NEC

Phase-out/Discontinued

MOS FIELD EFFECT TRANSISTOR
2SK1482

N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

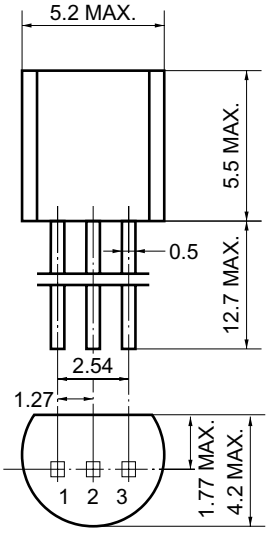
DESCRIPTION

The 2SK1482 is 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
  $R_{DS(on)1}$ = 0.8 Ω MAX. (V_{GS} = 4 V, I_D = 0.5 A)
  $R_{DS(on)2}$ = 0.4 Ω MAX. (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.

PACKAGE DRAWING (Unit : mm)

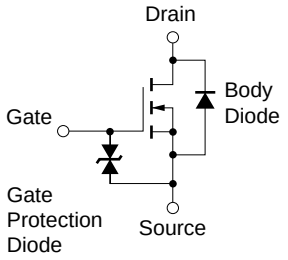


ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	30	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±20	V
Drain Current (DC) (T_C = 25°C)	$I_{D(DC)}$	±1.5	A
Drain Current (pulse) **Note**	$I_{D(pulse)}$	±3.0	A
Total Power Dissipation (T_A = 25°C)	P_T	750	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

Note PW ≤ 10 ms, Duty Cycle ≤ 50%

EQUIVALENT CIRCUIT



Remark The diode connected between the gate and source of the transistor serves as a protector against ESD. When this device actually used, an additional protection circuit is externally required if a voltage exceeding the rated voltage may be applied to this device.

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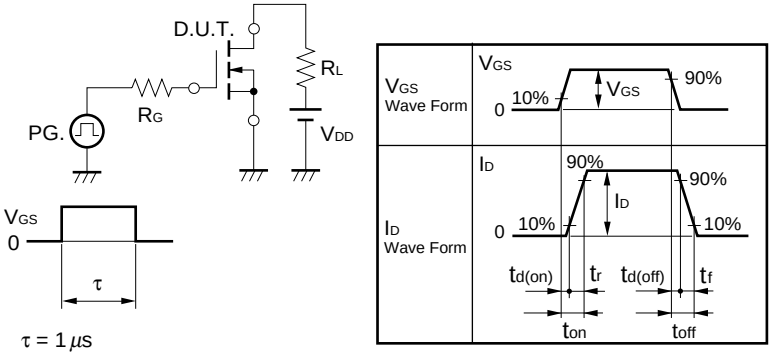
The mark ★ shows major revised points.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30 V, V_{GS} = 0 V			10	μA
Gate Leakage Current	I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V			±10	μA
Gate Cut-off Voltage	$V_{GS(off)}$	V_{DS} = 10 V, I_D = 1 mA	1.3	1.8	2.5	V
Forward Transfer Admittance	$\|y_{fs}\|$	V_{DS} = 10 V, I_D = 0.5 A	0.4			S
★ Drain to Source On-state Resistance	$R_{DS(on)1}$	V_{GS} = 4.0 V, I_D = 0.5 A		0.19	0.8	Ω
	$R_{DS(on)2}$	V_{GS} = 10 V, I_D = 0.5 A		0.15	0.4	Ω
Input Capacitance	C_{iss}	V_{DS} = 10 V		230		pF
Output Capacitance	C_{oss}	V_{GS} = 0 V		170		pF
Reverse Transfer Capacitance	C_{rss}	f = 1 MHz		45		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 25 V, I_D = 0.5 A		15		ns
Rise Time	t_r	V_{GS} = 10 V		50		ns
Turn-off Delay Time	$t_{d(off)}$	R_G = 10 Ω		420		ns
Fall Time	t_f			240		ns

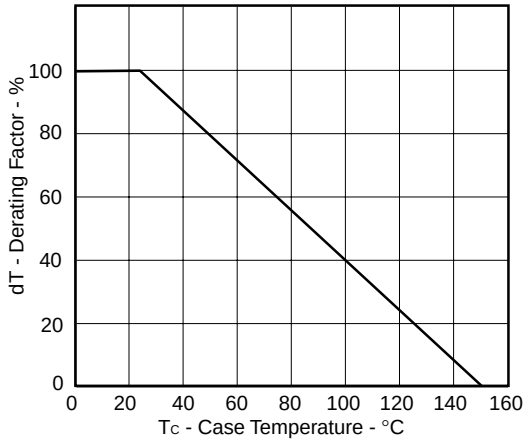
SWITCHING TIME



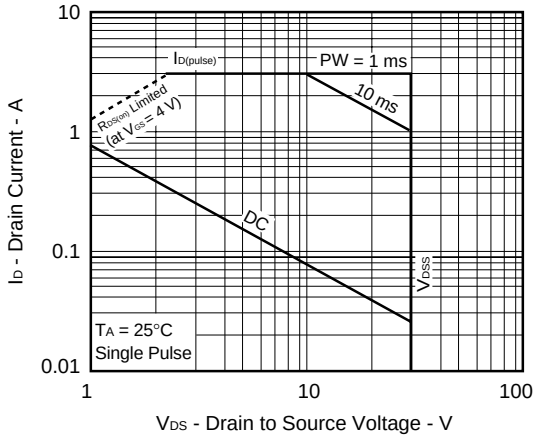
τ = 1 μs
Duty Cycle ≤ 1%

TYPICAL CHARACTERISTICS (T_A = 25°C)

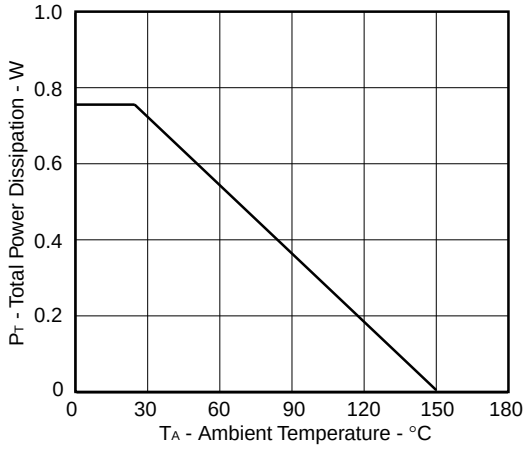
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



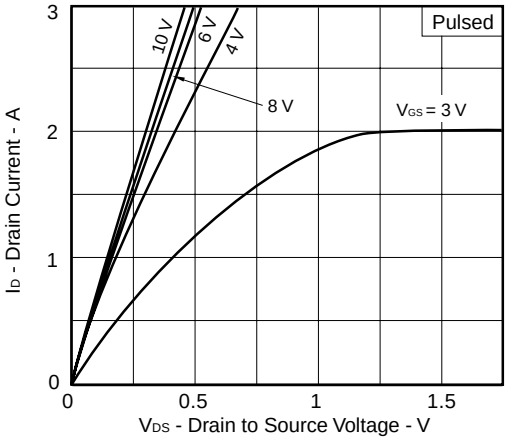
FORWARD BIAS SAFE OPERATING AREA



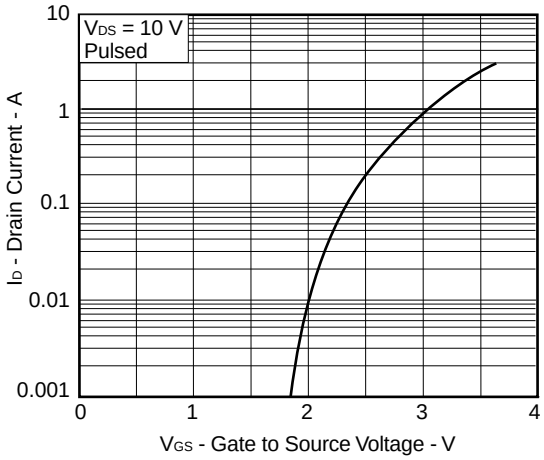
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



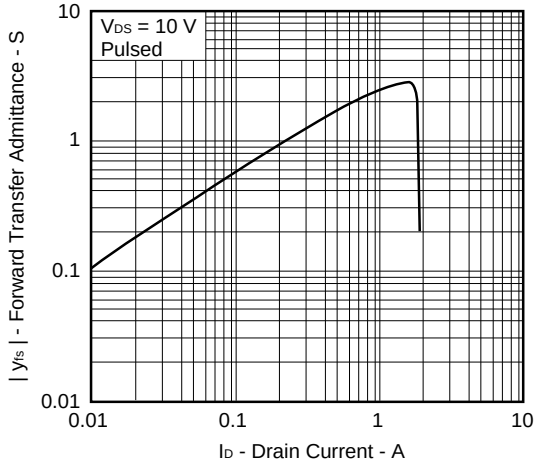
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



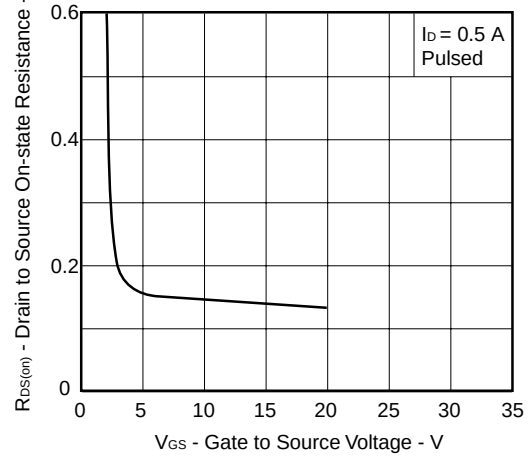
TRANSFER CHARACTERISTICS



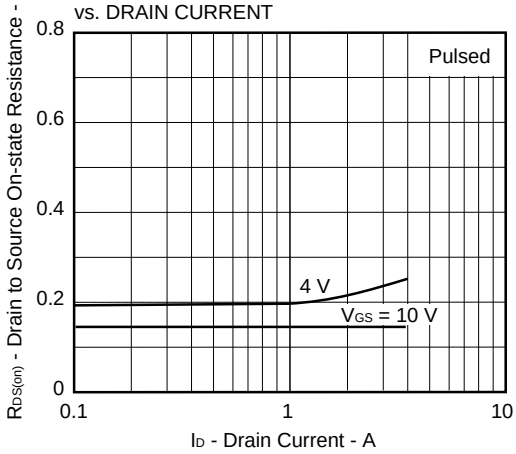
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



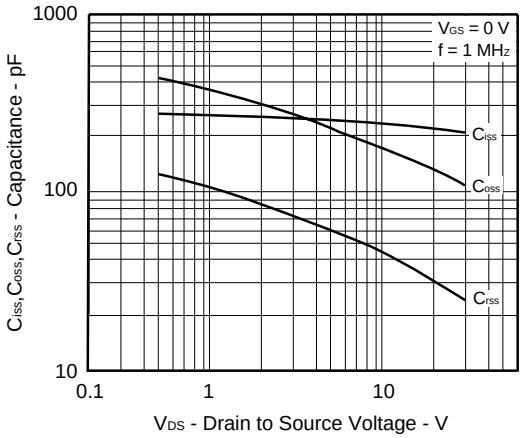
DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



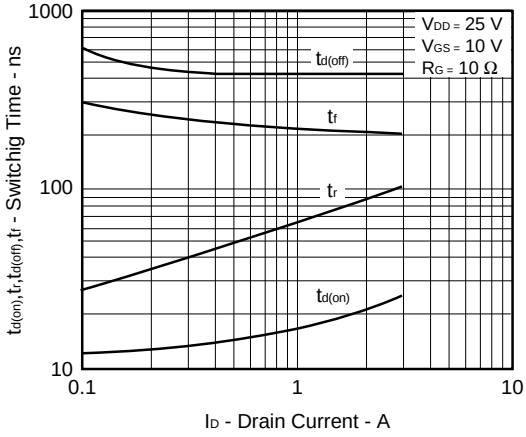
DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



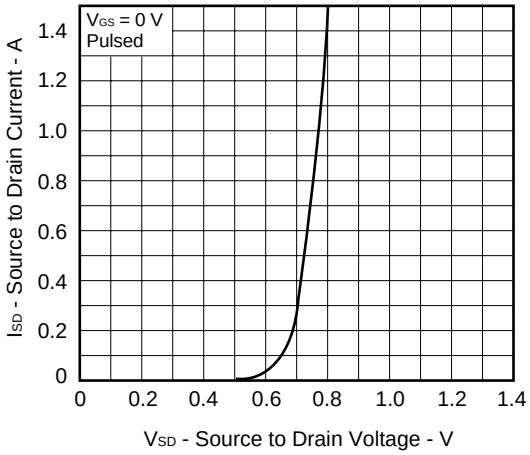
CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



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