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P1 98.2



MOS FIELD EFFECT POWER TRANSISTOR 2SK1288

SWITCHING N-CHANNEL POWER MOS FET INDUSTRIAL USE

DESCRIPTION

The 2SK1288 is N-channel MOS Field Effect Transistor designed for solenoid, motor and lamp driver.

FEATURES

• Low On-state Resistance

 $R_{DS(on)} \le 0.15 \ \Omega \text{ (VGS = 10 V, ID = 8 A)}$ $R_{DS(on)} \le 0.2 \ \Omega \text{ (VGS = 4 V, ID = 8 A)}$

- Low Ciss Ciss = 1 400 pF TYP.
- Built-in G-S Gate Protection Diodes

QUALITY GRADE

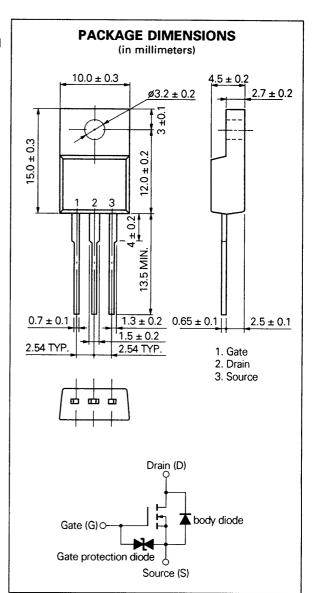
Standard

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 (Ta = 25 °C)

| Drain to Source Voltage | Voss | 100 | ٧ |
|--------------------------------------|------------------|-------------|----|
| Gate to Source Voltage | VGSS(AC | ±20 | ٧ |
| Drain Current (DC) | ID(DC) | ±15 | Α |
| Drain Current (pulse) | D(pulse) | * ±60 | Α |
| Total Power Dissipation (Tc = 25 °C) | PT1 | 30 | W |
| Total Power Dissipation (Ta = 25 °C) | PT2 | 2.0 | W |
| Channel Temperature | Tch | 150 | °C |
| Storage Temperature | T _{stg} | -55 to +150 | °C |

* PW \leq 10 μ s, Duty Cycle \leq 1 %

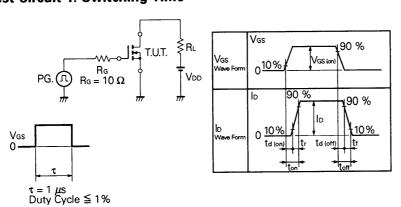




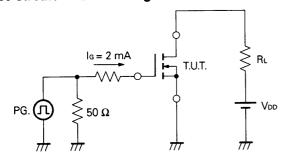
ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

| | | | T | | | |
|-------------------------------------|----------|------|-------|------|------|---|
| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
| Drain to Source On-state Resistance | RDS(on) | | 0.12 | 0.15 | Ω | Vgs = 10 V, lp = 8 A |
| Drain to Source On-state Resistance | Ros(on) | | 0.15 | 0.2 | Ω | Vgs = 4.0 V, lp = 8 A |
| Gate to Source Cutoff Voltage | VGS(off) | 1.0 | | 2.5 | V | V _{DS} = 10 V, I _D = 1 mA |
| Forward Transfer Admittance | yts | 7.0 | 14 | | s | Vps = 10 V, lp = 8 A |
| Drain Leakage Current | loss | | | 10 | μΑ | V _{DS} = 100 V, V _{GS} = 0 |
| Gate to Source Leakage Current | lgss | | | ±10 | μA | Vgs = ±20 V, Vps = 0 |
| Input Capacitance | Ciss | | 1 400 | | pF | V _{DS} = 10 V V _{GS} = 0 f = 1 MHz |
| Output Capacitance | Coss | | 350 | | pF | |
| Reverse Transfer Capacitance | Crss | | 50 | | pF | |
| Turn-On Delay Time | td(on) | | 25 | | ns | $V_{GB(on)} = 10 \text{ V}$ $V_{DD} = 50 \text{ V}$ $I_{D} = 10 \text{ A}, \text{ Rg} = 10 \Omega$ $R_{L} = 5.0 \Omega$ |
| Rise Time | tr | | 110 | | ns | |
| Turn-Off Delay Time | td(off) | | 100 | | ns | |
| Fall Time | tr | | 65 | | ns | |
| Total Gate Charge | QG | | 30 | | nC | V _{GS} = 10 V I _D = 20 A V _{DD} = 80 V |
| Gate to Source Charge | Qgs | | 5 | | nC | |
| Gate to Drain Charge | Qgp | | 10 | | nC | |
| Diode Forward Voltage | Vsp | | 1.1 | | V | IsD = 15 A, Vgs = 0 |
| Reverse Recovery Time | trr | | 200 | | ns | lr = 20 A, Vgs = 0 di/dt = 50 A/μs |
| Reverse Recovery Charge | Qrr | | 500 | | nC | |

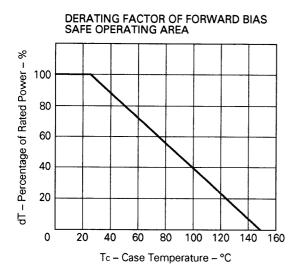
Test Circuit 1: Switching Time

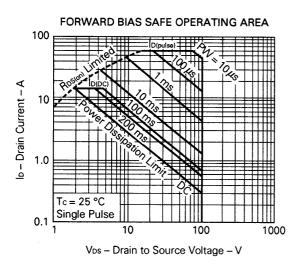


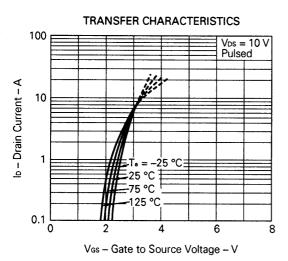
Test Circuit 2: Gate Charge

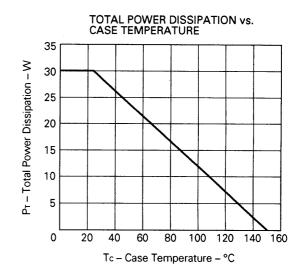


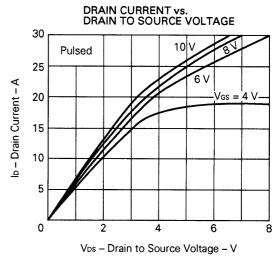
TYPICAL CHARACTERISTICS (Ta = 25 °C)

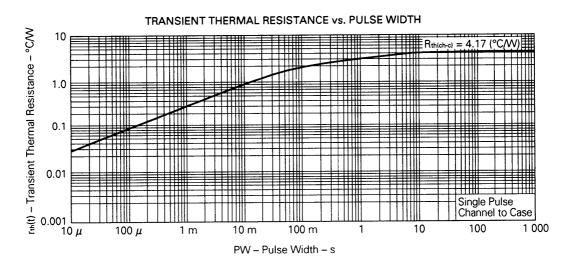


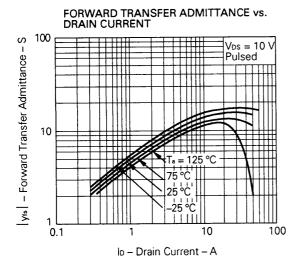


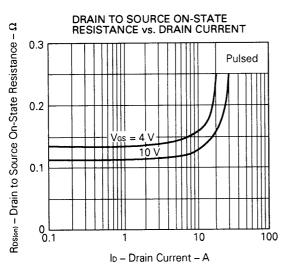


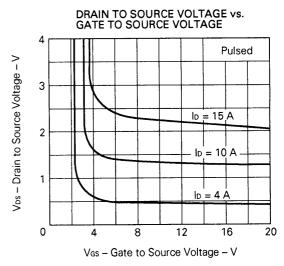


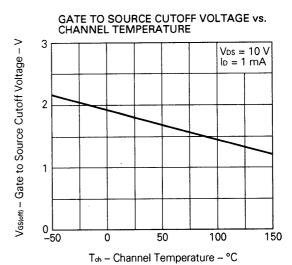


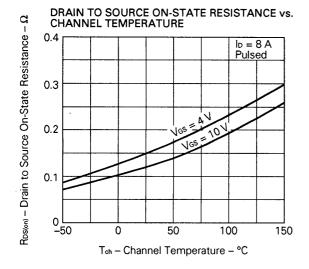


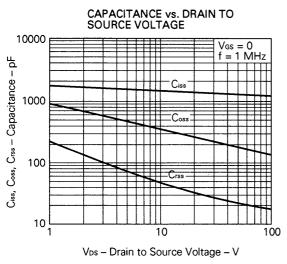


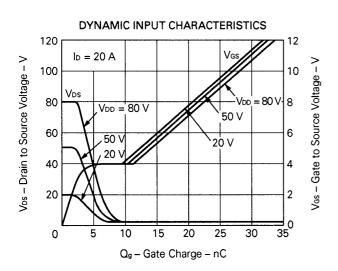


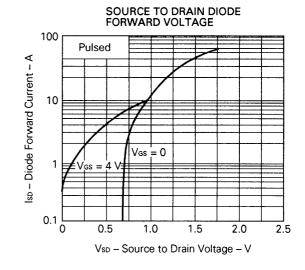


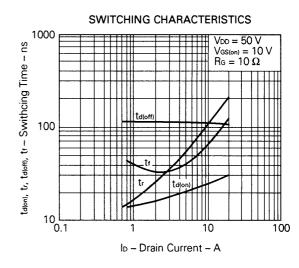


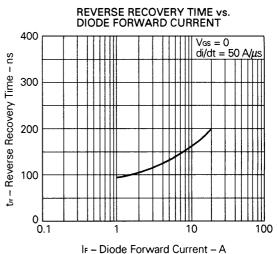












Reference

| Application note name | No. |
|--|----------|
| Safe operating area of Power MOS FET. | TEA-1034 |
| Application circuit using Power MOS FET. | TEA-1035 |
| Quality control of NEC semiconductors devices. | TEI-1202 |
| Quality control guide of semiconductors devices. | MEI-1202 |
| Assembly manual of semiconductors devices. | IEI-1207 |

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