# ST3400SRG

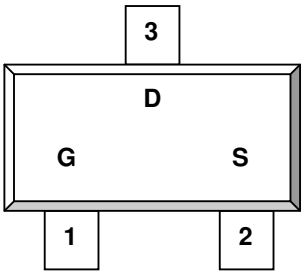
N Channel Enhancement Mode MOSFET

5.8A

## DESCRIPTION

The ST3400SRG is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density, DMOS trench technology.
This high-density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high side switching.

## PIN CONFIGURATION
## SOT-23

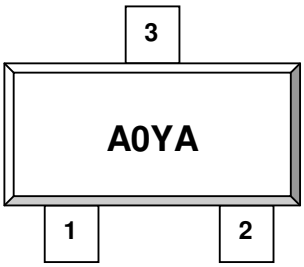



1.Gate 2.Source 3.Drain

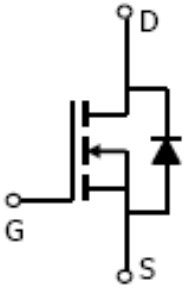
## FEATURE

- 30V/5.8A, $R_{DS(ON)}$ = 25mΩ (Typ.) @$V_{GS}$ = 10V
- 30V/4.8A, $R_{DS(ON)}$ = 30mΩ @$V_{GS}$ = 4.5V
- 30V/4.0A, $R_{DS(ON)}$ = 40mΩ @$V_{GS}$ = 2.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

## PART MARKING
## SOT-23




Y: Year Code A: Week Code



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**ABSOULTE MAXIMUM RATINGS** (Ta = 25℃ Unless otherwise noted )

| Parameter | | Symbol | Typical | Unit |
|---|---|---|---|---|
| Drain-Source Voltage | | $V_{DSS}$ | 30 | V |
| Gate-Source Voltage | | $V_{GSS}$ | ±12 | V |
| Continuous Drain CurrentTJ=150℃) | $T_A$=25℃<br>$T_A$=70℃ | $I_D$ | 5.8<br>3.5 | A |
| Pulsed Drain Current | | $I_{DM}$ | 25 | A |
| Continuous Source Current (Diode Conduction) | | $I_S$ | 1.7 | A |
| Power Dissipation | $T_A$=25℃<br>$T_A$=70℃ | $P_D$ | 2.0<br>1.3 | W |
| Operation Junction Temperature | | $T_J$ | 150 | ℃ |
| Storgae Temperature Range | | $T_{STG}$ | -55/150 | ℃ |
| Thermal Resistance-Junction to Ambient | | $R_{\theta JA}$ | 90 | ℃/W |



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**ELECTRICAL CHARACTERISTICS** ( Ta = 25℃ Unless otherwise noted )

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$=0V,$I_D$=250uA | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=VGS,$I_D$=250uA | 0.5 | | 1.5 | V |
| Gate Leakage Current | $I_{GSS}$ | $V_{DS}$=0V,$V_{GS}$=±12V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=24V,$V_{GS}$=0V | | | 1 | uA |
| | | $V_{DS}$=24V,$V_{GS}$=0V $T_J$=55℃ | | | 10 | |
| Drain-source On-Resistance | $R_{DS(on)}$ | $V_{GS}$=10V,$I_D$=5.8A<br>$V_{GS}$=4.5V,$I_D$=4.8A<br>$V_{GS}$=2.5V,$I_D$=4.0A | | 25<br>30<br>40 | | mΩ |
| Forward Transconductance | $g_{fs}$ | $V_{DS}$=4.5V,$I_D$=5.8A | | 12 | | S |
| Diode Forward Voltage | $V_{SD}$ | $I_S$=1.7A,$V_{GS}$=0V | | | 1.2 | V |
| **Dynamic** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=15V<br>$V_{GS}$=10V<br>$I_D$≡6.7A | | 9.7 | 18 | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1.6 | | |
| Gate-Drain Charge | $Q_{gd}$ | | | 3.1 | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=15V<br>$V_{GS}$=0V<br>F=1MHz | | 450 | | pF |
| Output Capacitance | $C_{oss}$ | | | 240 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 38 | | |
| Turn-On Time | $t_{d(on)}$<br>tr | $V_{DD}$=15V<br>$R_L$=15Ω<br>$I_D$=1.0A<br>$V_{GEN}$=10V<br>$R_G$=6Ω | | 7 | 15 | nS |
| | | | | 10 | 20 | |
| Turn-Off Time | $t_{d(off)}$<br>tf | | | 20 | 40 | |
| | | | | 11 | 20 | |



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**TYPICAL CHARACTERICTICS** (25℃ Unless noted)

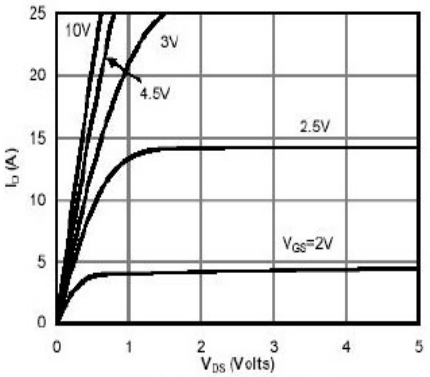

Fig 1: On-Region Characteristics

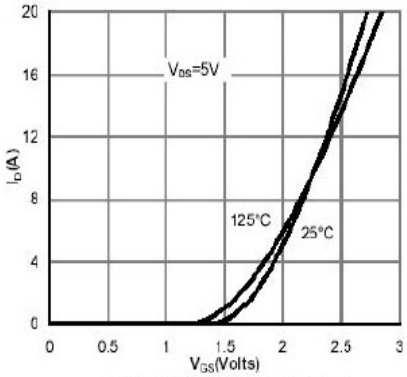

Figure 2: Transfer Characteristics

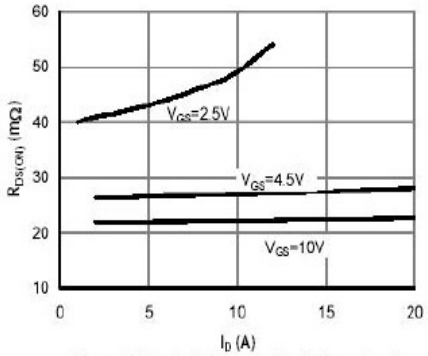

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

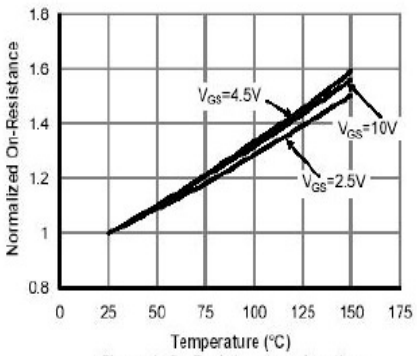

Figure 4: On-Resistance vs. Junction Temperature

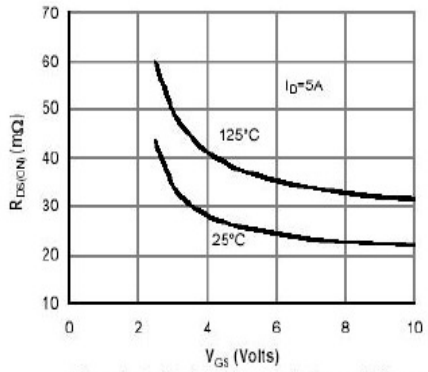

Figure 5: On-Resistance vs. Gate-Source Voltage

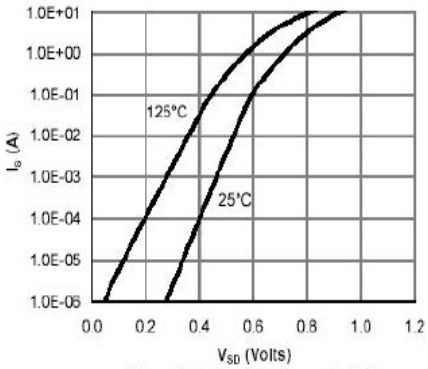

Figure 6: Body-Diode Characteristics



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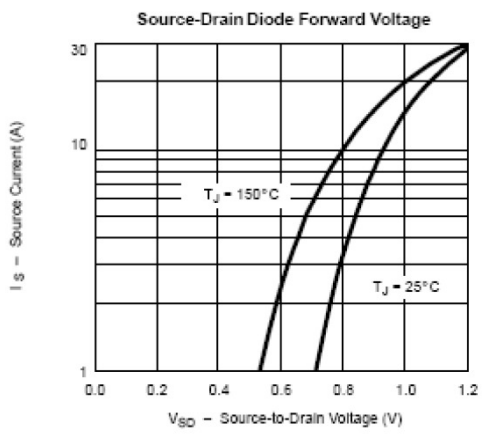


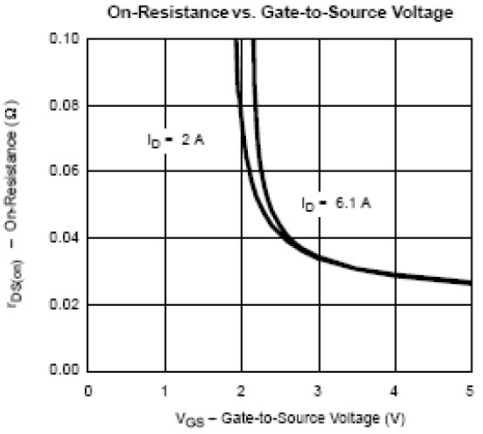


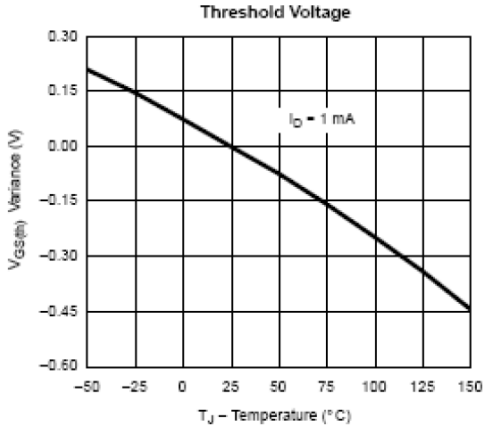


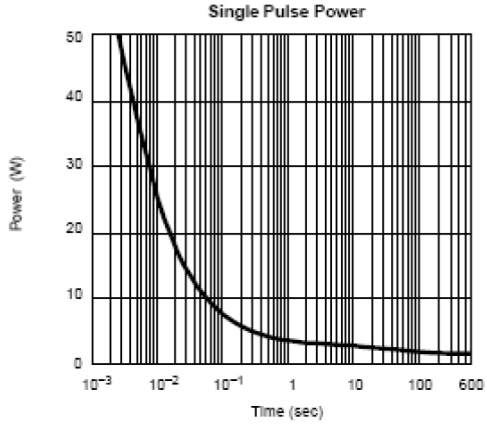


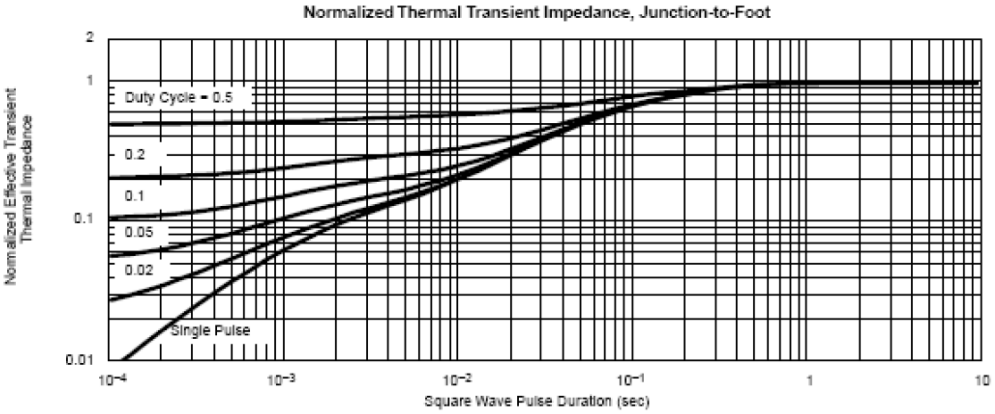




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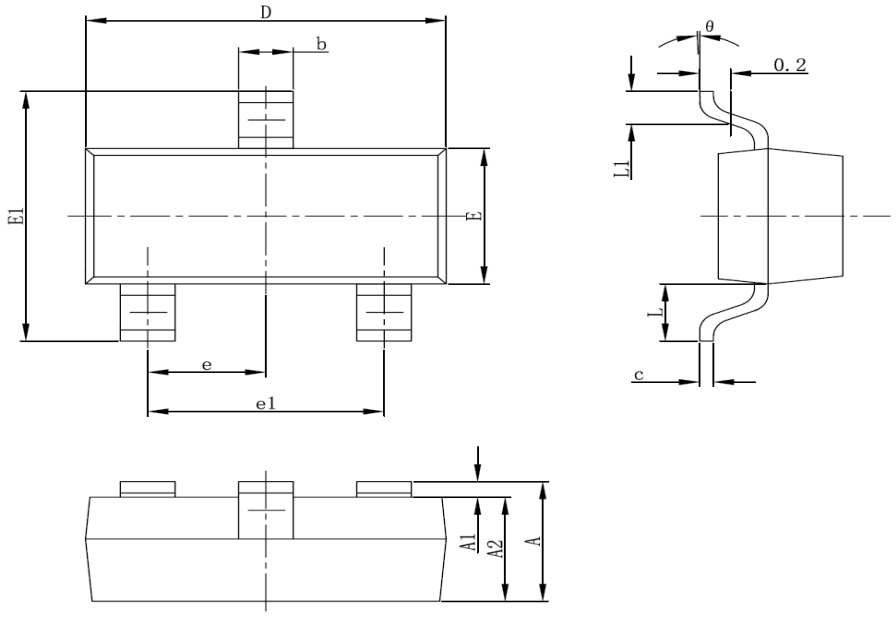
**SOT-23 PACKAGE OUTLINE**




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| θ | 0° | 8° | 0° | 8° |



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