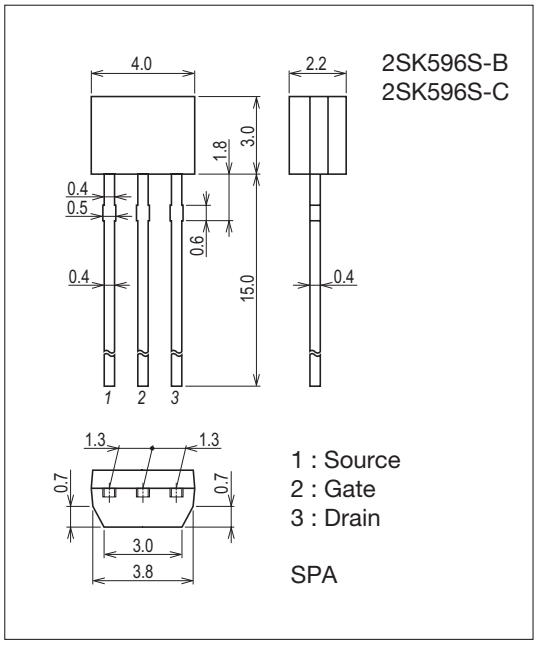
Parameter	Symbol	Conditions	Ratings	Unit
Gate-to-Drain Voltage	V_{GDO}		–20	V
Gate Current	I_G		10	mA
Drain Current	I_D		1	mA
Allowable Power Dissipation	P_D		100	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Package Dimensions

unit : mm (typ)

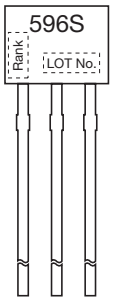
7524-005



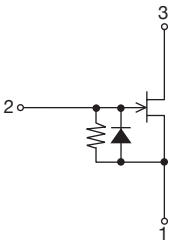
Product & Package Information

- Package : SPA
- JEITA, JEDEC : SC-72
- Minimum Packing Quantity : 500 pcs./bag

Marking



Electrical Connection



ORDERING INFORMATION

See detailed ordering and shipping information on page 2 of this data sheet.

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings				Unit
			Rank	min	typ	max	
Gate-to-Drain Breakdown Voltage	$V_{(BR)GDO}$	I_G=−100μA		−20			V
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=5V, I_D=1μA			−0.5	−1.0	V
Drain Current	I_{DSS}*	V_{DS}=5V, V_{GS}=0V	B	150		240	μA
			C	210		350	
Forward Transfer Admittance	| yfs |	V_{DS}=5V, V_{GS}=0V, f=1kHz		0.4	1.0		mS
Input Capacitance	Ciss	V_{DS}=5V, V_{GS}=0V, f=1MHz			4.1		pF
Reverse Transfer Capacitance	Crss	V_{DS}=5V, V_{GS}=0V, f=1MHz			0.88		pF
[Ta=25°C, V_{CC}=4.5V, R_L=1kΩ, Cin=15pF, See specified Test Circuit.]							
Voltage Gain	G_V	V_{IN}=10mV, f=1kHz			−3.0		dB
Reduced Voltage Characteristic	ΔG_{VV}	V_{IN}=10mV, f=1kHz, V_{CC}=4.5V → 1.5V			−1.0	−3.5	dB
Frequency Characteristic	ΔGvf	f=1kHz → 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

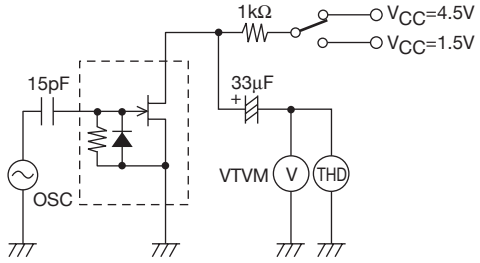
* : The 2SK596S is classified by I_{DSS} as follows : (unit : μA)

Rank	B	C
I_{DSS}	150 to 240	210 to 350

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

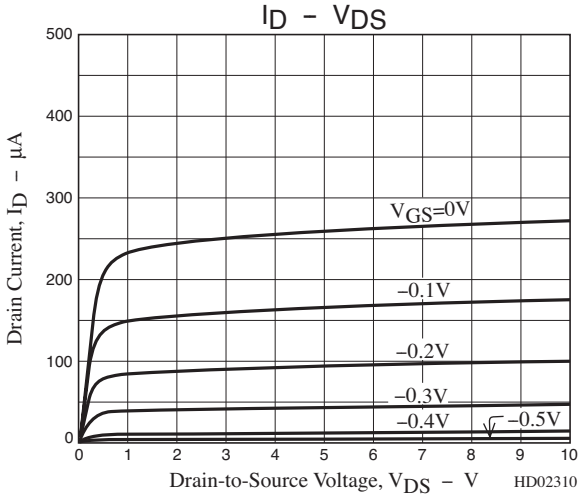
Test Circuit

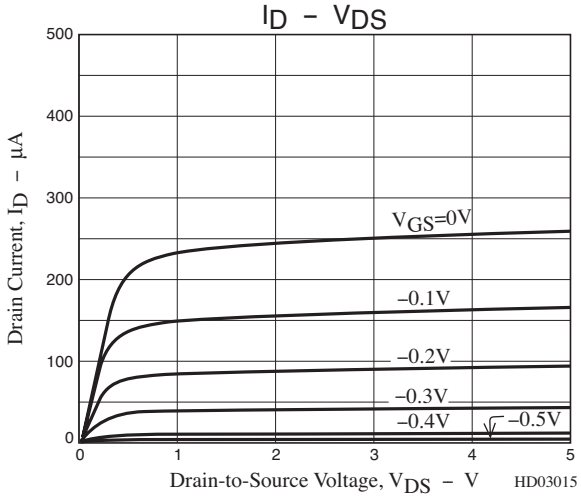
Voltage Gain
Frequency Characteristic
Harmonic Distortion
Reduced Voltage Characteristic

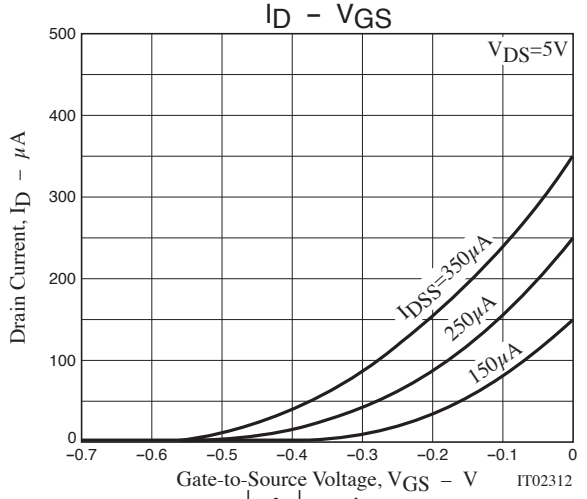


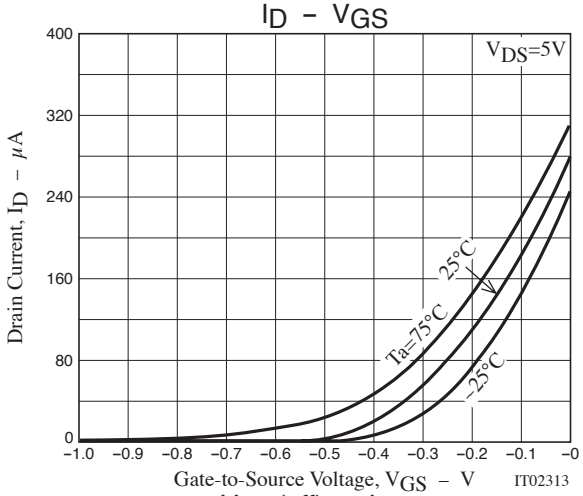
ODERING INFORMATON

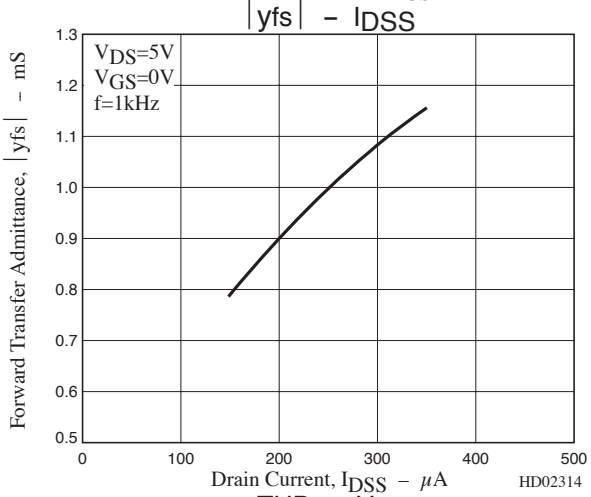
Device	Package	Shipping	memo
2SK596S-B	SPA	500pcs./bag	Pb-Free
2SK596S-C	SPA	500pcs./bag	

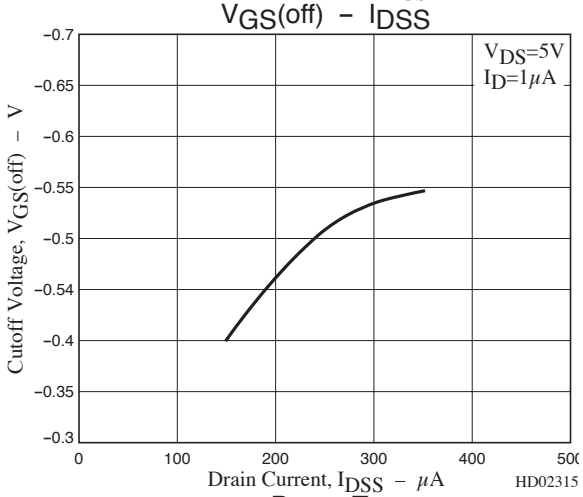


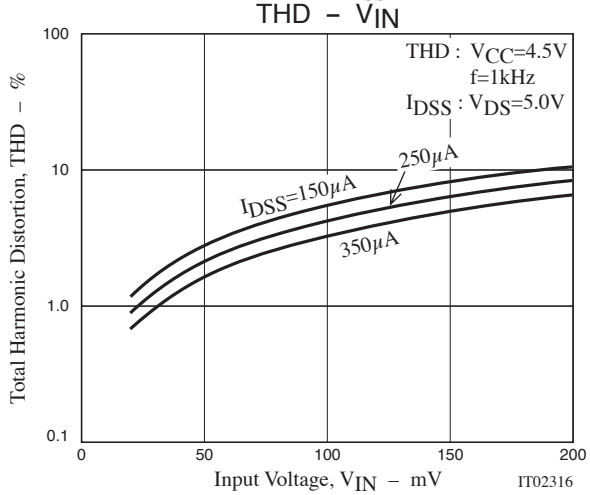


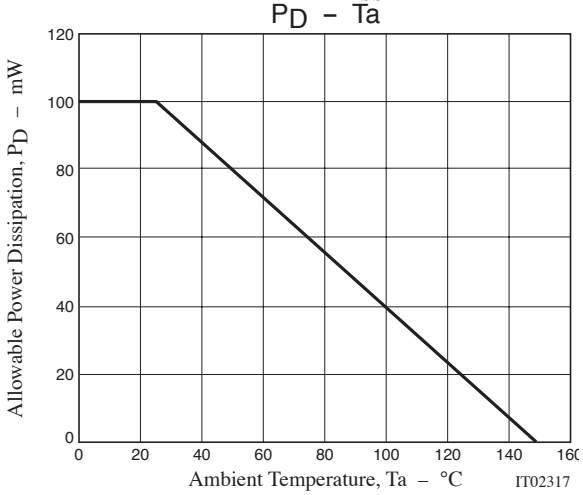

ID – VGS
VDS=5V
IDSS=350μA
250μA
150μA
Drain Current, ID – μA
Gate-to-Source Voltage, VGS – V
IT02312

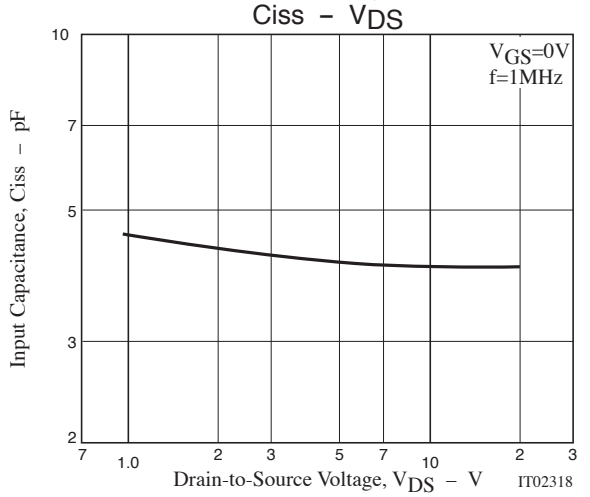

ID – VGS
VDS=5V
25°C
Ta=75°C
–25°C
Drain Current, ID – μA
Gate-to-Source Voltage, VGS – V
IT02313

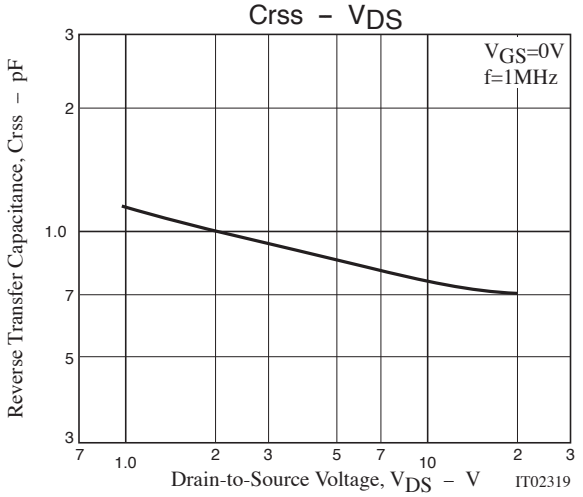

|yfs| – IDSS
VDS=5V
VGS=0V
f=1kHz
Forward Transfer Admittance, |yfs| – mS
Drain Current, IDSS – μA
HD02314

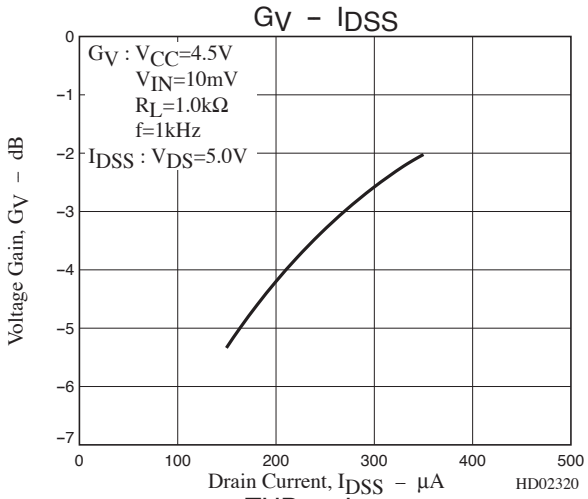

VGS(off) – IDSS
VDS=5V
ID=1μA
Cutoff Voltage, VGS(off) – V
Drain Current, IDSS – μA
HD02315

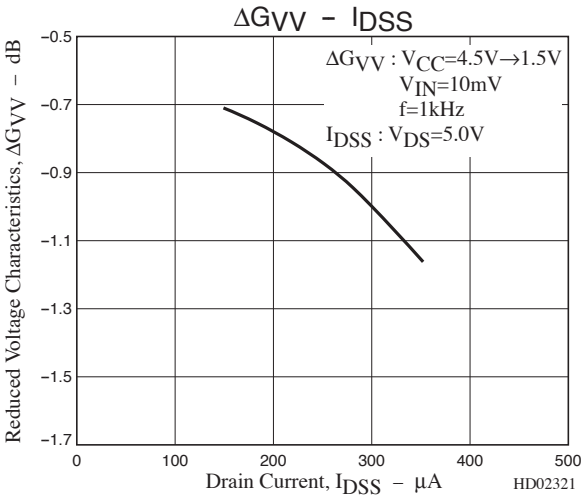

THD – VIN
THD : VCC=4.5V
f=1kHz
IDSS : VDS=5.0V
250μA
IDSS=150μA
350μA
Total Harmonic Distortion, THD – %
Input Voltage, VIN – mV
IT02316

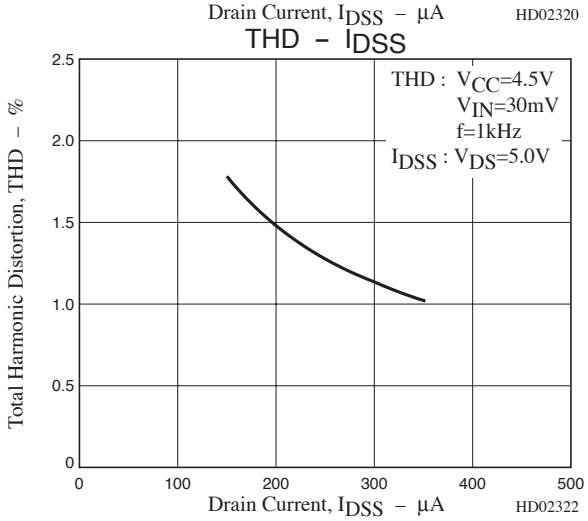

PD – Ta
Allowable Power Dissipation, PD – mW
Ambient Temperature, Ta – °C
IT02317


Ciss – VDS
VGS=0V
f=1MHz
Input Capacitance, Ciss – pF
Drain-to-Source Voltage, VDS – V
IT02318


Crss – VDS
VGS=0V
f=1MHz
Reverse Transfer Capacitance, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02319


GV – IDSS
GV : VCC=4.5V
VIN=10mV
RL=1.0kΩ
f=1kHz
IDSS : VDS=5.0V
Voltage Gain, GV – dB
0
–1
–2
–3
–4
–5
–6
–7
0
100
200
300
400
500
Drain Current, IDSS – µA
HD02320

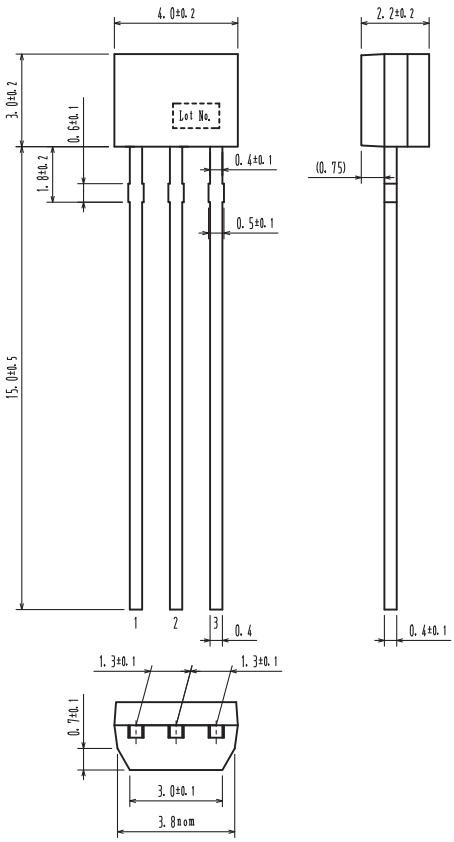

ΔGVV – IDSS
ΔGVV : VCC=4.5V→1.5V
VIN=10mV
f=1kHz
IDSS : VDS=5.0V
Reduced Voltage Characteristics, ΔGVV – dB
–0.5
–0.7
–0.9
–1.1
–1.3
–1.5
–1.7
0
100
200
300
400
500
Drain Current, IDSS – µA
HD02321


THD – IDSS
THD : VCC=4.5V
VIN=30mV
f=1kHz
IDSS : VDS=5.0V
Total Harmonic Distortion, THD – %
2.5
2.0
1.5
1.0
0.5
0
0
100
200
300
400
500
Drain Current, IDSS – µA
HD02322

Outline Drawing

2SK596S-B, 2SK596S-C

Mass (g)	Unit
0.13 * For reference	mm



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