

### P-CHANNEL MOSFET FOR SWITCHING

The 2SJ204, P-channel vertical type MOSFET, is a switching device which can be driven directly by the output of ICs having a 5 V power source.

The 2SJ204 has low on-state resistance and excellent switching characteristics, it is suitable for driving actuators such as motors, relays, and solenoids.

#### FEATURES

- Directly driven by ICs having a 5 V power supply.
- Has low on-state resistance
  - $R_{DS(on)} = 13 \Omega \text{ MAX. (} V_{GS} = -4.0 \text{ V, } I_D = -10 \text{ mA)}$
  - $R_{DS(on)} = 8 \Omega \text{ MAX. (} V_{GS} = -10 \text{ V, } I_D = -10 \text{ mA)}$
- Complementary to 2SK1582

#### ORDERING INFORMATION

PART NUMBER	PACKAGE
2SJ204	SC-59 (Mini Mold)

Marking: H15

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

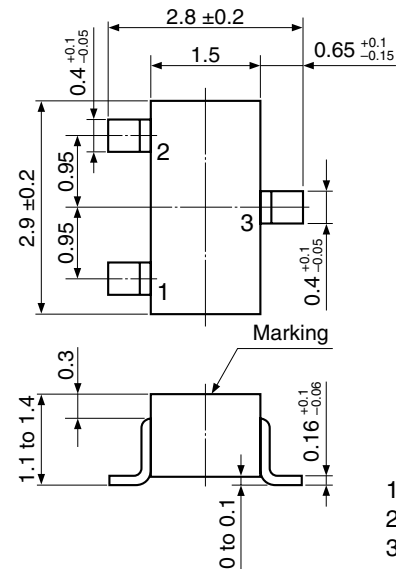
Drain to Source Voltage ( $V_{GS} = 0 \text{ V}$ )	$V_{DSS}$	-30	V
Gate to Source Voltage ( $V_{DS} = 0 \text{ V}$ )	$V_{GSS}$	$\pm 20$	V
Drain Current (DC)	$I_{D(DC)}$	$\pm 200$	mA
Drain Current (pulse) <sup>Note</sup>	$I_{D(pulse)}$	$\pm 400$	mA
Total Power Dissipation	$P_T$	200	mW
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

**Note**  $PW \leq 10 \text{ ms}$ , Duty Cycle  $\leq 50\%$

**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.

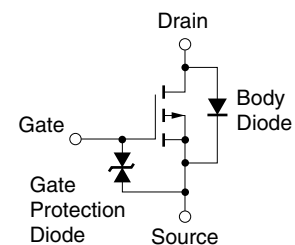
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#### PACKAGE DRAWING (Unit: mm)



1. Source
2. Gate
3. Drain

#### EQUIVALENT CIRCUIT



**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30V, V_{GS} = 0V$			-1.0	$\mu A$
Gate Leakage Current	$I_{GSS}$	$V_{GS} = \mp 20V, V_{DS} = 0V$			$\mp 1.0$	$\mu A$
Gate Cut-off Voltage	$V_{GS(off)}$	$V_{DS} = -5.0V, I_D = -1.0\mu A$	-1.4	-1.9	-2.4	V
Forward Transfer Admittance <b>Note</b>	$ y_{fs} $	$V_{DS} = -5.0V, I_D = -10mA$	20			mS
Drain to Source On-state Resistance <b>Note</b>	$R_{DS(on)1}$	$V_{GS} = -4.0V, I_D = -10mA$		8.5	13	$\Omega$
	$R_{DS(on)2}$	$V_{GS} = -10V, I_D = -10mA$		5	8	$\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -5.0V$		27		pF
Output Capacitance	$C_{oss}$	$V_{GS} = 0V$		27		pF
Reverse Transfer Capacitance	$C_{rss}$	$f = 1MHz$		6		pF
Turn-on Delay Time	$t_{d(on)}$	$V_{GS} = -4.0V, R_G = 10\Omega$		120		ns
Rise Time	$t_r$	$V_{DD} = -5.0V$		240		ns
Turn-off Delay Time	$t_{d(off)}$	$I_D = -10mA$		135		ns
Fall Time	$t_f$			210		ns

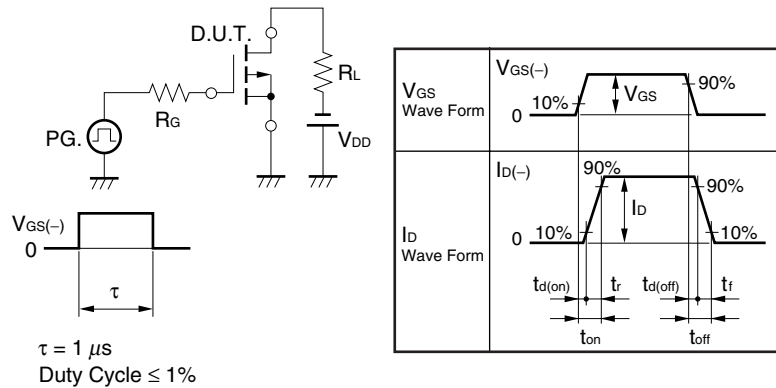
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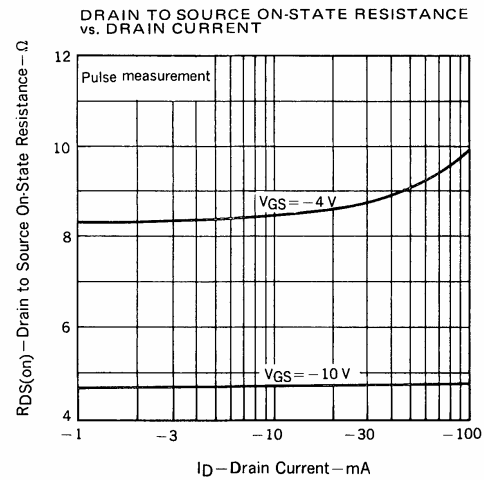
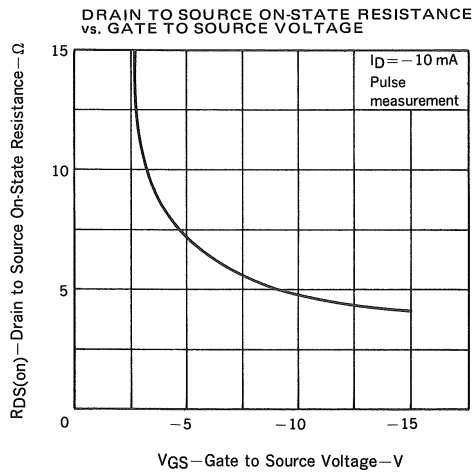
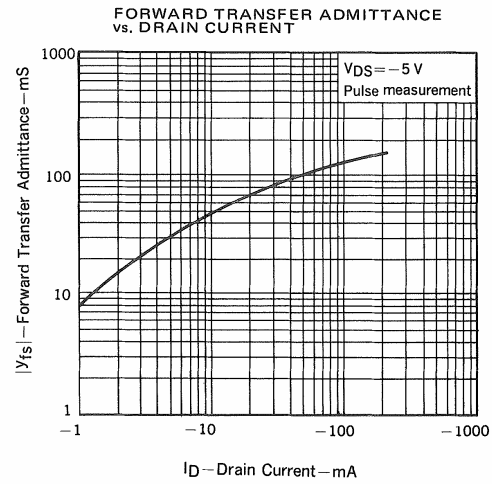
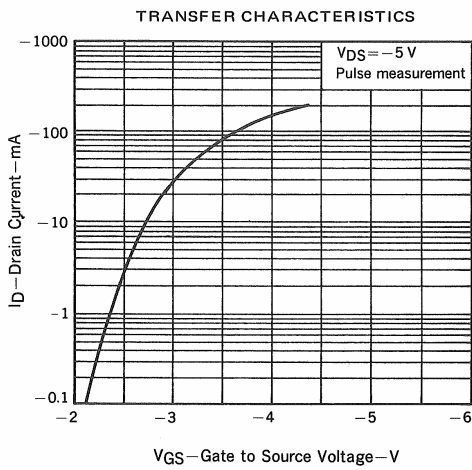
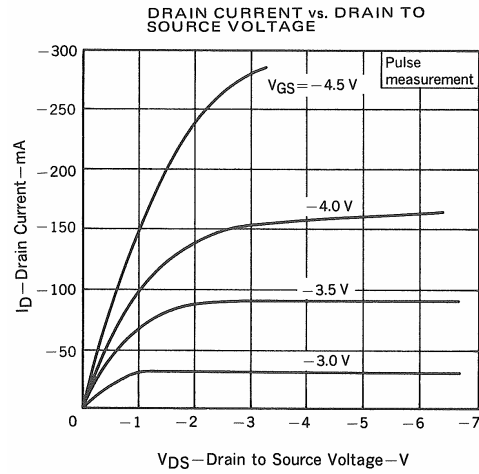
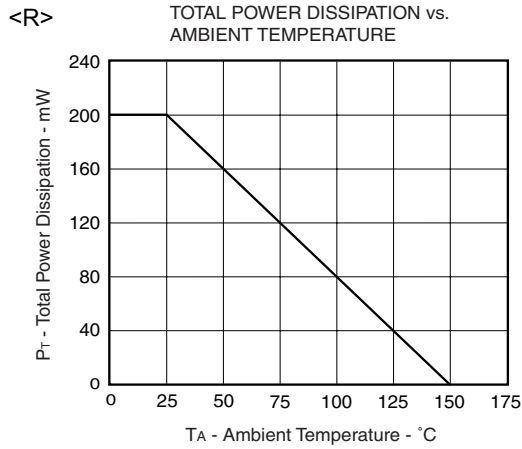
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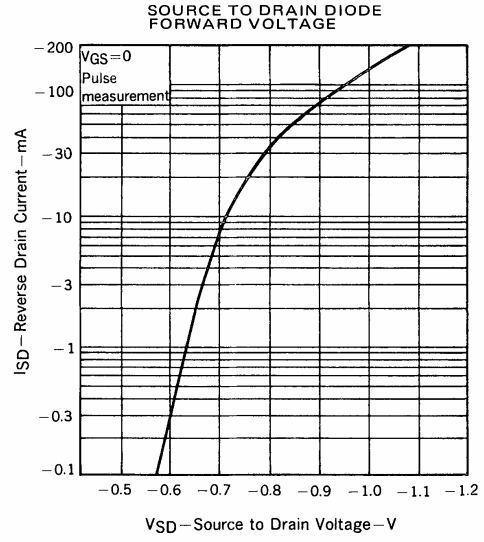
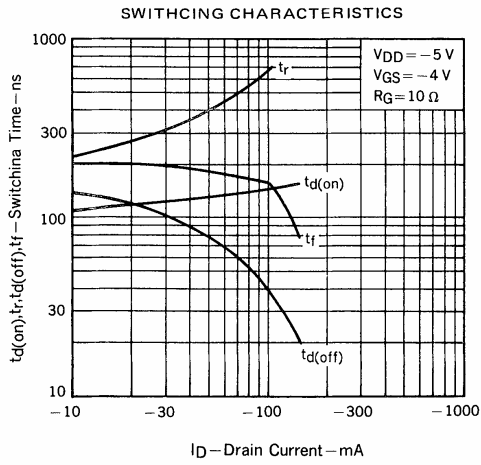
**Note** Pulsed

**TEST CIRCUIT SWITCHING TIME**



TYPICAL CHARACTERISTICS (TA = 25°C)





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