



ST2301A

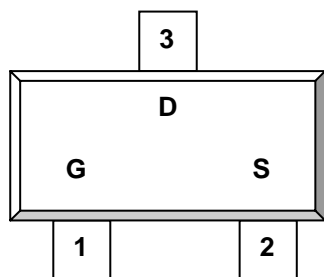
P Channel Enhancement Mode MOSFET

-3.0A

DESCRIPTION

ST2301A is the P-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**



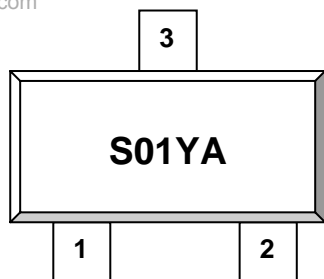
1.Gate 2.Source 3.Drain

FEATURE

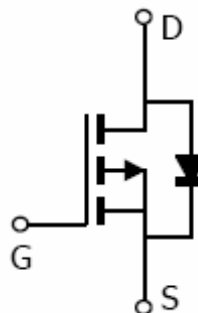
- -20V/-2.8A, $R_{DS(ON)} = 80m\Omega$ (Typ.) @ $V_{GS} = -4.5V$
- -20V/-2.0A, $R_{DS(ON)} = 120m\Omega$ @ $V_{GS} = -2.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

**PART MARKING
SOT-23**

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Y: Year Code A: Process Code



ORDERING INFORMATION

| Part Number | Package | Part Marking |
|-------------|---------|--------------|
| ST2301SRG | SOT-23 | S01YA |

- ※ Process Code : A ~ Z ; a ~ z
- ※ ST2301SRG : S : SOT23 R : Tape Reel ; G : Pb - Free

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120 Bentley Square, Mountain View, Ca 94040 USA
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-3.0A**ABSOLUTE MAXIMUM RATINGS** (Ta = 25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit |
|--|------------------|----------------------|------|
| Drain-Source Voltage | V _{DSS} | -20 | V |
| Gate-Source Voltage | V _{GSS} | ±12 | V |
| Continuous Drain Current (T _J =150°C) | I _D | T _A =25°C | -3.0 |
| | | T _A =70°C | -2.0 |
| Pulsed Drain Current | I _{DM} | -10 | A |
| Continuous Source Current (Diode Conduction) | I _S | -1.6 | A |
| Power Dissipation | P _D | T _A =25°C | 1.25 |
| | | 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} | 120 | °C/W |

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-3.0A**ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)**

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---------------------------------|-----------------------|--|----------|----------------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=-250\mu A$ | -20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -0.45 | | -1.5 | V |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=-20V, V_{GS}=0V$ | | | -1 | uA |
| | | $V_{DS}=-20V, V_{GS}=0V$ $T_J=55^\circ C$ | | | -10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS}\leq -5V, V_{GS}=-4.5V$ $V_{DS}\leq -5V, V_{GS}=-2.5V$ | -6 -3 | | | A |
| Drain-source On-Resistance | $R_{DS(on)}$ | $V_{GS}=-2.5V, I_D=-2.0A$ $V_{GS}=-4.5V, I_D=-2.8A$ | | 0.080 0.120 | | Ω |
| Forward Transconductance | g_{fs} | $V_{DS}=-5V, I_D=-2.8V$ | | 6.5 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=-1.6A, V_{GS}=0V$ | | -0.8 | -1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=-6V$ $V_{GS}=-4.5V$ $I_D=-2.8A$ | | 5.8 | 10 | nC |
| Gate-Source Charge | Q_{gs} | | | 0.85 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.7 | | |
| Input Capacitance | C_{iss} | $V_{DS}=-6V$ $V_{GS}=0V$ $F=1MHz$ | | 415 | | pF |
| Output Capacitance | C_{oss} | | | 223 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 87 | | |
| Turn-On Time | $t_{d(on)}$ t_r | $V_{DD}=-6V$ $R_L=6\Omega$ $I_D=-1A$ $V_{GEN}=-4.5V$ $R_G=6\Omega$ | | 13 | 25 | nS |
| | | | | 36 | 60 | |
| Turn-Off Time | $t_{d(off)}$ t_f | | | 42 | 70 | |
| | | | | 34 | 60 | |



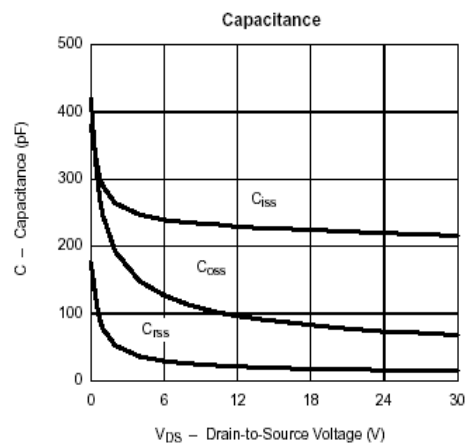
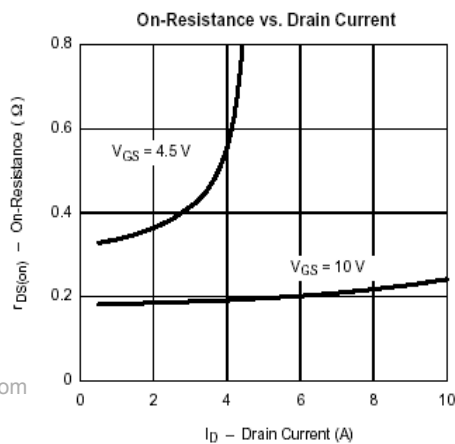
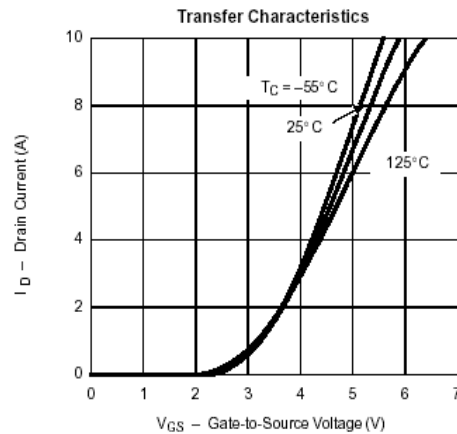
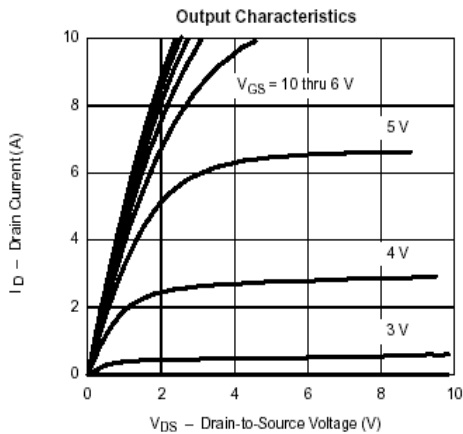
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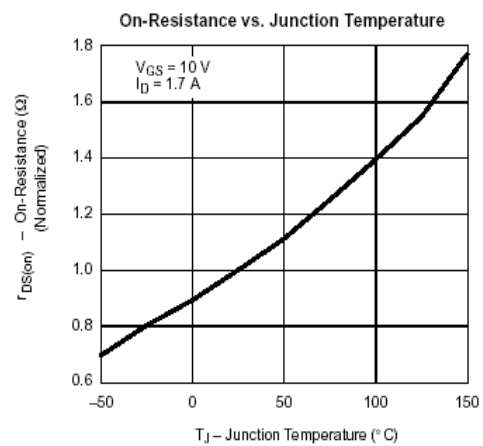
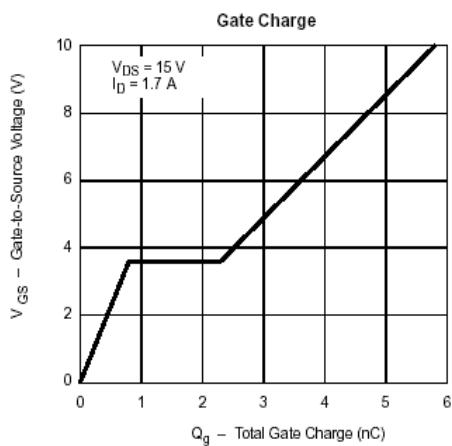
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TYPICAL CHARACTERISTICS (25°C Unless noted)



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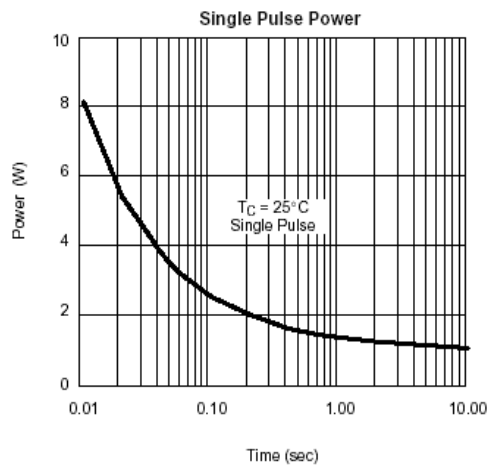
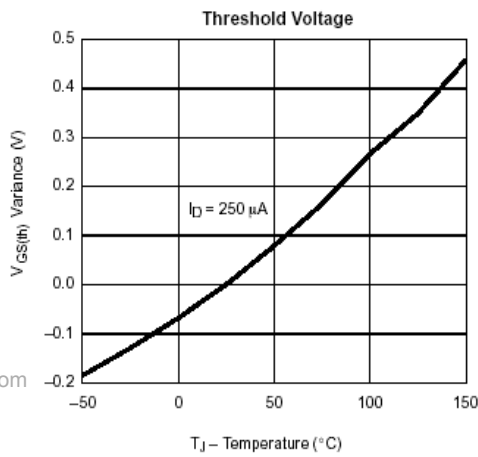
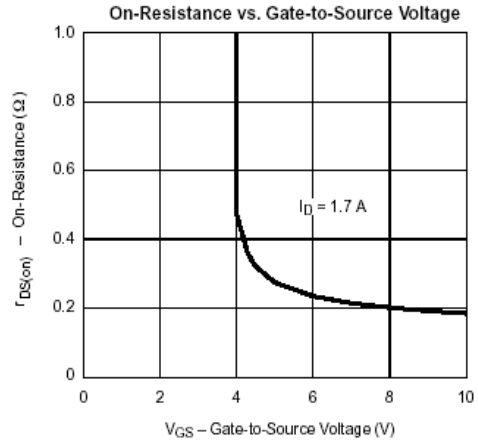
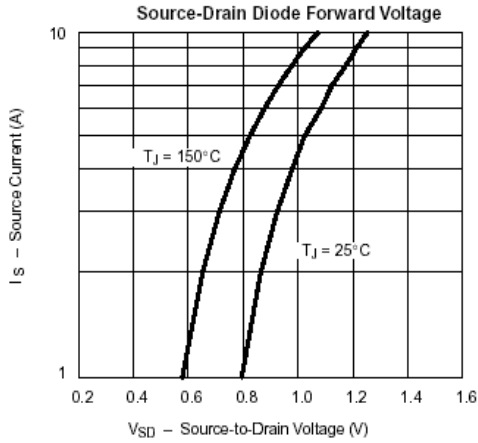


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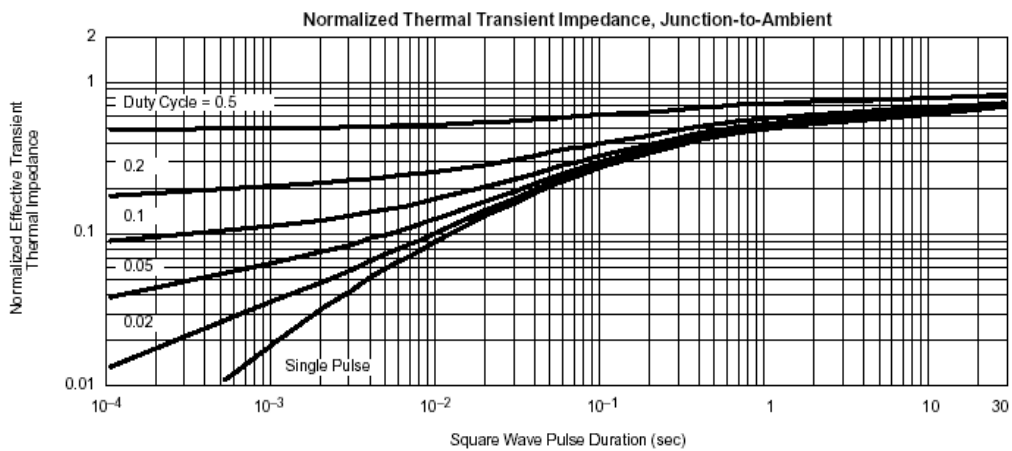
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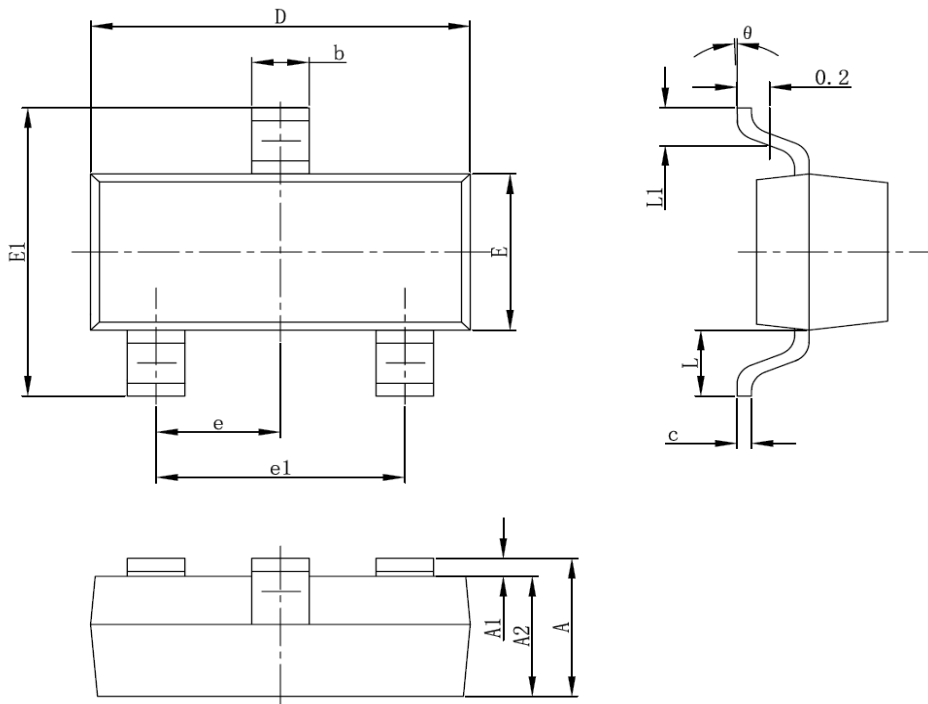
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-3.0A**SOT-23 PACKAGE OUTLINE**

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| 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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ST2301A 2005. V1