

TO-251-3L Plastic-Encapsulate MOSFETS

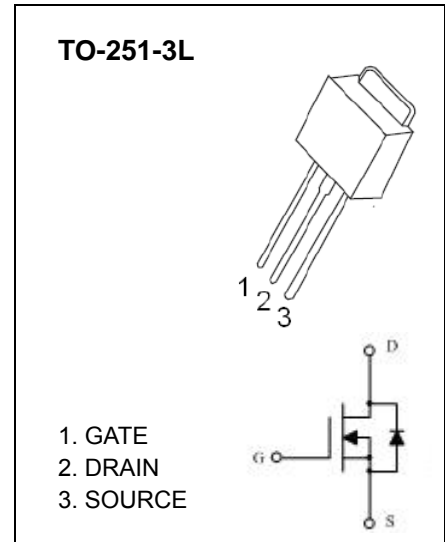
CJD04N65A N-Channel Power MOSFET

GENERAL DESCRIPTION

This advanced high voltage MOSFET is designed to stand high energy in the avalanche mode and switch efficiently. This new high energy device also offers a drain-to-source diode fast recovery time. Designed for high voltage, high speed switching applications such as power supplies, converters, power motor controls and bridge circuits.

FEATURE

- High Current Rating
- Lower $R_{DS(on)}$
- Lower Capacitance
- Lower Total Gate Charge
- Tighter V_{SD} Specifications
- Avalanche Energy Specified



Maximum ratings ($T_a=25^{\circ}C$ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|---------------|
| Drain-Source Voltage | V_{DS} | 650 | V |
| Gate-Source Voltage | V_{GSS} | ± 30 | |
| Continuous Drain Current | I_D | 4.0 | A |
| Pulsed Drain Current | I_{DM} | 16 | |
| Single Pulsed Avalanche Energy (note1) | E_{AS} | 280 | mJ |
| Power Dissipation | P_D | 1.25 | W |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 100 | $^{\circ}C/W$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 ~ +150 | $^{\circ}C$ |
| Maximum lead temperature for soldering purposes , 1/8" from case for 5 seconds | T_L | 260 | |

Electrical characteristics (T_a=25°C unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|----------------------|--|-----|-----|------|------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = 250μA | 650 | | | V |
| Drain-source diode forward voltage(note2) | V _{SD} | V _{GS} = 0V, I _S = 4.0A | | | 1.5 | |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = 600V, V _{GS} = 0V | | | 25 | μA |
| Gate-body leakage curren (note2) | I _{GSS} | V _{DS} = 0V, V _{GS} = ±30V | | | ±100 | nA |
| On characteristics (note2) | | | | | | |
| Gate-threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = 250μA | 2.0 | | 4.0 | V |
| Static drain-source on-resistance | R _{DS(on)} | V _{GS} = 10V, I _D = 2.0A | | | 3.0 | Ω |
| Dynamic characteristics (note 3) | | | | | | |
| Input capacitance | C _{iss} | V _{DS} = 25V, V _{GS} = 0V, f = 1MHz | | | 760 | pF |
| Output capacitance | C _{oss} | | | | 180 | |
| Reverse transfer capacitance | C _{rss} | | | | 20 | |
| Switching characteristics (note 3) | | | | | | |
| Total gate charge | Q _g | V _{DS} = 480V, V _{GS} = 10V, I _D = 4.0A | | 5.0 | 10 | nC |
| Gate-source charge | Q _{gs} | | | 2.7 | | |
| Gate-drain charge | Q _{gd} | | | 2.0 | | |
| Turn-on delay time (note3) | t _{d(on)} | V _{DD} = 300V, V _{GS} = 10V, R _G = 9.1Ω, I _D = 4.0A | | | 20 | ns |
| Turn-on rise time (note3) | t _r | | | | 10 | |
| Turn-off delay time (note3) | t _{d(off)} | | | | 40 | |
| Turn-off fall time (note3) | t _f | | | | 20 | |

Notes :

- L=30mH, I_L=4 A, V_{DD}=100V, V_{GS}=10V, R_G=25Ω, Starting T_J=25°C.
- Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
- These parameters have no way to verify.