RENESAS

MOS FIELD EFFECT TRANSISTOR

2SK1485

N-CHANNEL MOS FIELD EFFECT TRANSISTOR FOR SWITCHING

DESCRIPTION

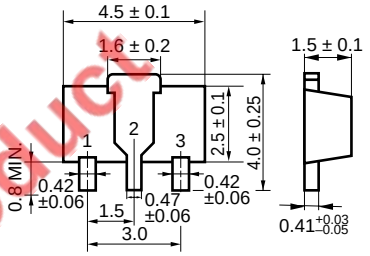
The 2SK1485, N-channel vertical type MOS FET is a switching device which can be driven directly by the output of ICs having a 5 V power source.

As the MOS FET has low on-state resistance and excellent switching characteristics, it is suitable for driving actuators such as motors, relays, and solenoids.

FEATURES

- Directly driven by ICs having a 5 V power source.
- Low on-state resistance
  $R_{DS(on)1}$ = 1.2 Ω MAX. (V_{GS} = 4.0 V, I_D = 0.5 A)
  $R_{DS(on)2}$ = 0.8 Ω MAX. (V_{GS} = 10 V, I_D = 0.5 A)
- Complementary to 2SJ199.

PACKAGE DRAWING (Unit : mm)

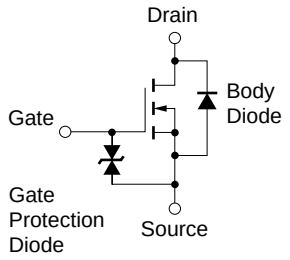


1.Source
2.Drain
3.Gate
MARK : NC

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Drain to Source Voltage (V_{GS} = 0 V)	V_{DSS}	100	V
Gate to Source Voltage (V_{DS} = 0 V)	V_{GSS}	±20	V
★ Drain Current (DC) (T_C = 25°C)	$I_{D(DC)}$	±1.0	A
Drain Current (pulse) Note1	$I_{D(pulse)}$	±2.0	A
Total Power Dissipation (T_A = 25°C) Note2	P_T	2.0	W
Channel Temperature	T_{ch}	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

EQUIVALENT CIRCUIT



Notes1. PW ≤ 10 ms, Duty Cycle ≤ 50%

2. Mounted on ceramic board of 16 cm^2 × 0.7 mm

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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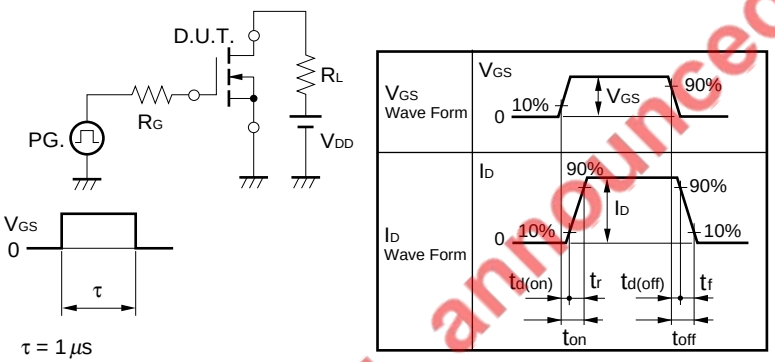
The mark ★ shows major revised points.

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100 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	0.8	1.2	2.0	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		0.6	1.2	Ω
	$R_{DS(on)2}$	V_{GS} = 10 V, I_D = 0.5 A		0.5	0.8	Ω
Input Capacitance	C_{iss}	V_{DS} = 10 V		230		pF
Output Capacitance	C_{oss}	V_{GS} = 0 V		80		pF
Reverse Transfer Capacitance	C_{rss}	f = 1 MHz		12		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DD} = 25 V, I_D = 0.5 A		14		ns
Rise Time	t_r	V_{GS} = 10 V		14		ns
Turn-off Delay Time	$t_{d(off)}$	R_G = 10 Ω		370		ns
Fall Time	t_f			65		ns

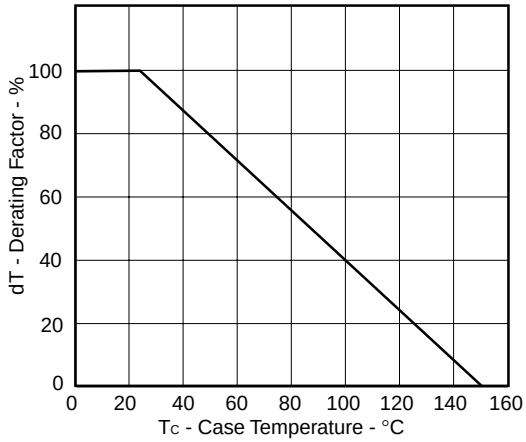
SWITCHING TIME



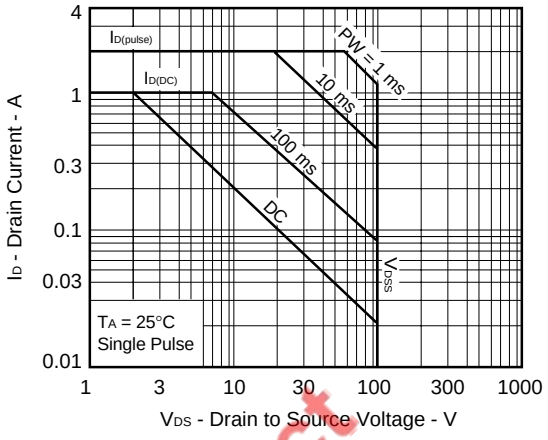
τ = 1 μs
Duty Cycle ≤ 1%

TYPICAL CHARACTERISTICS (T_A = 25°C)

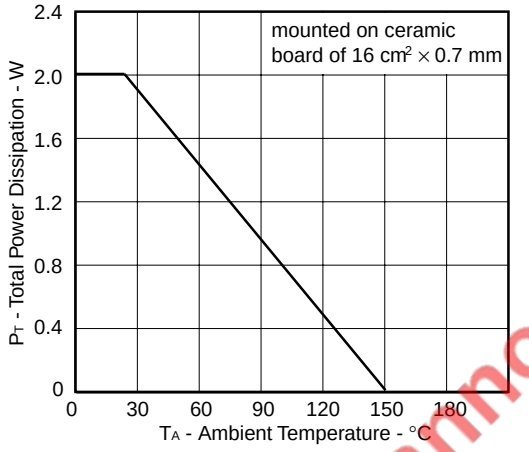
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



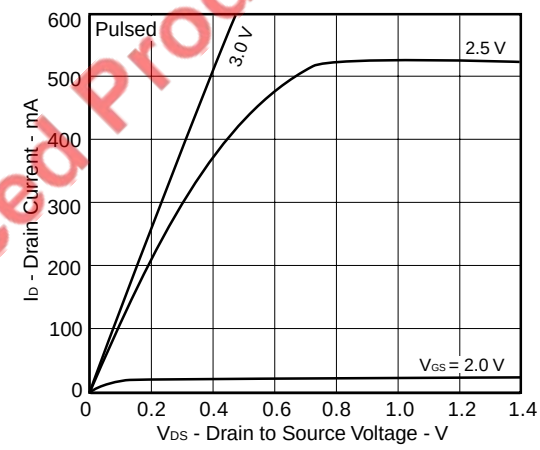
FORWARD BIAS SAFE OPERATING AREA



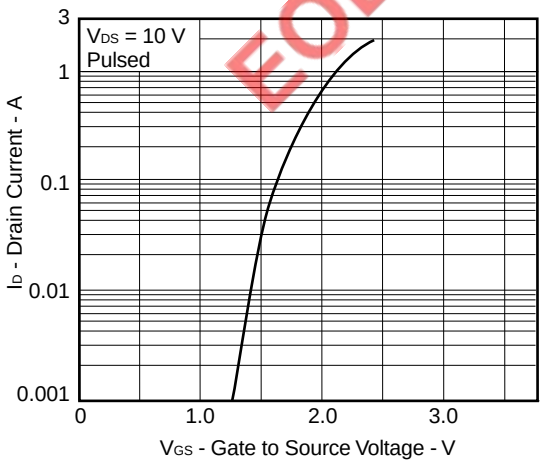
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



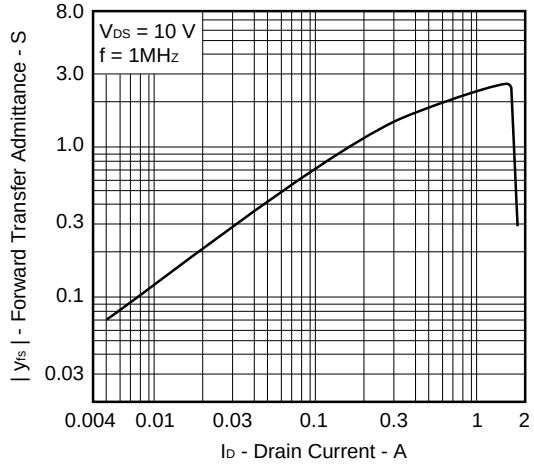
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



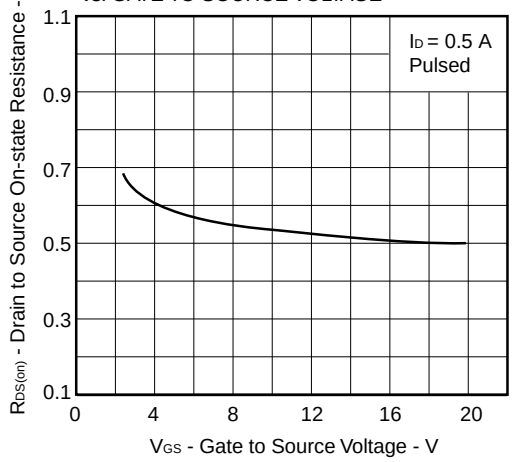
TRANSFER CHARACTERISTICS



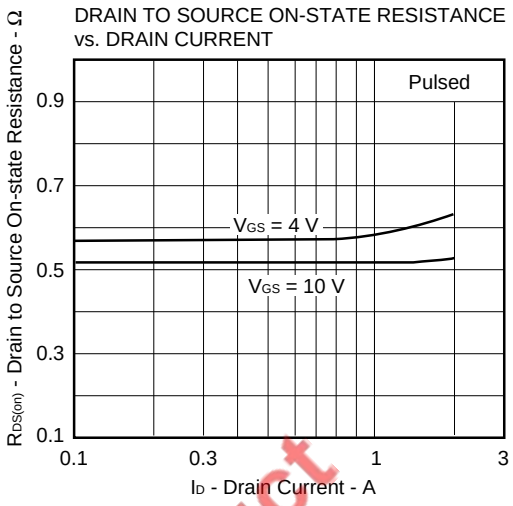
FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT



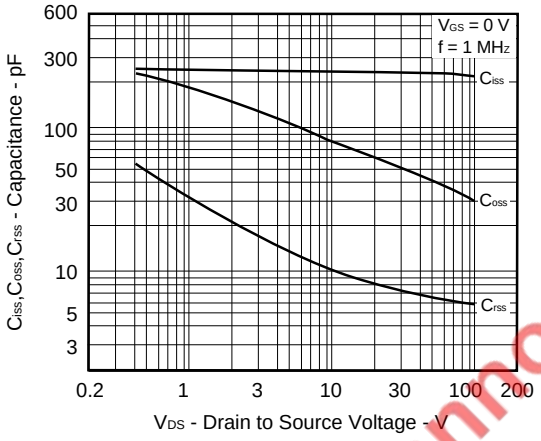
DRAIN TO SOURCE ON-STATE RESISTANCE
vs. GATE TO SOURCE VOLTAGE



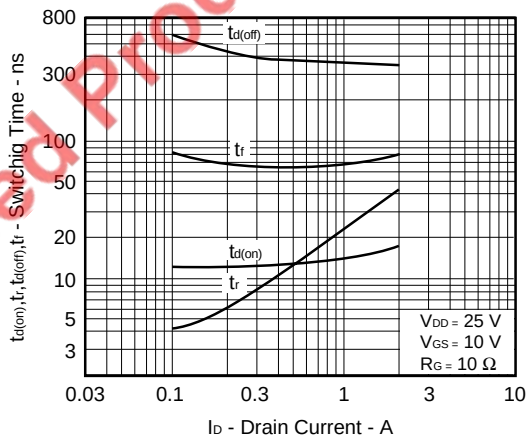
DRAIN TO SOURCE ON-STATE RESISTANCE
vs. DRAIN CURRENT



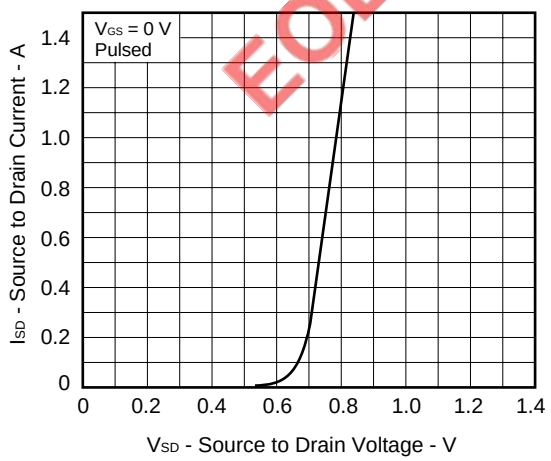
CAPACITANCE vs.
DRAIN TO SOURCE VOLTAGE



SWITCHING CHARACTERISTICS



SOURCE TO DRAIN DIODE FORWARD VOLTAGE



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