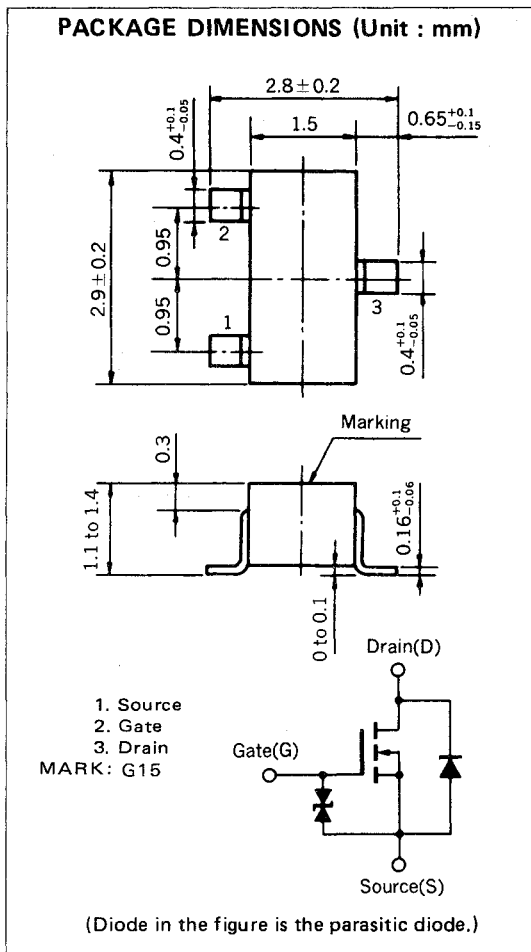


# MOS FIELD EFFECT TRANSISTOR 2SK1582

## N-CHANNEL MOS FET FOR SWITCHING



The 2SK1582, N-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.

The MOS FET has excellent switching characteristics and is suitable for use as a high-speed switching device in digital circuits.

### FEATURES

- Directly driven by ICs having a 5 V power source.
- Not necessary to consider driving current because of its high input impedance.
- Possible to reduce the number of parts by omitting the bias resistor.

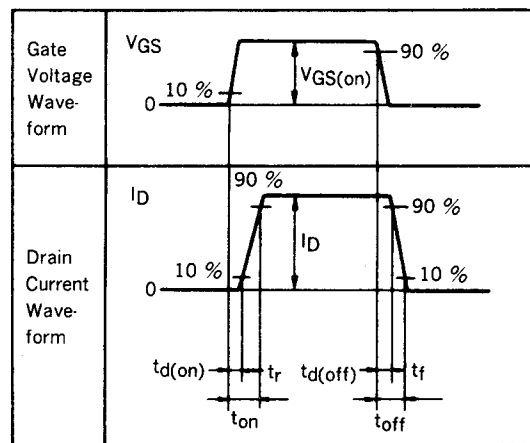
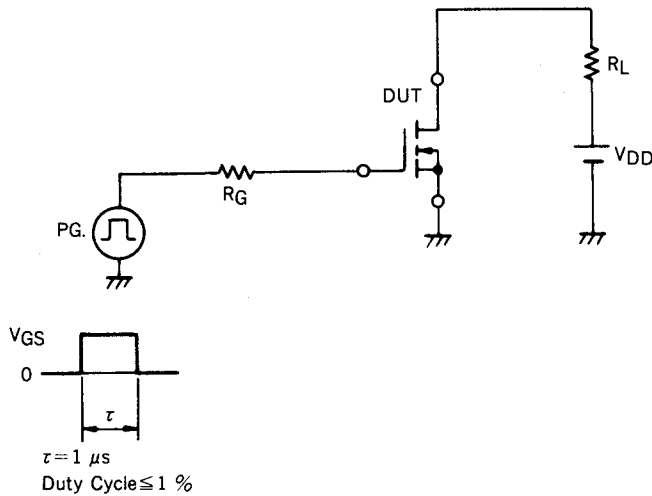
### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	RATINGS	UNIT	TEST CONDITIONS
Drain to Source Voltage	$V_{DSS}$	30	V	$V_{GS} = 0$
Gate to Source Voltage	$V_{GSS}$	$\pm 20$	V	$V_{DS} = 0$
Drain Current	$I_D(\text{DC})$	$\pm 200$	mA	
Drain Current	$I_D(\text{pulse})$	$\pm 400$	mA	$PW \leq 10 \text{ ms}$ , Duty Cycle $\leq 50 \%$
Total Power Dissipation	$P_T$	200	mW	
Channel Temperature	$T_{ch}$	150	$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	$-55$ to $+150$	$^\circ\text{C}$	

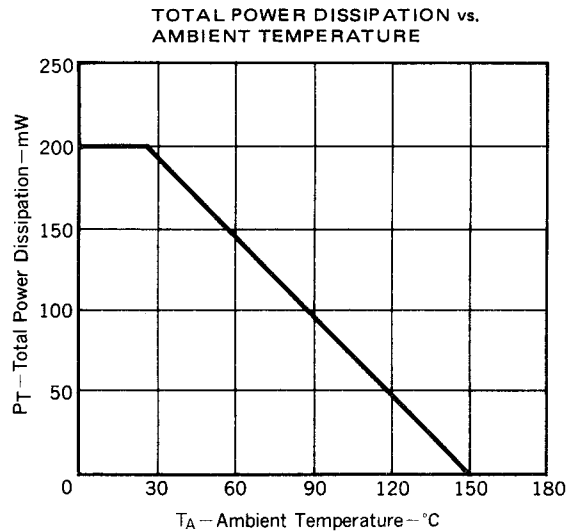
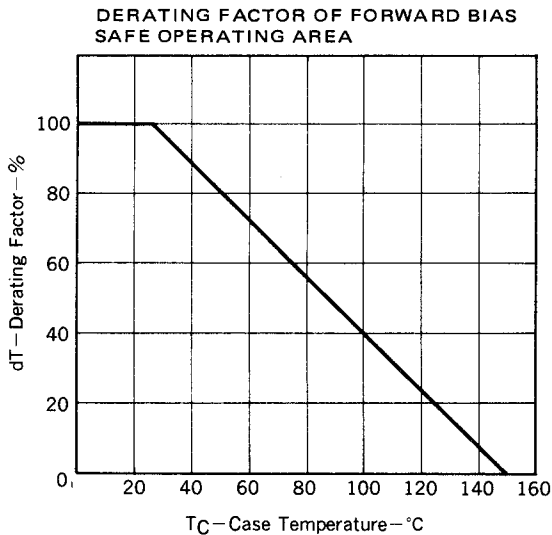
ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I <sub>DSS</sub>			1.0	μA	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0
Gate Leakage Current	I <sub>GSS</sub>			±1.0	μA	V <sub>GS</sub> = ±20 V, V <sub>DS</sub> = 0
Gate Cut-off Voltage	V <sub>GS(off)</sub>	0.8	1.3	1.8	V	V <sub>DS</sub> = 5.0 V, I <sub>D</sub> = 1.0 μA
Forward Transfer Admittance	y <sub>fs</sub>	20	60		mS	V <sub>DS</sub> = 5.0 V, I <sub>D</sub> = 10 mA
Drain to Source On-State Resistance	R <sub>DS(on)1</sub>		2.2	5.0	Ω	V <sub>GS</sub> = 4.0 V, I <sub>D</sub> = 10 mA
Drain to Source On-State Resistance	R <sub>DS(on)2</sub>		1.4	3.0	Ω	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 10 mA
Input Capacitance	C <sub>iss</sub>		28		pF	V <sub>DS</sub> = 5.0 V, V <sub>GS</sub> = 0, f = 1 MHz
Output Capacitance	C <sub>oss</sub>		30		pF	
Feedback Capacitance	C <sub>rss</sub>		7		pF	
Turn-On Delay Time	t <sub>d(on)</sub>		55		ns	V <sub>GS(on)</sub> = 5.0 V, R <sub>G</sub> = 10 Ω V <sub>DD</sub> = 5.0 V, I <sub>D</sub> = 10 mA R <sub>L</sub> = 500 Ω
Rise Time	t <sub>r</sub>		200		ns	
Turn-Off Delay Time	t <sub>d(off)</sub>		180		ns	
Fall Time	t <sub>f</sub>		250		ns	

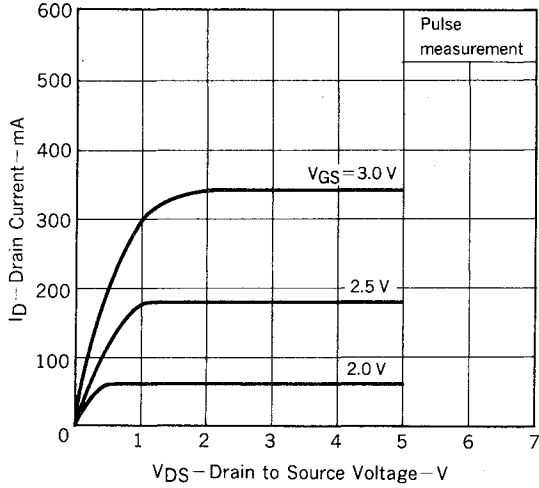
SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



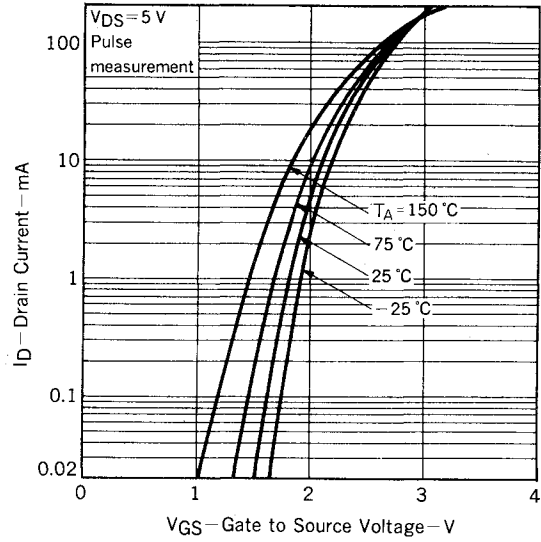
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)



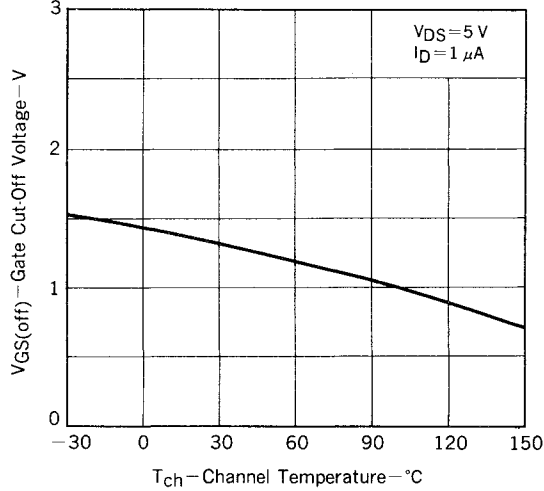
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



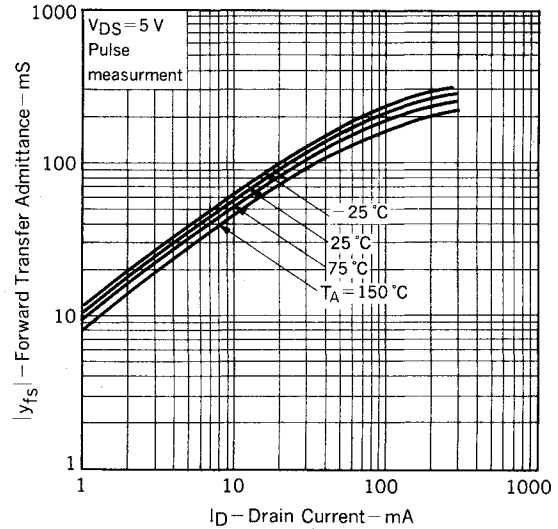
TRANSFER CHARACTERISTICS



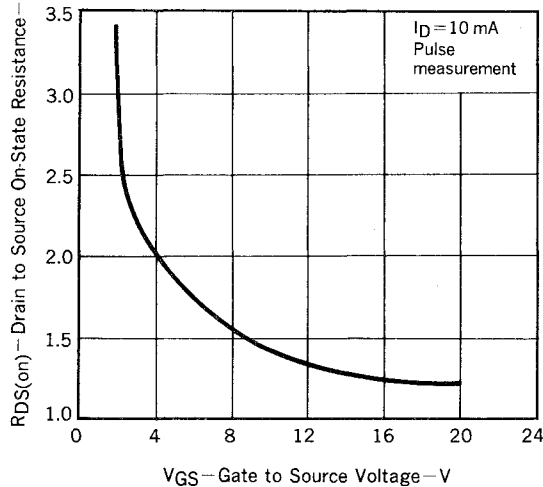
GATE TO SOURCE CUTOFF VOLTAGE vs. CHANNEL TEMPERATURE



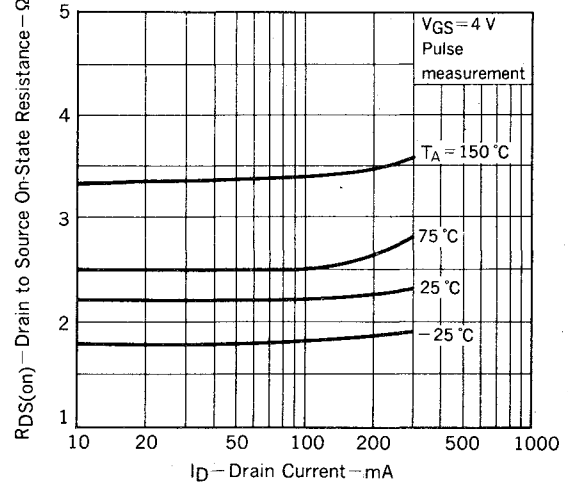
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



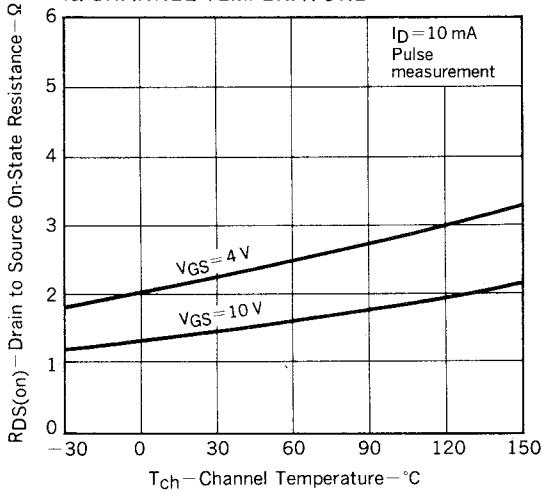
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



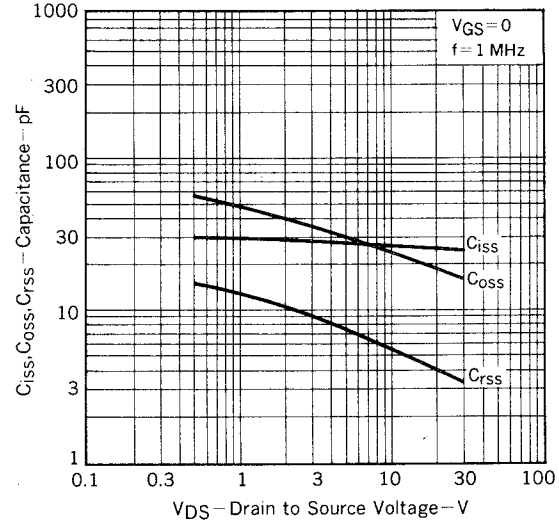
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



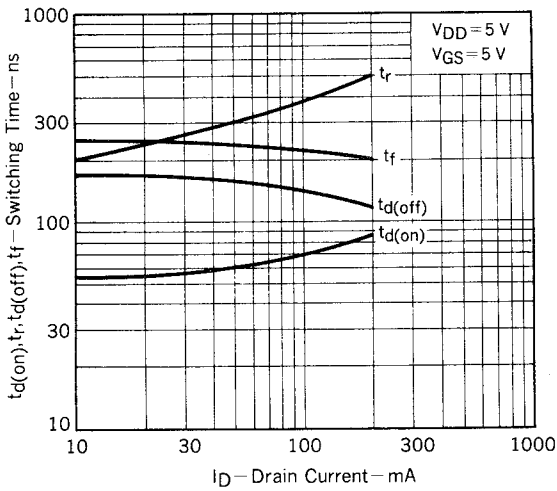
DRAIN TO SOURCE ON-STATE RESISTANCE vs. CHANNEL TEMPERATURE



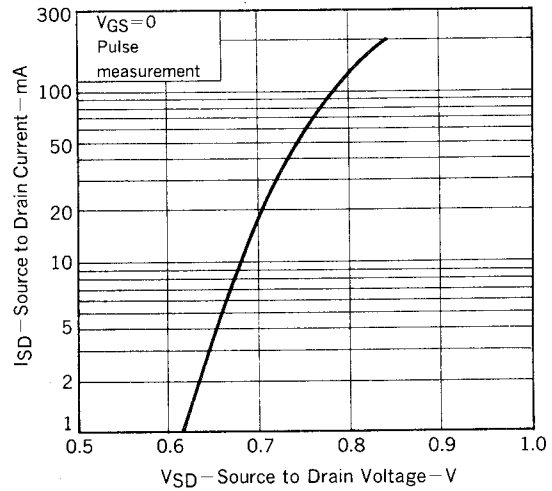
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



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Anti-radioactive design is not implemented in this product.