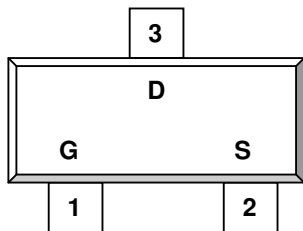


DESCRIPTION

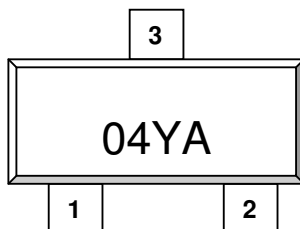
ST2304SRG is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management, other battery powered circuits, and low in-line power loss are required. The product is in a very small outline surface mount package.

PIN CONFIGURATION
SOT-23


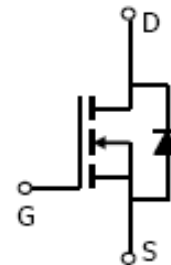
1.Gate 2.Source 3.Drain

FEATURE

- 30V/3.2A, $R_{DS(ON)} = 44\text{m-ohm}$ (Typ.) @VGS = 10.0V
- 30V/2.0A, $R_{DS(ON)} = 60\text{m-ohm}$ @VGS = 4.5V
- 30V/1.5A, $R_{DS(ON)} = 90\text{ m-ohm}$ @VGS = 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: Process Code


ORDERING INFORMATION

| Part Number | Package | Part Marking |
|-------------|---------|--------------|
| ST2304SRG | SOT-23 | 04YA |

※ Process Code : A ~ Z ; a ~ z

※ ST2304SRG S : SOT-23 ; R : Tape Reel ; G : Pb – Free



ST2304SRG 

N Channel Enhancement Mode MOSFET

3.2A

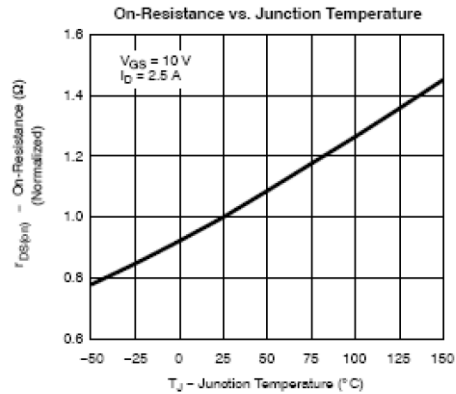
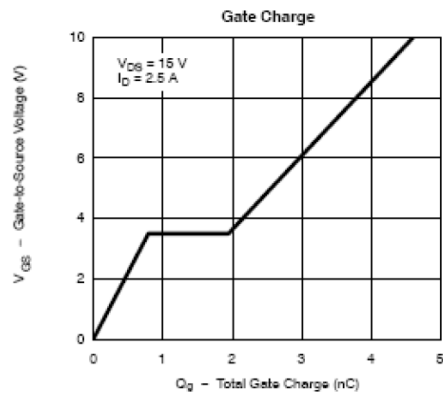
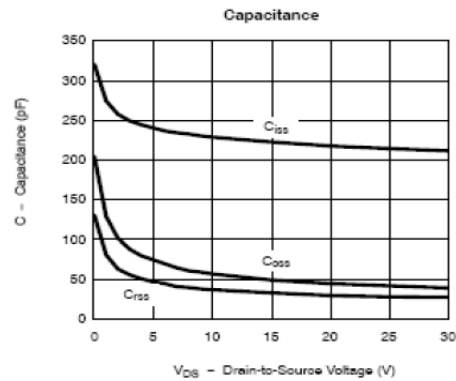
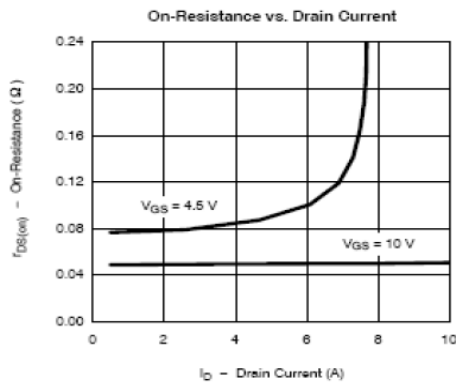
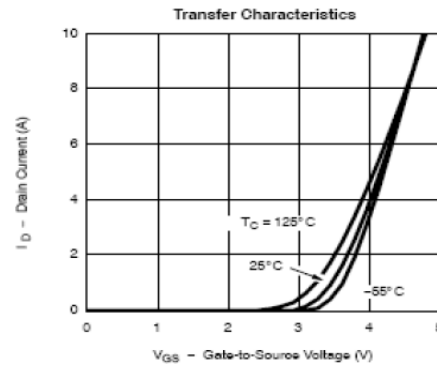
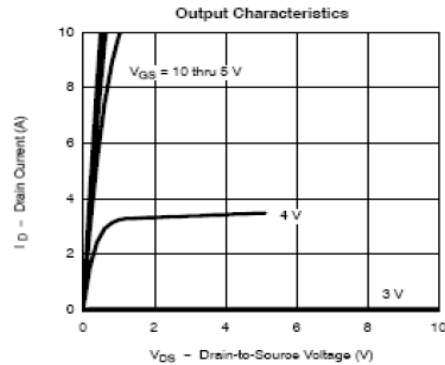
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

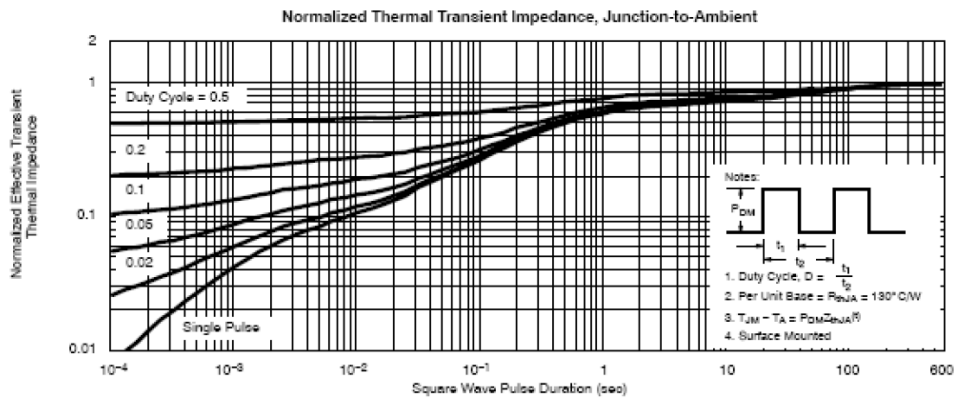
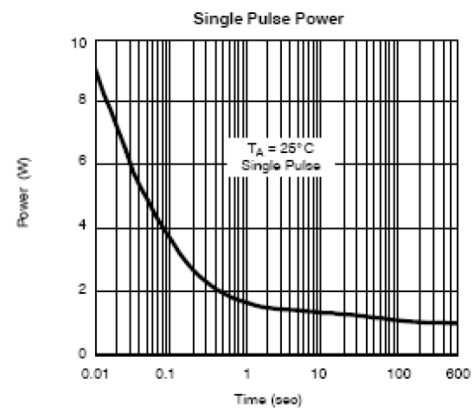
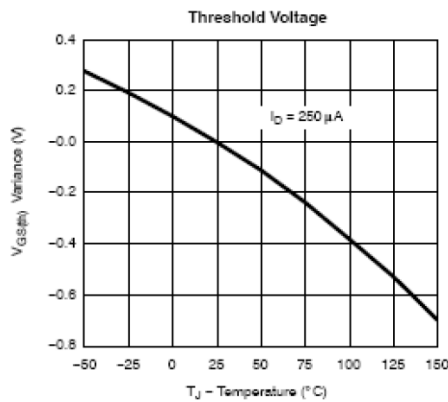
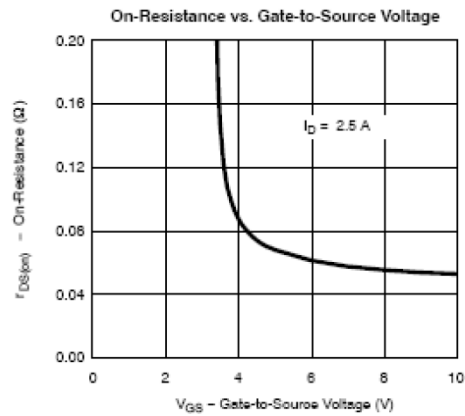
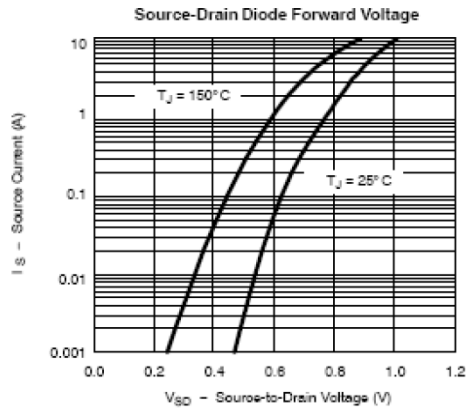
| Parameter | Symbol | Typical | Unit |
|--|------------------|------------------------------|------|
| Drain-Source Voltage | V _{DSS} | 30 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V |
| Continuous Drain Current (T _J =150°C) | I _D | T _A =25°C 3.2 | A |
| | | T _A =70°C 2.6 | |
| Pulsed Drain Current | I _{DM} | 10 | A |
| Continuous Source Current (Diode Conduction) | I _S | 1.20 | A |
| Power Dissipation | P _D | T _A =25°C 1.20 | W |
| | | T _A =70°C 0.8 | |
| Operation Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55/150 | °C |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 100 | °C/W |

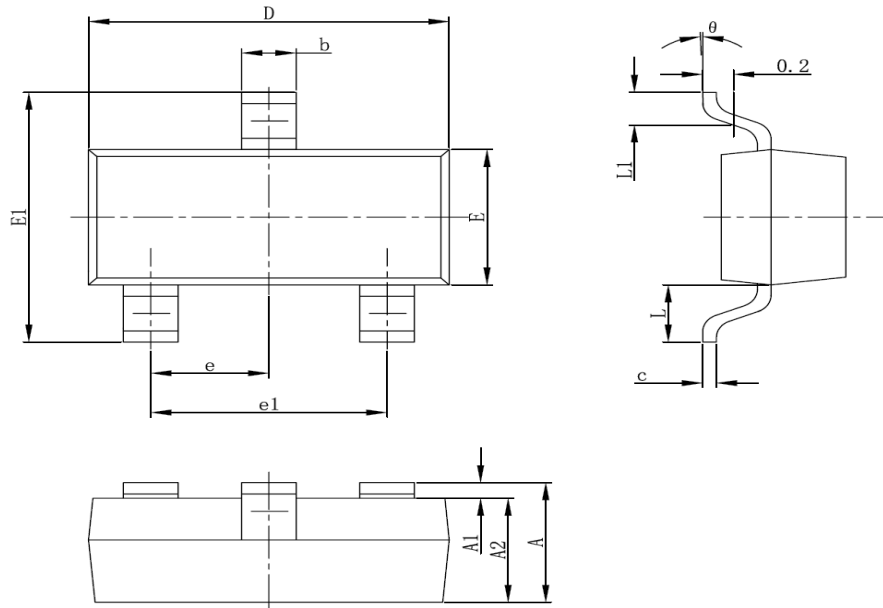
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ Unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---------------------------------|-----------------------|--|--------|-------------------------|-------------------------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 3.0 | V |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 20V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=30V, V_{GS}=1.0V$ | | | 1 | uA |
| | | $V_{DS}=30V, V_{GS}=0V$ $T_J=55^\circ\text{C}$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 4.5V, V_{GS}=10V$ $V_{DS} \geq 4.5V, V_{GS}=4.5V$ | 6 4 | | | A |
| Drain-source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=3.2A$ $V_{GS}=4.5V, I_D=2.0A$ $V_{GS}=2.5V, I_D=1.5A$ | | 0.044 0.060 0.090 | 0.052 0.067 0.100 | Ω |
| Forward Transconductance | g_{fs} | $V_{DS}=4.5V, I_D=2.5V$ | | 4.6 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=1.25A, V_{GS}=0V$ | | | 1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=15V$ $V_{GS}=10V$ $I_D=2.5A$ | | 4.5 | 10 | nC |
| Gate-Source Charge | Q_{gs} | | | 0.8 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.0 | | |
| Input Capacitance | C_{iss} | $V_{DS}=15V$ $V_{GS}=0V$ $F=1\text{MHz}$ | | 240 | | pF |
| Output Capacitance | C_{oss} | | | 110 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 17 | | |
| Turn-On Time | $t_{d(on)}$ t_r | $V_{DD}=15V$ $R_L=15\Omega$ $I_D=1.0A$ $V_{GEN}=10V$ $R_G=6\Omega$ | | 8.0 | 20 | nS |
| Turn-Off Time | $t_{d(off)}$ t_f | | | 12 | 30 | |
| | | | | 17 | 35 | |
| | | | | 8.0 | 20 | |

TYPICAL CHARACTERISTICS (25°C Unless noted)



TYPICAL CHARACTERISTICS (25°C Unless noted)


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° |