DATA SHEET

NEC

JUNCTION FIELD EFFECT TRANSISTOR
2SK3783

N-CHANNEL SILICON JUNCTION FIELD EFFECT TRANSISTOR FOR IMPEDANCE CONVERTER OF ECM

DESCRIPTION

The 2SK3783 is suitable for converter of ECM.

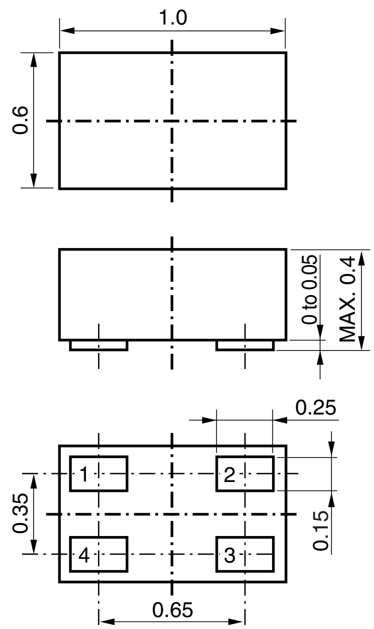
FEATURES

- High gain
  –0.5 dB (V_{DS} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ)
- Low noise
  –109 dB (V_{DS} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ)
- Super small area package
  1006 TYP. lead less

ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3783	4pXSLP04 (1006)

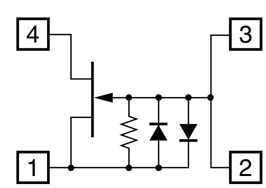
PACKAGE DRAWING (Unit: mm)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = –1.0 V)	V_{DSX}	20	V
Gate to Drain Voltage	V_{GDO}	–20	V
Drain Current	I_D	10	mA
Gate Current	I_G	10	mA
Total Power Dissipation	P_T	100	mW
Junction Temperature	T_j	125	°C
Storage Temperature	T_{stg}	–55 to +125	°C

EQUIVALENT CIRCUIT (Top View)



1: Source
2: Gate
3: Gate
4: Drain

Caution Please take care of ESD (Electro Static Discharge) when you handle the device in this document.

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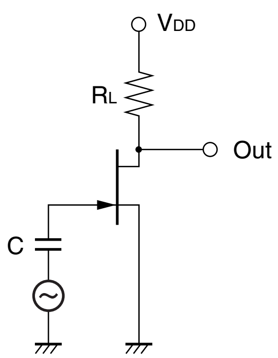
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Cut-off Current	I_{DSS}	V_{DS} = 2.0 V, V_{GS} = 0 V	90	250	430	μA
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 2.0 V, I_D = 1.0 μA		–0.37	–1.0	V
Forward Transfer Admittance	| y_{fs1} |	V_{DS} = 2.0 V, I_D = 30 μA, f = 1.0 kHz	320	470		μS
	| y_{fs2} |	V_{DS} = 2.0 V, V_{GS} = 0 V, f = 1.0 kHz	800	1600		μS
Input Capacitance	C_{iss}	V_{DS} = 2.0 V, V_{GS} = 0 V, f = 1.0 MHz		4.0		pF
Voltage Gain	G_V	V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ, V_{IN} = 10 mV, f = 1 kHz		–0.5		dB
Noise Voltage	NV	V_{DD} = 2.0 V, C = 5 pF, R_L = 2.2 kΩ, A-curve		–109		dB

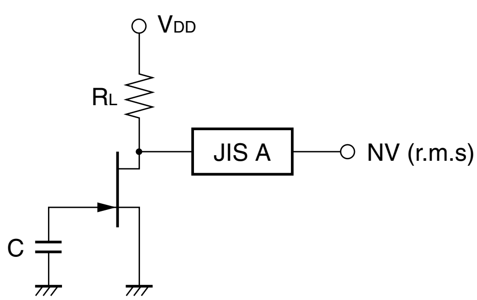
I_{DSS} CLASSIFICATION

MARKING	BE	BF	BH	BJ
I_{DSS} (μA)	90 to 180	150 to 240	210 to 350	320 to 430

GAIN TEST CIRCUIT

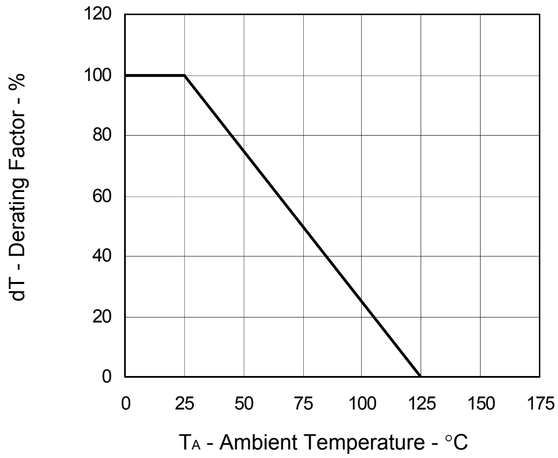


NOISE VOLTAGE TEST CIRCUIT

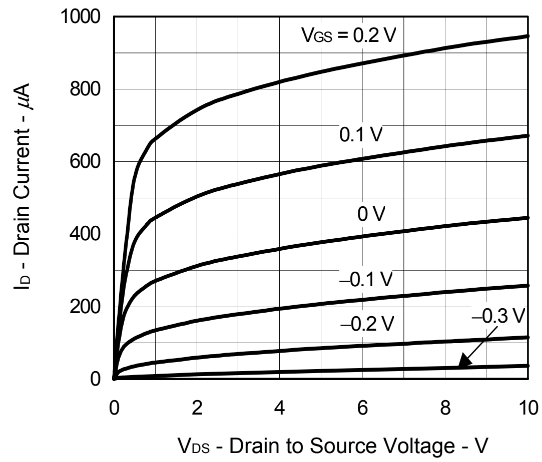


TYPICAL CHARACTERISTICS (T_A = 25°C)

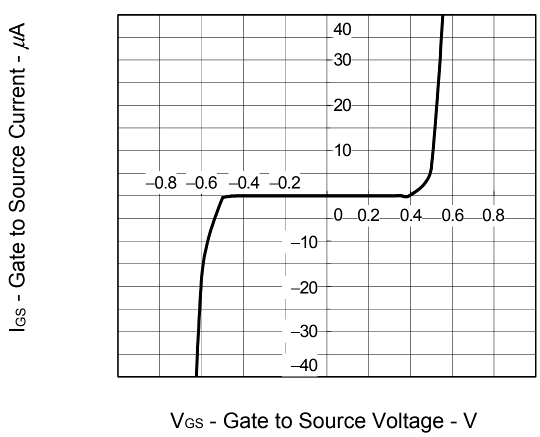
DERATING FACTOR OF POWER DISSIPATION



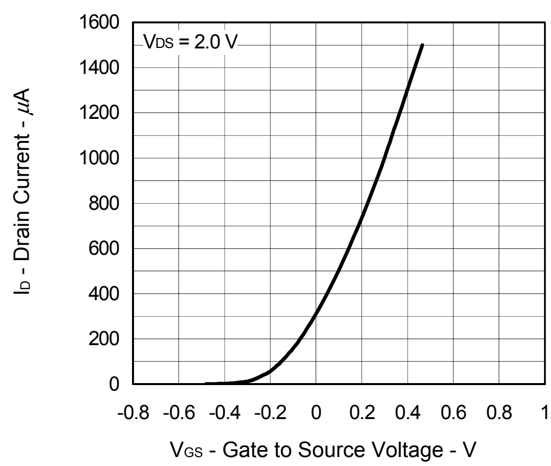
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



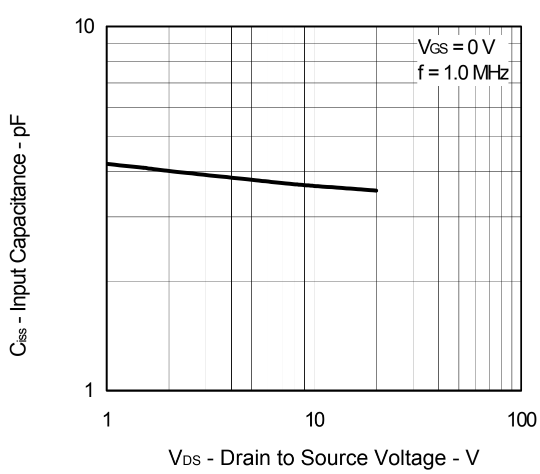
GATE TO SOURCE CURRENT vs.
GATE TO SOURCE VOLTAGE



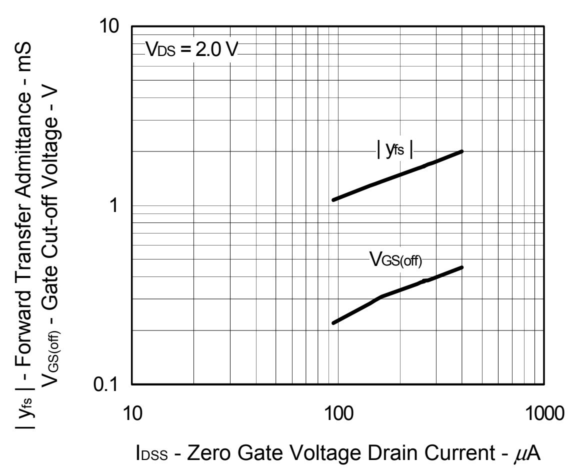
DRAIN CURRENT vs.
GATE TO SOURCE VOLTAGE



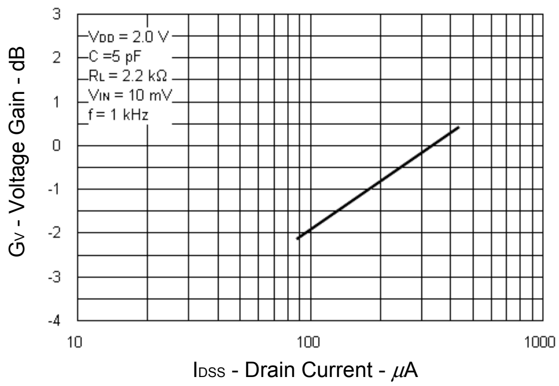
INPUT CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



FORWARD TRANSFER ADMITTANCE AND GATE
CUT-OFF VOLTAGE vs. ZERO GATE VOLTAGE
DRAIN CURRENT



VOLTAGE GAIN vs. DRAIN CURRENT



NOISE VOLTAGE vs. DRAIN CURRENT