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|-------------------------|---|
| 30V N沟道增强型功率场效应管 | 30V N-CHANNEL ENHANCEMENT MODE POWER MOSFET 5.8A/30V |
|-------------------------|---|

Discription

The ZX-3400 uses advanced trench technology to provide excellent RDS(ON), low gate charge and high density cell design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.

Features

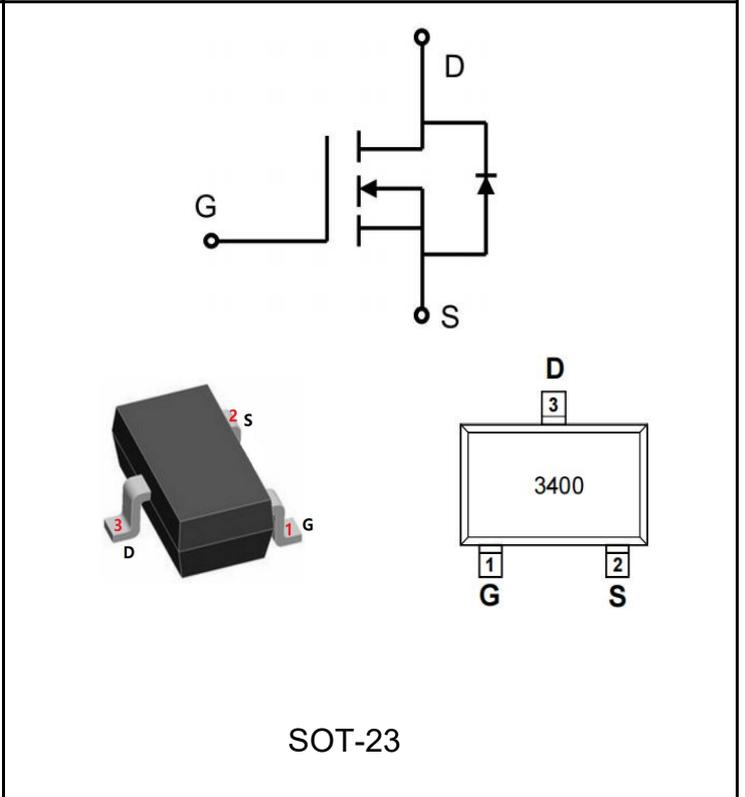
- $V_{DS}=30V, I_D=5.8A$
- $R_{DS(on) (MAX)}=30m\Omega@V_{GS}=10V$
- $R_{DS(on) (MAX)}=35m\Omega@V_{GS}=4.5V$

Applications

- PWM applications
- Load switch
- Power management

Note

- Products made by JUXIN semiconductor



ORDERING INFORMATION

| Part No. | Package | Marking | Material | Packing |
|----------|---------|---------|----------|---------------|
| ZX-3400 | SOT-23 | 3400 | Pb free | Tape and Reel |

ABSOLUTE MAXIMUM RATINGS (T_J=25°C unless otherwise noted)

| Characteristics | Symbol | Ratings | Unit |
|--------------------------------------|-----------|------------------|------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ±12 | V |
| Continuous Drain Current | I_D | $T_C=25^\circ C$ | 5.8 |
| | | $T_C=70^\circ C$ | 4.5 |
| Drain Current Pulsed(Note 1) | I_{DM} | 23.2 | A |
| Power Dissipation | P_D | $T_A=25^\circ C$ | 1.2 |
| | | $T_A=70^\circ C$ | 0.8 |
| Operation Junction Temperature Range | T_J | -55 to+150 | °C |
| Storage Temperature Range | T_{STG} | -55 to+150 | °C |

THERMAL CHARACTERISTICS

| Characteristics | Symbol | MAX | Unit |
|---|-----------------|-----|------|
| Thermal Resistance, Junction-to-Ambient(Note 2) | $R_{\theta JA}$ | 100 | °C/W |

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch2 pad of 2oz copper FR4 PCB.



ELECTRICAL CHARACTERISTICS

Off Characteristics

| Characteristics | Symbol | Test conditions | Min. | Typ. | Max. | Unit |
|---------------------------------|------------|---------------------------|------|------|------|---------|
| Drain -Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 30 | 33 | -- | V |
| Drain-Source Leakage Current | I_{DSS} | $V_{DS}=30V, V_{GS}=0V$ | -- | -- | 1.0 | μA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=+12V, V_{DS}=0V$ | -- | -- | 100 | nA |
| Gate-Source Leakage Current | I_{GSS} | $V_{GS}=-12V, V_{DS}=0V$ | -- | -- | -100 | nA |

On Characteristics

| | | | | | | |
|--|--------------|-------------------------------|-----|-----|-----|------------|
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 0.5 | 0.8 | 1.3 | V |
| Static Drain- Source On State Resistance (Note3) | $R_{DS(on)}$ | $V_{GS}=10V, I_D=5.8A$ | -- | -- | 30 | m Ω |
| | | $V_{GS}=4.5V, I_D=5A$ | -- | -- | 35 | |
| | | $V_{GS}=2.5V, I_D=4A$ | -- | -- | 45 | |
| Forward Transconductance | g_{FS} | $V_{DS}=10V, I_D=3A$ | 5 | 7 | -- | S |

Dynamic Characteristics

| | | | | | | |
|------------------------------|-----------|--|----|-----|----|----|
| Input Capacitance | C_{iss} | $V_{DS}=15V, V_{GS}=10V, f=1MHz$ (Note4) | -- | 663 | -- | pF |
| Output Capacitance | C_{oss} | | -- | 52 | -- | |
| Reverse Transfer Capacitance | C_{rss} | | -- | 43 | -- | |

Switching Characteristics

| | | | | | | |
|---------------------|--------------|---|----|-----|----|----|
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}=15V, V_{GS}=10V, R_L=2.6\ ohm,$ $R_{GEN}=3ohm$ (Note4) | -- | 3 | -- | ns |
| Turn-on Rise Time | t_r | | -- | 2.5 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 25 | -- | |
| Turn-off Fall Time | t_f | | -- | 4 | -- | |
| Total Gate Charge | Q_g | $V_{DD}=15V, V_{GS}=4.5V,$ $I_D=5.8A$ (Note4) | -- | 6 | -- | nC |
| Gate-Source Charge | Q_{gs} | | -- | 1.3 | -- | |
| Gate-Drain Charge | Q_{gd} | | -- | 1.8 | -- | |

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

| Characteristics | Symbol | Test conditions | Min. | Typ. | Max. | Unit |
|---------------------------|----------|--|------|------|------|------|
| Continuous Source Current | I_S | Integral Reverse P-N Junction Diode in the MOSFET(Note5) | -- | -- | 5.8 | A |
| Diode Forward Voltage | V_{SD} | $I_S=1A, V_{GS}=0V$ (Note3) | -- | 0.8 | 1.2 | V |

NOTE:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. $R_{\theta JA}$ is measured with the device mounted on a 1inch2 pad of 2oz copper FR4 PCB.
3. Pulse test:pulse width $\leq 300\mu s$,duty cycle $\leq 0.5\%$.
4. Guaranteed by design, not subject to production testing.
5. Surface mounted on 1" x 1" FR4 board.

Typical Performance Characteristics

Figure 1: Output Characteristics

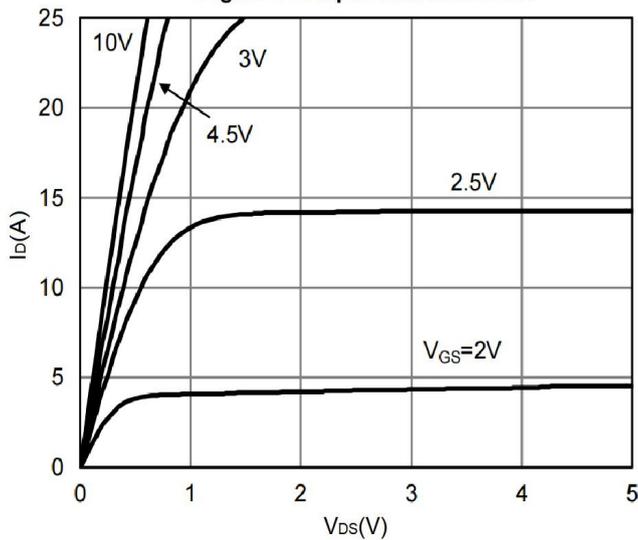


Figure 2: Transfer Characteristics

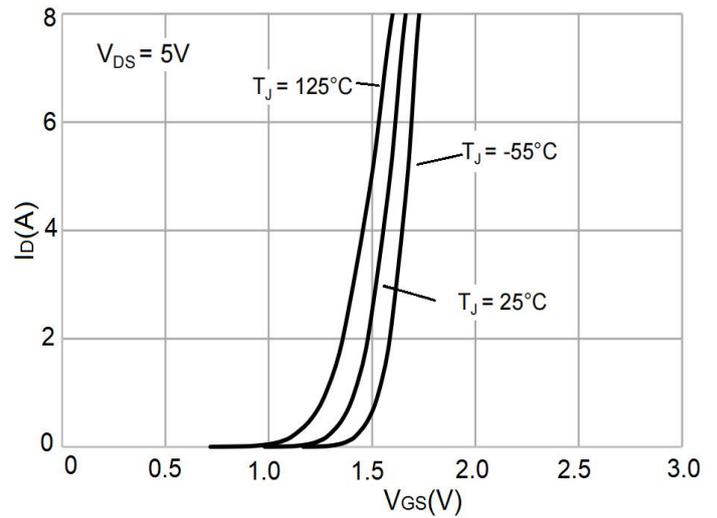


Figure 3: On-resistance vs. Drain Current

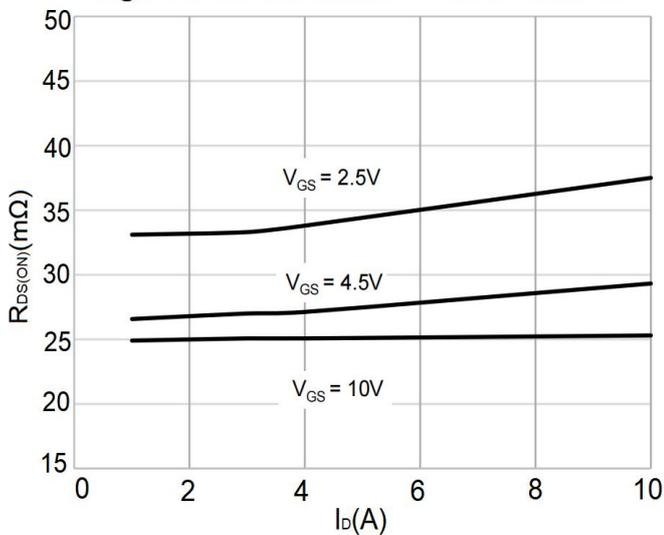


Figure 4: On-Resistance Variation with Vgs

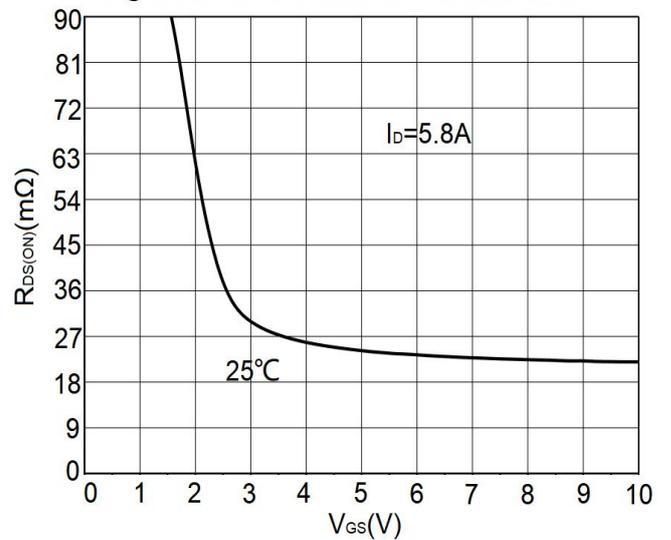
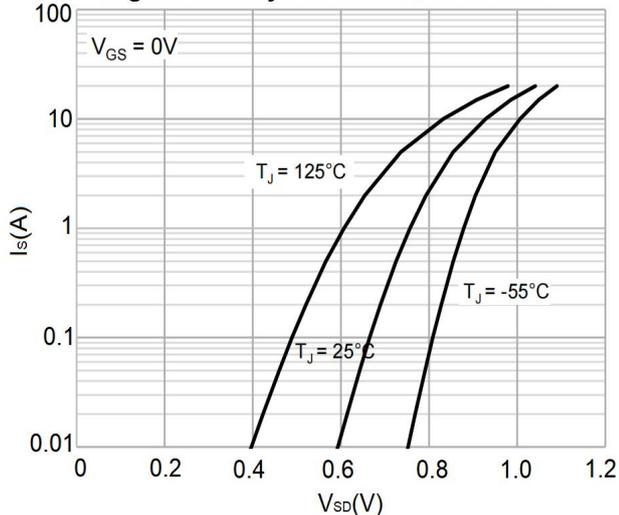
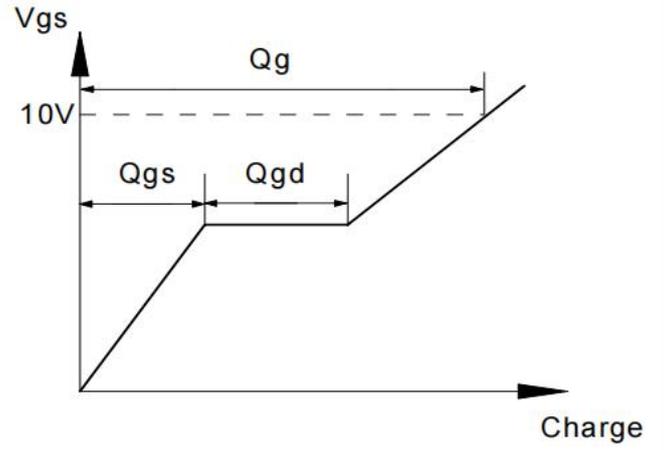
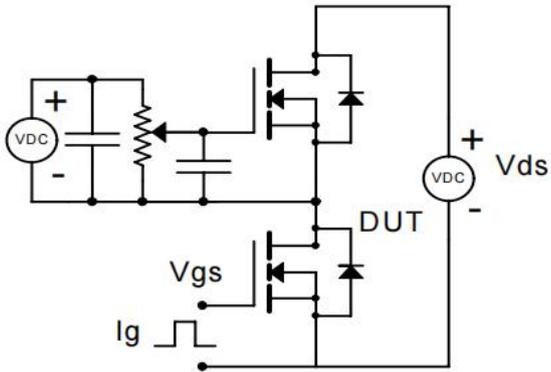


Figure 5: Body Diode Characteristics

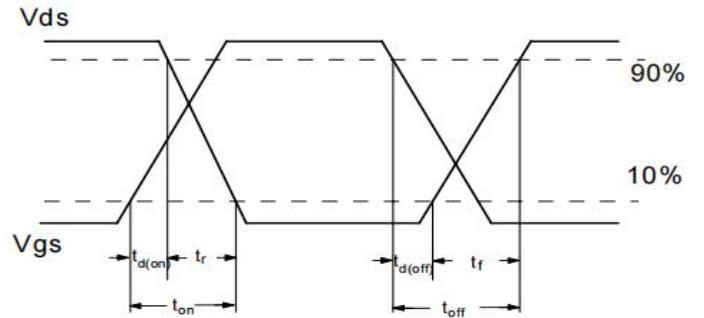
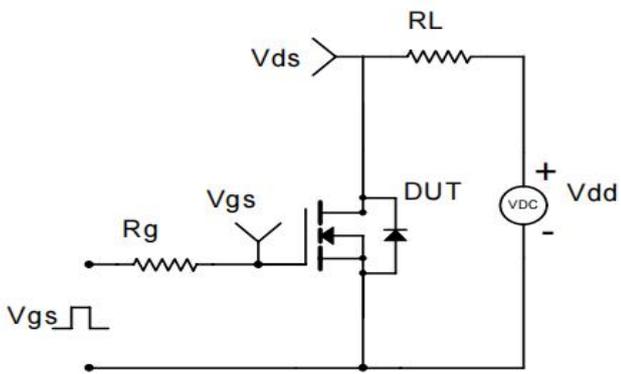


Test Circuit

Gate Charge Test Circuit & Waveform



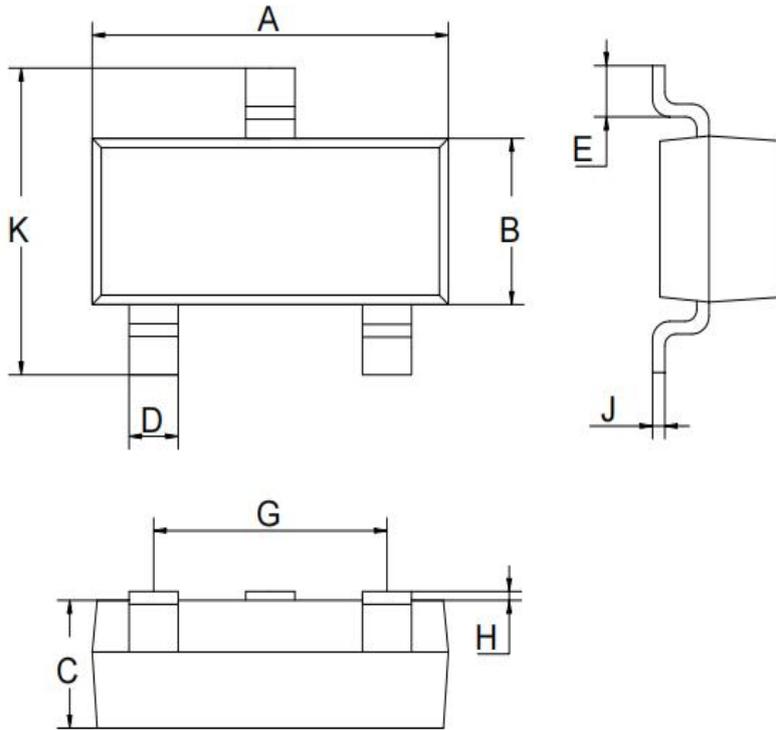
Resistive Switching Test Circuit & Waveform



Package Dimensions of SOT-23

Package Dimensions of SOT-23

Unit:mm



| SYMBOL | MILIMETER | |
|--------|-----------|------|
| | MIN | MAX |
| A | 2.80 | 3.00 |
| B | 1.20 | 1.40 |
| C | 0.90 | 1.05 |
| D | 0.30 | 0.50 |
| E | 0.20 | 0.50 |
| G | 1.80 | 2.00 |
| H | 0.00 | 0.10 |
| J | 0.05 | 0.15 |
| K | 2.25 | 2.55 |

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