DATA SHEET

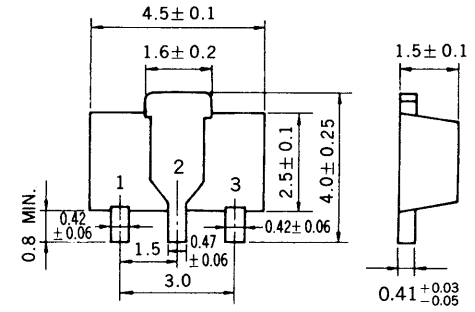
NEC

MOS FIELD EFFECT TRANSISTOR

2SK1483

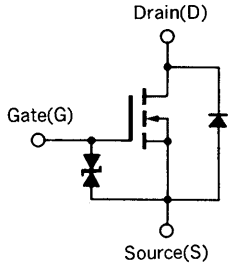
N-CHANNEL MOS FET FOR SWITCHING

PACKAGE DIMENSIONS (Unit : mm)



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

MARK : NB



(Diode in the figure is the parasitic diode.)

The 2SK1483 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 features low ON-state resistance and outstanding switching characteristics and thus is ideal for driving actuators such as motors, solenoids, and relays.

FEATURES

- Can be driven directly from an IC operating with a 5 V single power supply.
- 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
- Can be used complementary with the 2SJ197.

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	RATING	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)	$I_{D(DC)}$	±2.0	A	
Drain Current (pulse)	$I_{D(pulse)}$	±4.0	A	PW ≦ 10 ms, Duty Cycle ≦ 50 %
Total Power Dissipation	P_T	2.0	W	when using ceramic board of 16 cm² x 0.7 mm
Channel Temperature	T_{ch}	150	°C	
Storage Temperature	T_{stg}	−55 to +150	°C	

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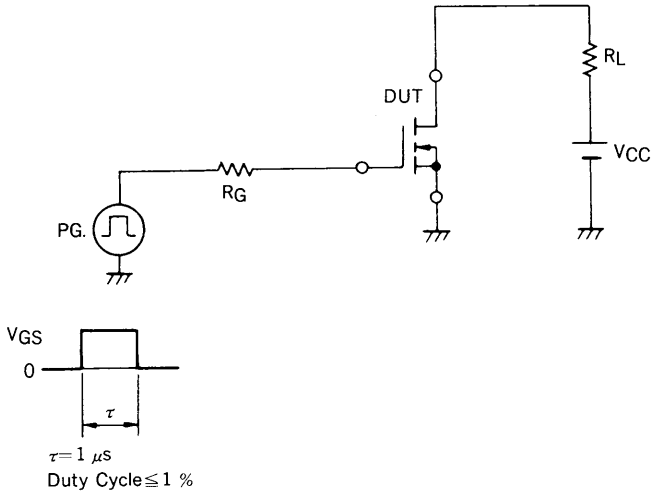
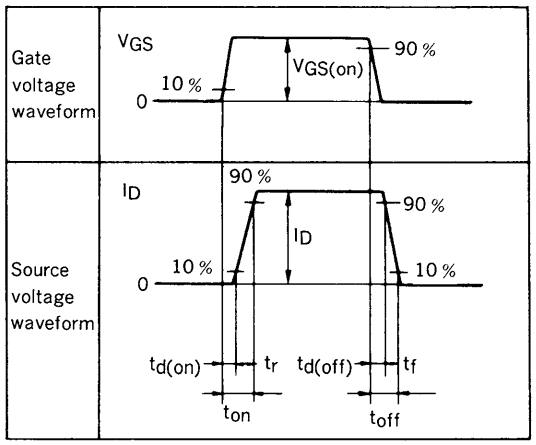
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Drain Leakage 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 Cutoff 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 1	$R_{DS(on)1}$		0.19	0.8	Ω	V_{GS} = 4.0 V, I_D = 0.5 A
Drain to Source On-State Resistance 2	$R_{DS(on)2}$		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 = 1.0 MHz
Output Capacitance	C_{oss}		170		pF	
Feedback Capacitance	C_{rss}		45		pF	
On-State 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	
Off-State Delay Time	$t_{d(off)}$		420		ns	
Fall Time	t_f		240		ns	

SWITCHING TIME MEASUREMENT CIRCUIT & MEASUREMENT CONDITIONS

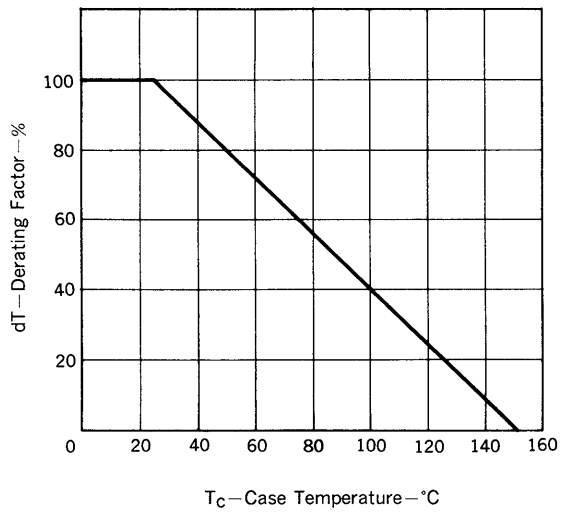


τ = 1 μs
Duty Cycle ≦ 1 %

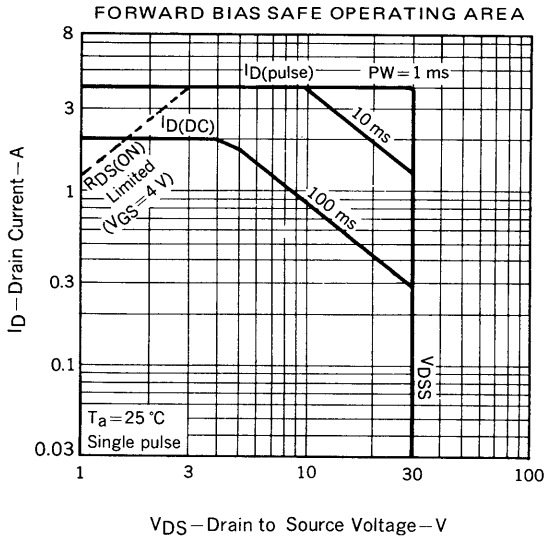


CHARACTERISTIC CURVES (T_a = 25 °C)

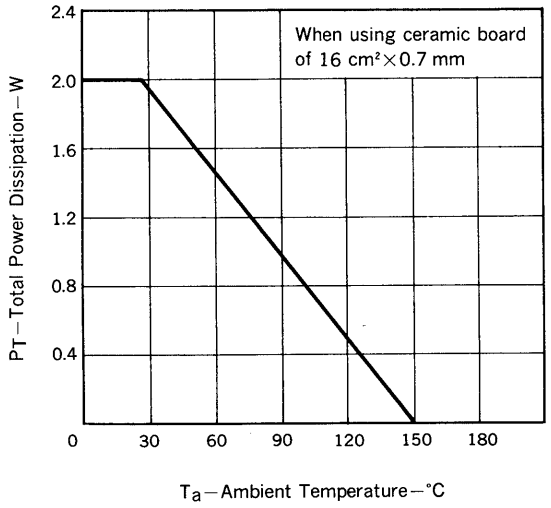
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



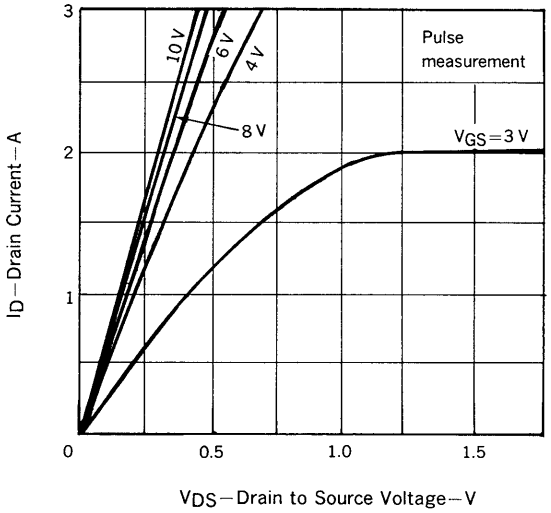
FORWARD BIAS SAFE OPERATING AREA



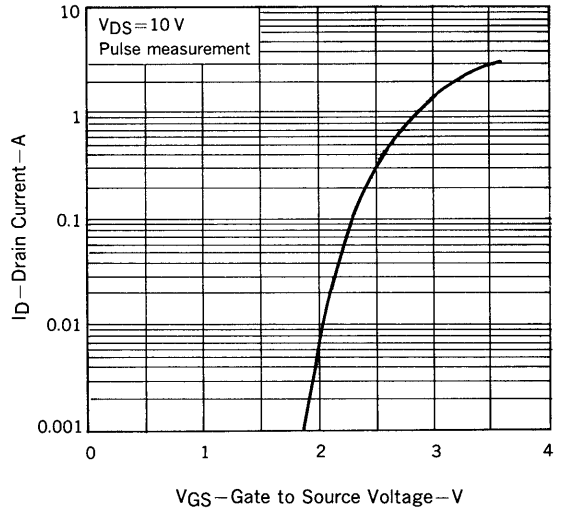
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



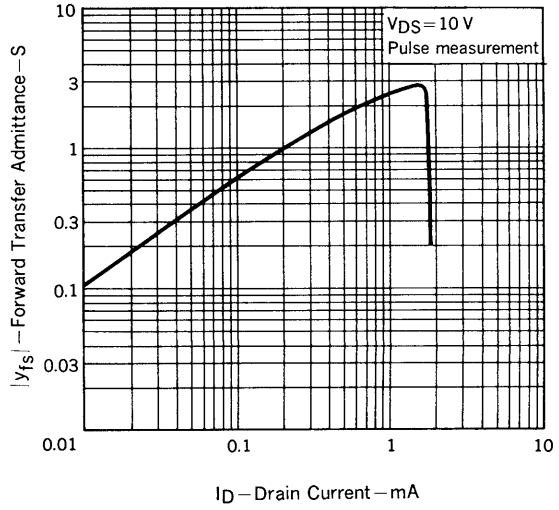
DRAIN CURRENT vs. DRAIN TO SOURCE VOLTAGE



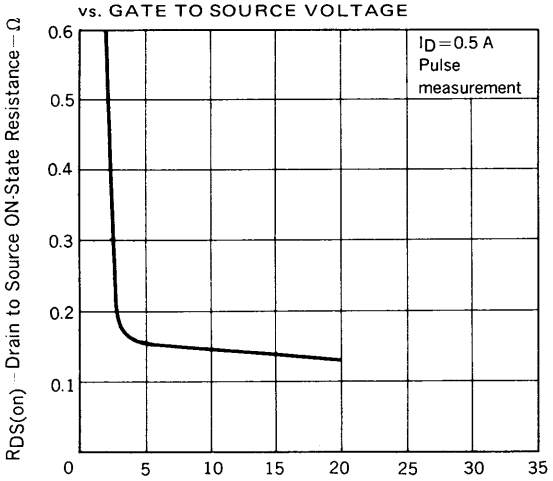
TRANSFER CHARACTERISTICS



FORWARD TRANSFER ADMITTANCE vs. DRAIN CURRENT

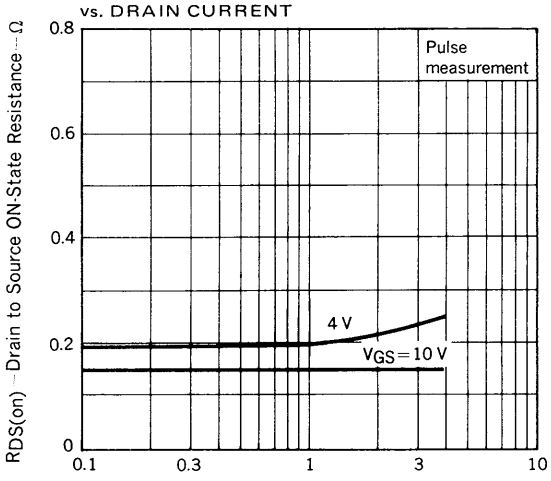


DRAIN TO SOURCE ON-STATE RESISTANCE vs. GATE TO SOURCE VOLTAGE



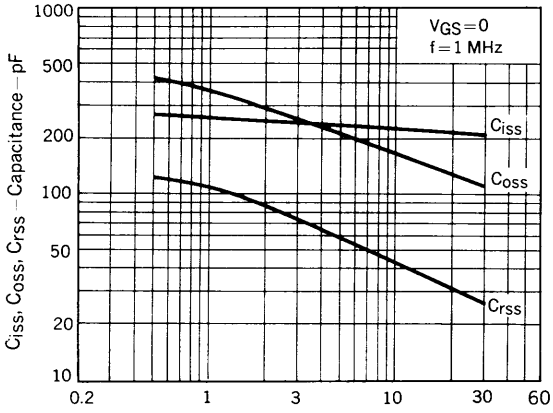
V_{GS} – Gate to Source Voltage – V

DRAIN TO SOURCE ON-STATE RESISTANCE vs. DRAIN CURRENT



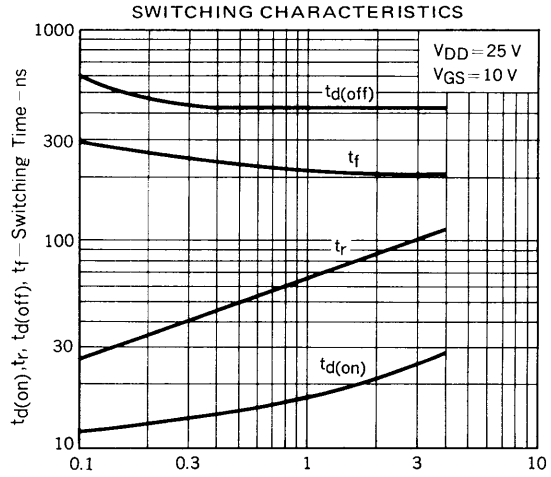
I_D – Drain Current – A

CAPACITANCE vs. DRAIN TO SOURCE VOLTAGE



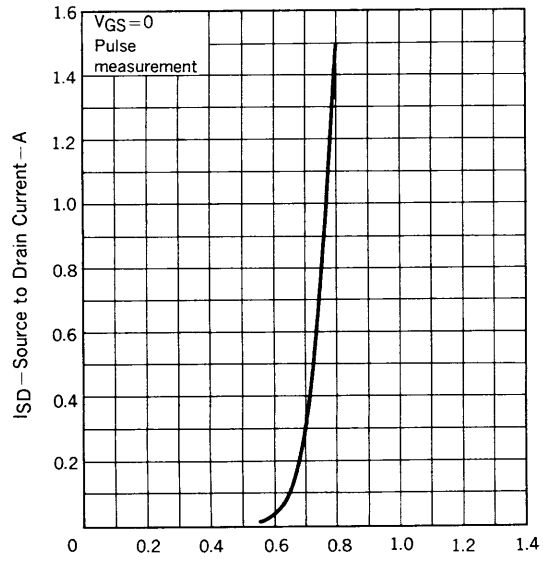
V_{DS} – Drain to Source Voltage – V

SWITCHING CHARACTERISTICS



I_D – Drain Current – A

SOURCE TO DRAIN DIODE FORWARD VOLTAGE



V_{SD} – Source to Drain Voltage – V

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.

SURFACE MOUNT TYPE

For details of the soldering conditions, refer to the surface-mount type Device Packaging Manual (IEI-1207).

Soldering method	Soldering conditions	Recommended condition code
Infrared reflow	Package peak temperature: 230 °C , Soldering time: 30 sec max. (at 210 °C min.) No. of applied times: Once Limit on No. of days*: None	IR30-00
VPS	Package peak temperature: 215 °C Soldering time: 40 sec max. (at 200 °C min.) No. of applied times: Once Limit on No. of days*: None	VP15-00
Wave soldering	Solder bath temperature: 260 °C max. Soldering time: 10 sec max. No. of applied times: Once Limit on No. of days*: None	WS60-00

*: Refers to the number of days to be kept in storage after unsealing the dry pack. The storage conditions are 25 °C and 65 % RH.

Note: Do not use any two of the above soldering methods in combination.

REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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