DATA SHEET

MOS FIELD EFFECT TRANSISTOR

2SJ205

P-CHANNEL MOS FET FOR SWITCHING

DESCRIPTION

The 2SJ205, P-channel vertical type MOS FET, is a switching device which can be driven by 3 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.

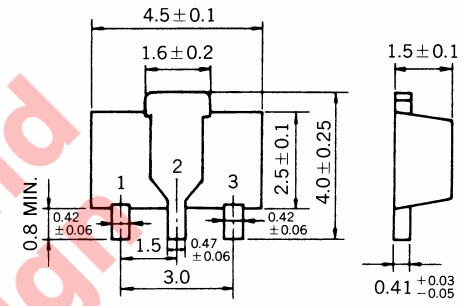
FEATURES

- 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

  $R_{DS(on)}$ = 5.0 Ω MAX. (V_{GS} = −2.5 V, I_D = −10 mA)

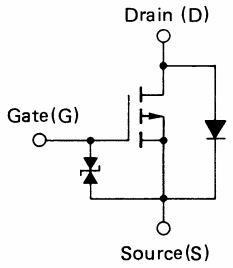
  $R_{DS(on)}$ = 3.0 Ω MAX. (V_{GS} = −4 V, I_D = −0.3 A)

PACKAGE DRAWING (Unit: mm)



1. Source
2. Drain
3. Gate

MARK : PD



(Diode in the figure is the parasitic diode.)

<R> ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	−16	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	∓16	V
Drain Current (DC)	$I_{D(DC)}$	∓500	mA
Drain Current (pulse) Note 1	$I_{D(pulse)}$	∓1.0	A
Total Power Dissipation Note 2	P_T	2.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	−55 to +150	°C

Notes 1. PW ≤ 10 ms, Duty Cycle ≤ 50%

2. When using ceramic board of 16 cm^2 × 0.7 mm

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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.

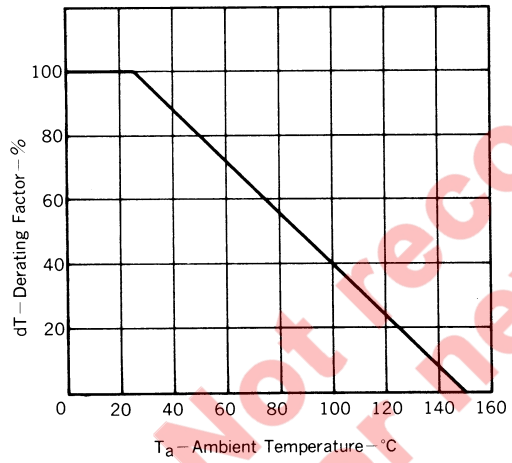
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I_{DSS}			−1.0	μA	V_{DS} = −16 V, V_{GS} = 0
Gate Leakage Current	I_{GSS}			∓5	μA	V_{GS} = ∓16 V, V_{DS} = 0
Gate Cut-off Voltage	$V_{GS(off)}$	−1.4	−1.9	−2.4	V	V_{DS} = −5 V, I_D = −10 μA
Forward Transfer Admittance	$\|y_{fs}\|$	0.4	0.5		S	V_{DS} = −3 V, I_D = −0.3 A
Drain to Source On-State Resistance	$R_{DS(on)1}$		3.0	5.0	Ω	V_{GS} = −2.5 V, I_D = −10 mA
Drain to Source On-State Resistance	$R_{DS(on)2}$		1.5	3.0	Ω	V_{GS} = −4 V, I_D = −0.3 A
Input Capacitance	C_{iss}		105		pF	V_{DS} = −3.0 V, V_{GS} = 0, f = 1 MHz
Output Capacitance	C_{oss}		90		pF	
Feedback Capacitance	C_{rss}		15		pF	
Turn-On Delay Time	$t_{d(on)}$		185		ns	$V_{GS(on)}$ = −3 V, R_G = 10 Ω, V_{DD} = −3 V, I_D = −0.3 A
Rise Time	t_r		900		ns	
Turn-Off Delay Time	$t_{d(off)}$		40		ns	
Fall Time	t_f		135		ns	

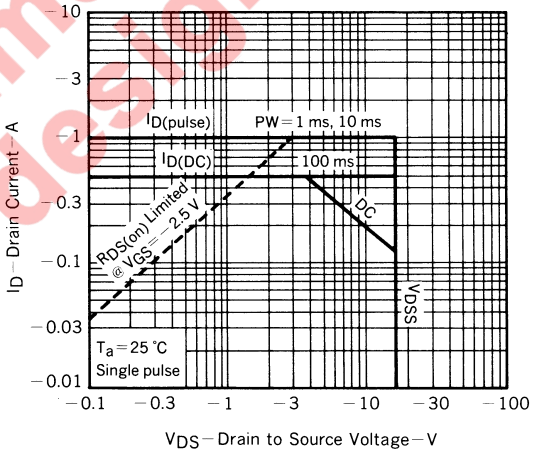
TYPICAL CHARACTERISTICS (T_a = 25 °C)

<R>

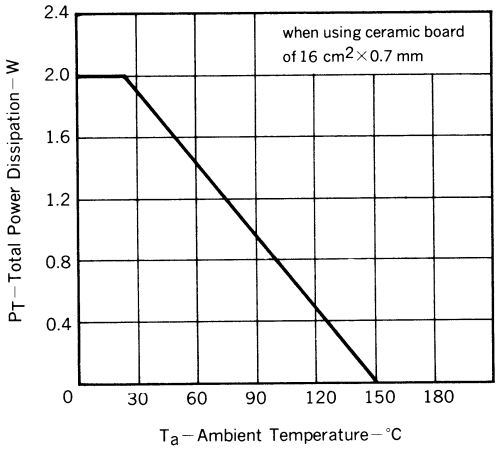
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



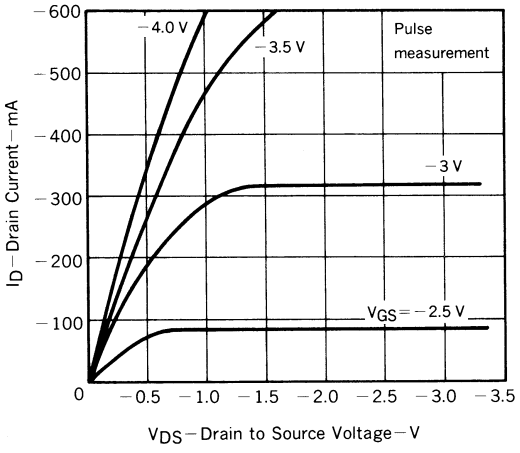
FORWARD BIAS SAFE OPERATING AREA



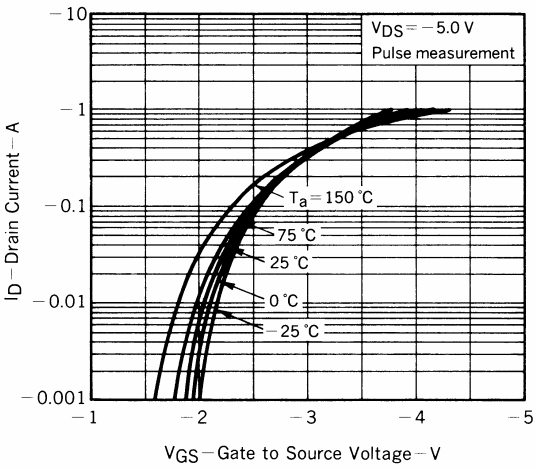
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



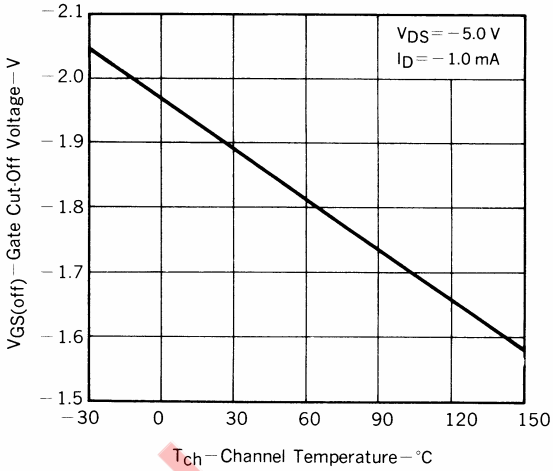
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



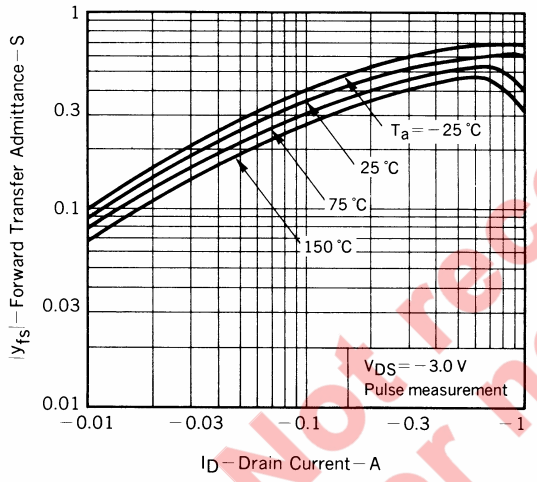
TRANSFER CHARACTERISTICS



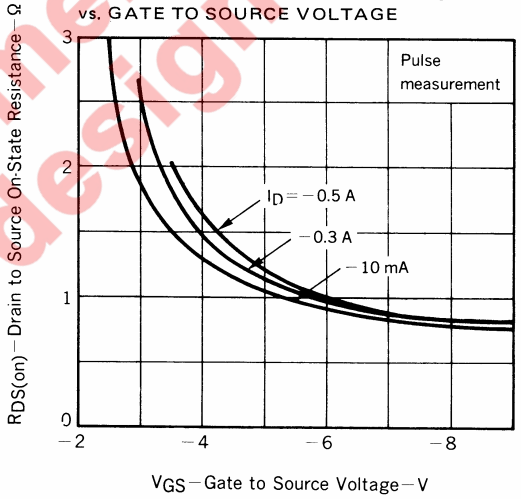
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



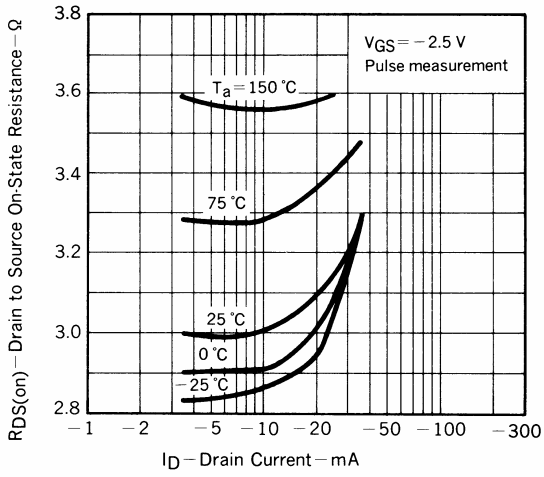
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



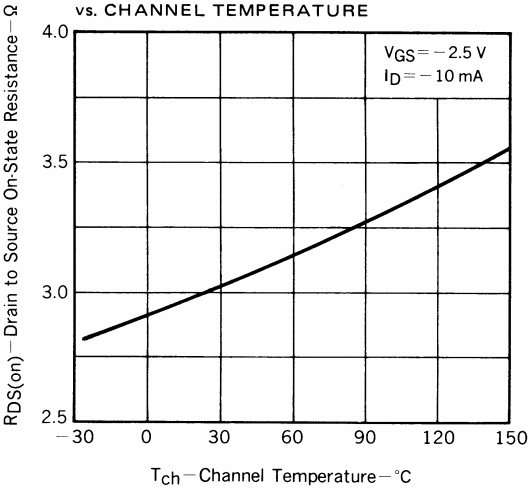
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



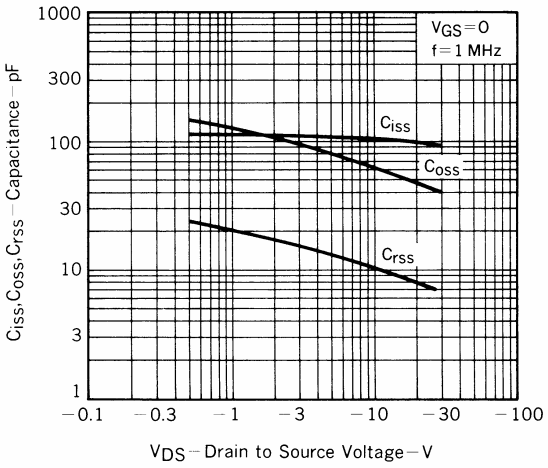
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



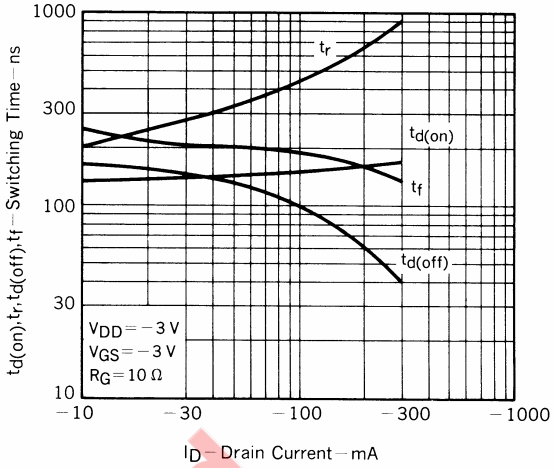
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



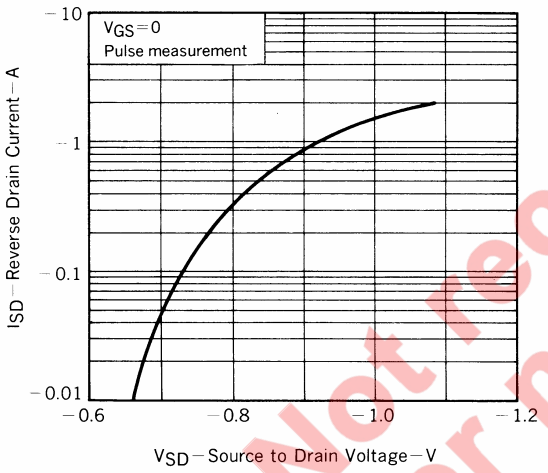
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



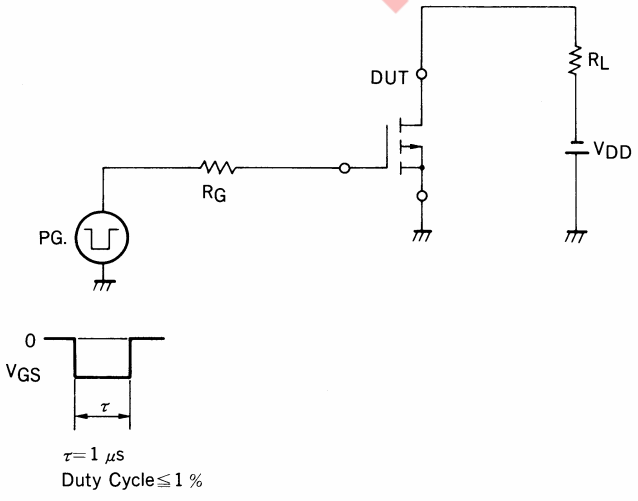
SWITCHING CHARACTERISTICS



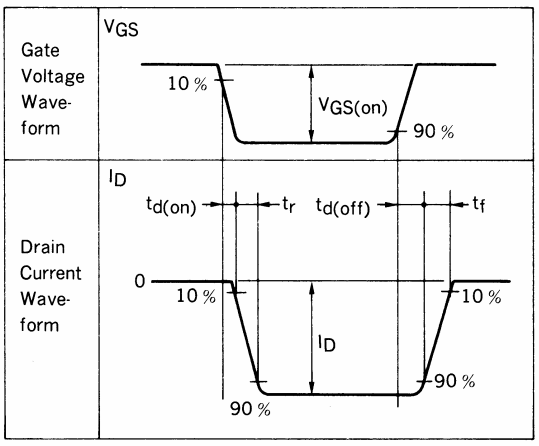
SOURCE TO DRAIN DIODE FORWARD VOLTAGE



SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



$\tau = 1\ \mu s$
Duty Cycle ≦ 1 %



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