

DESCRIPTION

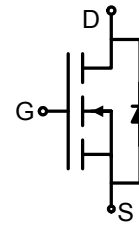
The 3400 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

GENERAL FEATURES

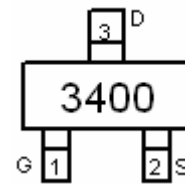
- $V_{DS} = 30V, I_D = 5.8A$
- $R_{DS(ON)} = 45m\Omega @ V_{GS}=2.5V$ (Typ)
- $R_{DS(ON)} = 31m\Omega @ V_{GS}=4.5V$ (Typ)
- $R_{DS(ON)} = 28m\Omega @ V_{GS}=10V$ (Typ)
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management



Schematic diagram



Marking and pin Assignment



SOT-23 top view

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|--|----------------|------------|------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ±12 | V |
| Drain Current-Continuous | I_D | 5.8 | A |
| Drain Current-Pulsed (Note 1) | I_{DM} | 30 | A |
| Maximum Power Dissipation | P_D | 1.4 | W |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 To 150 | °C |

Thermal Characteristic

| | | | |
|--|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 1.0 | °C/W |
|--|-----------------|-----|------|

Electrical Characteristics (TA=25°C unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--------------------------------|------------|---------------------------|-----|-----|-----|------|
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | 33 | - | V |

| | | | | | | |
|---|--------------|---|-----|------|-----------|------------|
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 12V, V_{DS}=0V$ | - | - | ± 100 | nA |
| On Characteristics (Note 3) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.7 | 0.9 | 1.4 | V |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}=2.5V, I_D=4A$ | - | 45 | 50 | m Ω |
| | | $V_{GS}=4.5V, I_D=2.9A$ | - | 31 | 40 | m Ω |
| | | $V_{GS}=10V, I_D=2.9A$ | - | 28 | 35 | m Ω |
| Forward Transconductance | g_{FS} | $V_{DS}=5V, I_D=2.9A$ | 10 | - | - | S |
| Dynamic Characteristics (Note4) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$ | - | 623 | - | PF |
| Output Capacitance | C_{oss} | | - | 99 | - | PF |
| Reverse Transfer Capacitance | C_{rss} | | - | 77 | - | PF |
| Switching Characteristics (Note 4) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=15V, I_D=2.9A$ $V_{GS}=10V, R_{GEN}=3\Omega$ | - | 3.3 | - | nS |
| Turn-on Rise Time | t_r | | - | 4.8 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 26 | - | nS |
| Turn-Off Fall Time | t_f | | - | 4 | - | nS |
| Total Gate Charge | Q_g | $V_{DS}=15V, I_D=5.8A,$ $V_{GS}=4.5V$ | - | 9.5 | - | nC |
| Gate-Source Charge | Q_{gs} | | - | 1.5 | - | nC |
| Gate-Drain Charge | Q_{gd} | | - | 3 | - | nC |
| Drain-Source Diode Characteristics | | | | | | |
| Diode Forward Voltage (Note 3) | V_{SD} | $V_{GS}=0V, I_S=2.9A$ | - | 0.75 | 1.2 | V |
| Diode Forward Current (Note 2) | I_S | | - | - | 2.9 | A |

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

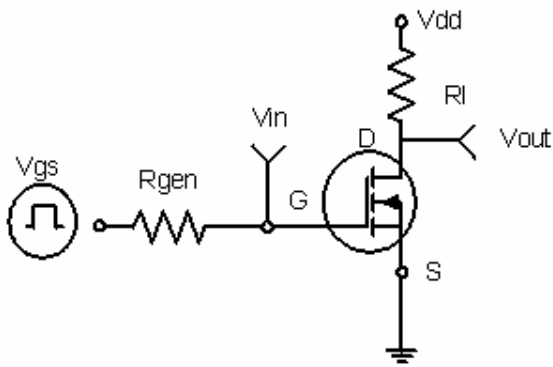


Figure 1: Switching Test Circuit

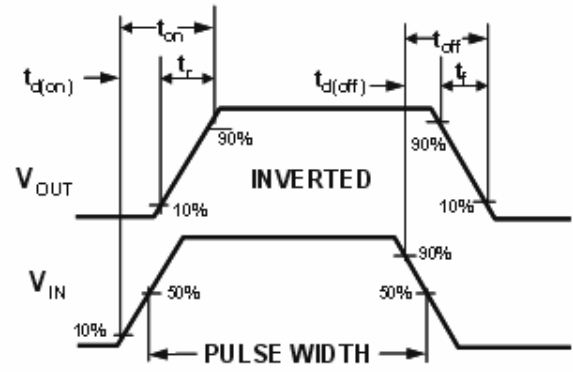


Figure 2: Switching Waveforms