

### P-CHANNEL MOS FET FOR SWITCHING

#### DESCRIPTION

The 2SJ208, P-channel vertical type MOS FET, is a switching device which can be driven by 2.5 V power supply.

As the MOS FET is driven by low voltage and does not require consideration of driving current, it is suitable for appliances including VCR cameras and headphone stereos which need power saving.

#### FEATURES

- Directly driven by ICs having a 3 V power supply.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.
- Has low on-state resistance

$$R_{DS(on)} = 3.0 \Omega \text{ MAX. } V_{GS} = -2.5 \text{ V, } I_D = -30 \text{ mA}$$

$$R_{DS(on)} = 1.0 \Omega \text{ MAX. } V_{GS} = -4.0 \text{ V, } I_D = -1.0 \text{ A}$$

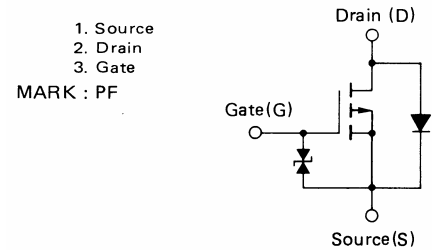
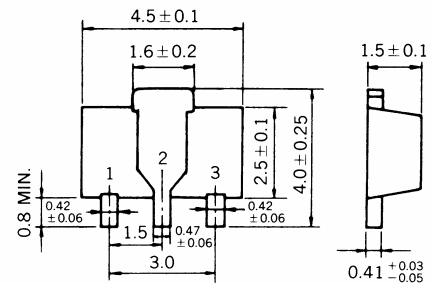
#### <R> ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

Drain to Source Voltage (V <sub>GS</sub> = 0 V)	V <sub>DSS</sub>	-16	V
Gate to Source Voltage (V <sub>DS</sub> = 0 V)	V <sub>GSS</sub>	±16	V
Drain Current (DC)	I <sub>D(DC)</sub>	±2.0	A
Drain Current (pulse) <sup>Note 1</sup>	I <sub>D(pulse)</sub>	±4.0	A
Total Power Dissipation <sup>Note 2</sup>	P <sub>T</sub>	2.0	W
Channel Temperature	T <sub>ch</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55 to +150	°C

**Notes 1.** PW ≤ 10 ms, Duty Cycle ≤ 50%

**2.** When using ceramic board of 16 cm<sup>2</sup> × 0.7 mm

#### PACKAGE DRAWING (Unit: mm)



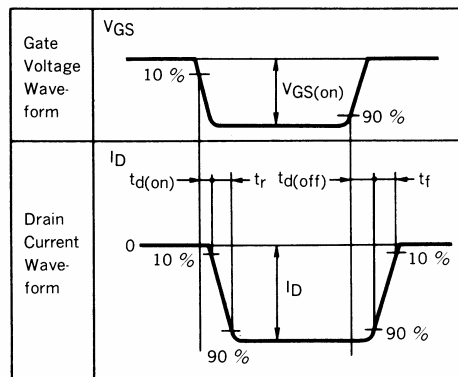
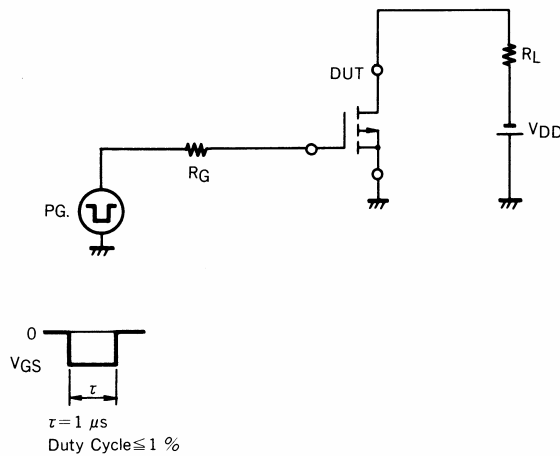
(Diode in the figure is the parasitic diode.)

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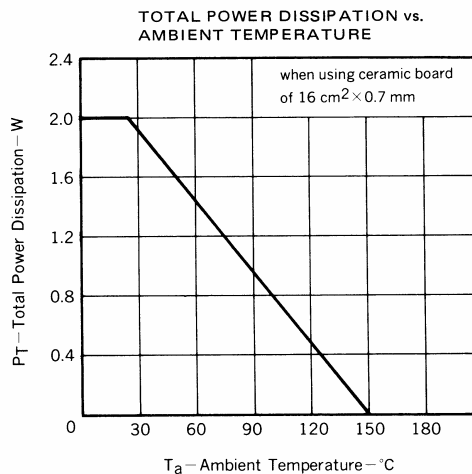
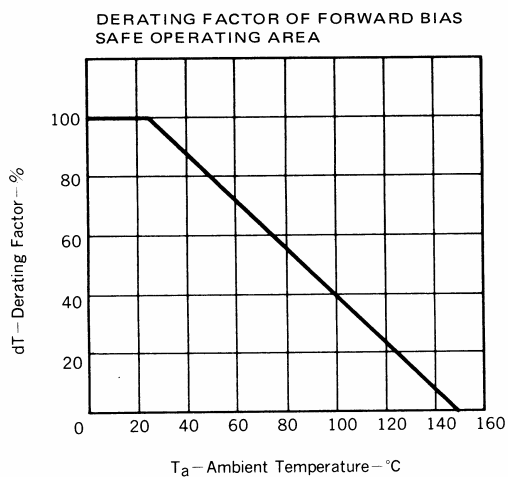
ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25 °C)

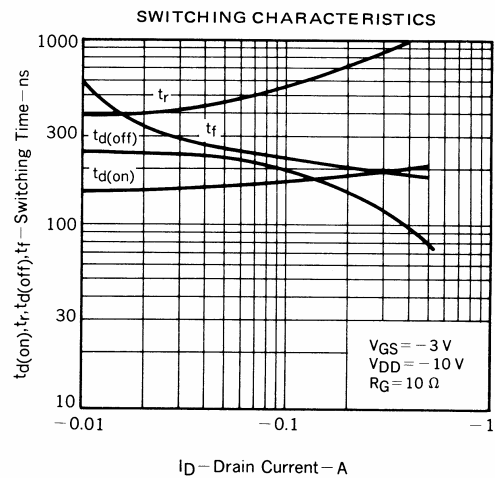
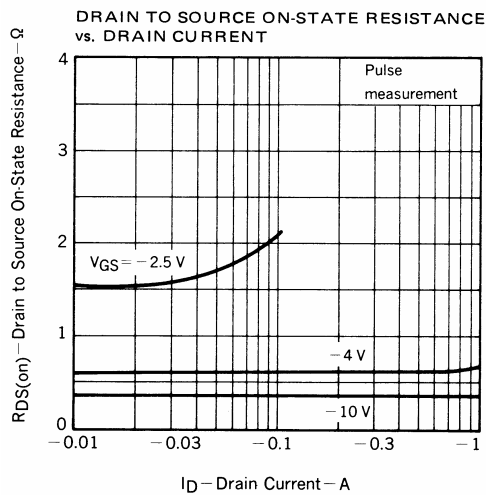
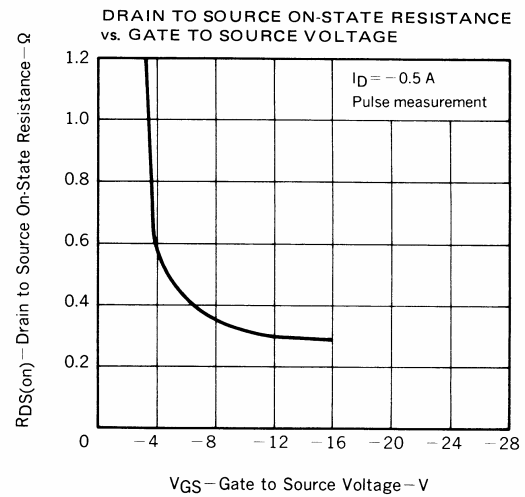
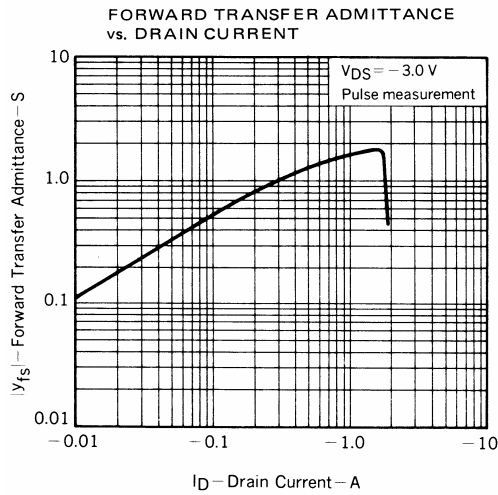
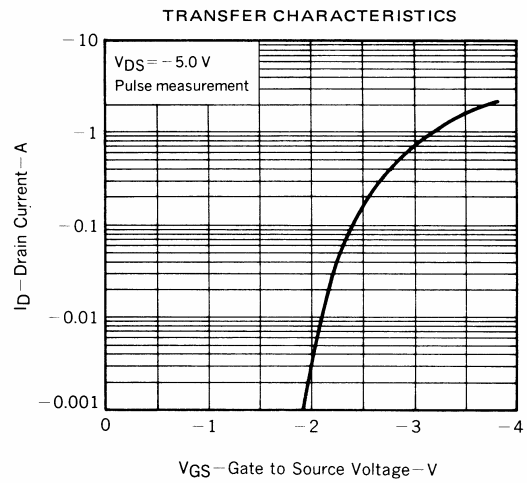
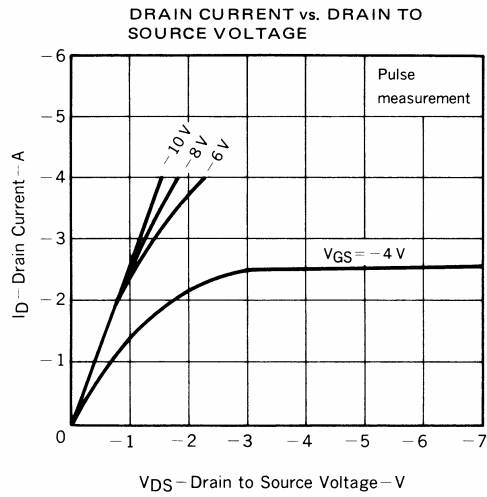
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I <sub>DSS</sub>			-1.0	μA	V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0
Gate Leakage Current	I <sub>GSS</sub>			±5.0	μA	V <sub>GS</sub> = ±16 V, V <sub>DS</sub> = 0
Gate Cut-off Voltage	V <sub>GS(off)</sub>	-1.4	-1.9	-2.4	V	V <sub>DS</sub> = -5 V, I <sub>D</sub> = -1 mA
Forward Transfer Admittance	y <sub>fs</sub>	0.4	1.6		S	V <sub>DS</sub> = -3 V, I <sub>D</sub> = -1.0 A
Drain to Source On-State Resistance	R <sub>DS(on)1</sub>		1.6	3.0	Ω	V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -30 mA
Drain to Source On-State Resistance	R <sub>DS(on)2</sub>		0.7	1.0	Ω	V <sub>GS</sub> = -4.0 V, I <sub>D</sub> = -1.0 A
Input Capacitance	C <sub>iss</sub>		230		pF	V <sub>DS</sub> = -3 V, V <sub>GS</sub> = 0, f = 1 MHz
Output Capacitance	C <sub>oss</sub>		210		pF	
Feedback Capacitance	C <sub>rss</sub>		35		pF	
Turn-On Delay Time	t <sub>d(on)</sub>		175		ns	V <sub>GS(on)</sub> = -3 V, R <sub>G</sub> = 10 Ω, V <sub>DD</sub> = -10 V, I <sub>D</sub> = -0.1 A
Rise Time	t <sub>r</sub>		540		ns	
Turn-Off Delay Time	t <sub>d(off)</sub>		200		ns	
Fall Time	t <sub>f</sub>		230		ns	

SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



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





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