

N-CHANNEL MOSFET

FOR HIGH-SPEED SWITCHING

DESCRIPTION

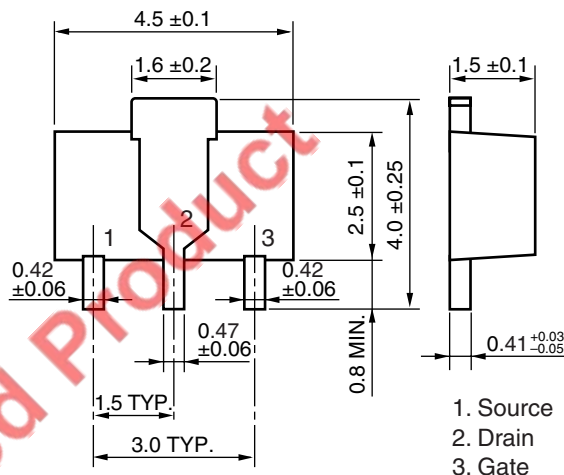
The 2SK2110 is a N-channel MOSFET of a vertical type and is a switching element that can be directly driven by the output of an IC operating at 5 V.

This product has a low on-state resistance and superb switching characteristics and is ideal for driving the actuators, such as motors and DC/DC converters.

FEATURES

- Low on-state resistance
 $R_{DS(on)} = 1.5 \Omega \text{ MAX. (} V_{GS} = 4.0 \text{ V, } I_D = 0.3 \text{ A)}$
- High switching speed
 $t_{on} + t_{off} < 100 \text{ ns}$
- Low parasitic capacitance

PACKAGE DRAWING (Unit: mm)



<R> ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK2110	SC-62 (Power Mini Mold)

Marking: NT

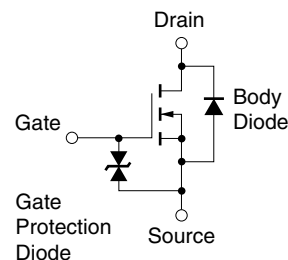
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage ($V_{GS} = 0 \text{ V}$)	V_{DSS}	100	V
Gate to Source Voltage ($V_{DS} = 0 \text{ V}$)	V_{GSS}	± 20	V
Drain Current (DC)	$I_{D(DC)}$	± 0.5	A
Drain Current (pulse) ^{Note1}	$I_{D(pulse)}$	± 1.0	A
Total Power Dissipation ^{Note2}	P_T	2.0	W
Channel Temperature	T_{ch}	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

Notes 1. $PW \leq 10 \text{ ms}$, Duty Cycle $\leq 50\%$

2. Mounted on ceramic substrate of $16 \text{ cm}^2 \times 0.7 \text{ mm}$

EQUIVALENT CIRCUIT



<R> **Remark** The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

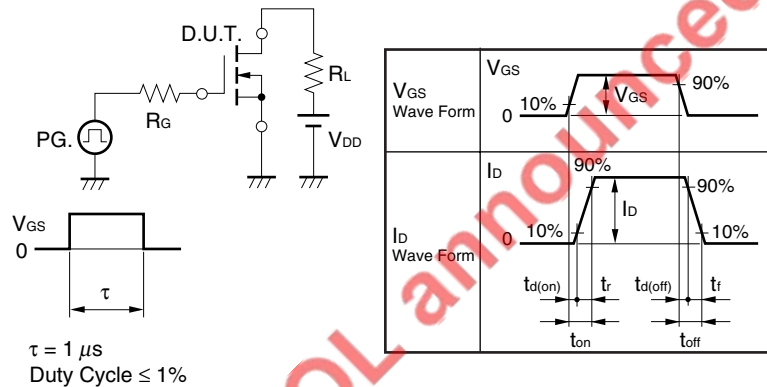
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<R> ELECTRICAL CHARACTERISTICS (T_A = 25°C)

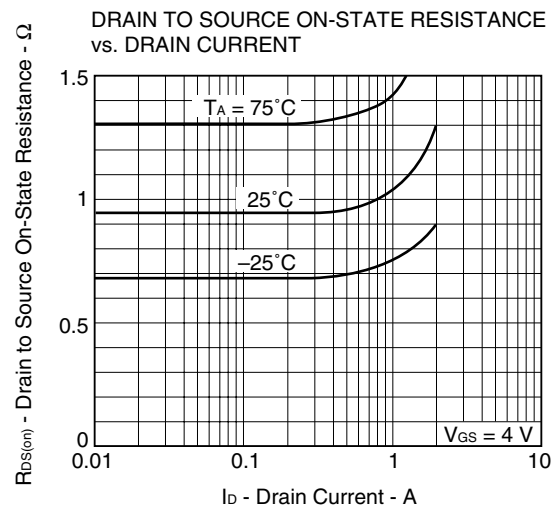
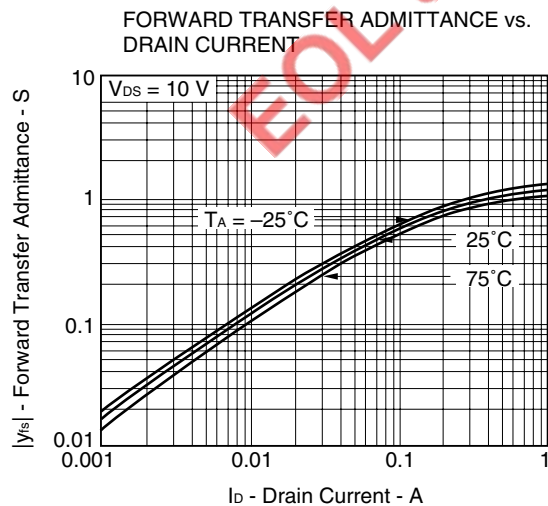
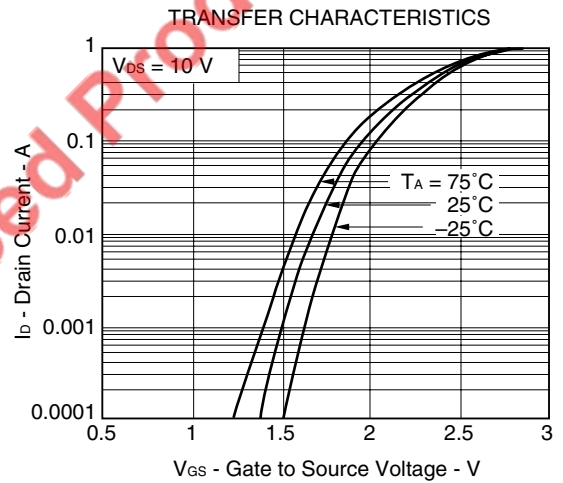
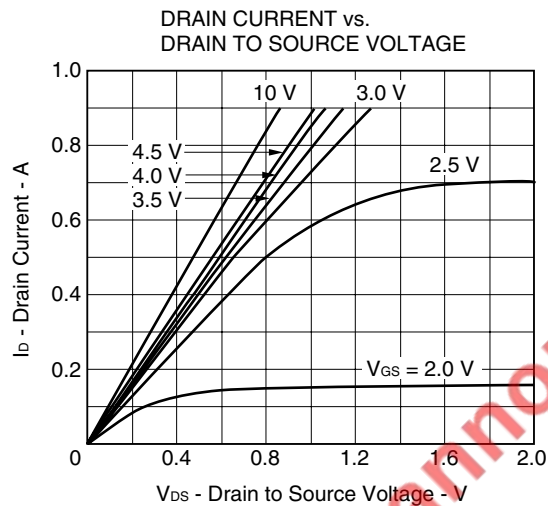
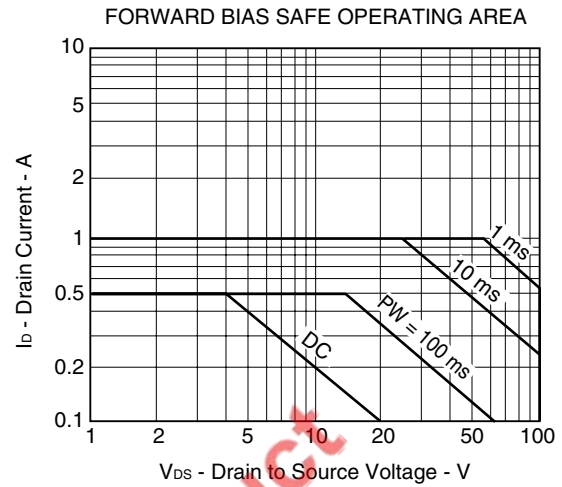
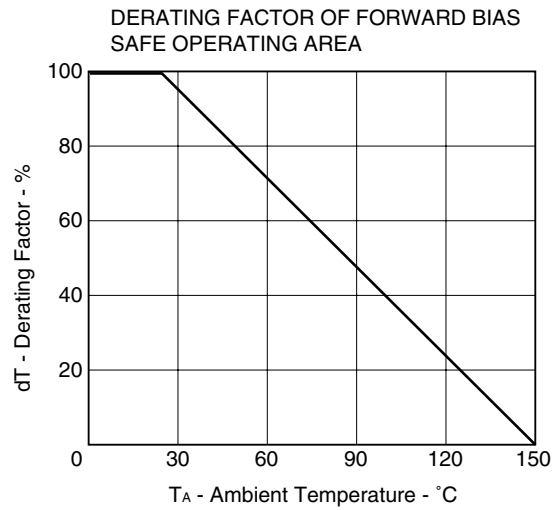
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			10	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±20 V, V _{DS} = 0 V			±10	μA
Gate Cut-off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	0.8	1.5	2.0	V
Forward Transfer Admittance Note	y _{fs}	V _{DS} = 10 V, I _D = 0.3 A	0.4			S
Drain to Source On-state Resistance Note	R _{DS(on)1}	V _{GS} = 4.0 V, I _D = 0.3 A		0.95	1.5	Ω
	R _{DS(on)2}	V _{GS} = 10 V, I _D = 0.3 A		0.82	1.2	Ω
Input Capacitance	C _{iss}	V _{DS} = 10 V		100		pF
Output Capacitance	C _{oss}	V _{GS} = 0 V		38		pF
Reverse Transfer Capacitance	C _{rss}	f = 1.0 MHz		10		pF
Turn-on Delay Time	t _{d(on)}	V _{DD} = 25 V, I _D = 0.3 A		2.0		ns
Rise Time	t _r	V _{GS} = 10 V		1.3		ns
Turn-off Delay Time	t _{d(off)}	R _G = 10 Ω		38		ns
Fall Time	t _f			13		ns

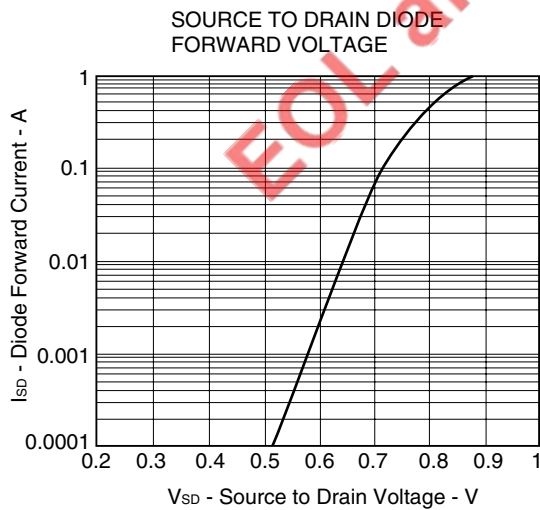
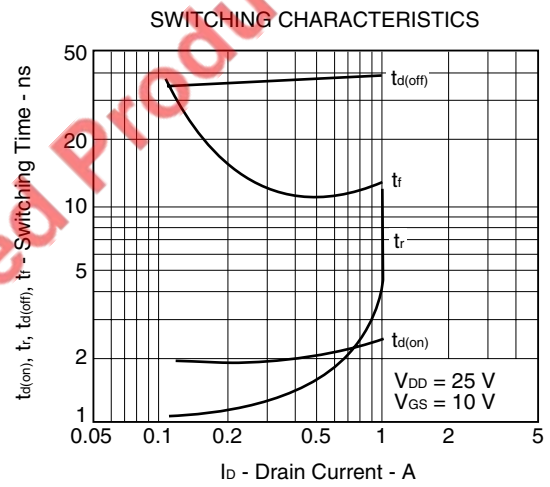
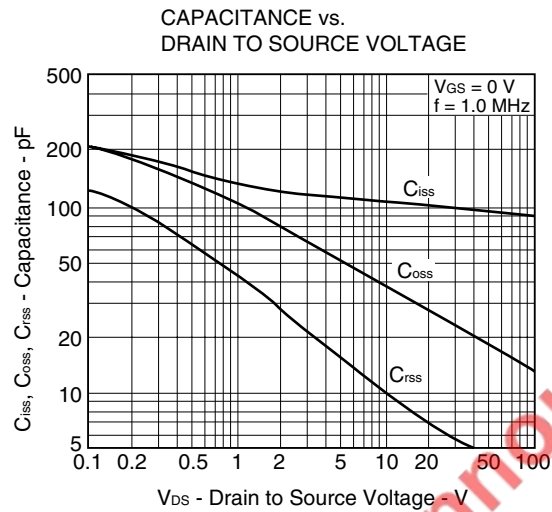
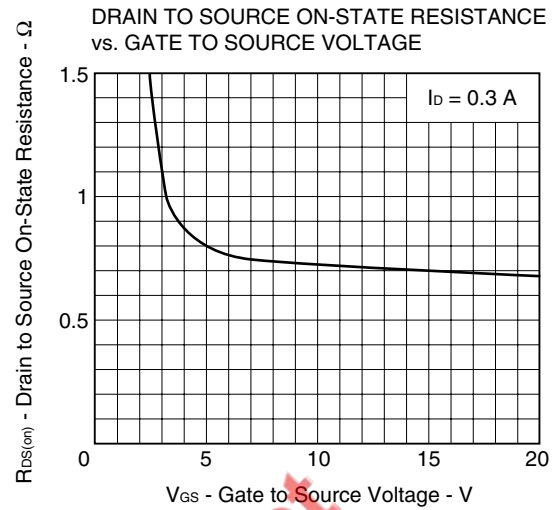
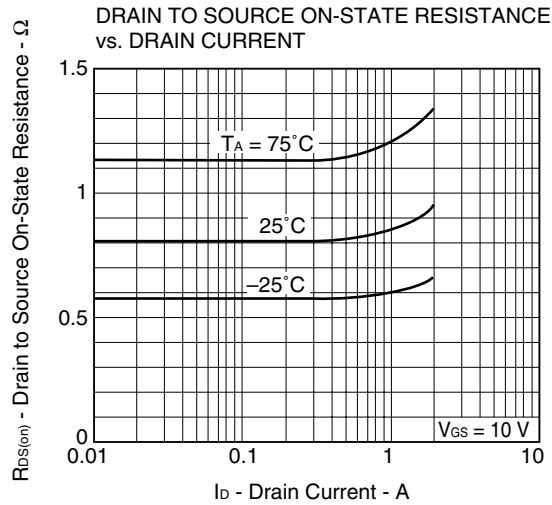
Note Pulsed

<R> TEST CIRCUIT SWITCHING TIME



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





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