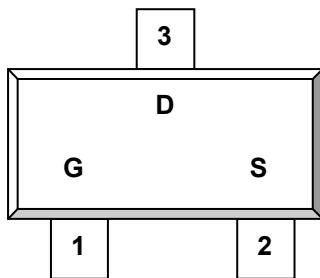


DESCRIPTION

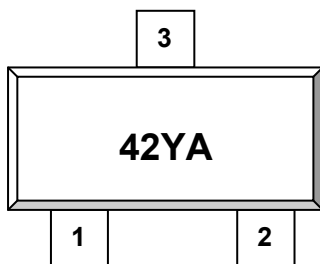
The ST2300 is the N-Channel logic enhancement mode power field effect transistor is produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other batter powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

PIN CONFIGURATION
SOT-23-3L


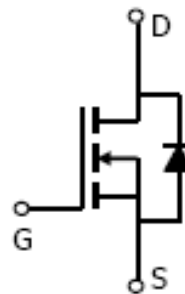
1.Gate 2.Source 3.Drain

FEATURE

- 20V/6.0A, $R_{DS(ON)} = 22m\Omega$ (Typ.) @ $V_{GS} = 10V$
- 20V/5.0A, $R_{DS(ON)} = 36m\Omega$ @ $V_{GS} = 4.5V$
- 20V/4.5A, $R_{DS(ON)} = 45m\Omega$ @ $V_{GS} = 2.5V$
- 20V/4.0A, $R_{DS(ON)} = 60m\Omega$ @ $V_{GS} = 1.8V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- SOT-23-3L package design

PART MARKING
SOT-23-3L


Y: Year Code A: Process Code


ORDERING INFORMATION

| Part Number | Package | Part Marking |
|-------------|-----------|--------------|
| ST2300 | SOT-23-3L | 42YA |

※ Process Code : A ~ Z ; a ~ z



ST2300  Lead-free

N Channel Enhancement Mode MOSFET

6.0A

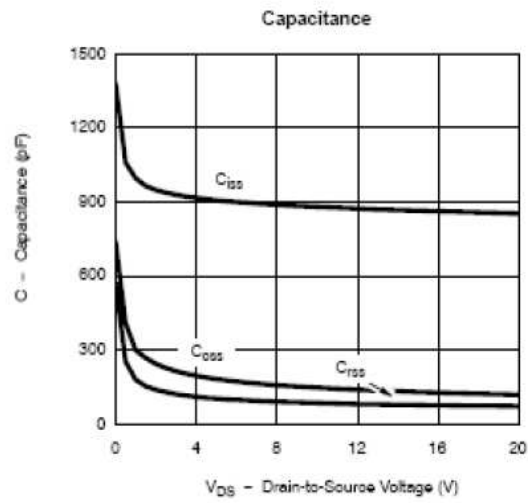
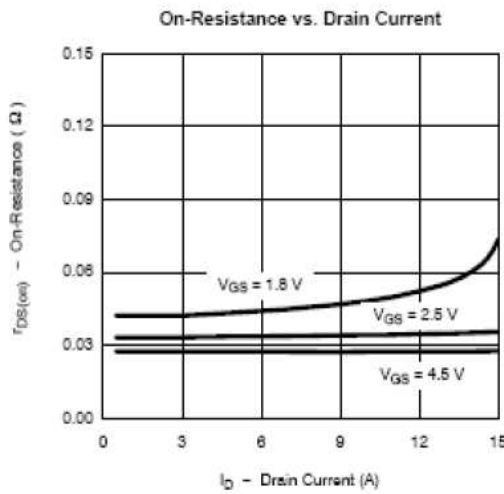
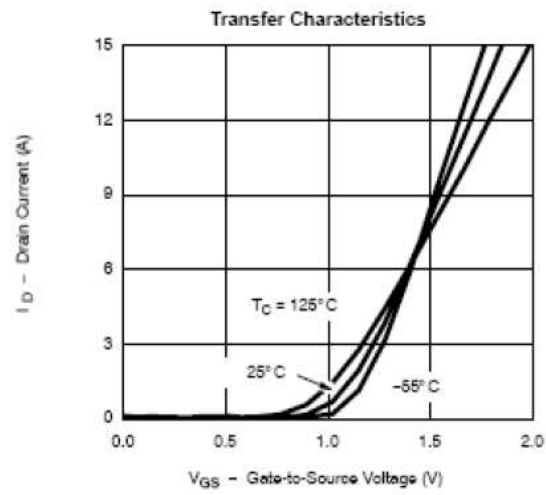
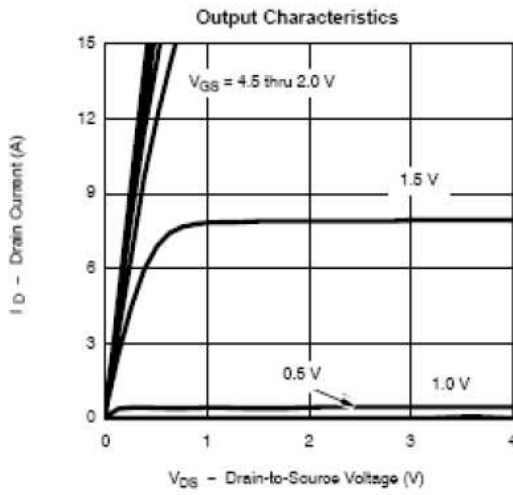
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

| 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) | T _A =25°C | I _D | 6.0 | A |
| | T _A =70°C | | 3.0 | |
| Pulsed Drain Current | | I _{DM} | 13 | A |
| Continuous Source Current (Diode Conduction) | | I _S | 1.0 | A |
| Power Dissipation | T _A =25°C | P _D | 1.25 | 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} | 140 | °C/W |

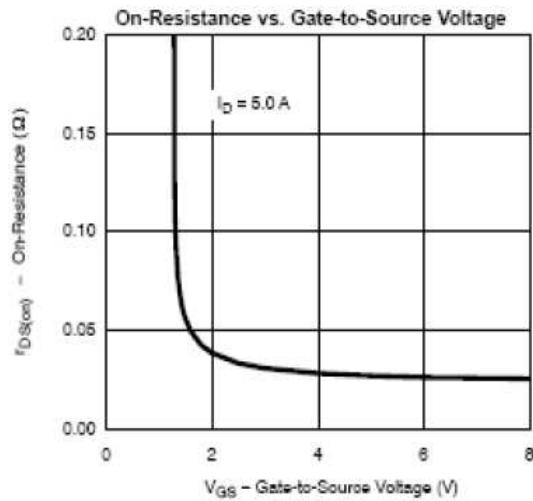
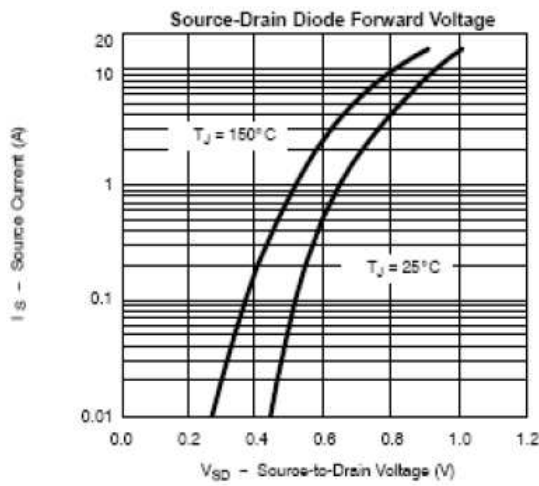
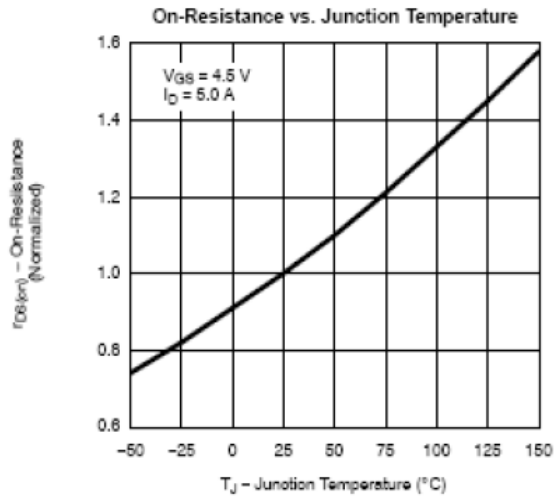
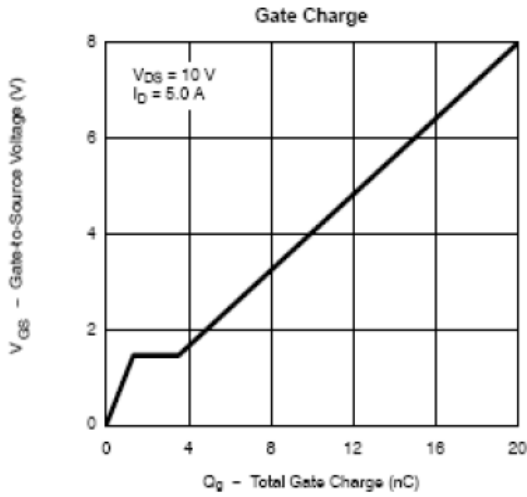
ELECTRICAL CHARACTERISTICS (Ta = 25°C Unless otherwise noted)

| 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 | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 0.4 | | 1.0 | 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 |
| | | $V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ C$ | | | 10 | |
| Drain-source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=6.0A$ $V_{GS}=4.5V, I_D=5.0A$ $V_{GS}=2.5V, I_D=4.5A$ $V_{GS}=1.8V, I_D=4.0A$ | | 0.022 0.036 0.045 0.060 | | Ω |
| Forward Transconductance | g_{fs} | $V_{DS}=15V, I_D=5.0A$ | | 30 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=1.7A, V_{GS}=0V$ | | 0.9 | 1.3 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=10V$ $V_{GS}=4.5V$ $I_D=5A$ | | 10 | 13 | nC |
| Gate-Source Charge | Q_{gs} | | | 1.4 | | |
| Gate-Drain Charge | Q_{gd} | | | 2.1 | | |
| Input Capacitance | C_{iss} | $V_{DS}=10V$ $V_{GS}=0V$ $F=1MHz$ | | 600 | | pF |
| Output Capacitance | C_{oss} | | | 120 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 100 | | |
| Turn-On Time | $t_{d(on)}$ t_r | $V_{DD}=10V$ $R_L=10\Omega$ $I_D=1A$ $V_{GEN}=4.5V$ $R_G=6\Omega$ | | 15 | 25 | nS |
| | | | | 40 | 60 | |
| Turn-Off Time | $t_{d(off)}$ t_f | | | 45 | 65 | |
| | | | | 30 | 40 | |

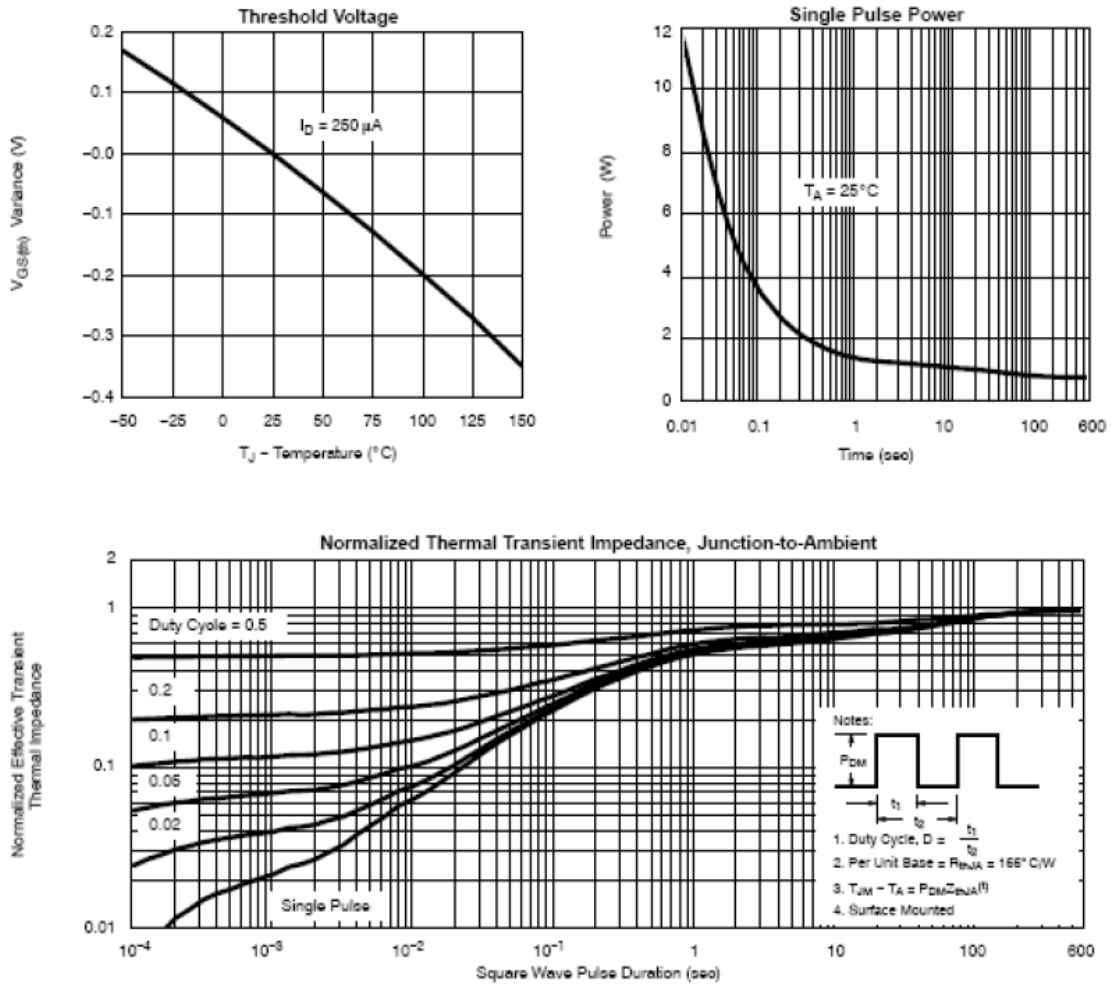
TYPICAL CHARACTERISTICS (25°C Unless noted)

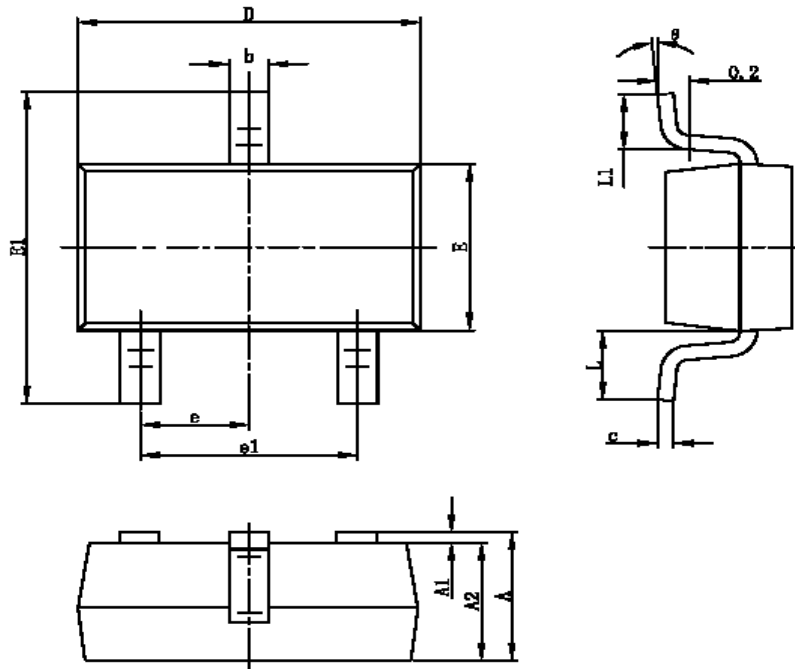


TYPICAL CHARACTERISTICS (25°C Unless noted)



TYPICAL CHARACTERISTICS



SOT-23-3L PACKAGE OUTLINE


| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.400 | 0.012 | 0.016 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.700REF | | 0.028REF | |
| L1 | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |