

N-CHANNEL MOS FIELD EFFECT TRANSISTOR  
FOR HIGH SPEED SWITCHING

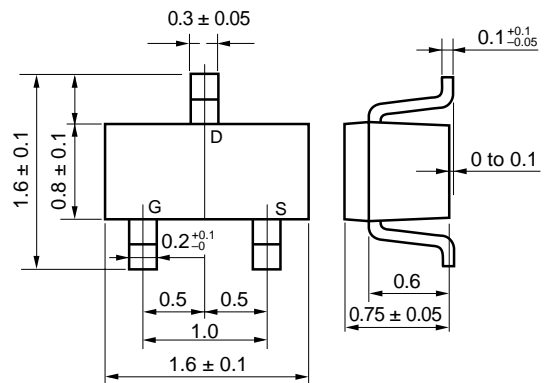
DESCRIPTION

The 2SK3503 is an N-channel vertical MOS FET. 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

- Automatic mounting supported
- Gate can be driven by a 1.5 V power source
- Because of its high input impedance, there's no need to consider a drive current
- Since bias resistance can be omitted, the number of components required can be reduced

PACKAGE DRAWING (Unit : mm)



ORDERING INFORMATION

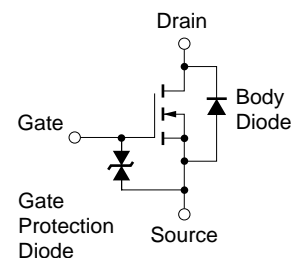
PART NUMBER	PACKAGE
2SK3503 <sup>Note</sup>	SC-75 (USM)

Note Marking: E1

ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Drain to Source Voltage (V <sub>GS</sub> = 0 V)	V <sub>DS</sub>	16	V
Gate to Source Voltage (V <sub>DS</sub> = 0 V)	V <sub>GSS</sub>	±7.0	V
Drain Current (DC) (T <sub>c</sub> = 25°C)	I <sub>D(DC)</sub>	±0.1	A
Drain Current (pulse) <sup>Note1</sup>	I <sub>D(pulse)</sub>	±0.4	A
Total Power Dissipation (T <sub>c</sub> = 25°C) <sup>Note2</sup>	P <sub>T</sub>	200	mW
Channel Temperature	T <sub>ch</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

EQUIVALENT CIRCUIT



- Notes
1. PW ≤ 10 μs, Duty Cycle ≤ 1%
  2. Mounted on ceramic substrate of 3.0 cm<sup>2</sup> × 0.64 mm

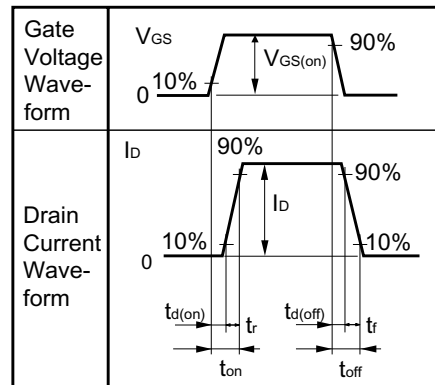
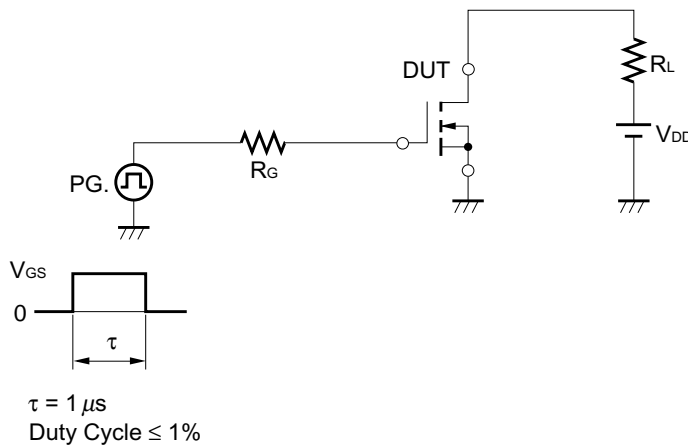
**Remark** The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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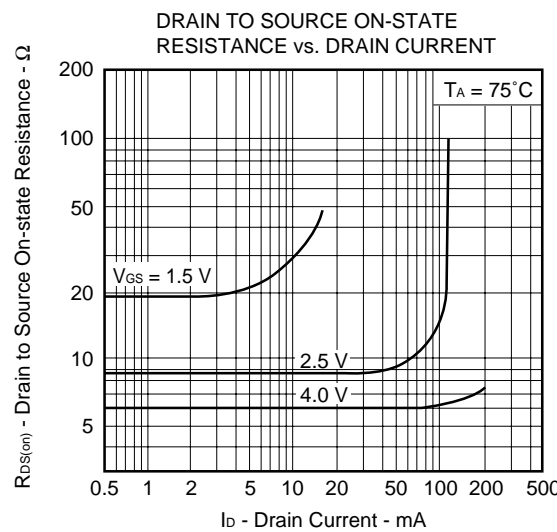
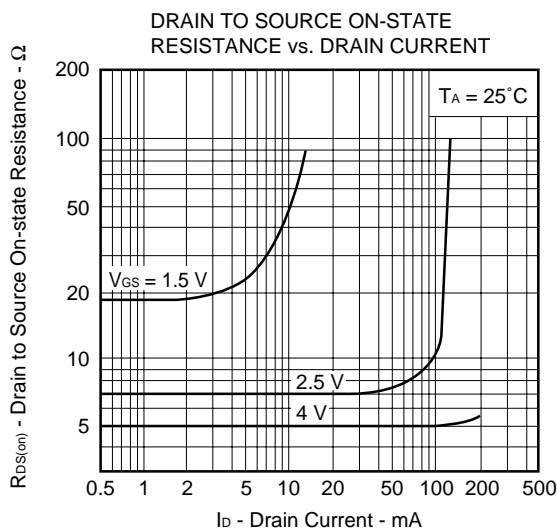
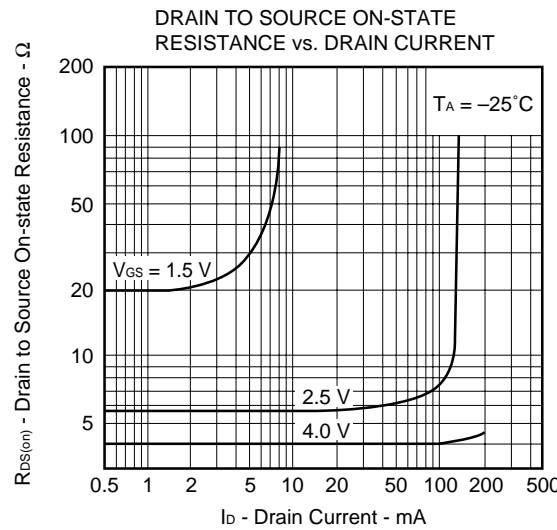
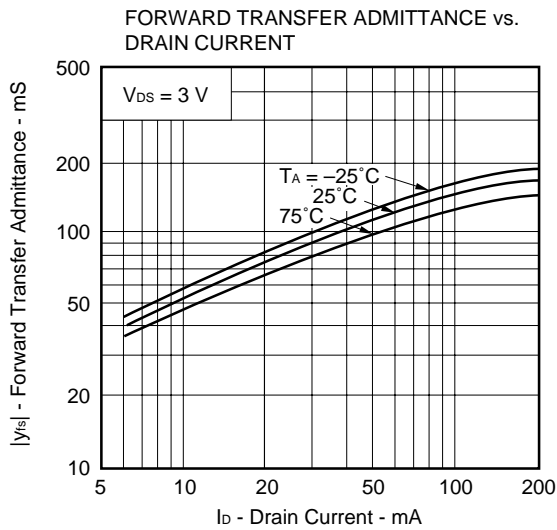
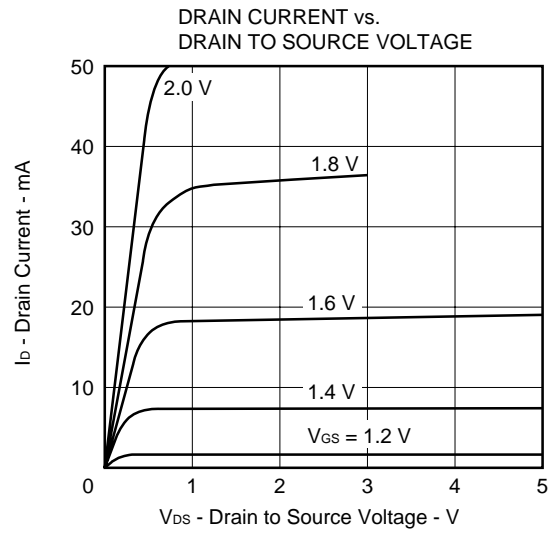
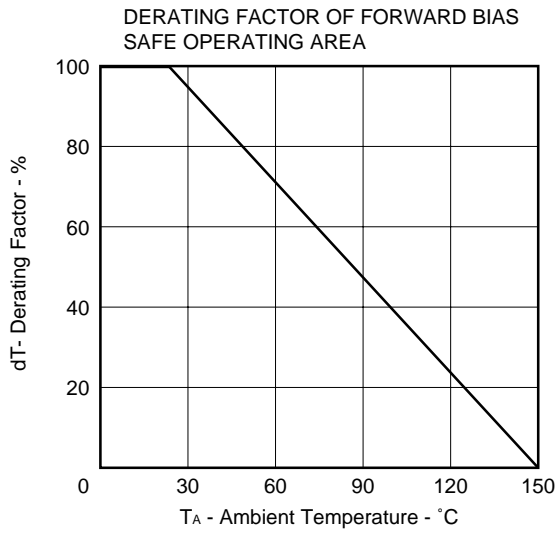
**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)**

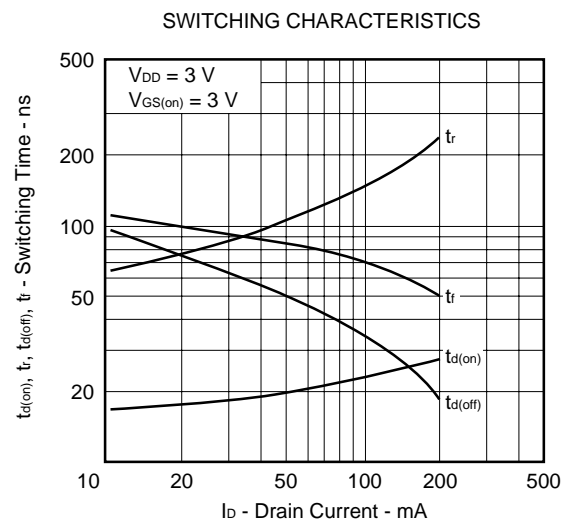
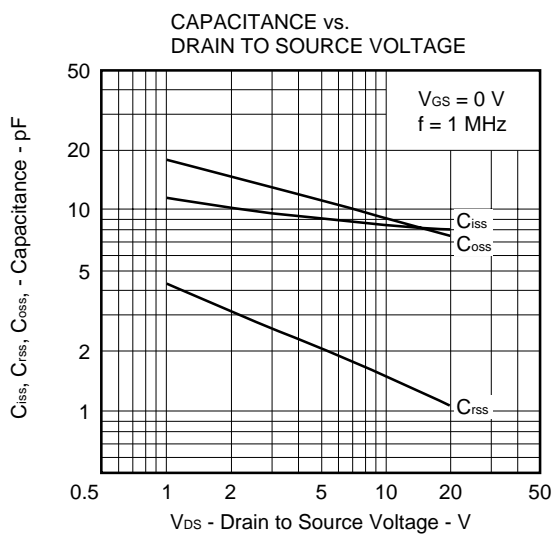
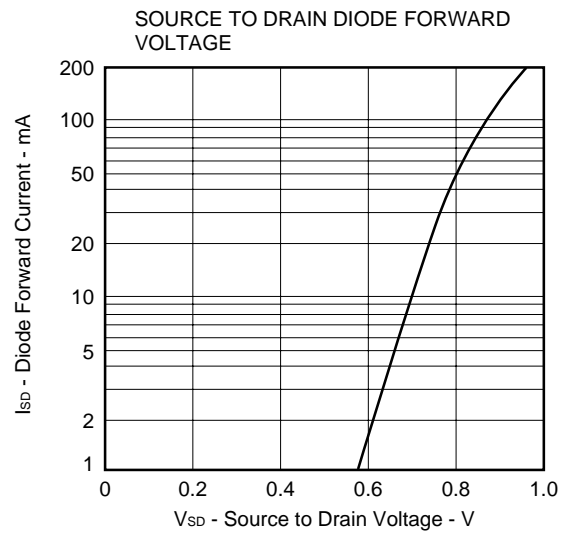
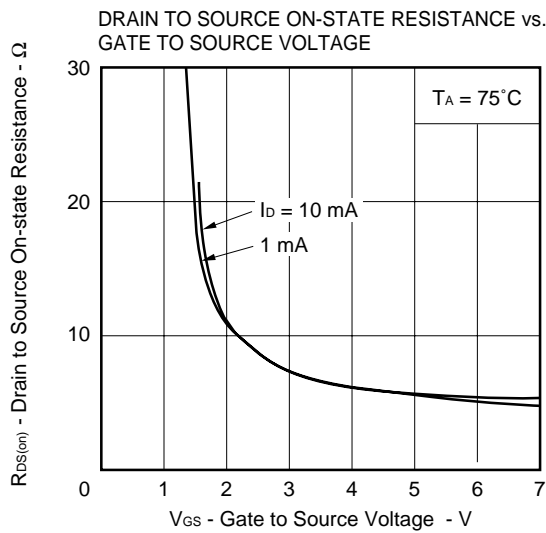
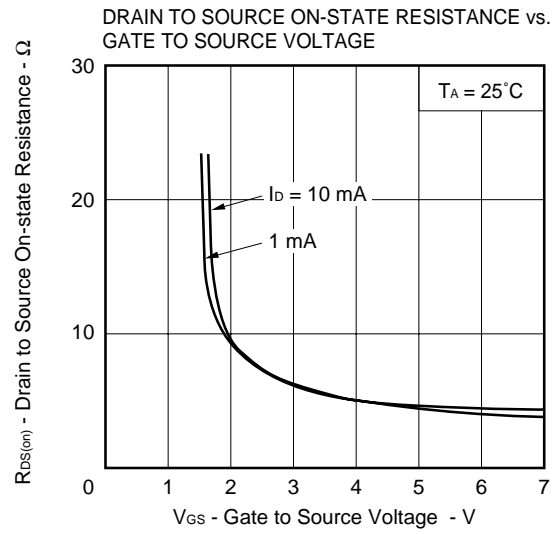
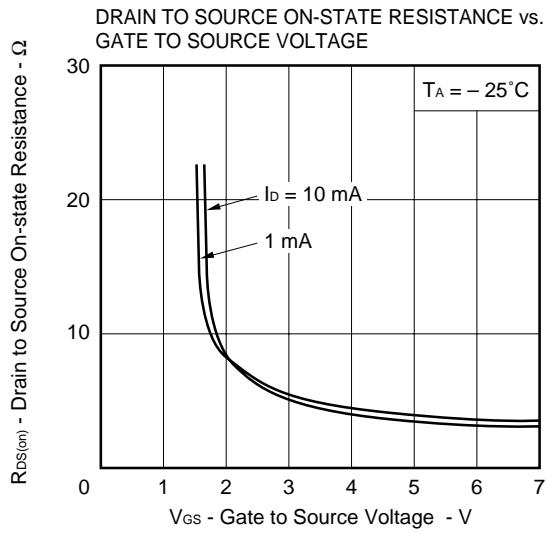
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 16 V, V <sub>GS</sub> = 0 V			1.0	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±7.0 V, V <sub>DS</sub> = 0 V			±3.0	μA
Gate Cut-off Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> = 3 V, I <sub>D</sub> = 10 μA	0.5	0.8	1.1	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> = 3 V, I <sub>D</sub> = 10 mA	20			mS
Drain to Source On-state Resistance	R <sub>DS(on)1</sub>	V <sub>GS</sub> = 1.5 V, I <sub>D</sub> = 1 mA		20	50	Ω
	R <sub>DS(on)2</sub>	V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 10 mA		7	15	Ω
	R <sub>DS(on)3</sub>	V <sub>GS</sub> = 4.0 V, I <sub>D</sub> = 10 mA		5	12	Ω
Input Capacitance	C <sub>iSS</sub>	V <sub>GS</sub> = 0 V		10		pF
Output Capacitance	C <sub>oSS</sub>	V <sub>DS</sub> = 3 V		13		pF
Reverse Transfer Capacitance	C <sub>rSS</sub>	f = 1 MHz		3		pF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = 3 V, I <sub>D</sub> = 10 mA		15		ns
Rise Time	t <sub>r</sub>	V <sub>GS(on)</sub> = 3 V		70		ns
Turn-off Delay Time	t <sub>d(off)</sub>	R <sub>G</sub> = 10 Ω		100		ns
Fall Time	t <sub>f</sub>			110		ns

**SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS**



TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)





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