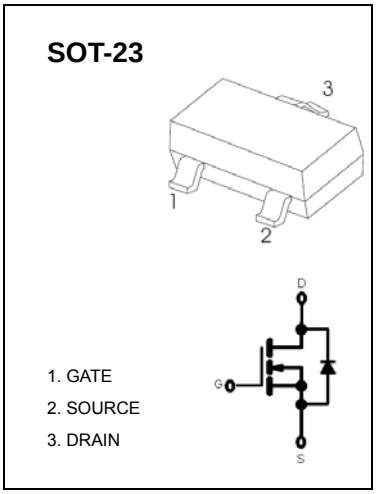
# SOT-23 Plastic-Encapsulate MOSFETS

**CJ3402** N-Channel MOSFET




## DESCRIPTION

The CJ3402 uses advanced trench technology to provide excellent $R_{DS(ON)}$ , low gate charge and operation with gate voltage as low as 2.5V. This device is suitable for use as a load switch or in PWM application.

## FEATURES

- Lead free product is acquired
- Surface mount package

## APPLICATION

- Load Switch and in PWM applications

**MARKING: R2**

**Maximum ratings ($T_a$=25℃ unless otherwise noted)**

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 30 | V |
| Gate-Source Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current | $I_D$ | 4 | A |
| Pulsed Drain Current (note 1) | $I_{DM}$ | 15 | A |
| Power Dissipation | $P_D$ | 0.35 | W |
| Thermal Resistance from Junction to Ambient (note 2) | $R_{\theta JA}$ | 357 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~+150 | ℃ |

## Electrical characteristics ($T_a$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **STATIC CHARACTERISTICS** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 30 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =24V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±12V, $V_{DS}$ = 0V | | | 100 | nA |
| Gate threshold voltage (note 3) | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =250μA | 0.6 | 1 | 1.4 | V |
| Drain-source on-resistance (note 3) | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =4A | | 45 | 55 | mΩ |
| | | $V_{GS}$ =4.5V, $I_D$ =3A | | 55 | 70 | mΩ |
| | | $V_{GS}$ =2.5V, $I_D$ =2A | | 83 | 110 | mΩ |
| Forward transconductance (note 3) | $g_{FS}$ | $V_{DS}$ =15V, $I_D$ =4A | | 8 | | S |
| Diode forward voltage (note 3) | $V_{SD}$ | $I_S$=1A, $V_{GS}$ = 0V | | 0.8 | 1 | V |
| **DYNAMIC CHARACTERISTICS (note 4)** | | | | | | |
| Input capacitance | $C_{iss}$ | $V_{DS}$ =15V,$V_{GS}$ =0V,f =1MHz | | 390 | | pF |
| Output capacitance | $C_{oss}$ | | | 54.5 | | pF |
| Reverse transfer capacitance | $C_{rss}$ | | | 41 | | Pf |
| Gate resistance | $R_g$ | $V_{DS}$ =0V,$V_{GS}$ =0V,f =1MHz | | 3 | | Ω |
| **SWITCHING CHARACTERISTICS (note 4)** | | | | | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{GS}$=10V,$V_{DS}$=15V, $R_L$=3.75Ω,$R_{GEN}$=6Ω | | 3.3 | | ns |
| Turn-on rise time | $t_r$ | | | 1 | | ns |
| Turn-off delay time | $t_{d(off)}$ | | | 21.7 | | ns |
| Turn-off fall time | $t_f$ | | | 2.1 | | ns |
| Total gate charge | $Q_g$ | $V_{DS}$ =15V,$V_{GS}$ =4.5V,$I_D$ =4A | | 4.34 | | nC |
| Gate-source Charge | $Q_{gs}$ | | | 0.6 | | nC |
| Gate-drain Charge | $Q_{gd}$ | | | 1.38 | | nC |
| Body diode reverse recovery time | $t_{.}$ | $I_F$=4A,dI/dt=100A/μs | | 1.2 | | ns |
| Body diode reverse recovery charge | $Q_{rr}$ | | | 6.3 | | nC |

**Notes :**

1. Repetitive rating : Pulse width limited by junction temperature.
2. Surface mounted on FR4 board , t≤10s.
3. Pulse Test : Pulse Width≤80μs, Duty Cycle≤0.5%.
4. Guaranteed by design, not subject to producting.