

MOS FIELD EFFECT TRANSISTOR
2SK1959

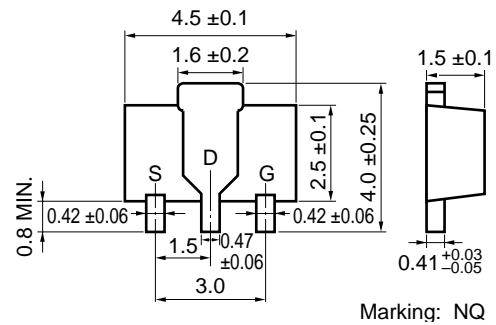
N-CHANNEL MOS FET FOR HIGH-SPEED SWITCHING

The 2SK1959 is an N-channel vertical MOSFET. Because it can be driven by a voltage as low as 1.5 V and it is not necessary to consider a drive current, this FET is ideal as an actuator for low-current portable systems such as headphone stereos and video cameras.

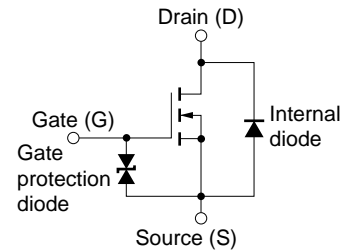
FEATURES

- Gate can be driven by 1.5 V
- Low ON resistance
 $R_{DS(on)} = 3.2 \Omega$ MAX. @ $V_{GS} = 1.5 V, I_D = 50 mA$
 $R_{DS(on)} = 0.5 \Omega$ MAX. @ $V_{GS} = 4.0 V, I_D = 1.0 A$

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CURCUIT



PIN CONNECTIONS

- S: Source
- D: Drain
- G: Gate

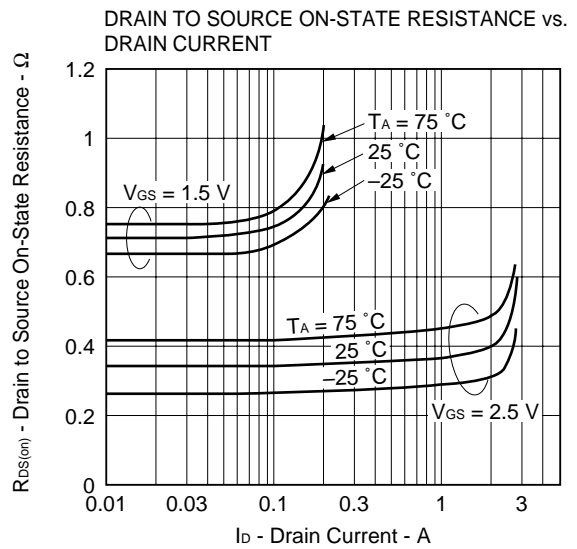
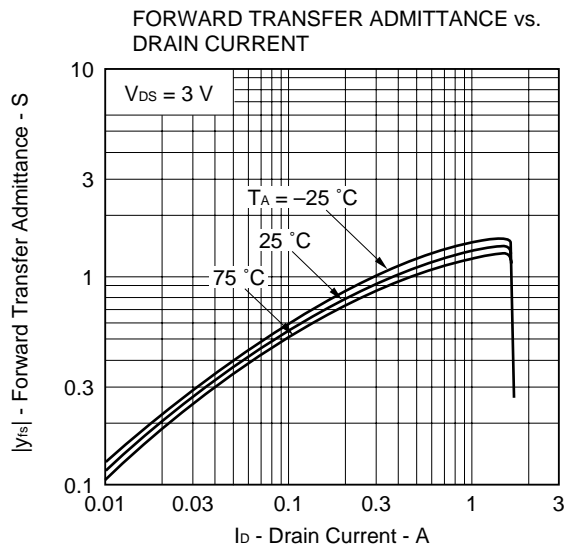
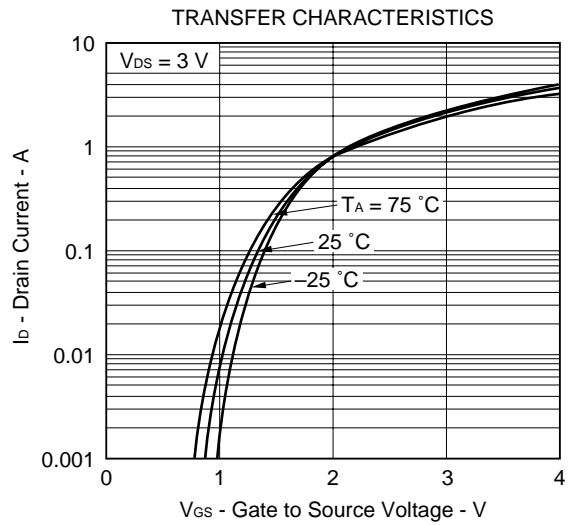
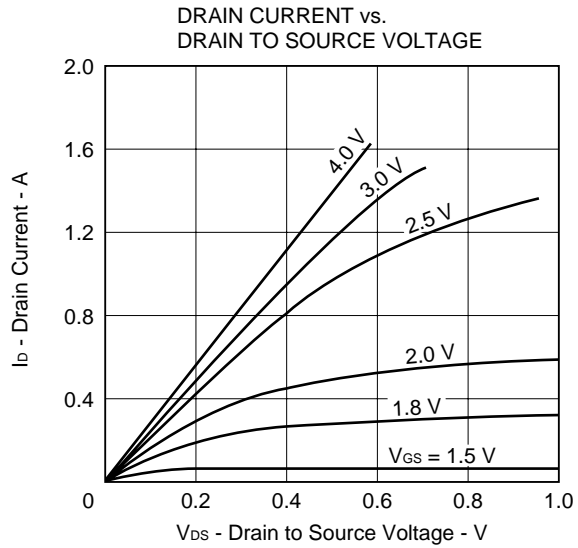
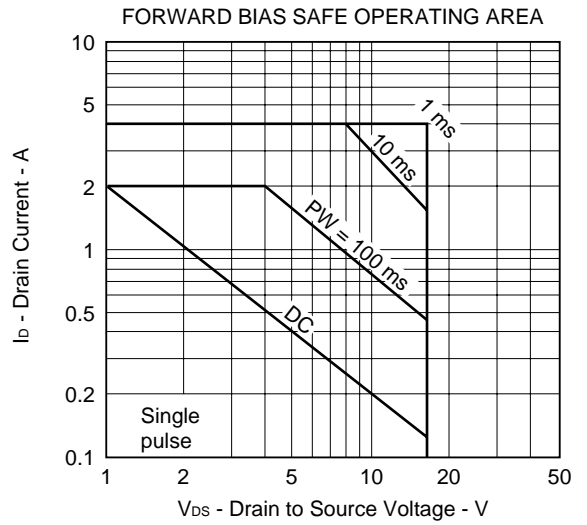
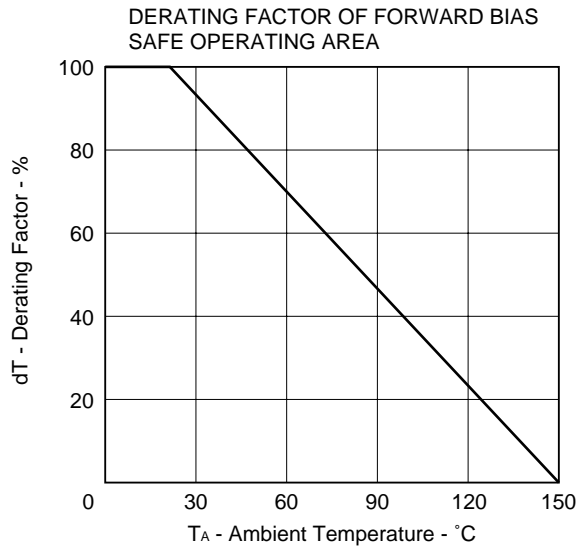
ABSOLUTE MAXIMUM RATINGS (TA = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V_{DSS}	$V_{GS} = 0$	16	V
Gate to Source Voltage	V_{GSS}	$V_{DS} = 0$	± 7.0	V
Drain Current (DC)	$I_{D(DC)}$		± 2.0	A
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10 ms, duty\ cycle \leq 50 \%$	± 4.0	A
Total Power Dissipation	P_T	16 cm ² × 0.7 mm ceramic substrate used	2.0	W
Channel Temperature	T_{ch}		150	°C
Storage Temperature	T_{stg}		-55 to +150	°C

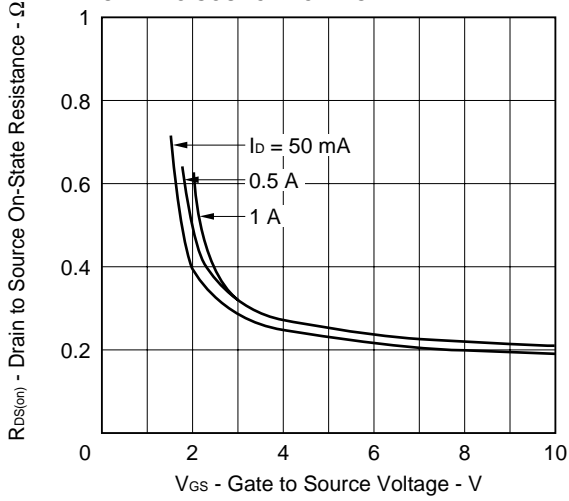
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	I _{DSS}	V _{DS} = 16 V, V _{GS} = 0			1.0	μA
Gate Leakage Current	I _{GSS}	V _{GS} = ±7.0 V, V _{DS} = 0			±3.0	μA
Gate Cut-Off Voltage	V _{GS(off)}	V _{DS} = 3 V, I _D = 100 μA	0.5	0.8	1.1	V
Forward Transfer Admittance	y _{fs}	V _{DS} = 3 V, I _D = 1.0 A	1.0			S
Drain to Source On-State Resistance	R _{DS(on)1}	V _{GS} = 1.5 V, I _D = 50 mA		0.8	3.2	Ω
Drain to Source On-State Resistance	R _{DS(on)2}	V _{GS} = 2.5 V, I _D = 0.5 A		0.36	0.6	Ω
Drain to Source On-State Resistance	R _{DS(on)3}	V _{GS} = 4.0 V, I _D = 1.0 A		0.28	0.5	Ω
Input Capacitance	C _{iss}	V _{DS} = 3 V, V _{GS} = 0, f = 1.0 MHz		160		pF
Output Capacitance	C _{oss}			150		pF
Reverse Transfer Capacitance	C _{rss}			50		pF
Turn-ON Delay Time	t _{d(on)}	V _{DD} = 3 V, I _D = 0.5 A, V _{GS(on)} = 3 V, R _G = 10 Ω, R _L = 6 Ω		45		ns
Rise Time	t _r			190		ns
Turn-OFF Delay Time	t _{d(off)}			180		ns
Fall Time	t _f			210		ns

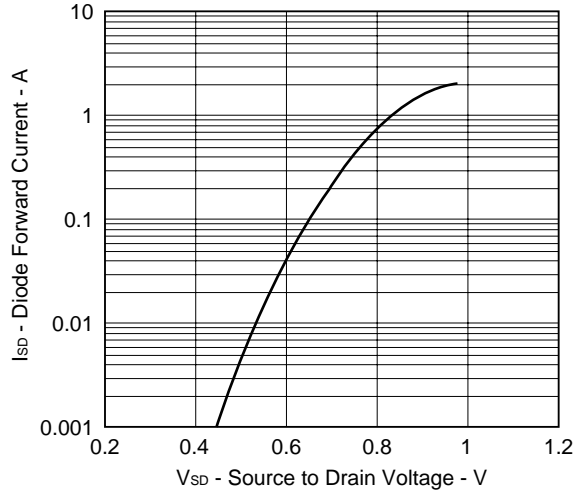
TYPICAL CHARACTERISTICS (T_A = 25 °C)



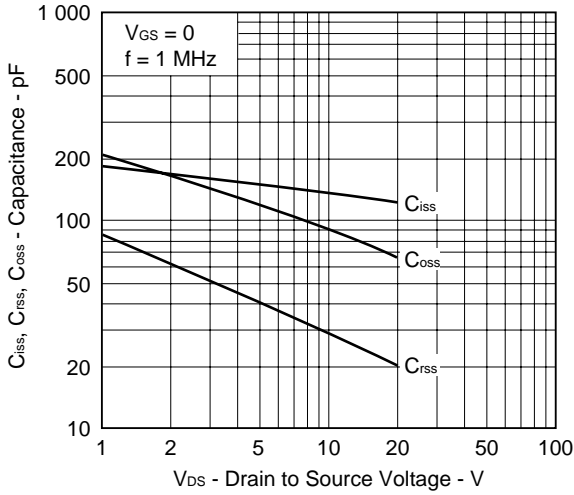
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



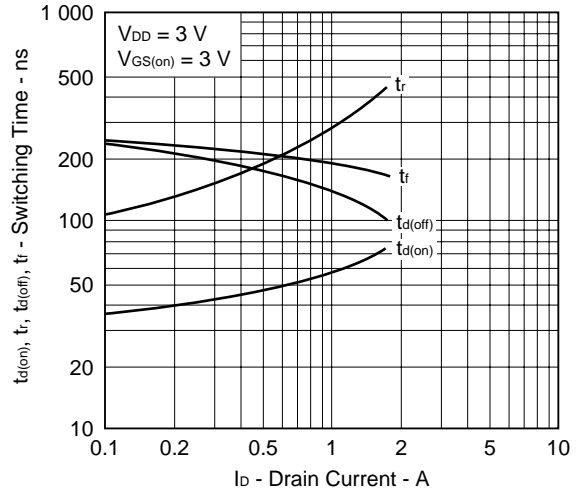
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



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.