

# 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.

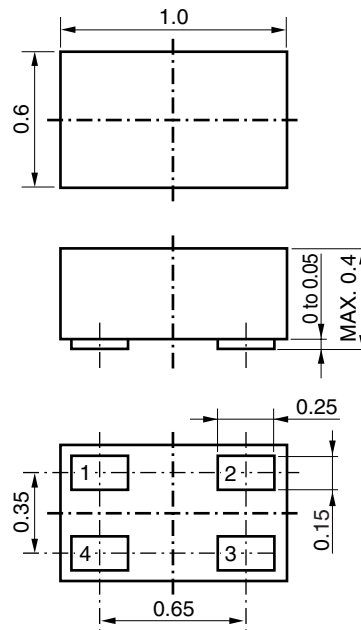
#### FEATURES

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

#### ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3783	4pXSLP04 (1006)

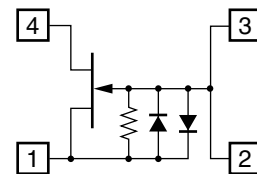
#### PACKAGE DRAWING (Unit: mm)



#### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

Drain to Source Voltage ( $V_{GS} = -1.0\text{ V}$ )	$V_{DSX}$	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	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +125	$^\circ\text{C}$

#### 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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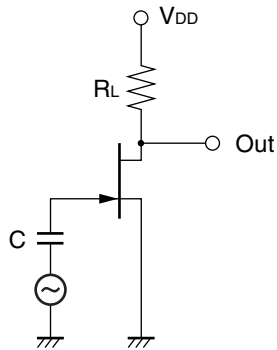
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Cut-off Current	I <sub>DSS</sub>	V <sub>DS</sub> = 2.0 V, V <sub>GS</sub> = 0 V	90	250	430	μA
Gate Cut-off Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = 2.0 V, I <sub>D</sub> = 1.0 μA		-0.37	-1.0	V
Forward Transfer Admittance	y <sub>fs1</sub>	V <sub>DS</sub> = 2.0 V, I <sub>D</sub> = 30 μA, f = 1.0 kHz	320	470		μS
	y <sub>fs2</sub>	V <sub>DS</sub> = 2.0 V, V <sub>GS</sub> = 0 V, f = 1.0 kHz	800	1600		μS
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 2.0 V, V <sub>GS</sub> = 0 V, f = 1.0 MHz		4.0		pF
Voltage Gain	G <sub>v</sub>	V <sub>DD</sub> = 2.0 V, C = 5 pF, R <sub>L</sub> = 2.2 kΩ, V <sub>IN</sub> = 10 mV, f = 1 kHz		-0.5		dB
Noise Voltage	NV	V <sub>DD</sub> = 2.0 V, C = 5 pF, R <sub>L</sub> = 2.2 kΩ, A-curve		-109		dB

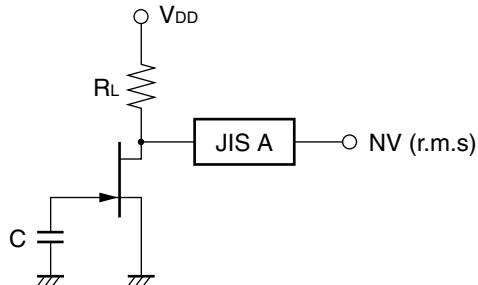
**I<sub>DSS</sub> CLASSIFICATION**

MARKING	BE	BF	BH	BJ
I <sub>DSS</sub> (μA)	90 to 180	150 to 240	210 to 350	320 to 430

**GAIN TEST CIRCUIT**

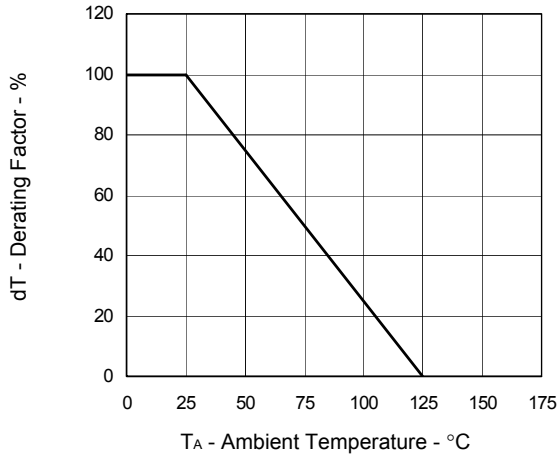


**NOISE VOLTAGE TEST CIRCUIT**

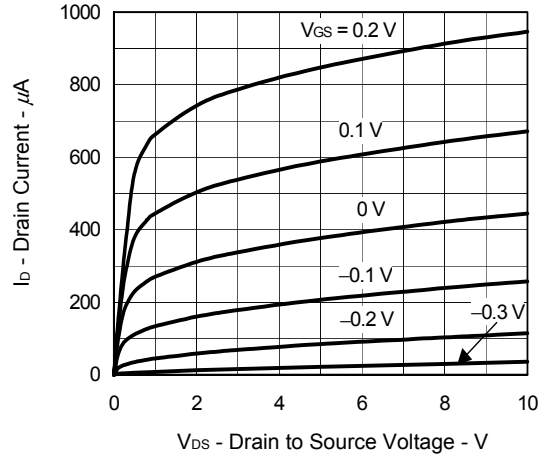


TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

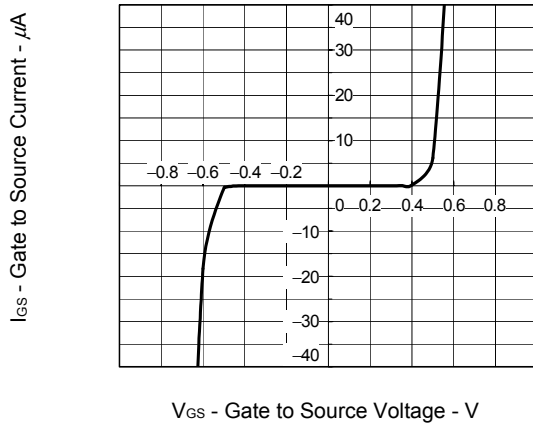
DERATING FACTOR OF POWER DISSIPATION



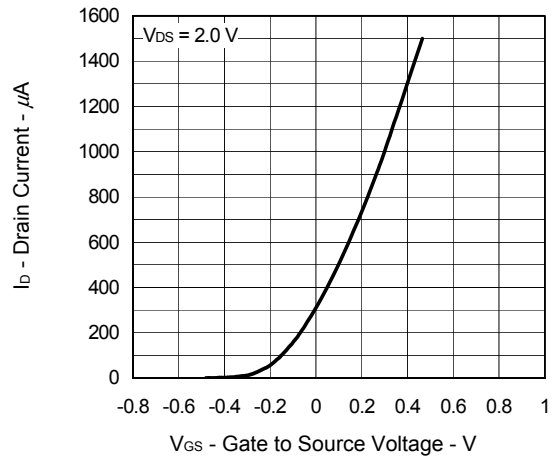
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



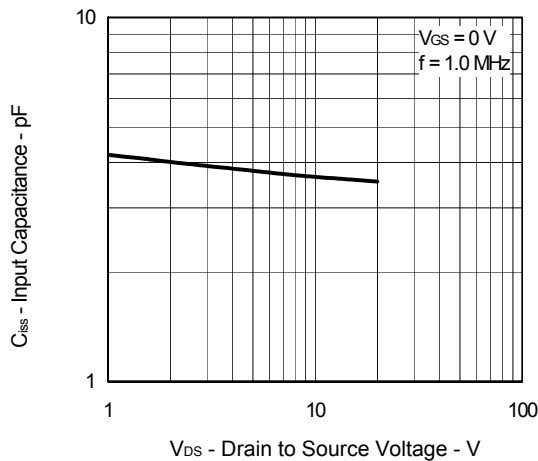
GATE TO SOURCE CURRENT vs. GATE TO SOURCE VOLTAGE



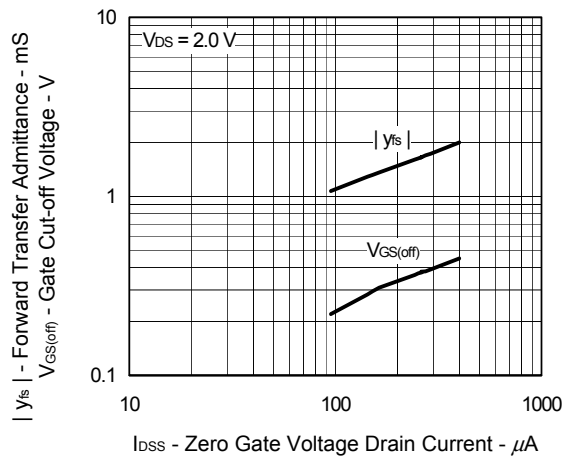
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE



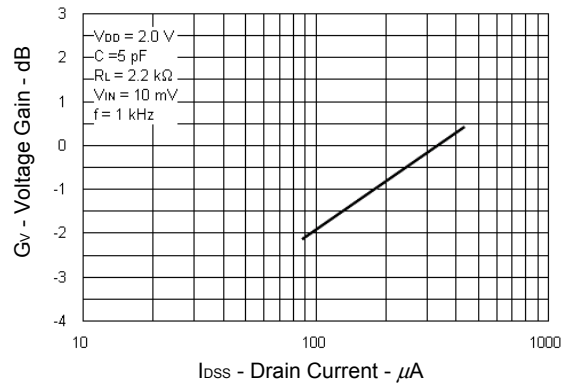
INPUT CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



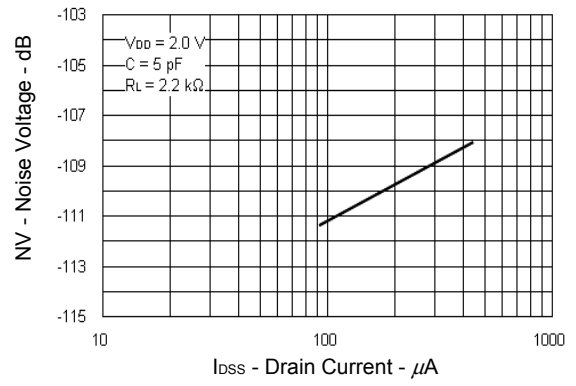
FORWARD TRANSFER ADMITTANCE AND GATE CUT-OFF VOLTAGE vs. ZERO GATE VOLTAGE DRAIN CURRENT



VOLTAGE GAIN vs. DRAIN CURRENT



NOISE VOLTAGE vs. DRAIN CURRENT



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