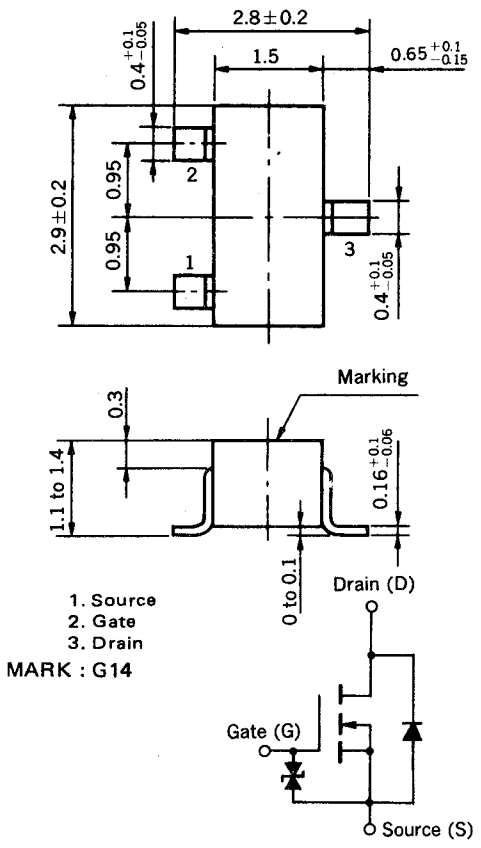
NEC

MOS FIELD EFFECT TRANSISTOR

2SK1581

N-CHANNEL MOS FET FOR SWITCHING

PACKAGE DIMENSIONS (Unit : mm)



(Diode in the figure is the parasitic diode.)

The 2SK1581, N-channel vertical type MOS FET, 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.

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C)

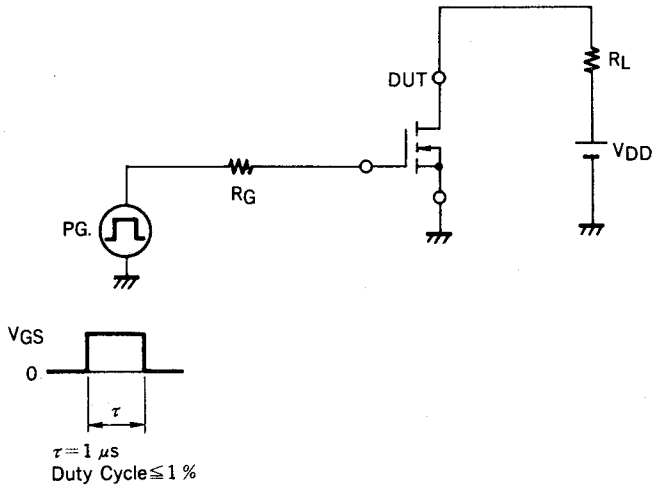
PARAMETER	SYMBOL	RATINGS	UNIT	TEST CONDITIONS
Drain to Source Voltage	V_{DSS}	16	V	V_{GS} = 0
Gate to Source Voltage	V_{GSS}	±16	V	V_{DS} = 0
Drain Current	$I_{D(DC)}$	±200	mA	
Drain Current	$I_{D(pulse)}$	±400	mA	PW ≦ 10 ms, Duty Cycle ≦ 50 %
Total Power Dissipation	P_T	200	mW	
Channel Temperature	T_{ch}	150	°C	
Operating Temperature	T_{opt}	−55 to +80	°C	
Storage Temperature	T_{stg}	−55 to +150	°C	

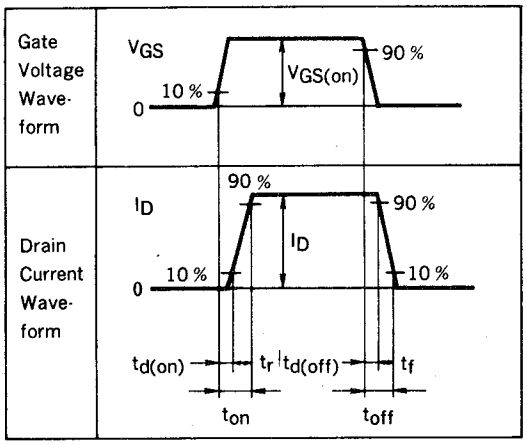
Document No. D13556EJ3V0DS00 (3rd edition)
(Previous No. TC-2296A)
Date Published June 1998 M CP(K)
Printed in Japan

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}			±5.0	μA	V_{GS} = ±3 V, V_{DS} = 0
Gate Cut-off Voltage	$V_{GS(off)}$	0.8	1.1	1.6	V	V_{DS} = 3.0 V, I_D = 10 μA
Forward Transfer Admittance	$\|y_{fs}\|$	20	70		mS	V_{DS} = 3.0 V, I_D = 10 mA
Drain to Source On-State Resistance	$R_{DS(on)1}$		3.2	5.0	Ω	V_{GS} = 2.5 V, I_D = 1 mA
Drain to Source On-State Resistance	$R_{DS(on)2}$		2.2	3.0	Ω	V_{GS} = 4.0 V, I_D = 1 mA
Input Capacitance	C_{iss}		27		pF	V_{DS} = 3.0 V, V_{GS} = 0, f = 1 MHz
Output Capacitance	C_{oss}		37		pF	
Feedback Capacitance	C_{rss}		8		pF	
Turn-On Delay Time	$t_{d(on)}$		100		ns	$V_{GS(on)}$ = 3.0 V, R_G = 10 Ω V_{DD} = 3.0 V, I_D = 10 mA R_L = 300 Ω
Rise Time	t_r		300		ns	
Turn-Off Delay Time	$t_{d(off)}$		210		ns	
Fall Time	t_f		240		ns	

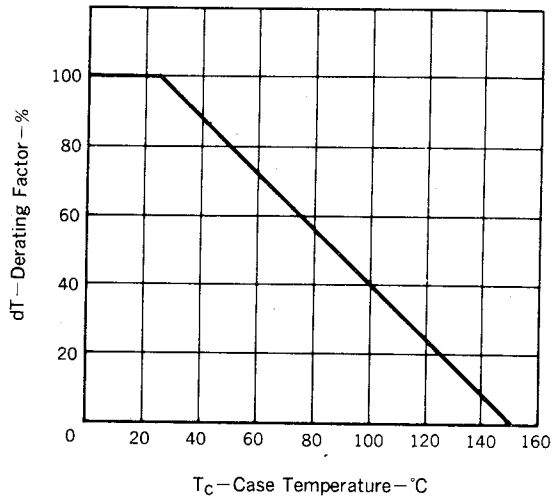
SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



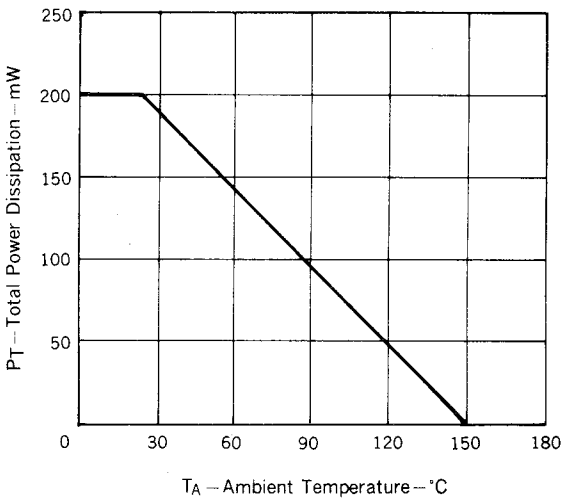


TYPICAL CHARACTERISTICS (T_A = 25 °C)

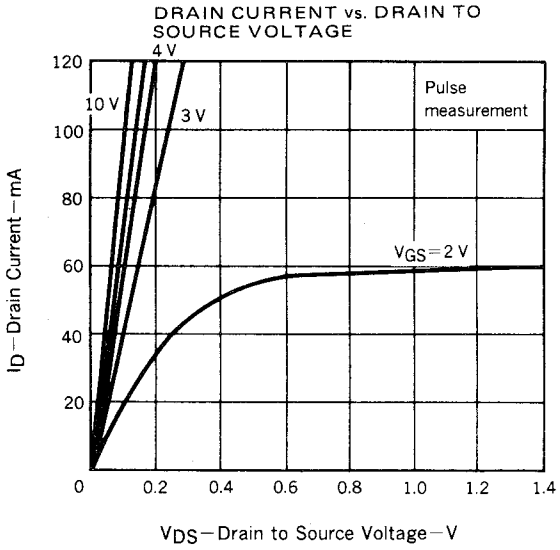
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



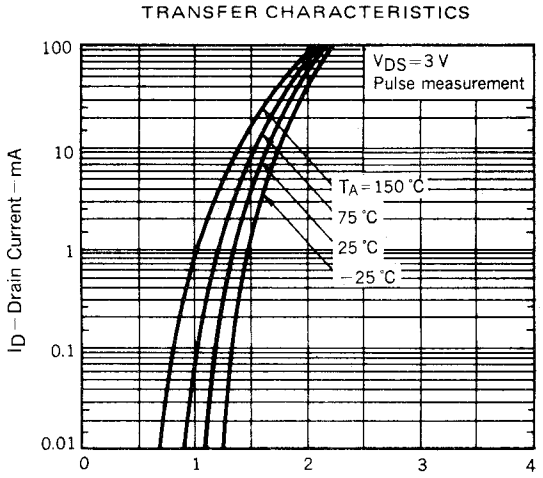
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



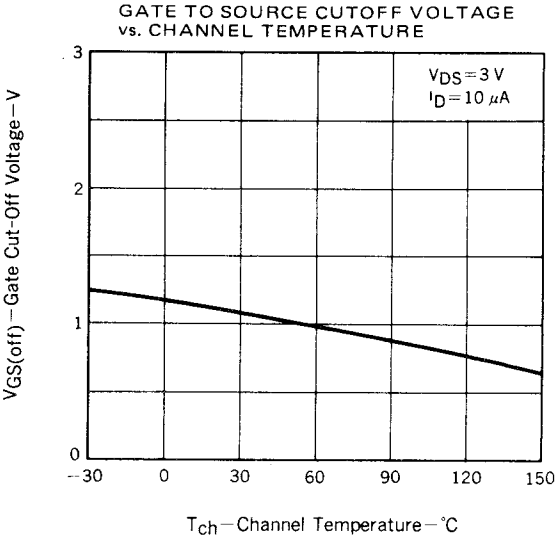
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



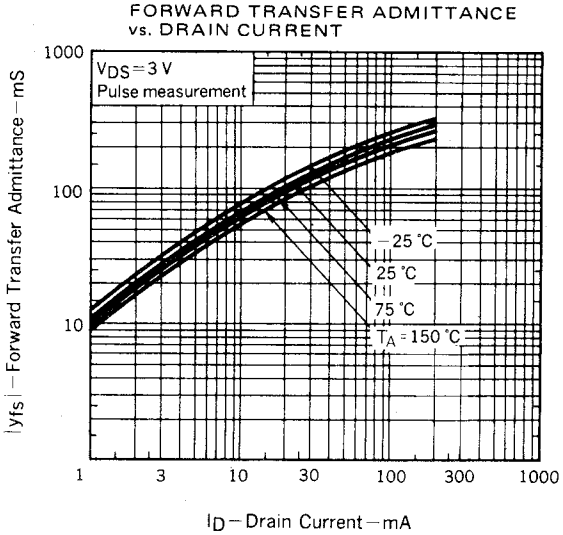
TRANSFER CHARACTERISTICS



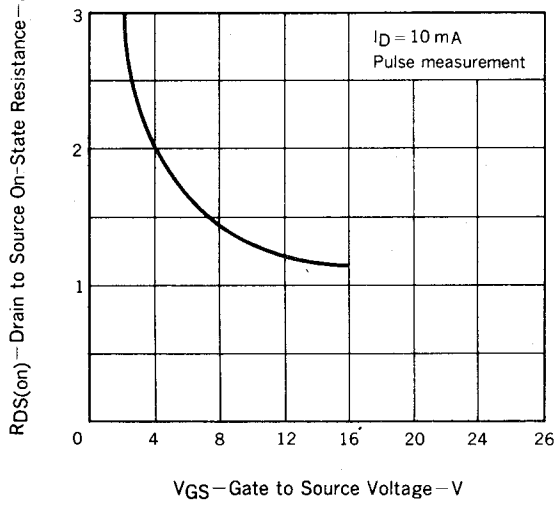
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



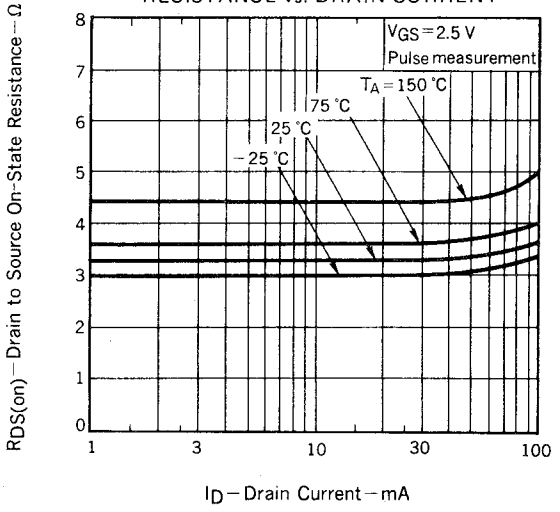
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



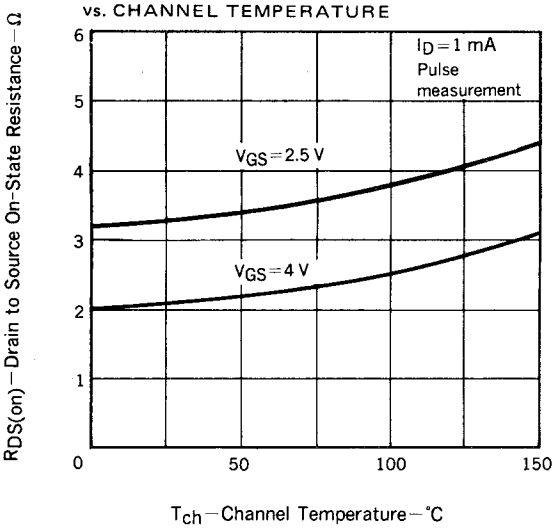
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



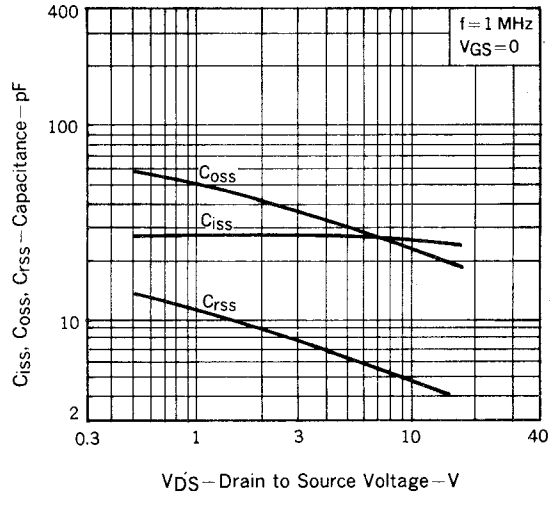
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



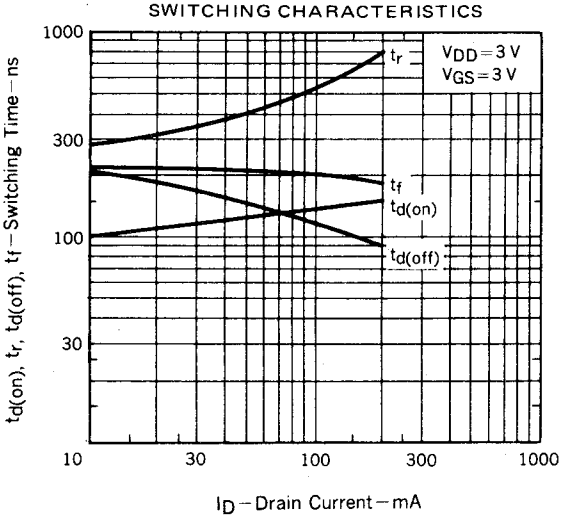
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



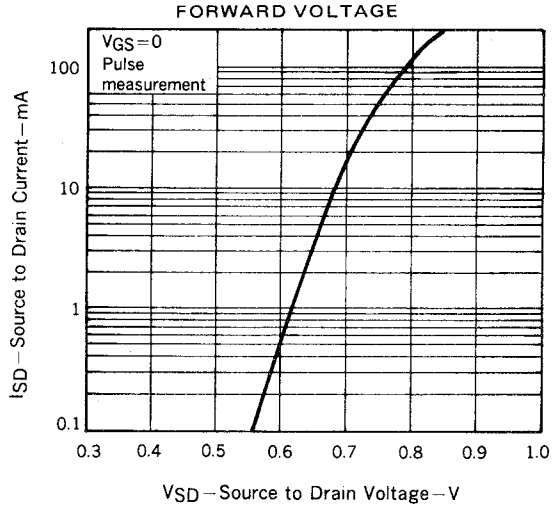
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



〔MEMO〕

〔MEMO〕

〔MEMO〕

M4 96.5