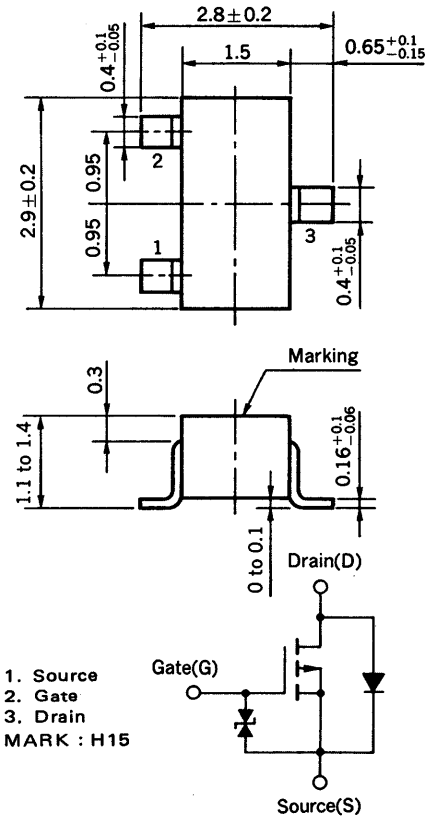
DATA SHEET

MOS FIELD EFFECT TRANSISTOR

2SJ204

P-CHANNEL MOS FET FOR SWITCHING

PACKAGE DIMENSIONS (Unit : mm)



1. Source
2. Gate
3. Drain

MARK : H15

(Diode in the figure is the parasitic diode.)

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

As the MOS FET 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

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

PARAMETER	SYMBOL	RATINGS	UNIT	TEST CONDITIONS
Drain to Source Voltage	V_{DSS}	−30	V	V_{GS} = 0
Gate to Source Voltage	V_{GSS}	∓20	V	V_{DS} = 0
Drain Current	$I_{D(DC)}$	∓200	mA	
Drain Current	$I_{D(pulse)}$	∓400	mA	PW ≦ 10 ms, Duty Cycle ≦ 50 %
Total Power Dissipation	P_T	200	mW	
Channel Temperature	T_{ch}	150	°C	
Operating Temperature	T_{opt}	−55 to +80	°C	
Storage Temperature	T_{stg}	−55 to +150	°C	

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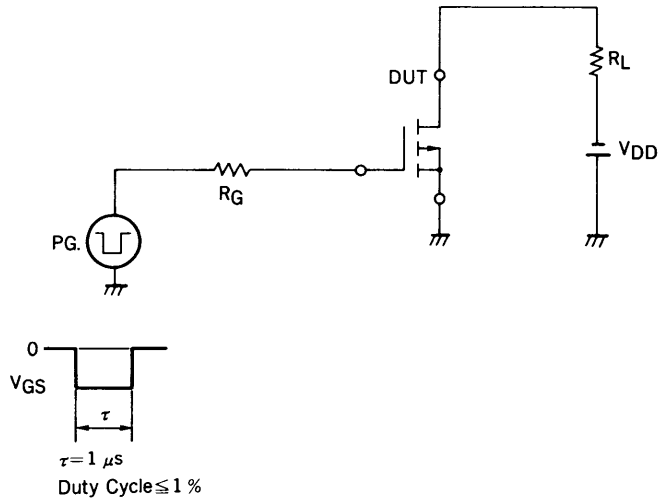
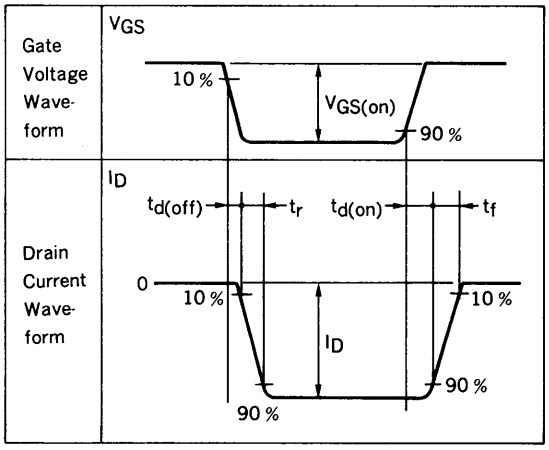
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I_{DSS}			−1.0	μA	V_{DS} = −30 V, V_{GS} = 0
Gate Leakage Current	I_{GSS}			∓1.0	μA	V_{GS} = ∓20 V, V_{DS} = 0
Gate Cut-off Voltage	$V_{GS(off)}$	−1.4	−1.9	−2.4	V	V_{DS} = −5.0 V, I_D = −1.0 μA
Forward Transfer Admittance	$\|y_{fs}\|$	20			mS	V_{DS} = −5.0 V, I_D = −10 mA
Drain to Source On-State Resistance	$R_{DS(on)1}$		8.5	13	Ω	V_{GS} = −4.0 V, I_D = −10 mA
Drain to Source On-State Resistance	$R_{DS(on)2}$		5	8	Ω	V_{GS} = −10 V, I_D = −10 mA
Input Capacitance	C_{iss}		27		pF	V_{DS} = −10 V, V_{GS} = 0, f = 1 MHz
Output Capacitance	C_{oss}		27		pF	
Feedback Capacitance	C_{rss}		6		pF	
Turn-On Delay Time	$t_{d(on)}$		120		ns	$V_{GS(on)}$ = −4 V, R_G = 10 Ω, V_{DD} = −5 V, I_D = −0.3 A, R_L = 1.5 Ω
Rise Time	t_r		240		ns	
Turn-Off Delay Time	$t_{d(off)}$		135		ns	
Fall Time	t_f		210		ns	

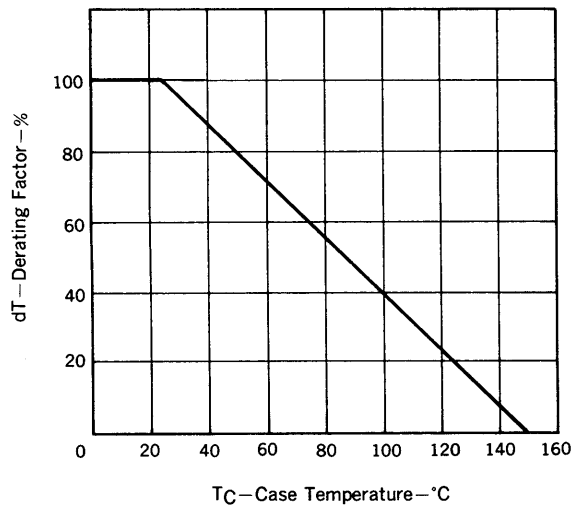
SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



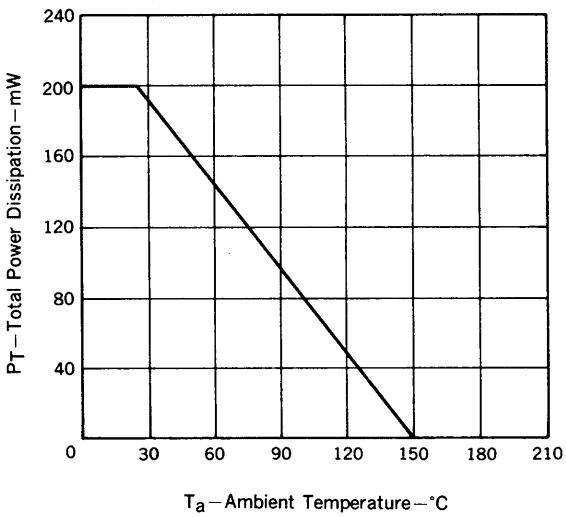


TYPICAL CHARACTERISTICS (T_a = 25 °C)

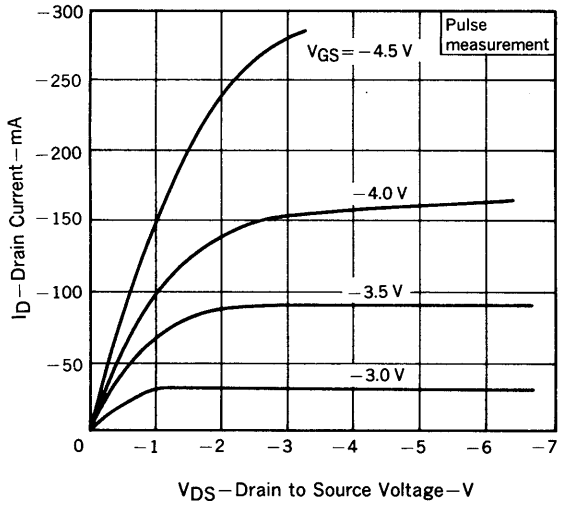
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



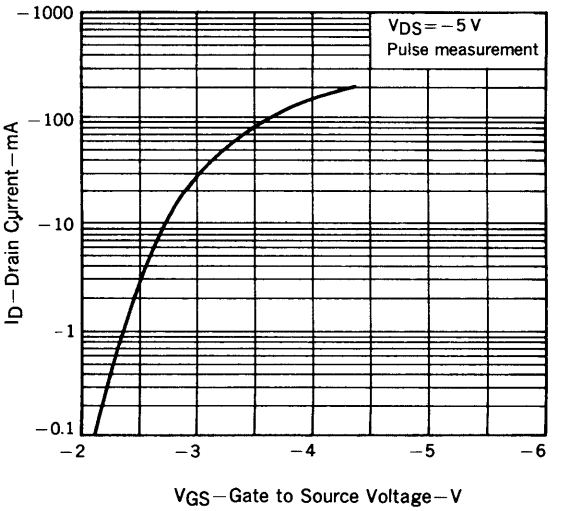
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



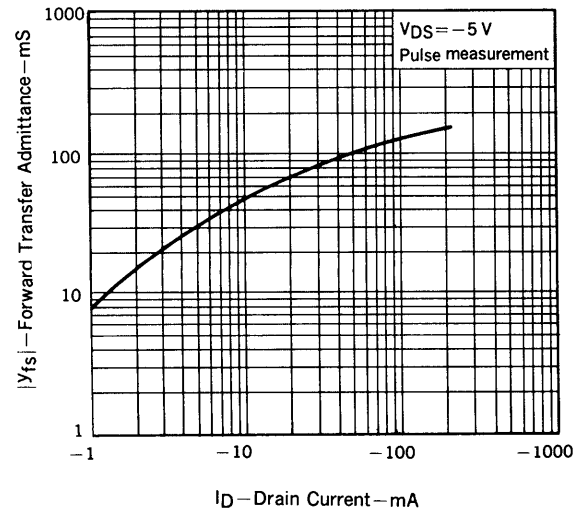
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



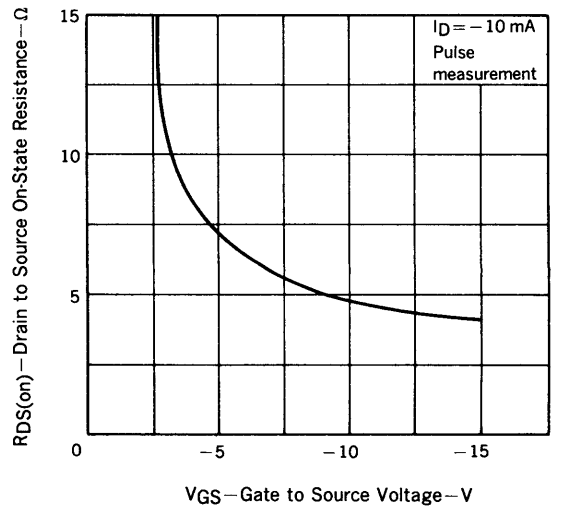
TRANSFER CHARACTERISTICS



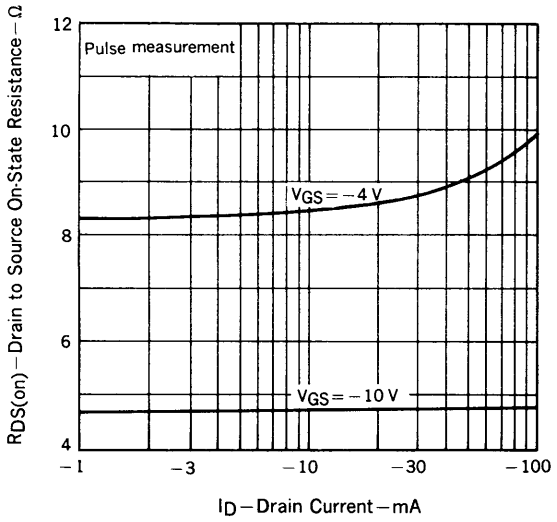
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



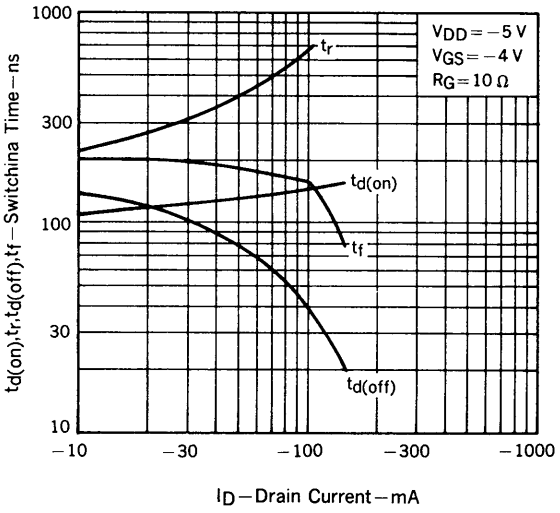
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



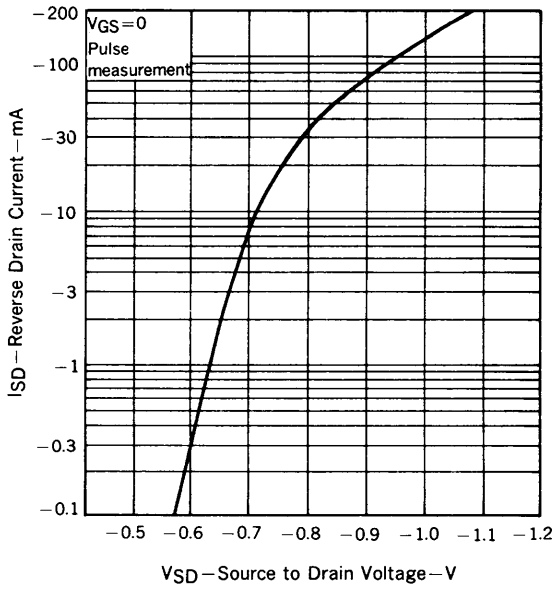
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



SWITHCING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



RECOMMENDED SOLDERING CONDITIONS

Mounting of this product by soldering should be done under the following conditions.
Please consult with our representatives about soldering methods and conditions other than these recommended.

SURFACE MOUNT TYPE

For details of the recommended soldering conditions, see the information document.
"Device Mounting Manual for Surface Mounting (IEI-616)."

Soldering Method	Soldering Conditions	Symbol for Recommended Conditions
Infrared Reflow	Package peak temp.: 230 °C Soldering time: within 30 sec (above 210 °C) Soldering times: 1, Days limitation: none*	IR30-00
Vapor Phase Soldering	Package peak temp.: 215 °C Soldering time: within 40 sec (above 200 °C) Soldering times: 1, Days limitation: none*	VP15-00
Wave Soldering	Soldering bath temp.: 260 °C Soldering time: within 10 sec Soldering times: 1, Days limitation: none*	WS60-00

* Stored days under storage conditions at 25 °C and below 65 % R.H. after dry-pack opened.

Note 1: Combination of soldering methods should be avoided.

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Application examples recommended by NEC Corporation

Standard: Data processing and office equipment, Communication equipment (terminal, mobile). Test and Measurement equipment, Audio and Video equipment, Other consumer products, etc.

Special: Automotive and Transportation equipment, Communication equipment (trunk line), Train and Traffic control devices, industrial robots, Burning control systems, antidisaster systems, anticrime systems etc.