

MOS FIELD EFFECT POWER TRANSISTORS

2SK2134, 2SK2134-Z

SWITCHING

N-CHANNEL POWER MOS FET

INDUSTRIAL USE

DESCRIPTION

The 2SK2134, 2SK2134-Z are N-channel Power MOS Field Effect Transistors designed for high voltage switching applications.

FEATURES

- Low On-state Resistance
 $R_{DS(on)} = 0.4 \Omega \text{ MAX. (} V_{GS} = 10 \text{ V, } I_D = 7.0 \text{ A)}$
- Low C_{iss} $C_{iss} = 500 \text{ pF TYP.}$
- High Avalanche Capability Ratings

QUALITY GRADE

Standard

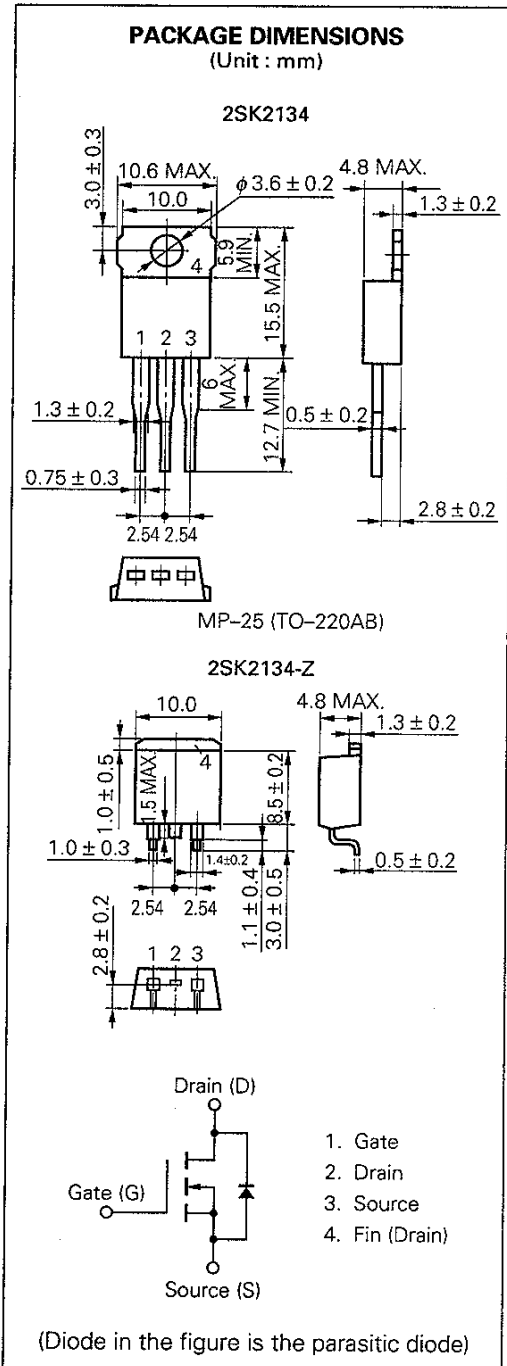
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS

| | | | |
|--|------------------|-------------|------------------|
| Drain to Source Voltage | V_{DSS} | 200 | V |
| Gate to Source Voltage | V_{GSS} | ± 30 | V |
| Drain Current (DC) | $I_{D(DC)}$ | ± 13 | A |
| Drain Current (pulse) | $I_{D(pulse)^*}$ | ± 39 | A |
| Single Avalanche Current** | I_{AS} | 13 | A |
| Single Avalanche Energy** | E_{AS} | 33.8 | mJ |
| Total Power Dissipation ($T_a = 25^\circ\text{C}$) | PT_1 | 1.5 | W |
| Total Power Dissipation ($T_c = 25^\circ\text{C}$) | PT_2 | 70 | W |
| Storage Temperature | T_{stg} | -55 to +150 | $^\circ\text{C}$ |
| Channel Temperature | T_{ch} | 150 | $^\circ\text{C}$ |

* $PW \leq 10 \mu\text{s}$, Duty Cycle $\leq 1\%$

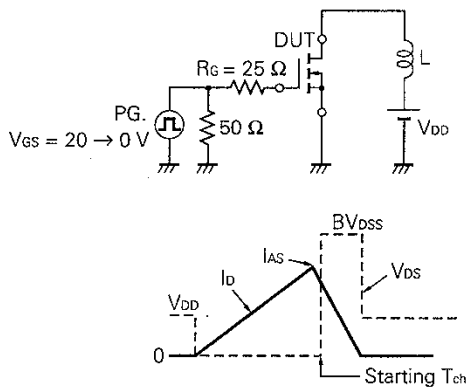
** Starting $T_{ch} = 25^\circ\text{C}$, $R_{\theta} = 25 \Omega$, $V_{GS} = 20 \text{ V} \rightarrow 0$



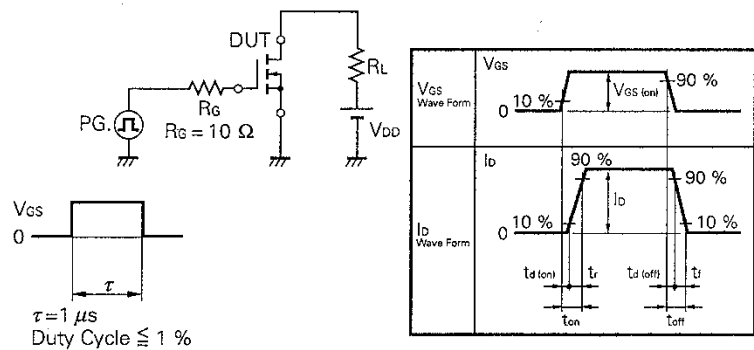
ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

| CHARACTERISTIC | SYMBOL | MIN. | TYP. | MAX. | UNIT | TEST CONDITIONS |
|-------------------------------------|----------------------|------|------|------|------|---|
| Drain to Source On-state Resistance | R _{DS(on)} | | 0.3 | 0.4 | Ω | V _{GS} = 10 V, I _D = 7.0 A |
| Gate to Source Cutoff Voltage | V _{GS(off)} | 2.0 | | 4.0 | V | V _{DS} = 10 V, I _D = 1 mA |
| Forward Transfer Admittance | y _{fs} | 2.0 | | | S | V _{DS} = 10 V, I _D = 7.0 A |
| Drain Leakage Current | I _{DSS} | | | 100 | μA | V _{DS} = 200 V, V _{GS} = 0 |
| Gate to Source Leakage Current | I _{GSS} | | | ±100 | nA | V _{GS} = ±30 V, V _{DS} = 0 |
| Input Capacitance | C _{iss} | | 500 | | pF | V _{DS} = 10 V V _{GS} = 0 f = 1 MHz |
| Output Capacitance | C _{oss} | | 230 | | pF | |
| Reverse Transfer Capacitance | C _{rss} | | 60 | | pF | |
| Turn-On Delay Time | t _{d(on)} | | 12 | | ns | V _{GS} = 10 V V _{DD} = 100 V I _D = 7.0 A, R _G = 10 Ω R _L = 14.3 Ω |
| Rise Time | t _r | | 45 | | ns | |
| Turn-Off Delay Time | t _{d(off)} | | 35 | | ns | |
| Fall Time | t _f | | 12 | | ns | |
| Total Gate Charge | Q _G | | 15 | | nC | V _{GS} = -10 V I _D = 13 A V _{DD} = 160 V |
| Gate to Source Charge | Q _{GS} | | 5.0 | | nC | |
| Gate to Drain Charge | Q _{GD} | | 8.0 | | nC | |
| Diode Forward Voltage | V _{F(S-D)} | | 1.0 | | V | I _F = 13 A, V _{GS} = 0 |
| Reverse Recovery Time | t _{rr} | | 200 | | ns | I _F = 13 A |
| Reverse Recovery Charge | Q _{rr} | | 0.6 | | μC | di/dt = 50 A/μs |

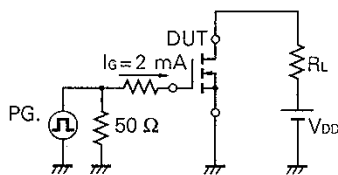
Test Circuit 1 : Avalanche Capability



Test Circuit 2 : Switching Time



Test Circuit 3 : Gate Charge



This datasheet has been download from:

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Datasheets for electronics components.