

## DATA SHEET

**NEC****JUNCTION FIELD EFFECT TRANSISTOR  
2SK3653C****N-CHANNEL SILICON JUNCTION FIELD EFFECT TRANSISTOR  
FOR IMPEDANCE CONVERTER OF ECM****DESCRIPTION**

The 2SK3653C contains a diode and high resistivity between its gates and sources, for achieving short stability time during power-on. In addition, because of its compact package and low noise, the 2SK3653C is especially suitable for compact ECMs for audio or mobile devices such as cell-phones.

**FEATURES**

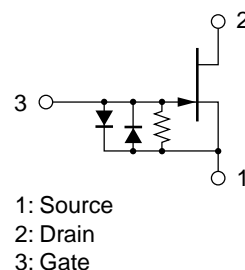
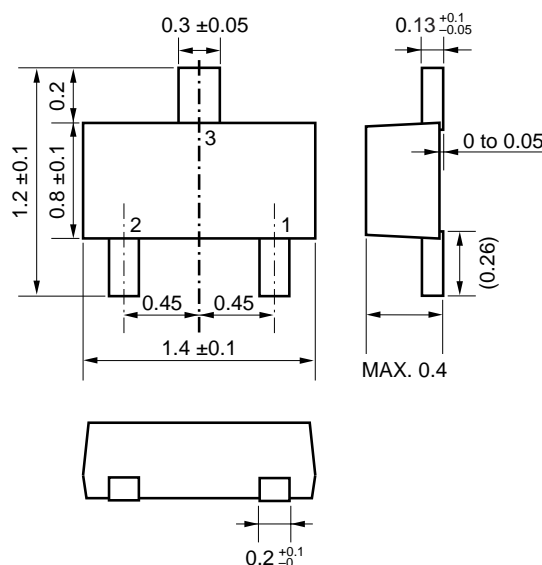
- Low noise:  
–108.5 dB TYP. ( $V_{DD} = 2.0\text{ V}$ ,  $C = 5\text{ pF}$ ,  $R_L = 2.2\text{ k}\Omega$ )
- Containing a diode and high resistivity, short stability time is achieved during power-on.
- Super thin thickness package: 3pXSOF (0814)  
 $t = 0.37\text{ mm TYP.}$

**ORDERING INFORMATION**

PART NUMBER	PACKAGE
2SK3653C	3pXSOF (0814)

**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****PACKAGE DRAWING (Unit: mm)**

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

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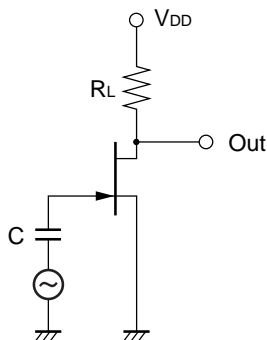
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

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	200	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	300	480		μS
	y <sub>fs2</sub>	V <sub>DS</sub> = 2.0 V, V <sub>GS</sub> = 0 V, f = 1.0 kHz	750	1300		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		-1.0		dB
Noise Voltage	NV	V <sub>DD</sub> = 2.0 V, C = 5 pF, R <sub>L</sub> = 2.2 kΩ, A-curve		-108.5		dB

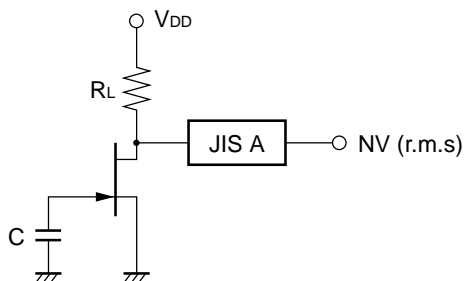
**I<sub>DSS</sub> CLASSIFICATION**

MARKING	EE	EF	EH	EJ
I <sub>DSS</sub> (μA)	90 to 180	150 to 240	210 to 350	320 to 430

**VOLTAGE GAIN TEST CIRCUIT**

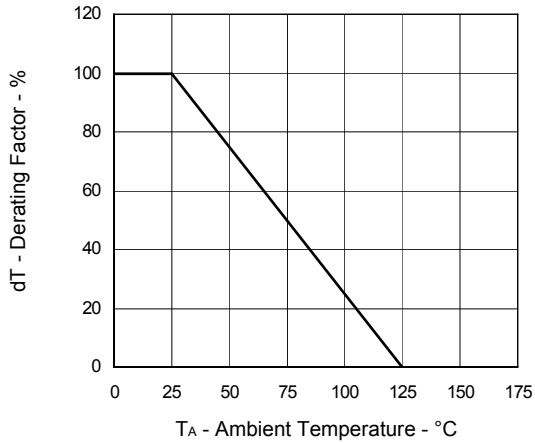


**NOISE VOLTAGE TEST CIRCUIT**

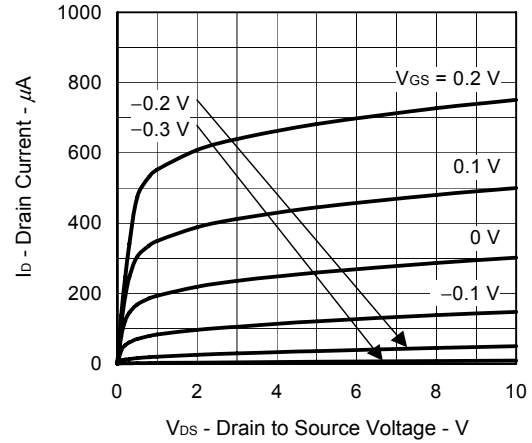


TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

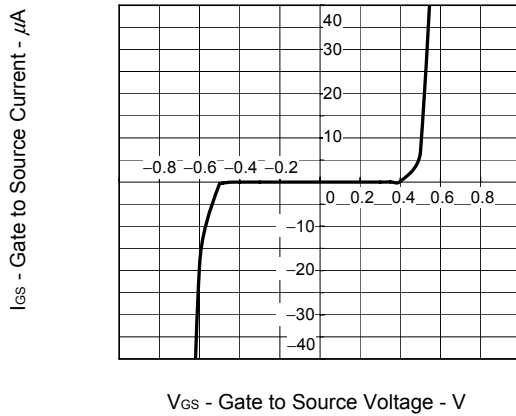
DERATING FACTOR OF POWER DISSIPATION



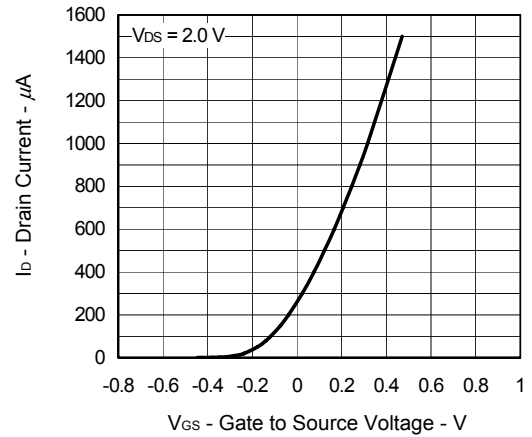
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



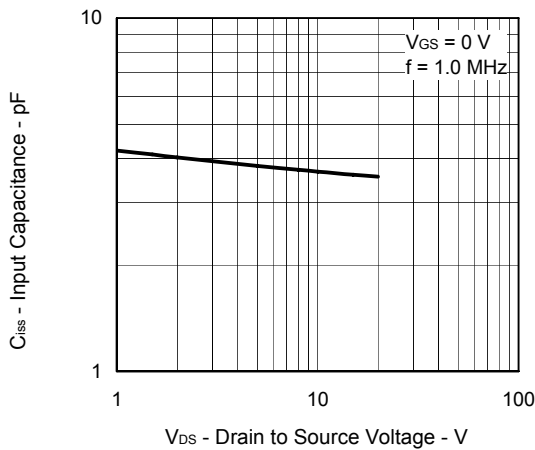
GATE TO SOURCE CURRENT vs. GATE TO SOURCE VOLTAGE



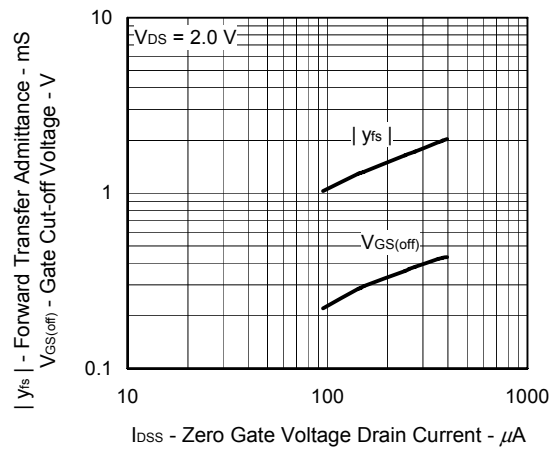
DRAIN CURRENT vs. GATE TO SOURCE VOLTAGE

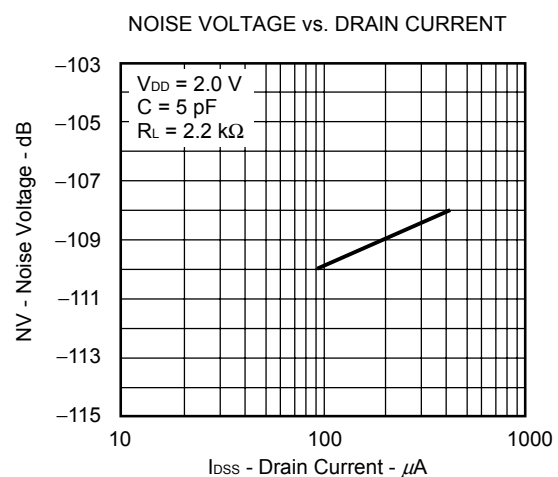
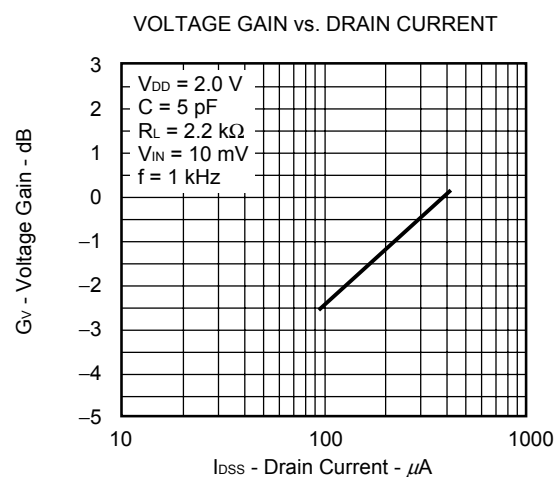


INPUT CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



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





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