

MOS FIELD EFFECT TRANSISTOR

2SK2054

N-CHANNEL MOS FET FOR HIGH-SPEED SWITCHING

The 2SK2054 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.

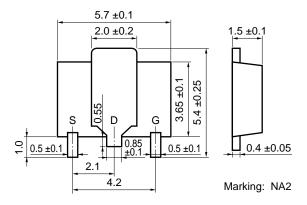
This product has a low ON resistance and superb switching characteristics and is ideal for driving the actuators and DC/DC converters.

FEATURES

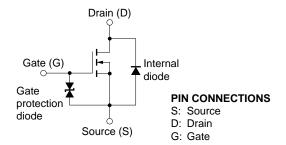
- New package intermediate between small-signal and power models
- · Can be directly driven by output of 5-V IC
- · Low ON resistance

 $R_{DS(on)} = 0.25 \ \Omega \ MAX. \ @V_{GS} = 4 \ V, \ I_{D} = 1.5 \ A$ $R_{DS(on)} = 0.20 \ \Omega \ MAX. \ @V_{GS} = 10 \ V, \ I_{D} = 1.5 \ A$

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	Voss	Vgs = 0	60	V
Gate to Source Voltage	Vgss	V _{DS} = 0	±20	V
Drain Current (DC)	I _{D(DC)}		±3.0	Α
Drain Current (Pulse)	ID(pulse)	PW ≤ 10 ms, Duty cycle ≤ 50 %	±6.0	А
Total Power Dissipation	Рт	$7.5~\text{cm}^2 \times 0.7~\text{mm}$, ceramic substrate used	2.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

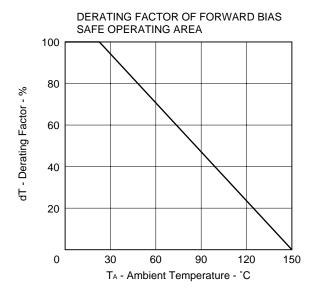


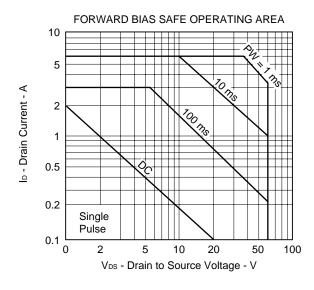
ELECTRICAL CHARACTERISTICS (TA = 25 °C)

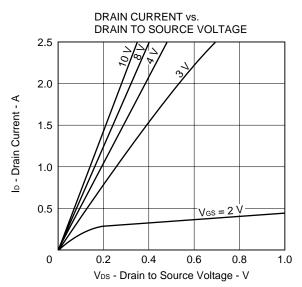
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	Ioss	V _{DS} = 60 V, V _{GS} = 0			1.0	μΑ
Gate Leakage Current	Igss	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0$			±10	μΑ
Gate Cut-Off Voltage	V _{GS(off)}	V _{DS} = 10 V, I _D = 1 mA	0.8	1.3	2.0	V
Forward Transfer Admittance	yfs	V _{DS} = 10 V, I _D = 1.5 A	2.0			S
Drain to Source On-State Resistance	RDS(on)1	Vgs = 4 V, ID = 1.5 A		0.18	0.25	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	Vgs = 10 V, ID = 1.5 A		0.15	0.20	Ω
Input Capacitance	Ciss	V _{DS} = 10 V, V _{GS} = 0, f = 1.0 MHz		530		pF
Output Capacitance	Coss			200		pF
Reverse Transfer Capacitance	Crss			50		pF
Turn-On Delay Time	td(on)	$V_{DD} = 10 \text{ V, } I_{D} = 1.5 \text{ A}$ $V_{GS(on)} = 10 \text{ V, } R_{G} = 10 \Omega$ $R_{L} = 6 \Omega$		6		ns
Rise Time	tr			80		ns
Turn-Off Delay Time	td(off)			70		ns
Fall Time	t _f			25		ns

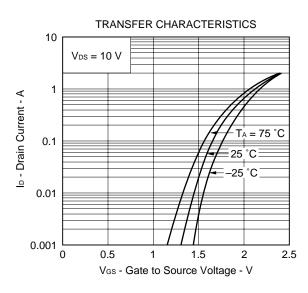
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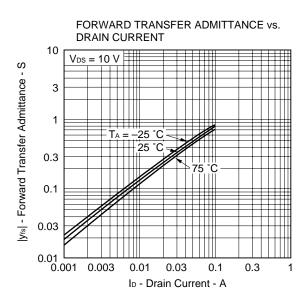
TYPICAL CHARACTERISTICS (TA = 25 °C)

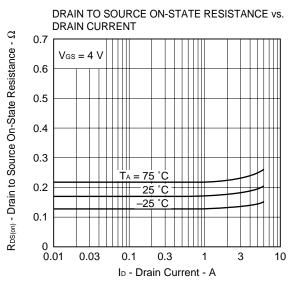




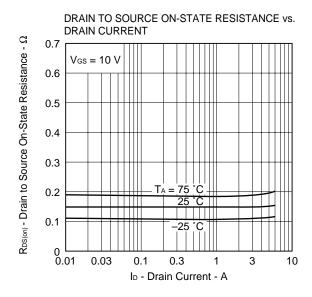


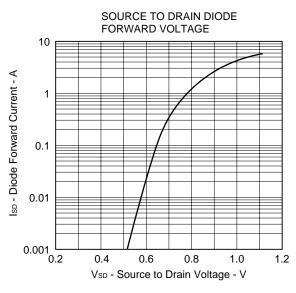


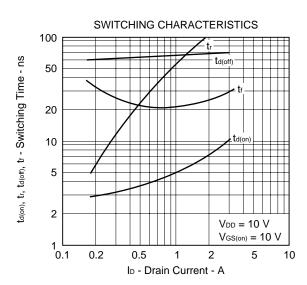


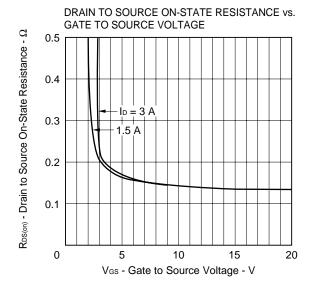


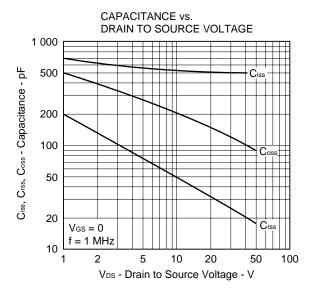














REFERENCE

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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Anti-radioactive design is not implemented in this product.