NEC

MOS FIELD EFFECT TRANSISTOR
2SJ204

P-CHANNEL MOSFET FOR SWITCHING

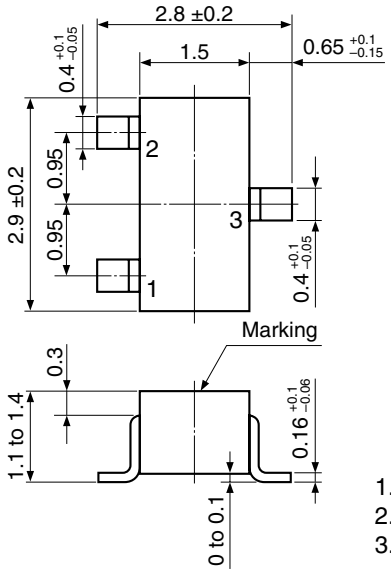
The 2SJ204, P-channel vertical type MOSFET, is a switching device which can be driven directly by the output of ICs having a 5 V power source.

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 Ω MAX. (V_{GS} = –4.0 V, I_D = –10 mA)
  $R_{DS(on)}$ = 8 Ω MAX. (V_{GS} = –10 V, I_D = –10 mA)
- Complementary to 2SK1582

PACKAGE DRAWING (Unit: mm)



1. Source
2. Gate
3. Drain

<R> ### ORDERING INFORMATION

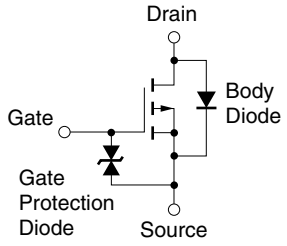
PART NUMBER	PACKAGE
2SJ204	SC-59 (Mini Mold)

Marking: H15

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	–30	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	∓20	V
Drain Current (DC)	$I_{D(DC)}$	∓200	mA
Drain Current (pulse) **Note**	$I_{D(pulse)}$	∓400	mA
Total Power Dissipation	P_T	200	mW
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

EQUIVALENT CIRCUIT



Note PW ≤ 10 ms, Duty Cycle ≤ 50%

<R> **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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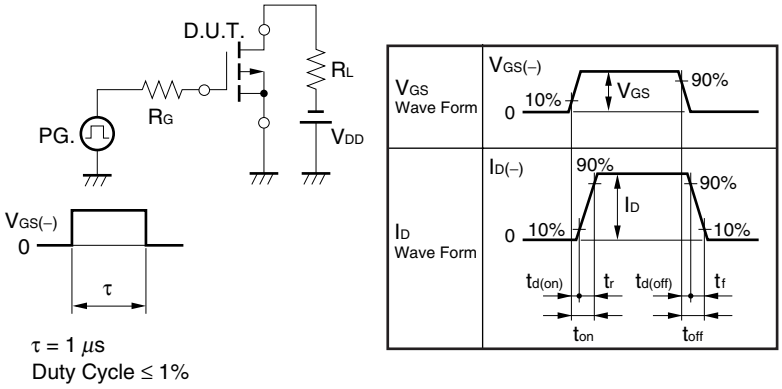
The mark <R> shows major revised points.
The revised points can be easily searched by copying an "<R>" in the PDF file and specifying it in the "Find what:" field.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

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

<R> **Note** Pulsed

TEST CIRCUIT SWITCHING TIME



τ = 1 μs
Duty Cycle ≤ 1%

TYPICAL CHARACTERISTICS (T_A = 25°C)

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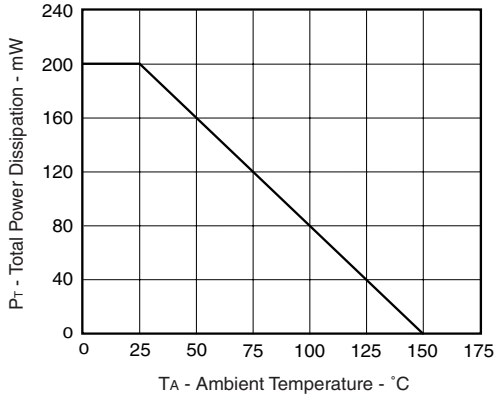
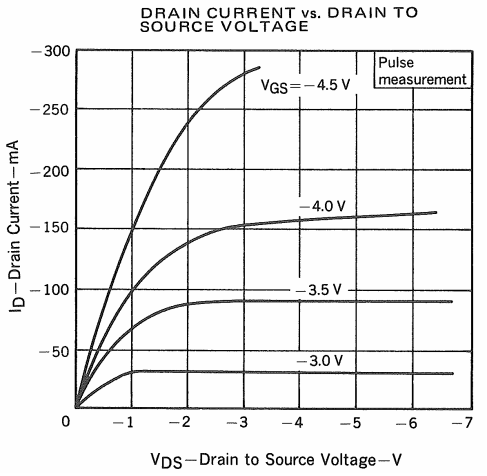
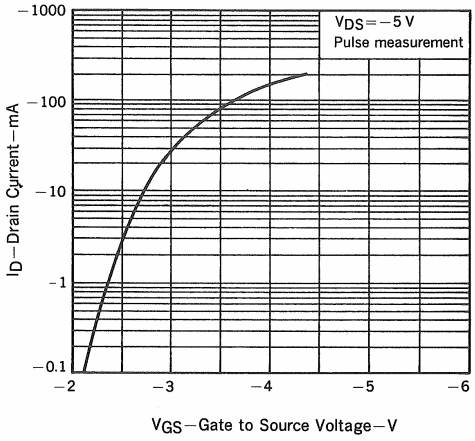
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



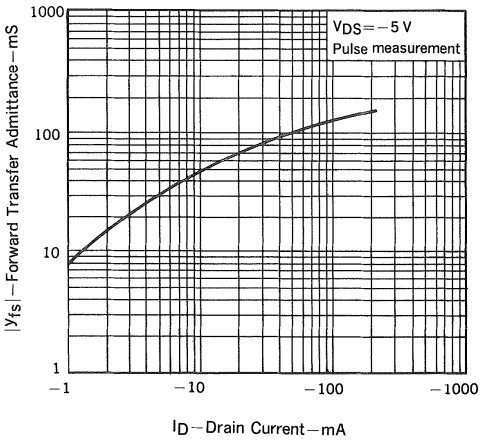
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



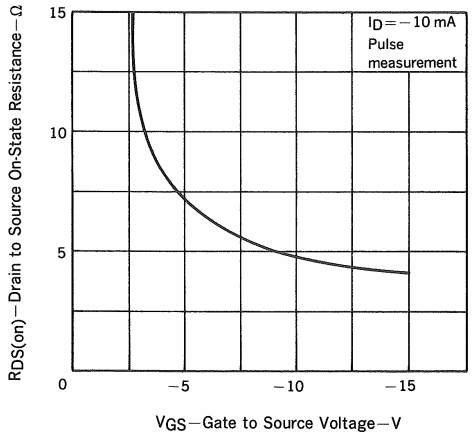
TRANSFER CHARACTERISTICS



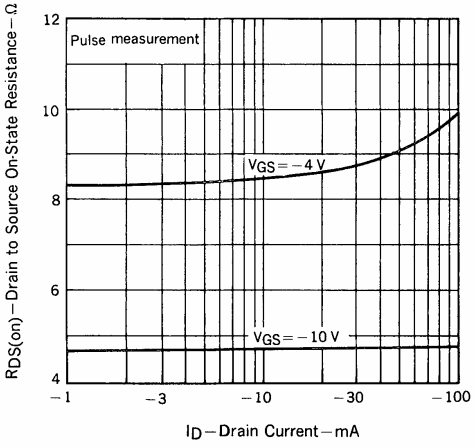
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



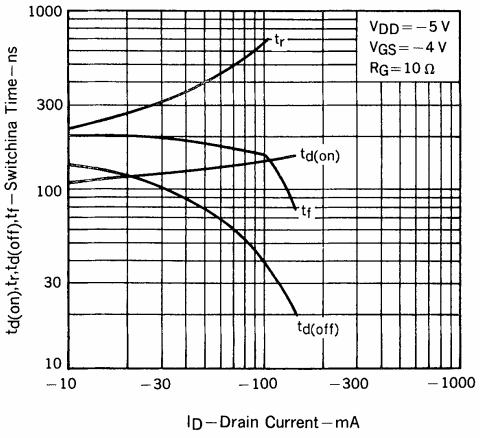
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



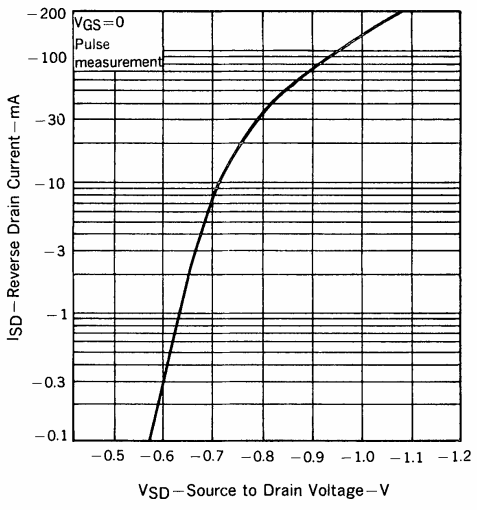
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



SWITHCING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



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