



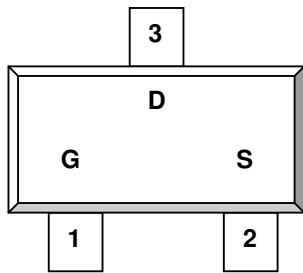
# AMS3400SRG

## DESCRIPTION

The AMS3400SRG 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

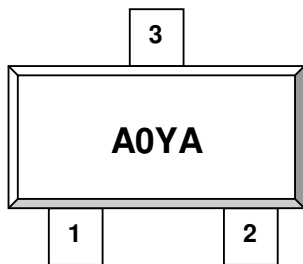


1.Gate 2.Source 3.Drain

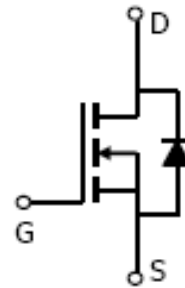
## FEATURE

- 30V/5.8A,  $R_{DS(ON)} = 25m\Omega$  (Typ.)  
@ $V_{GS} = 10V$
- 30V/4.8A,  $R_{DS(ON)} = 30m\Omega$   
@ $V_{GS} = 4.5V$
- 30V/4.0A,  $R_{DS(ON)} = 40m\Omega$   
@ $V_{GS} = 2.5V$
- 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



Y: Year Code A: Week Code





## AMS3400SRG

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

| Parameter                                        |                                              | Symbol           | Typical    | Unit |
|--------------------------------------------------|----------------------------------------------|------------------|------------|------|
| Drain-Source Voltage                             |                                              | V <sub>DSS</sub> | 30         | 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>   | 5.8<br>3.5 | A    |
| Pulsed Drain Current                             |                                              | I <sub>DM</sub>  | 25         | A    |
| Continuous Source Current (Diode Conduction)     |                                              | I <sub>S</sub>   | 1.7        | A    |
| Power Dissipation                                | T <sub>A</sub> =25°C<br>T <sub>A</sub> =70°C | P <sub>D</sub>   | 2.0<br>1.3 | 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> | 90         | °C/W |



# AMS3400SRG

**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          | $V_{GS(th)}$   | $V_{DS}=V_{GS}, I_D=250\mu A$                                                  | 0.5 |                | 1.5       | V          |
| Gate Leakage Current            | $I_{GSS}$      | $V_{DS}=0V, V_{GS}=\pm 12V$                                                    |     |                | $\pm 100$ | nA         |
| Zero Gate Voltage Drain Current | $I_{DSS}$      | $V_{DS}=24V, V_{GS}=0V$                                                        |     |                | 1         | $\mu A$    |
|                                 |                | $V_{DS}=24V, V_{GS}=0V$<br>$T_J=55^{\circ}C$                                   |     |                | 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 |           | m $\Omega$ |
| 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                    | $t_{d(on)tr}$  | $V_{DD}=15V$<br>$R_L=15\Omega$<br>$I_D=1.0A$<br>$V_{GEN}=10V$<br>$R_G=6\Omega$ |     | 7              | 15        | nS         |
| Turn-Off Time                   | $t_{d(off)tf}$ |                                                                                |     | 10             | 20        |            |
|                                 |                |                                                                                |     | 20             | 40        |            |
|                                 |                |                                                                                |     | 11             | 20        |            |



## TYPICAL CHARACTERISTICS (25°C Unless noted)

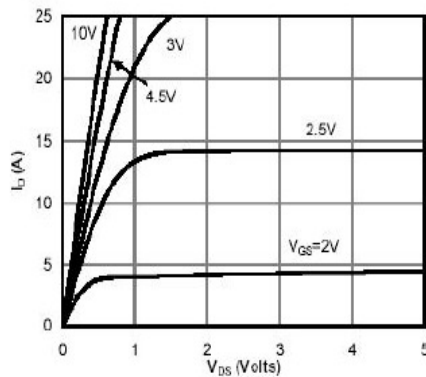


Fig 1: On-Region Characteristics

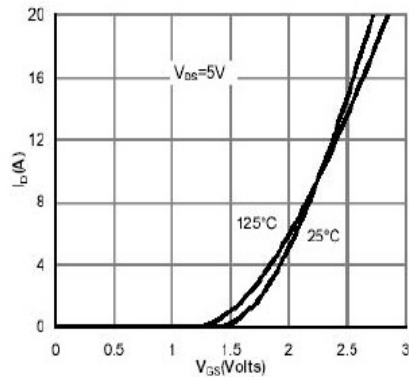


Figure 2: Transfer Characteristics

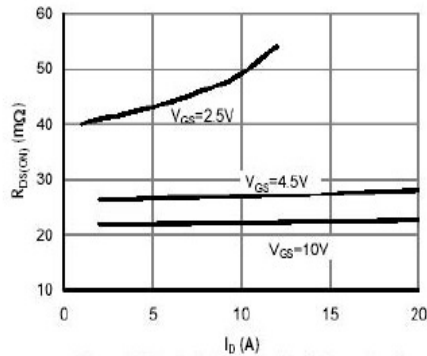


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

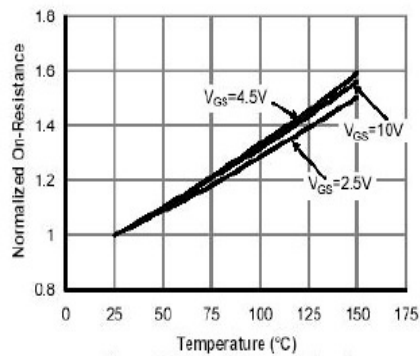


Figure 4: On-Resistance vs. Junction Temperature

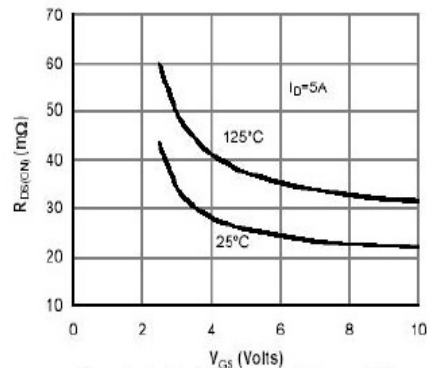


Figure 5: On-Resistance vs. Gate-Source Voltage

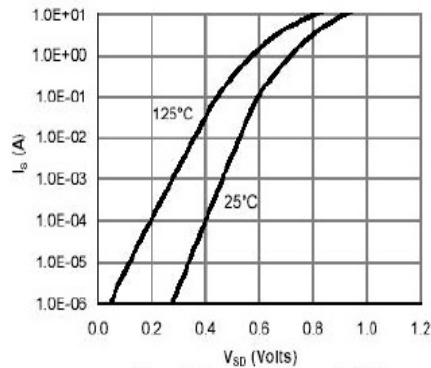
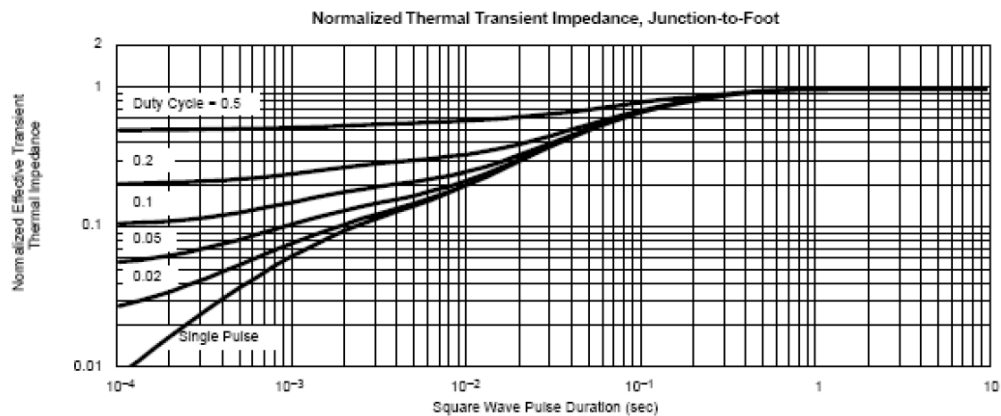
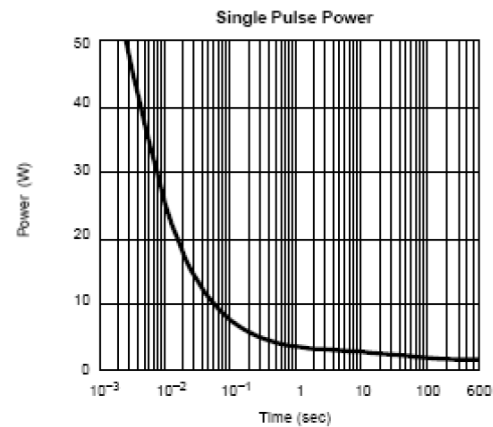
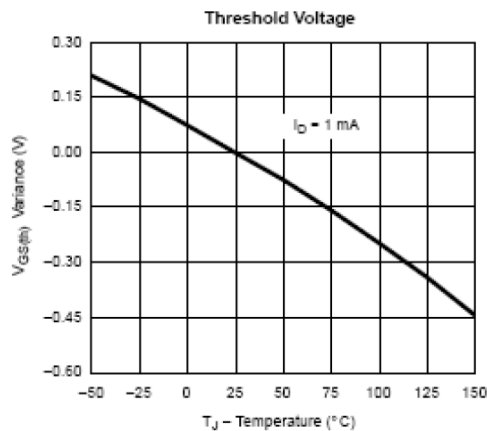
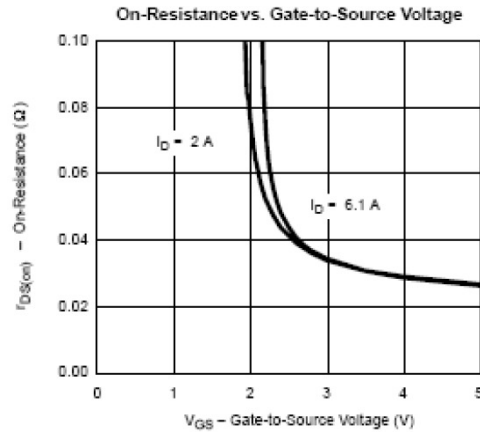
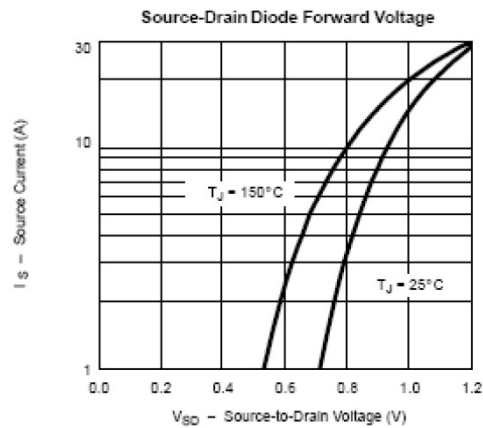


Figure 6: Body-Diode Characteristics

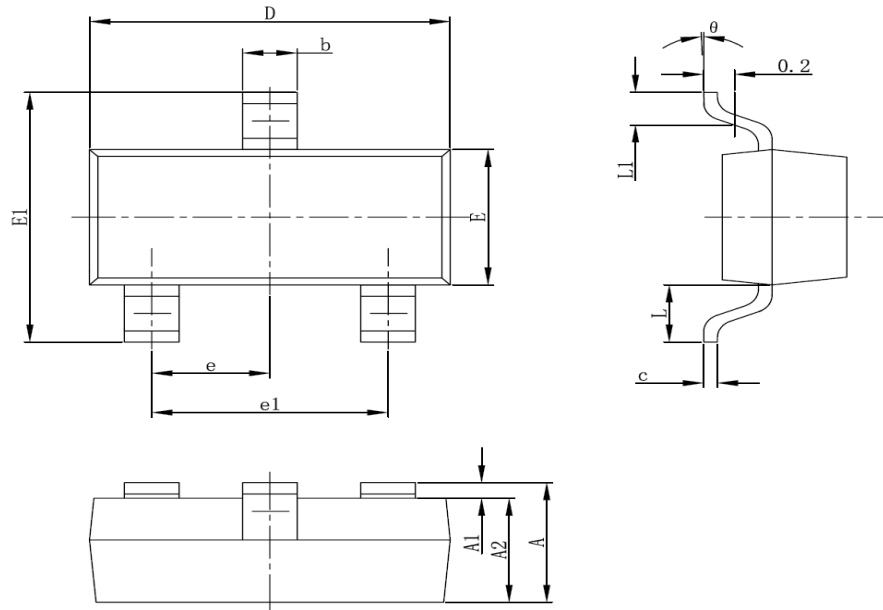


## TYPICAL CHARACTERISTICS (25°C Unless noted)





## 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°    |