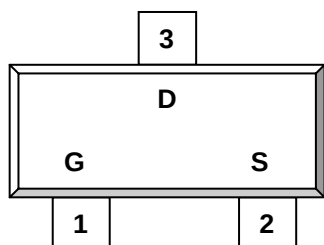


## DESCRIPTION

ST2305A 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-23-3L

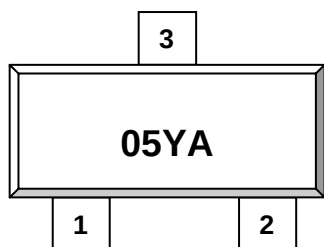


1.Gate 2.Source 3.Drain

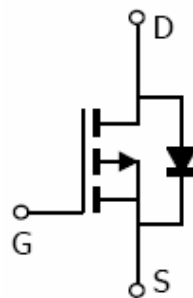
## FEATURE

- -15V/-3.5A,  $R_{DS(ON)} = 45\text{m-ohm}$  (Typ.) @VGS = -4.5V
- -15V/-3.0A,  $R_{DS(ON)} = 55\text{m-ohm}$  @VGS = -2.5V
- -15V/-2.0A,  $R_{DS(ON)} = 90\text{m-ohm}$  @VGS=-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 |
|--------------|-----------|--------------|
| ST2305AS23RG | SOT-23-3L | 05YA         |

※ Process Code : A ~ Z ; a ~ z

※ ST2305AS23RG S : SOT-23-3L ; R : Tape Reel ; G : Pb – Free

STANSON TECHNOLOGY

120 Bentley Square, Mountain View, Ca 94040 USA

www.stansontech.com

**ST2305A**

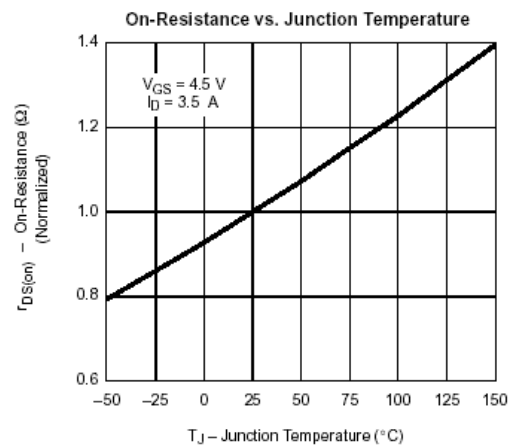
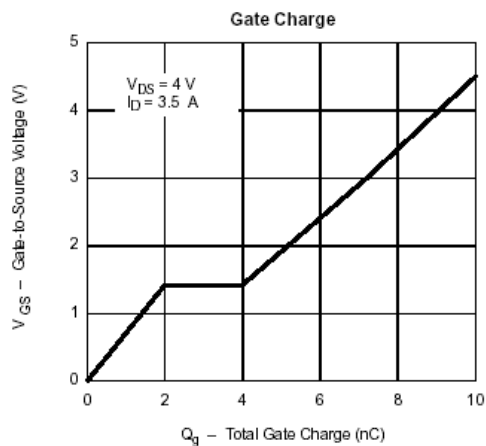
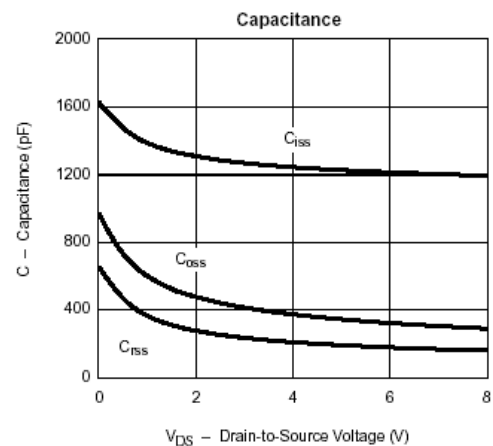
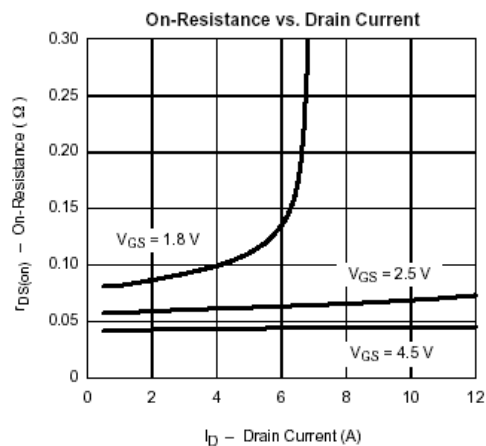
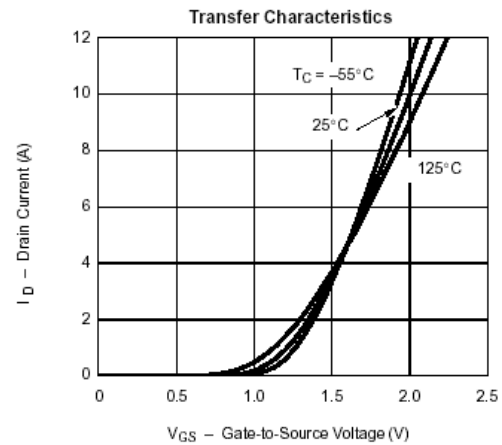
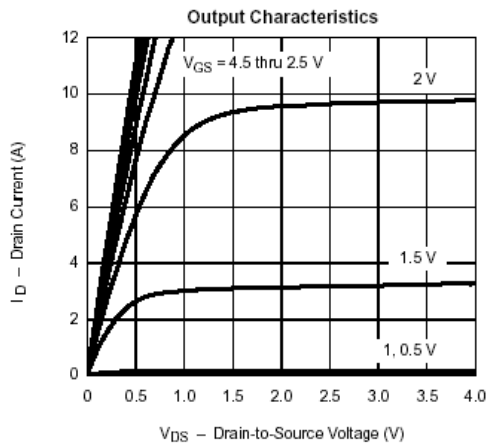
P Channel Enhancement Mode MOSFET

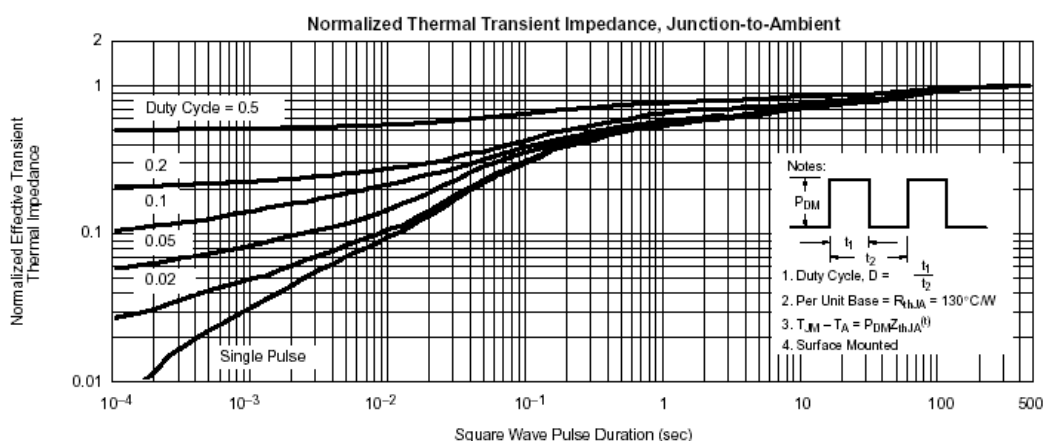
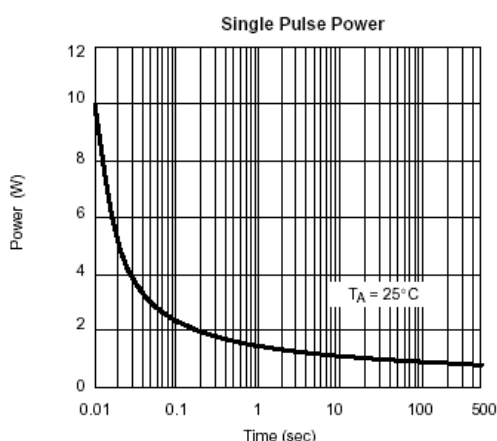
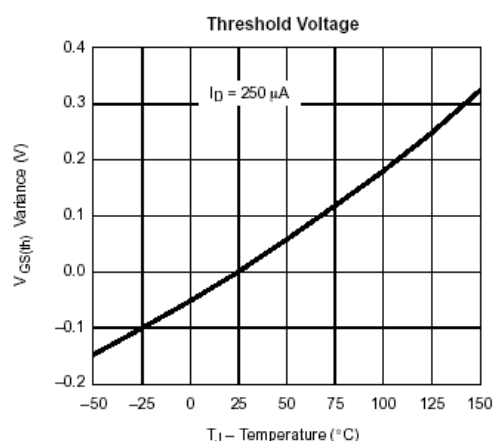
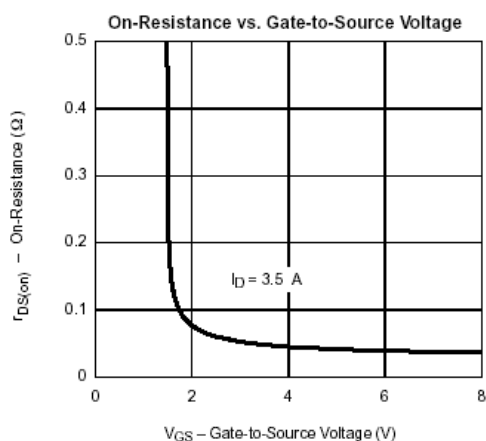
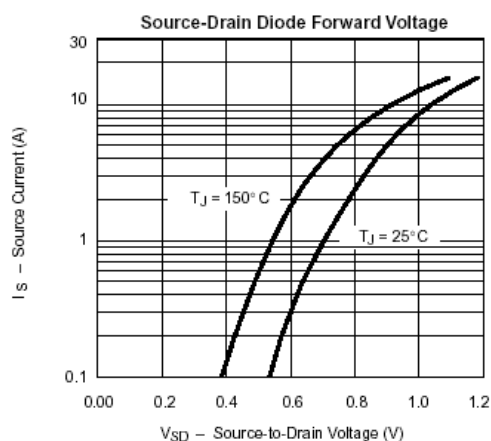
**-3.5A****ABSOLUTE MAXIMUM RATINGS** (Ta = 25°C Unless otherwise noted )

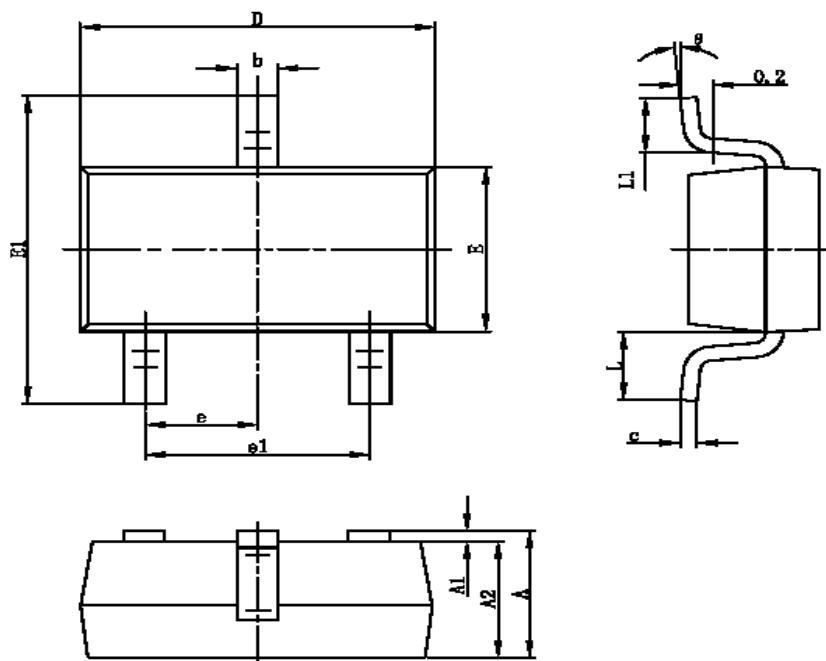
| Parameter                                         |                                                | Symbol           | Typical      | Unit |
|---------------------------------------------------|------------------------------------------------|------------------|--------------|------|
| Drain-Source Voltage                              |                                                | V <sub>DSS</sub> | -15          | V    |
| Gate-Source Voltage                               |                                                | V <sub>GSS</sub> | ±12          | V    |
| Continuous Drain Current (T <sub>J</sub> = 150°C) | T <sub>A</sub> = 25°C<br>T <sub>A</sub> = 70°C | I <sub>D</sub>   | -3.5<br>-2.8 | A    |
| Pulsed Drain Current                              |                                                | I <sub>DM</sub>  | -10          | A    |
| Continuous Source Current (Diode Conduction)      |                                                | I <sub>S</sub>   | -1.6         | A    |
| Power Dissipation                                 | T <sub>A</sub> = 25°C<br>T <sub>A</sub> = 70°C | P <sub>D</sub>   | 1.25<br>0.8  | W    |
| Operation Junction Temperature                    |                                                | T <sub>J</sub>   | 150          | °C   |
| Storage Temperature Range                         |                                                | T <sub>STG</sub> | -55/150      | °C   |
| Thermal Resistance-Junction to Ambient            |                                                | R <sub>θJA</sub> | 120          | °C/W |

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

| Parameter                       | Symbol         | Condition                                                                           | Min      | Typ                    | Max       | Unit     |
|---------------------------------|----------------|-------------------------------------------------------------------------------------|----------|------------------------|-----------|----------|
| <b>Static</b>                   |                |                                                                                     |          |                        |           |          |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$  | $V_{GS}=0V, I_D=-250\mu A$                                                          | -15      |                        |           | V        |
| Gate Threshold Voltage          | $V_{GS(th)}$   | $V_{DS}=V_{GS}, I_D=-250\mu A$                                                      | -0.3     |                        | -1.5      | V        |
| Gate Leakage Current            | $I_{GSS}$      | $V_{DS}=0V, V_{GS}=\pm 12V$                                                         |          |                        | $\pm 100$ | nA       |
| Zero Gate Voltage Drain Current | $I_{DSS}$      | $V_{DS}=-20V, V_{GS}=0V$                                                            |          |                        | -1        | uA       |
|                                 |                | $V_{DS}=-20V, V_{GS}=0V$<br>$T_J=55^\circ C$                                        |          |                        | -10       |          |
| On-State Drain Current          | $I_{D(on)}$    | $V_{DS}\leq -5V, V_{GS}=-4.5V$<br>$V_{DS}\leq -5V, V_{GS}=-2.5V$                    | -6<br>-3 |                        |           | A        |
| Drain-source On-Resistance      | $R_{DS(on)}$   | $V_{GS}=-4.5V, I_D=-3.5A$<br>$V_{GS}=-2.5V, I_D=-2.0A$<br>$V_{GS}=-1.8V, I_D=-2.0A$ |          | 0.045<br>0.055<br>0.09 |           | $\Omega$ |
| Forward Transconductance        | $g_{fs}$       | $V_{DS}=-5V, I_D=-3.5V$                                                             |          | 8.5                    |           | S        |
| Diode Forward Voltage           | $V_{SD}$       | $I_S=-1.6A, V_{GS}=0V$                                                              |          | -0.8                   | -1.2      | V        |
| <b>Dynamic</b>                  |                |                                                                                     |          |                        |           |          |
| Total Gate Charge               | $Q_g$          | $V_{DS}=-10V$<br>$V_{GS}=-4.5V$<br>$I_D=-3.5A$                                      |          | 10                     | 12        | nC       |
| Gate-Source Charge              | $Q_{gs}$       |                                                                                     |          | 2                      |           |          |
| Gate-Drain Charge               | $Q_{gd}$       |                                                                                     |          | 2                      |           |          |
| Input Capacitance               | $C_{iss}$      | $V_{DS}=-10V$<br>$V_{GS}=0V$<br>$F=1MHz$                                            |          | 485                    |           | pF       |
| Output Capacitance              | $C_{oss}$      |                                                                                     |          | 90                     |           |          |
| Reverse Transfer Capacitance    | $C_{rss}$      |                                                                                     |          | 40                     |           |          |
| Turn-On Time                    | $t_{d(on)tr}$  | $V_{DD}=-10V$<br>$R_L=6\Omega$<br>$I_D=-1.0A$<br>$V_{GEN}=-4.5V$<br>$R_G=6\Omega$   |          | 10                     | 18        | nS       |
|                                 |                |                                                                                     |          | 13                     | 22        |          |
|                                 |                |                                                                                     |          | 18                     | 24        |          |
| Turn-Off Time                   | $t_{d(off)tf}$ |                                                                                     |          | 15                     | 20        |          |

**TYPICAL CHARACTERISTICS (25°C Unless noted)**


**TYPICAL CHARACTERISTICS (25°C Unless noted)**


**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°    |