

# MOS FIELD EFFECT TRANSISTOR **2SK3107**

# N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR HIGH SPEED SWITCHING

#### **DESCRIPTION**

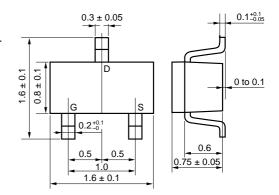
The 2SK3107 is a switching device which can be driven directly by a 2.5-V power source.

The 2SK3107 has excellent switching characteristics, and is suitable for use as a high-speed switching device in digital circuits.

#### **FEATURES**

- Can be driven by a 2.5-V power source
- Low gate cut-off voltage

## PACKAGE DRAWING (Unit: mm)



#### ORDERING INFORMATION

PART NUMBER	PACKAGE
2SK3107	SC-75(USM)

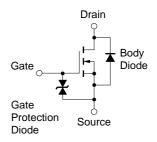
### ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

	Drain to Source Voltage	VDSS	30	V
	Gate to Source Voltage	Vgss	±20	V
	Drain Current (DC)	ID(DC)	±0.1	Α
	Drain Current (pulse) Note1	D(pulse)	±0.4	Α
*	Total Power Dissipation Note2	Рт	200	mW
	Channel Temperature	Tch	150	°C
	Storage Temperature	Tstg	-55 to +150	°C

**Notes 1.** PW  $\leq$  10  $\mu$ s, Duty Cycle  $\leq$  1 %

2. Mounted on ceramic substrate of 3.0 cm<sup>2</sup> x 0.64 mm

# **EQUIVALENT CIRCUIT**



Marking: D1

**Remark** The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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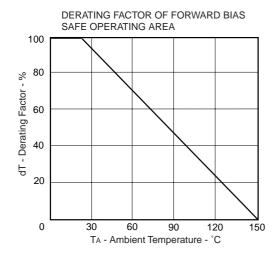
# ELECTRICAL CHARACTERISTICS (TA = 25 °C)

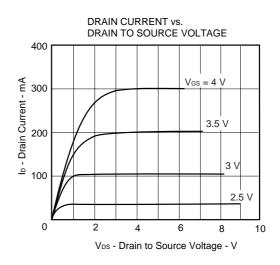
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Drain Cut-off Current	Ipss	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V			1	μΑ
Gate Leakage Current	lgss	Vgs = ±20 V, Vps = 0 V			±10	μΑ
Gate Cut-off Voltage	V <sub>GS(off)</sub>	$V_{DS} = 3 \text{ V}, I_{D} = 10 \mu \text{A}$	1.0	1.4	1.8	V
Forward Transfer Admittance	yfs	V <sub>DS</sub> = 3 V, I <sub>D</sub> = 10 m A	20			mS
Drain to Source On-state Resistance	RDS(on)1	Vgs = 2.5 V, ID = 1 m A		8	15	Ω
	RDS(on)2	Vgs = 4 V, ID = 10 mA		4	8	Ω
	RDS(on)3	Vgs = 10 V, ID = 10 mA		3	5	Ω
Input Capacitance	Ciss	Vps = 3 V		9		pF
Output Capacitance	Coss	V <sub>G</sub> S = 0 V		12		pF
Reverse Transfer Capacitance	Crss	f = 1 MHz		2.1		pF
Turn-on Delay Time	td(on)	VDD = 3 V		40		ns
Rise Time	tr	I <sub>D</sub> = 10 mA		55		ns
Turn-off Delay Time	td(off)	V <sub>GS(on)</sub> = 4 V		68		ns
Fall Time	tr	$R_G = 10 \Omega$ , $R_L = 300 \Omega$		64		ns

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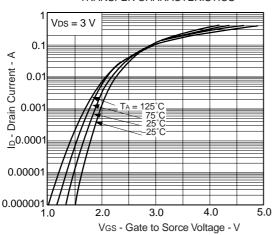


## TYPICAL CHARACTERISTICS (TA = 25 °C)

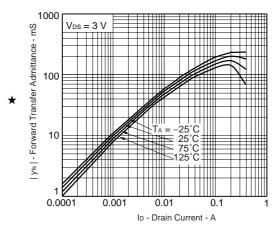


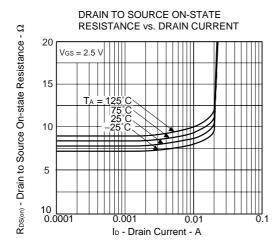


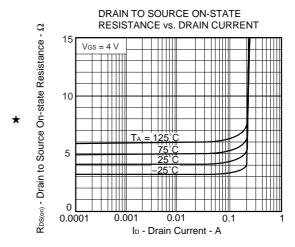




FORWARD TRANSFER ADMMITTANCE Vs. DRAIN CURRENT

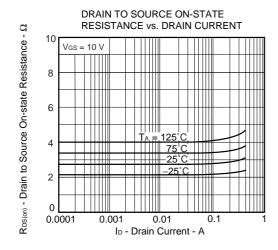


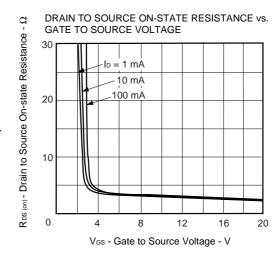


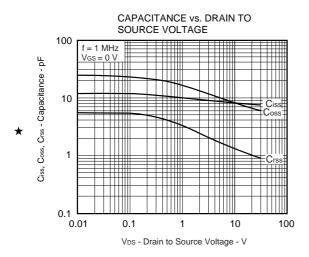


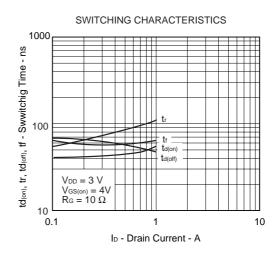
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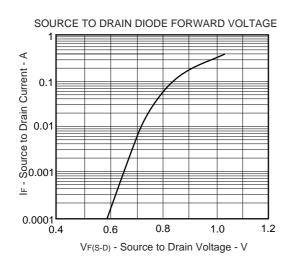












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