NEC
ELECTRON DEVICE

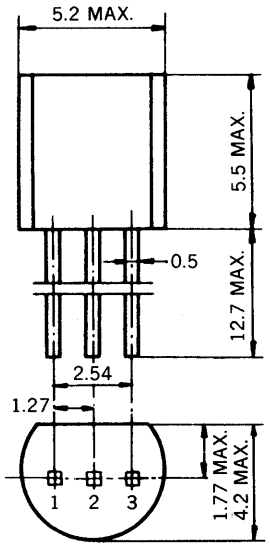
DATA SHEET

MOS FIELD EFFECT TRANSISTOR

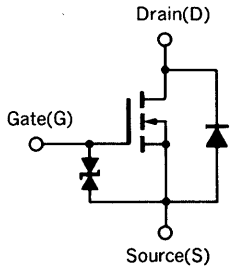
2SK1482

N-CHANNEL MOS FET FOR SWITCHING

PACKAGE DIMENSIONS (Unit : mm)



1. Gate (G)
2. Drain (D)
3. Source (S)



(Diode in the figure is the parastic diode.)

The 2SK1482 is an N-channel vertical type MOS FET switching device which can be directly driven from an IC operating with a 5 V single power supply. The device featuring low ON-state resistance is of the voltage drive type and thus is ideal for driving actuators such as motors, solenoids, and relays.

FEATURES

- Low ON-state resistance
  $R_{DS(on)}$ = 0.8 Ω MAX. at V_{GS} = 4 V, I_D = 0.5 A
  $R_{DS(on)}$ = 0.4 Ω MAX. at V_{GS} = 10 V, I_D = 0.5 A
- Voltage drive at logic level (V_{GS} = 4 V) is possible.
- Bidirectional zener diode for protection is incorporated in between the gate and the source.
- Inductive loads can be driven without protective circuit thanks to the improved breakdown voltage between the drain and source.
- Can be used complementary with the 2SJ196

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)

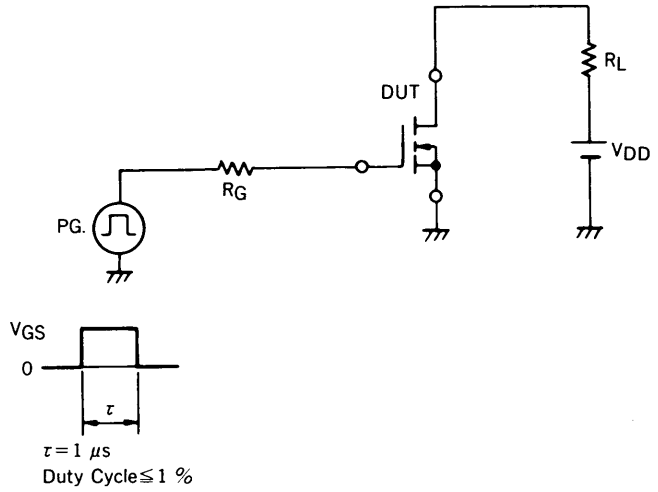
PARAMETER	SYMBOL	RATINGS	UNIT	TEST CONDITIONS
Drain to Source Voltage	V_{DSS}	30	V	V_{GS} = 0
Gate to Source Voltage	V_{GSS}	±20	V	V_{DS} = 0
Drain Current (DC)	$I_{D(DC)}$	±1.5	A	
Drain Current (pulse)	$I_{D(pulse)}$	±3.0	A	PW ≦ 10 ms, Duty Cycle ≦ 50 %
Total Power Dissipation	P_T	750	mW	
Channel Temperature	T_{ch}	150	°C	
Storage Temperature	T_{stg}	−55 to +150	°C	

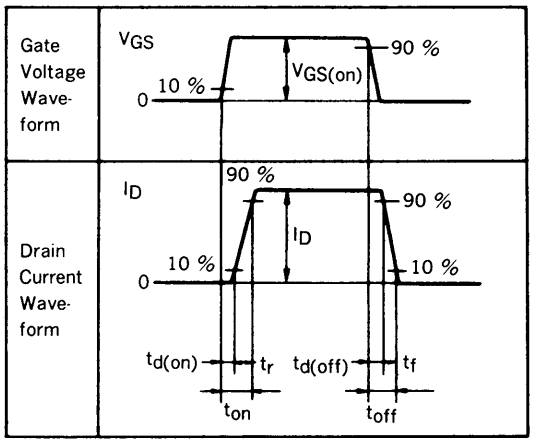
Document No. TC−2344
(O.D.No. TC−7680A)
Date Published June 1991 M
Printed in Japan

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Cut-off Current	I_{DSS}			10	μA	V_{DS} = 30 V, V_{GS} = 0
Gate Leakage Current	I_{GSS}			±10	μA	V_{GS} = ±20 V, V_{DS} = 0
Gate Cut-off Voltage	$V_{GS(off)}$	1.3	1.8	2.5	V	V_{DS} = 10 V, I_D = 1 mA
Forward Transfer Admittance	$\|y_{fs}\|$	0.4			S	V_{DS} = 10 V, I_D = 0.5 A
Drain to Source On-State Resistance	$R_{DS(on)1}$		0.4	0.8	Ω	V_{GS} = 4.0 V, I_D = 0.5 A
Drain to Source On-State Resistance	$R_{DS(on)2}$		0.15	0.4	Ω	V_{GS} = 10 V, I_D = 0.5 A
Input Capacitance	C_{iss}		230		pF	V_{DS} = 10 V, V_{GS} = 0, f = 1 MHz
Output Capacitance	C_{oss}		170		pF	
Feedback Capacitance	C_{rss}		45		pF	
Turn-On Delay Time	$t_{d(on)}$		15		ns	$V_{GS(on)}$ = 10 V, R_G = 10 Ω V_{DD} = 25 V, I_D = 0.5 A R_L = 50 Ω
Rise Time	t_r		50		ns	
Turn-Off Delay Time	$t_{d(off)}$		420		ns	
Fall Time	t_f		240		ns	

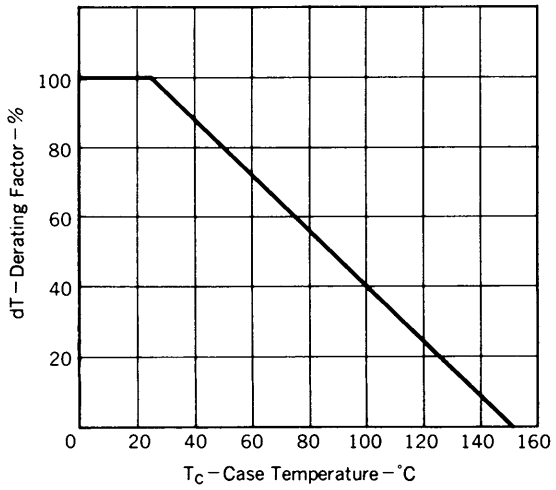
SWITCHING TIME MEASUREMENT CIRCUIT AND CONDITIONS



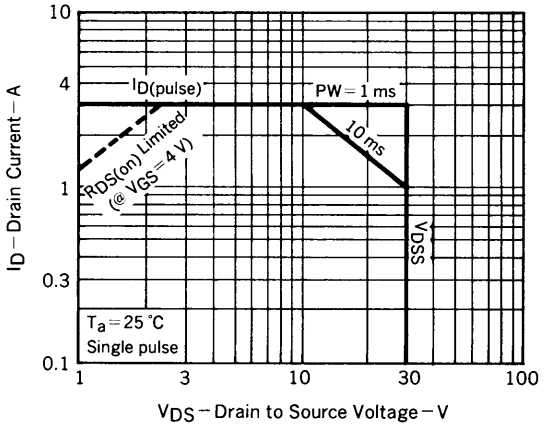


TYPICAL CHARACTERISTICS (T_a = 25 °C)

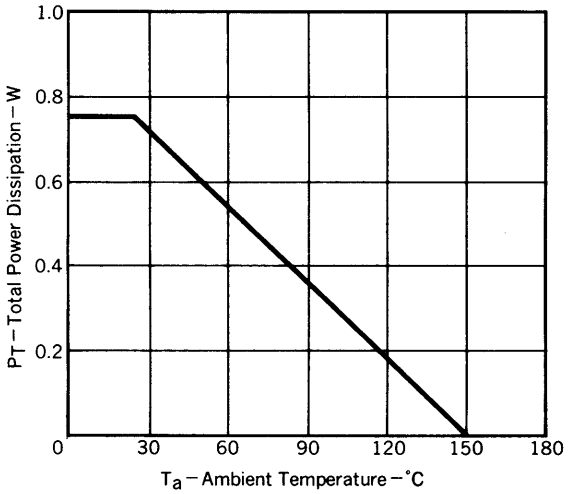
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



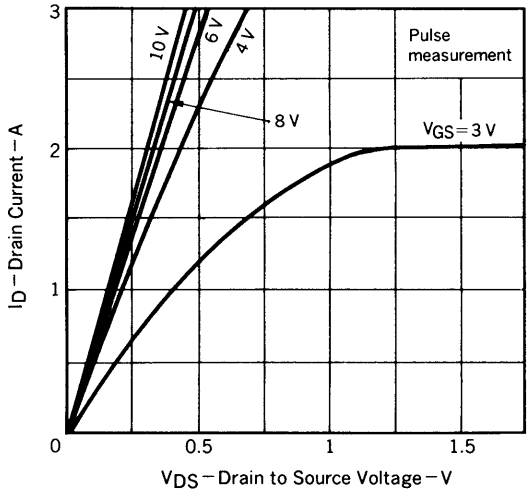
FORWARD BIAS SAFE OPERATING AREA



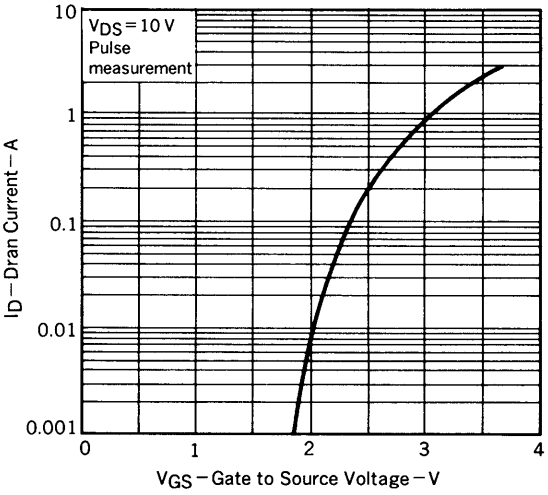
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



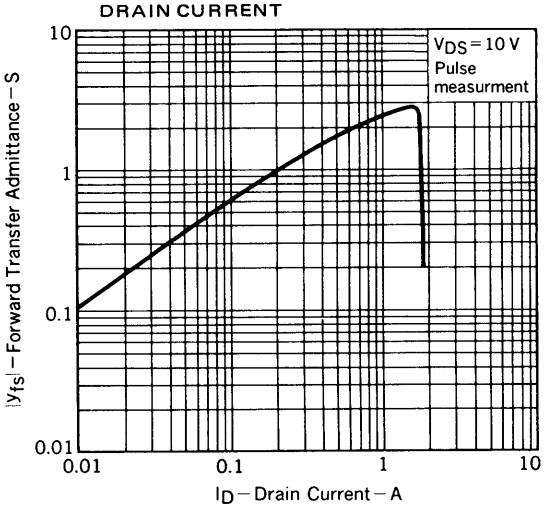
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



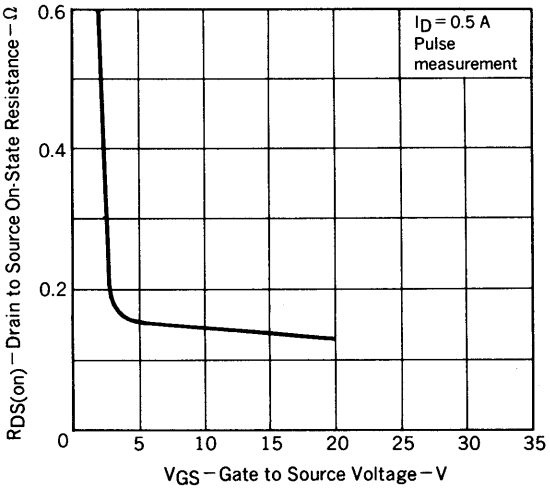
TRANSFER CHARACTERISTICS



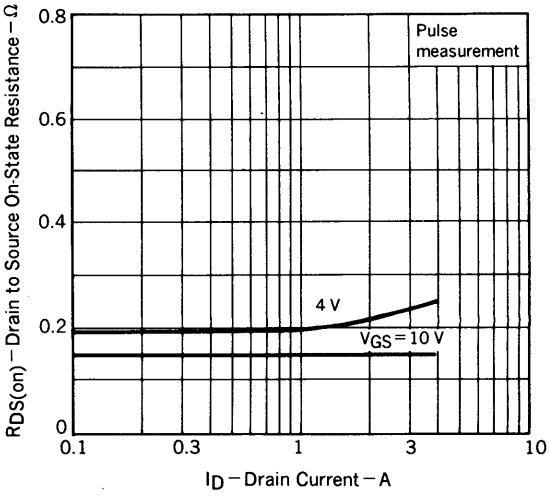
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



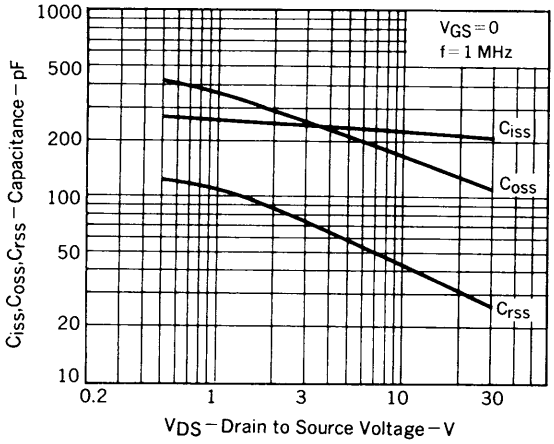
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



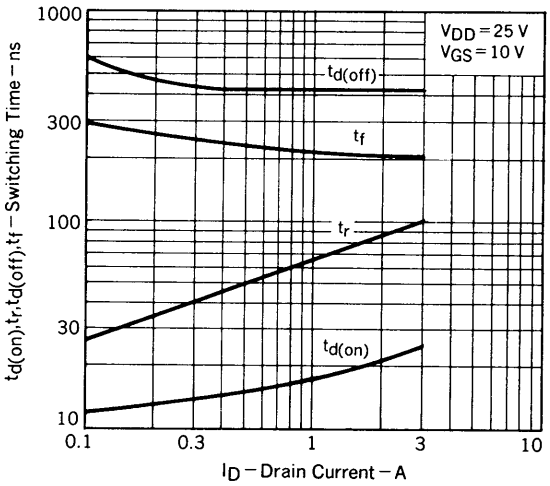
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



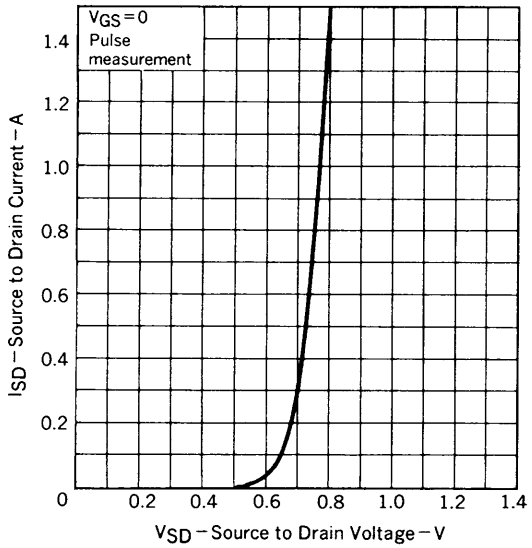
CAPACITANCE vs. DRAIN TO SOURCE VOLTAE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



RECOMMENDED SOLDERING CONDITIONS

Solder this product under the following recommended conditions.
For soldering methods or soldering conditions other than those recommended in the table, please consult our NEC salespeople.

Insert type

Soldering method	Soldering conditions	Recommended condition code
Wave soldering	Solder bath temperature: 260 °C max. Soldering time: 10 sec max.	

〔MEMO〕