

N-CHANNEL MOS FET FOR HIGH-SPEED SWITCHING

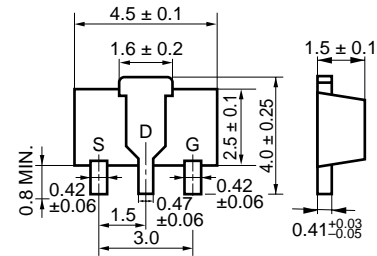
The 2SK2111 is a N-channel MOS FET of a vertical type and is a switching element that can be directly driven by the output of an IC operating at 5 V.

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

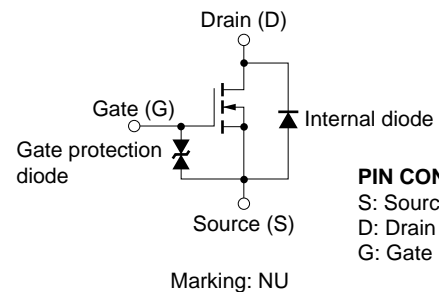
FEATURES

- Low ON resistance
 $R_{DS(on)} = 0.6 \Omega$ MAX. @ $V_{GS} = 4.0 \text{ V}$, $I_D = 0.5 \text{ A}$
- High switching speed
 $t_{on} + t_{off} < 100 \text{ ns}$
- Low parasitic capacitance

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



PIN CONNECTIONS

S: Source
D: Drain
G: Gate

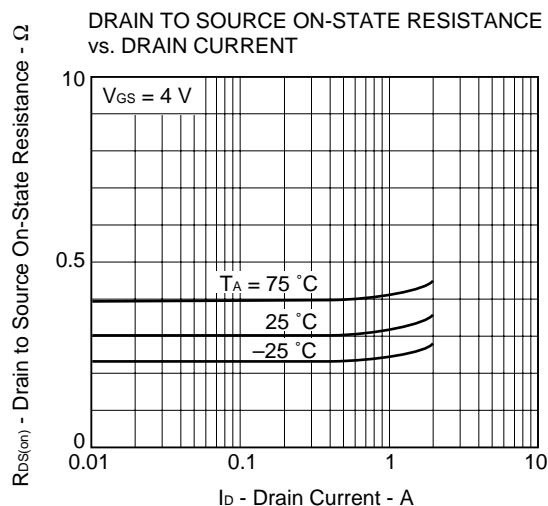
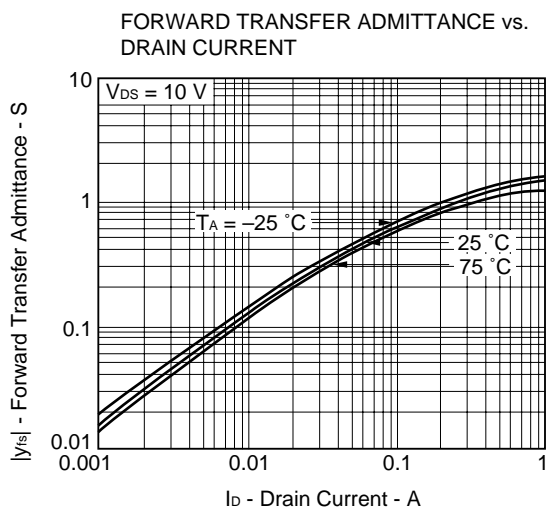
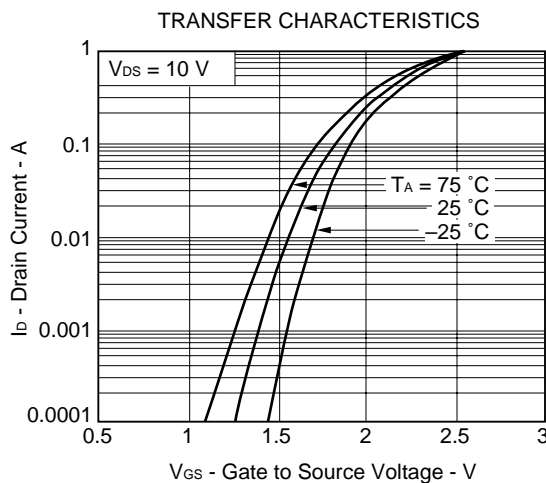
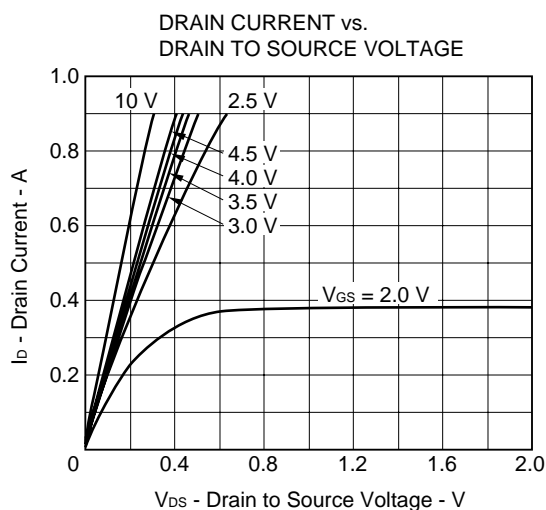
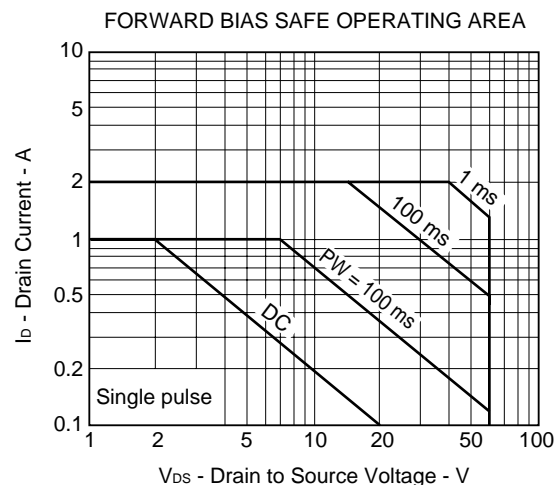
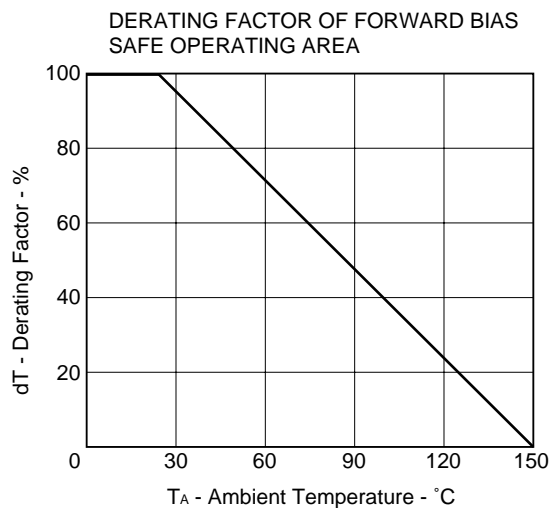
ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

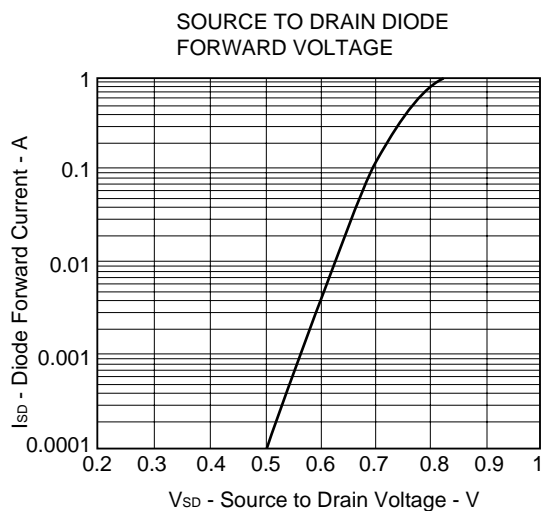
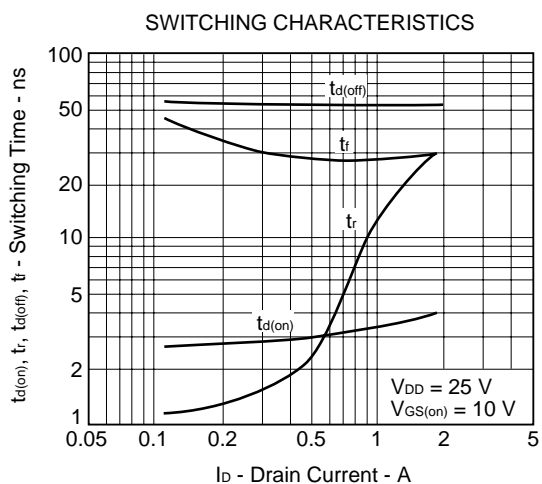
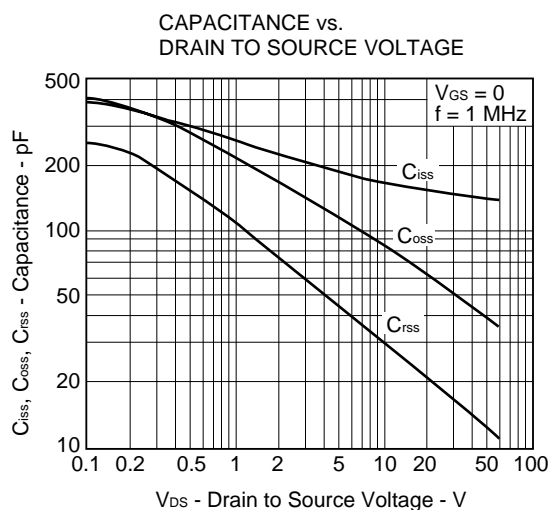
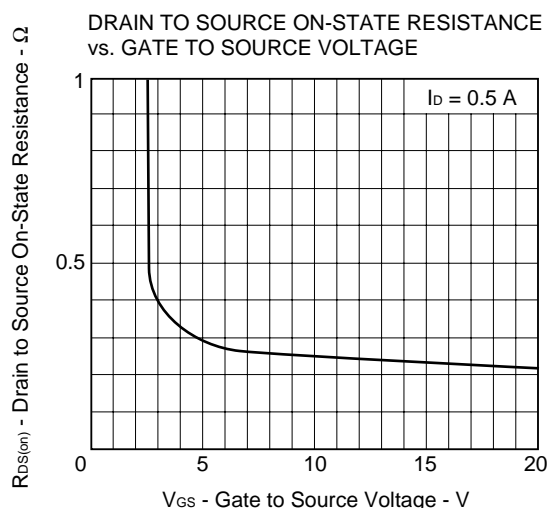
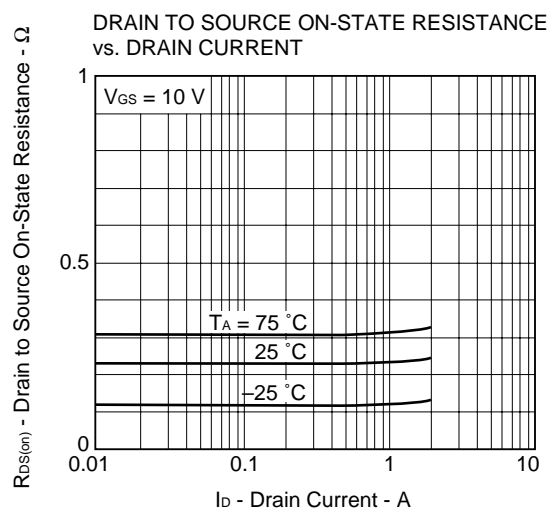
PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V_{DS}	$V_{GS} = 0$	60	V
Gate to Source Voltage	V_{GS}	$V_{DS} = 0$	± 20	V
Drain Current (DC)	$I_{D(DC)}$		± 1.0	A
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10 \text{ ms}$, Duty cycle $\leq 50 \%$	± 2.0	A
Total Power Dissipation	P_T	$16 \text{ cm}^2 \times 0.7 \text{ mm}$, ceramic substrate used	2.0	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		$-55 \text{ to } +150$	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0			1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±20 V, V _{DS} = 0			±10	μA
Gate Cut-Off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	0.8	1.4	2.0	V
Forward Transfer Admittance	y _{ts}	V _{DS} = 10 V, I _D = 0.5 A	0.4			S
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = 4.0 V, I _D = 0.5 A		0.32	0.6	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = 10 V, I _D = 0.5 A		0.24	0.45	Ω
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0, f = 1.0 MHz		170		pF
Output Capacitance	C _{oss}			87		pF
Reverse Transfer Capacitance	C _{rss}			32		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 25 V, I _D = 0.5 A V _{GS(on)} = 10 V, R _G = 10 Ω R _L = 50 Ω		2.8		ns
Rise Time	t _r			2.3		ns
Turn-Off Delay Time	t _{d(off)}			55		ns
Fall Time	t _f			27		ns

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





REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

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Anti-radioactive design is not implemented in this product.