

MOS FIELD EFFECT TRANSISTOR
2SK2157

N-CHANNEL MOS FET
FOR HIGH-SPEED SWITCHING

The 2SK2157 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 and DC/DC converters.

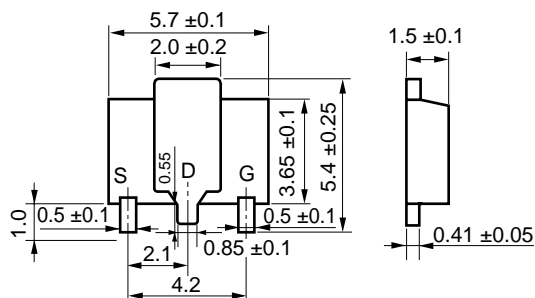
FEATURES

- New package intermediate between small-signal and power models
- Can be directly driven by output of 5-V IC
- Low ON resistance

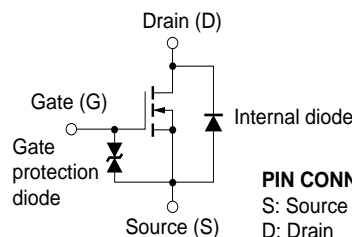
$R_{DS(on)} \leq 0.15 \Omega$ @ $V_{GS} = 4 V, I_D = 2.5 A$

$R_{DS(on)} \leq 0.10 \Omega$ @ $V_{GS} = 10 V, I_D = 2.5 A$

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



PIN CONNECTIONS

S: Source
D: Drain
G: Gate

Marking: NA4

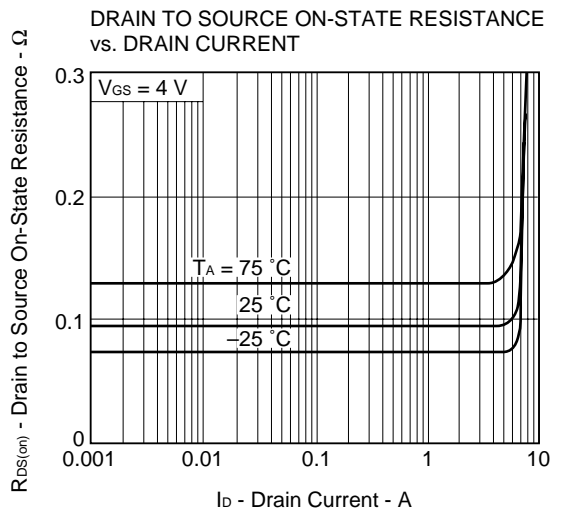
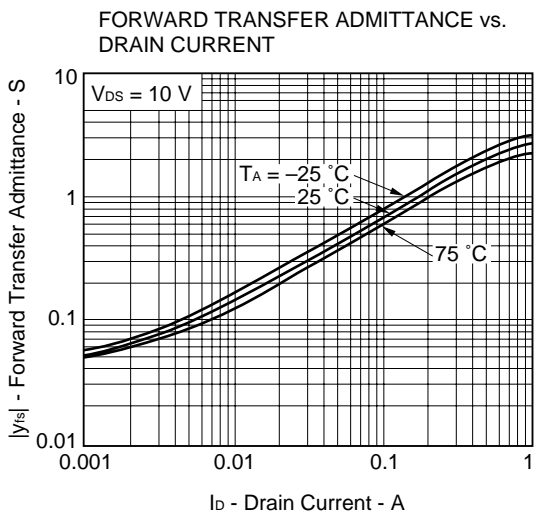
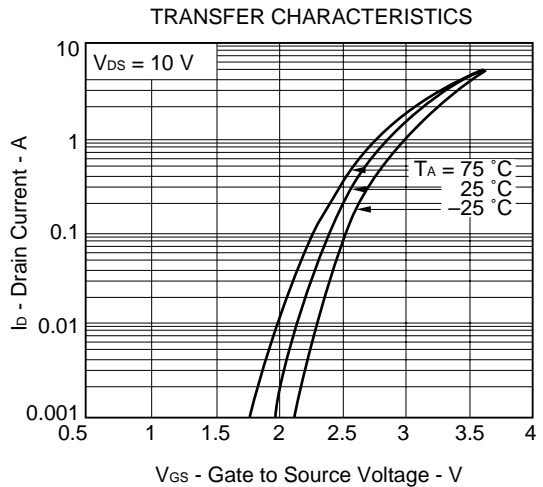
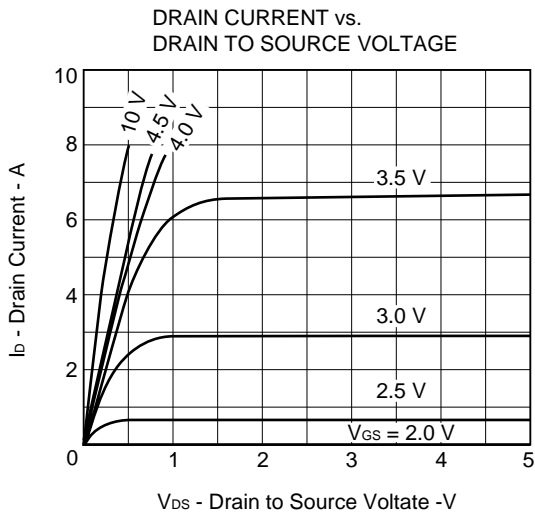
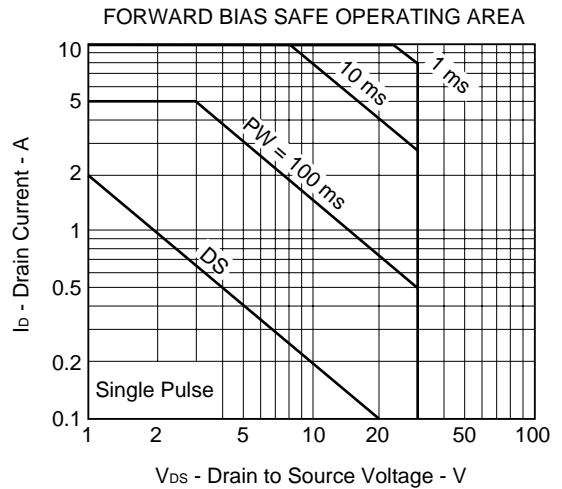
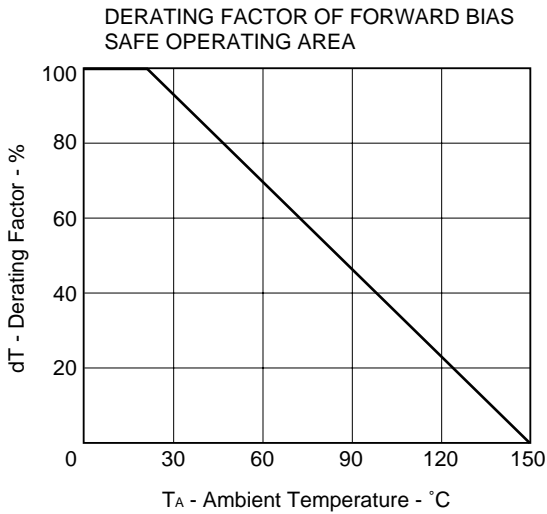
ABSOLUTE MAXIMUM RATINGS ($T_A = 25 \text{ }^\circ\text{C}$)

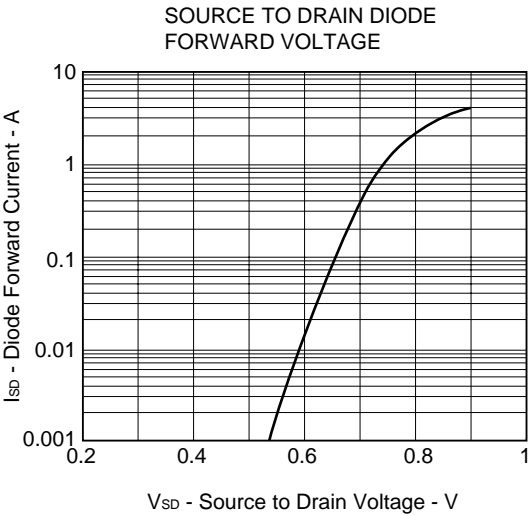
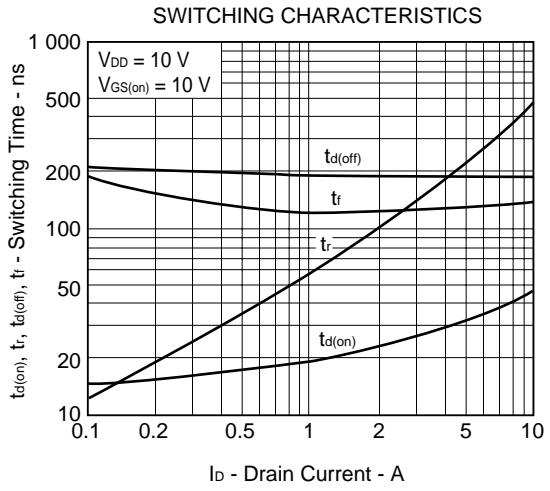
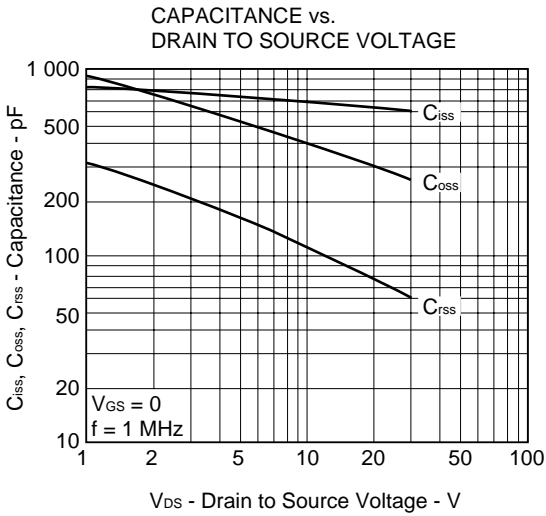
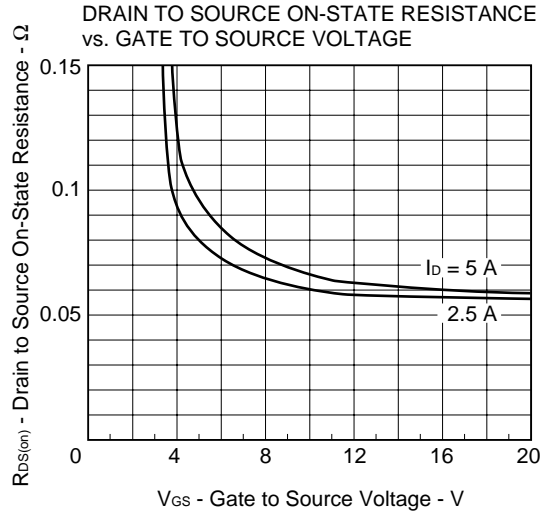
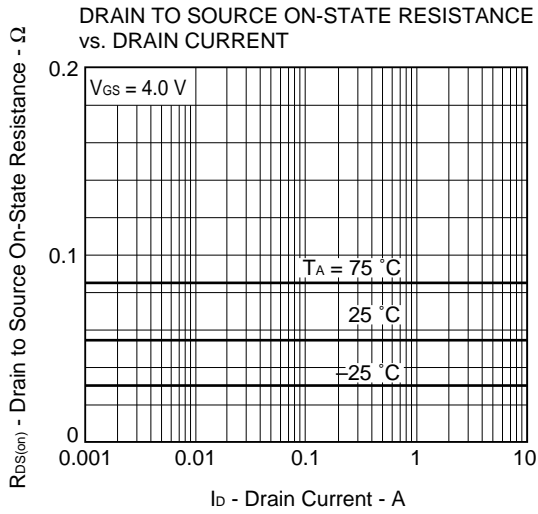
PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V_{BSS}	$V_{GS} = 0$	30	V
Gate to Source Voltage	V_{GSS}	$V_{DS} = 0$	± 20	V
Drain Current (DC)	$I_{D(DC)}$		± 5.0	A
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10 \text{ ms}$, Duty cycle $\leq 50 \%$	± 10.0	A
Total Power Dissipation	P_T	$7.5 \text{ cm}^2 \times 0.7 \text{ mm}$, ceramic substrate used	2.0	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 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} = 30 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	1.5	1.9	2.5	V
Forward Transfer Admittance	y _{ts}	V _{DS} = 10 V, I _D = 2.5 A	2.0			S
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = 4 V, I _D = 2.5 A		0.09	0.15	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = 10 V, I _D = 2.5 A		0.06	0.10	Ω
Input Capacitance	C _{iss}	V _{DS} = 10 V, V _{GS} = 0, f = 1.0 MHz		650		pF
Output Capacitance	C _{oss}			400		pF
Reverse Transfer Capacitance	C _{rss}			120		pF
Turn-On Delay Time	t _{d(on)}	V _{DD} = 10 V, I _D = 2.5 A V _{GS(on)} = 10 V, R _G = 10 Ω R _L = 4 Ω		85		ns
Rise Time	t _r			450		ns
Turn-Off Delay Time	t _{d(off)}			285		ns
Fall Time	t _f			315		ns

TYPICAL CHARACTERISTICS (T_A = 25 °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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The quality grade of NEC devices in “Standard” unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact NEC Sales Representative in advance.

Anti-radioactive design is not implemented in this product.