

MOS FIELD EFFECT TRANSISTOR

2SK1824

N-CHANNEL MOS FET

FOR SWITCHING

The 2SK1824 is a N-channel vertical type MOS FET that is driven at 2.5 V.

Because this MOS FET can be driven on a low voltage and because it is not necessary to consider the drive current, the 2SK1824 is ideal for driving the actuator of power-saving systems, such as VCR cameras and headphone stereo systems.

Moreover, the 2SK1824 is housed in a super small mini-mold package so that it can help increase the mounting density on the printed circuit board and lower the mounting cost, contributing to miniaturization of the application systems.

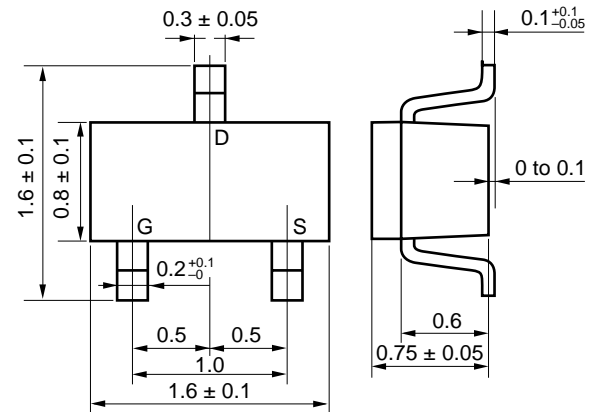
FEATURES

- Small mounting area: about 60 % of the conventional mini-mold package (SC-70)
- Can be automatically mounted
- Can be directly driven by 3-V IC

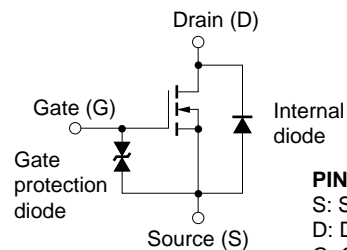
The internal diode in the right figure is a parasitic diode.

The protection diode is to protect the product from damage due to static electricity. If there is a danger that an extremely high voltage will be applied across the gate and source in the actual circuit, a gate protection circuit such as an external constant-voltage diode is necessary.

PACKAGE DIMENSIONS (in mm)



EQUIVALENT CIRCUIT



PIN CONNECTIONS

S: Source
D: Drain
G: Gate

Marking: B1

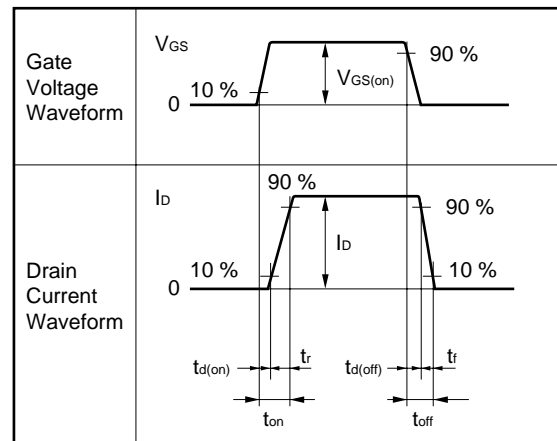
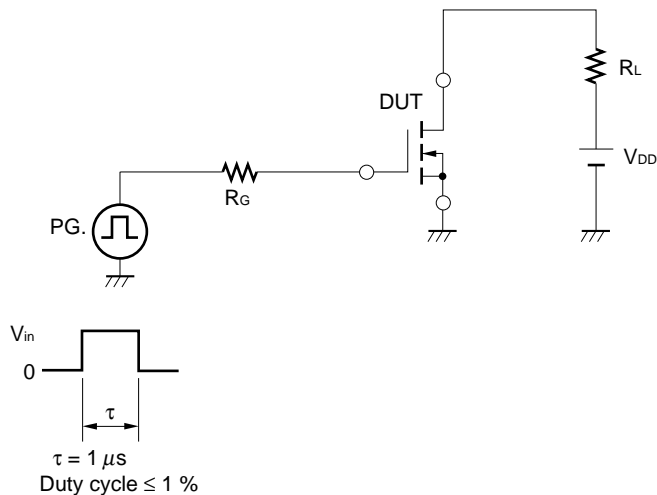
ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^{\circ}\text{C}$)

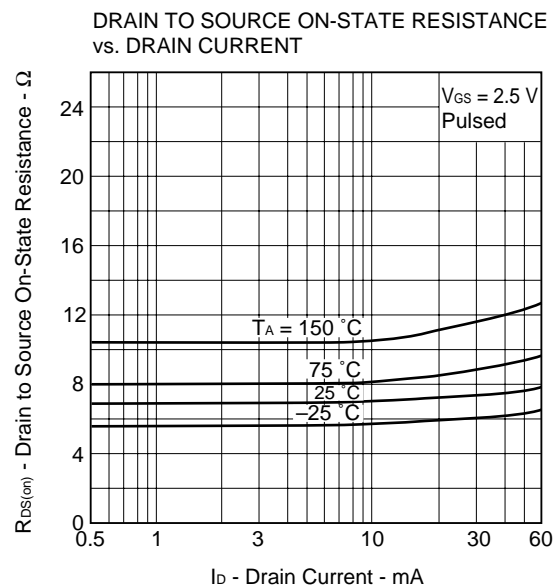
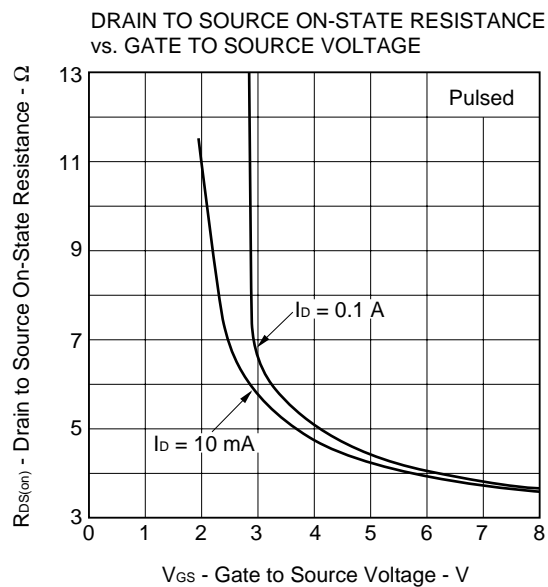
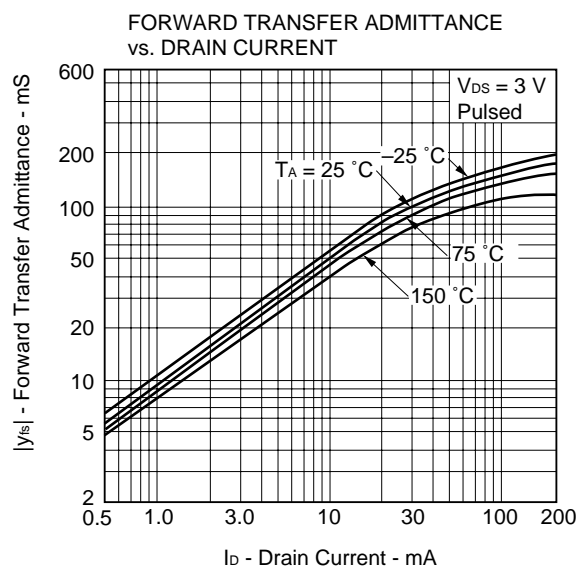
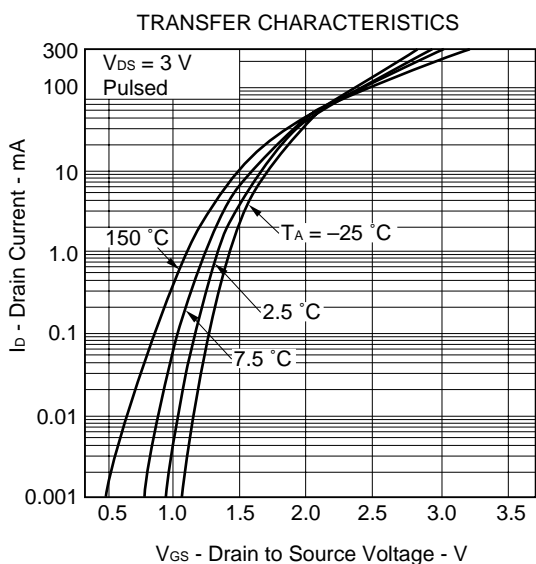
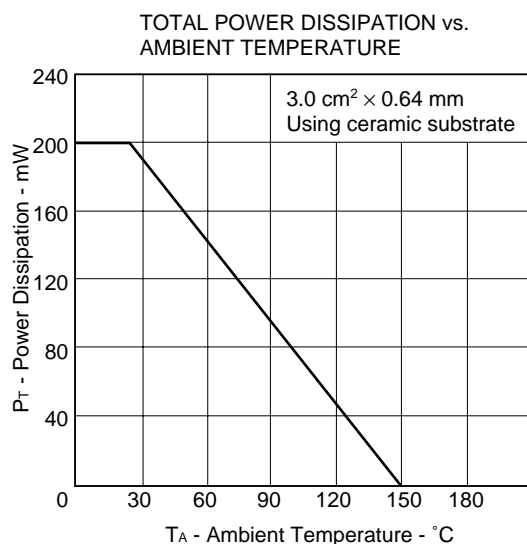
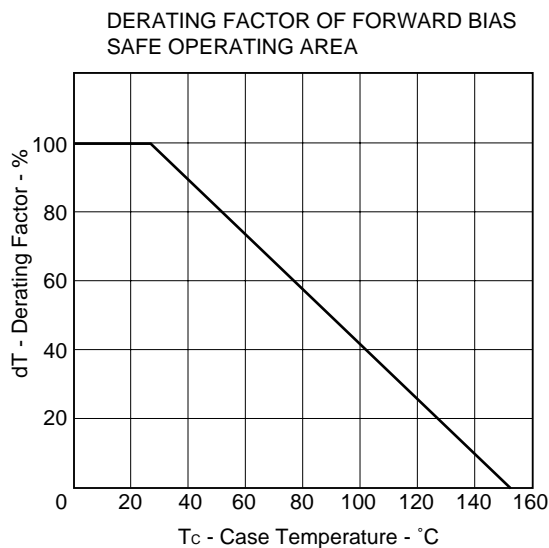
PARAMETER	SYMBOL	TEST CONDITIONS	RATING	UNIT
Drain to Source Voltage	V_{DS}	$V_{GS} = 0$	30	V
Gate to Source Voltage	V_{GS}	$V_{DS} = 0$	± 7	V
Drain Current (DC)	$I_{D(DC)}$		± 100	mA
Drain Current (Pulse)	$I_{D(pulse)}$	$PW \leq 10\text{ ms}$ Duty cycle $\leq 50\%$	± 200	mA
Total Power Dissipation	P_T	$3.0\text{ cm}^2 \times 0.64\text{ mm}$, ceramic substrate used	200	mW
Channel Temperature	T_{ch}		150	$^{\circ}\text{C}$
Operating Temperature	T_{opt}		$-55\text{ to }+80$	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		$-55\text{ to }+150$	$^{\circ}\text{C}$

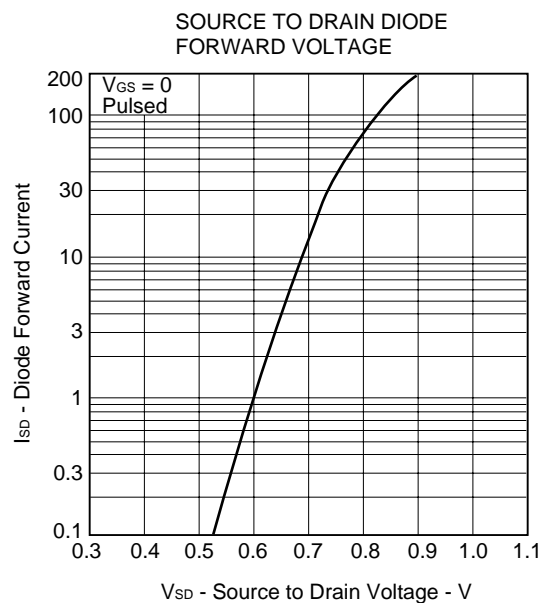
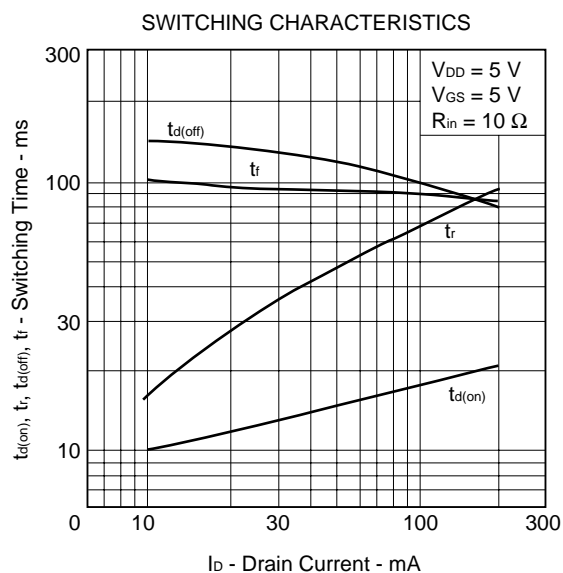
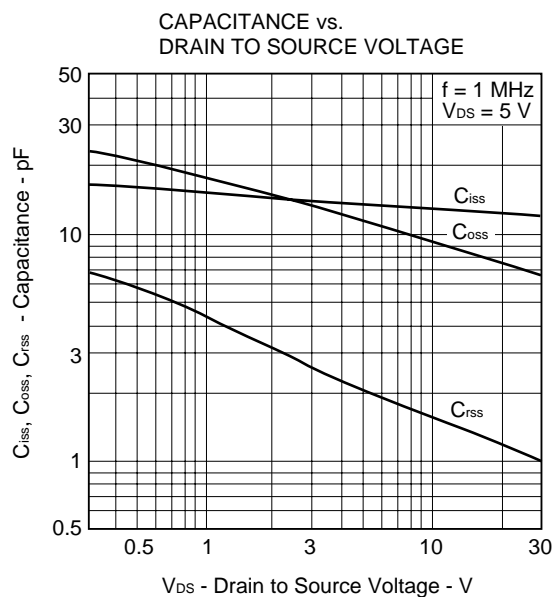
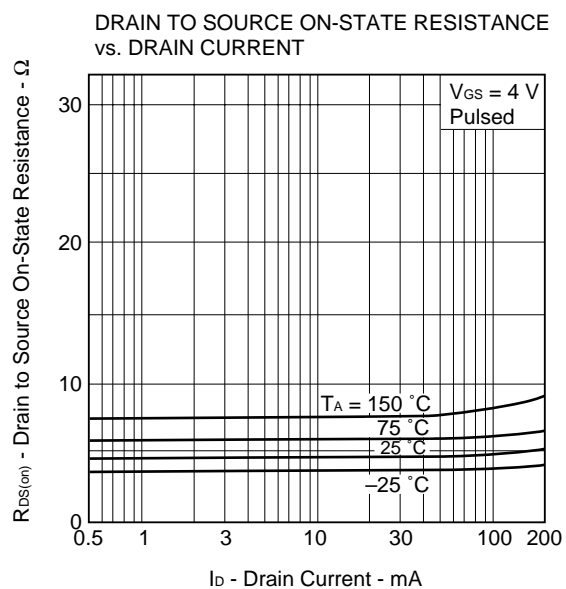
ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^{\circ}\text{C}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-Off Current	I_{DSS}	$V_{DS} = 30\text{ V}$, $V_{GS} = 0$			1.0	μA
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 5\text{ V}$, $V_{DS} = 0$		± 0.1	± 3	μA
Gate Cut-Off Voltage	$V_{GS(off)}$	$V_{DS} = 3\text{ V}$, $I_D = 10\text{ }\mu\text{A}$	0.8	1.0	1.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 3\text{ V}$, $I_D = 10\text{ mA}$	20	50		mS
Drain to Source On-State Resistance	$R_{DS(on)1}$	$V_{GS} = 2.5\text{ V}$, $I_D = 1\text{ mA}$		7	13	Ω
Drain to Source On-State Resistance	$R_{DS(on)2}$	$V_{GS} = 4.0\text{ V}$, $I_D = 10\text{ mA}$		5	8	Ω
Input Capacitance	C_{iss}	$V_{DS} = 5.0\text{ V}$, $V_{GS} = 0$, $f = 1\text{ MHz}$		16		pF
Output Capacitance	C_{oss}			14		pF
Reverse Transfer Capacitance	C_{rss}			2		pF
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 5\text{ V}$, $I_D = 10\text{ mA}$ $V_{GS(on)} = 5\text{ V}$, $R_G = 10\text{ }\Omega$ $R_L = 500\text{ }\Omega$		15		ns
Rise Time	t_r			20		ns
Turn-Off Delay Time	$t_{d(off)}$			100		ns
Fall Time	t_f			100		ns

SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS (Resistive Load)



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.