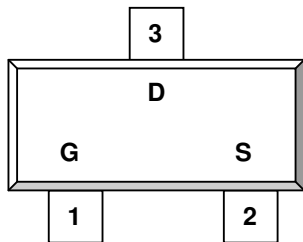




## DESCRIPTION

AMS3402 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-23-3L

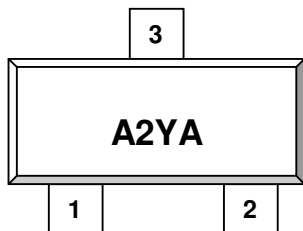


1.Gate 2.Source 3.Drain

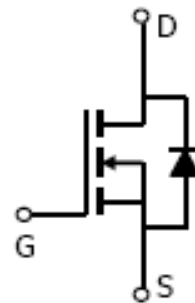
## FEATURE

- 30V/2.8A,  $R_{DS(ON)} = 48m\Omega$   
@ $V_{GS} = 10V$
- 30V/2.3A,  $R_{DS(ON)} = 53m\Omega$   
@ $V_{GS} = 4.5V$
- 30V/1.5A,  $R_{DS(ON)} = 80m\Omega$   
@ $V_{GS} = 2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design

## PART MARKING SOT-23-3L



Y: Year Code A: Week Code



**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>   | 4.0<br>2.8  | A    |
| Pulsed Drain Current                             |                                              | I <sub>DM</sub>  | 10          | A    |
| Continuous Source Current (Diode Conduction)     |                                              | I <sub>S</sub>   | 1.25        | 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> | 100         | °C/W |

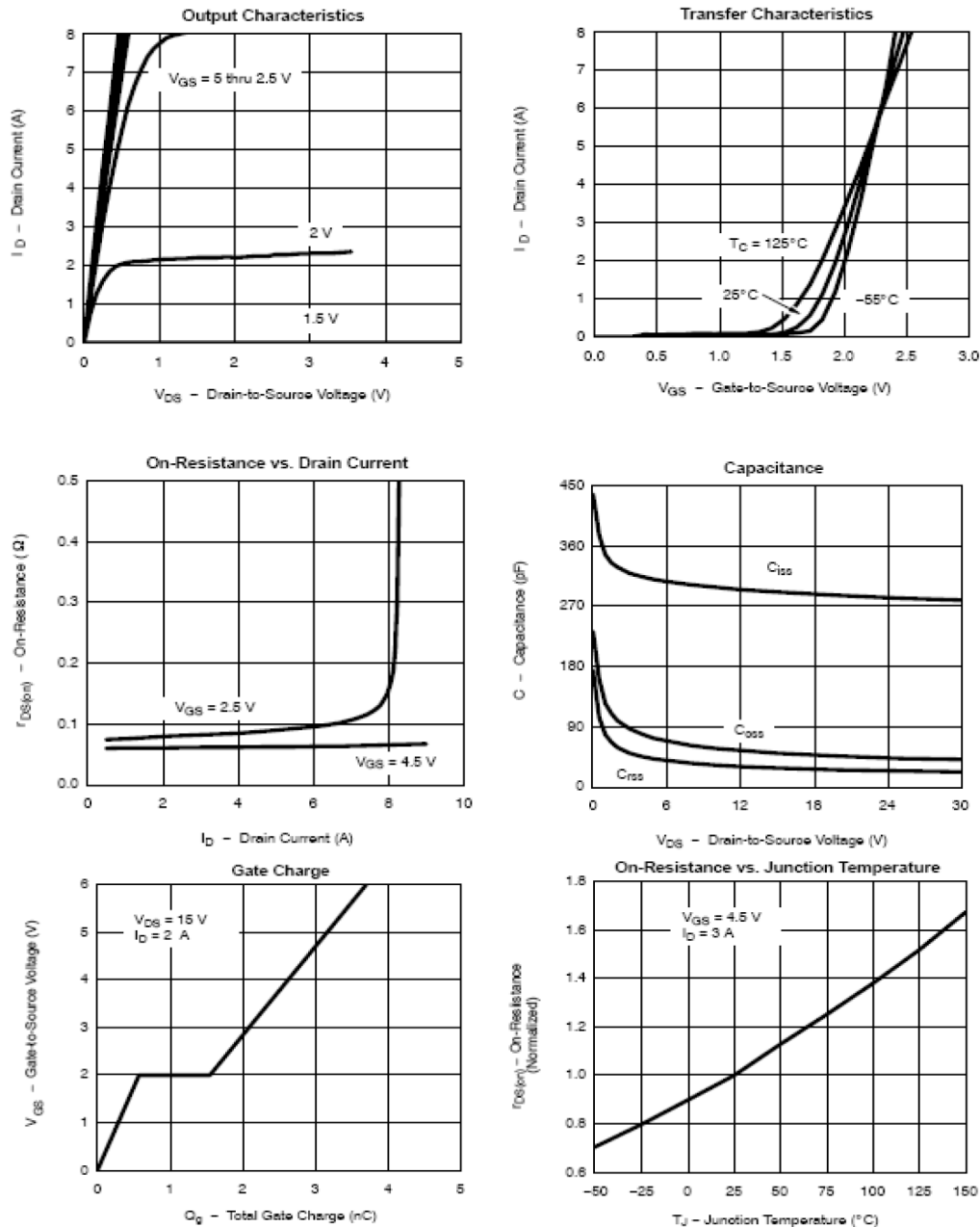


## ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ unless otherwise noted )

| 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          | $V_{GS(th)}$   | $V_{DS}=V_{GS}, I_D=250\mu A$                                                  | 0.8 |                | 1.6       | 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         | uA   |
|                                 |                | $V_{DS}=24V, V_{GS}=0V$<br>$T_J=55^{\circ}C$                                   |     |                | 10        |      |
| On-State Drain Current          | $I_{D(on)}$    | $V_{DS}\geq 4.5V, V_{GS}=4.5V$                                                 | 4   |                |           | A    |
| Drain-source On-Resistance      | $R_{DS(on)}$   | $V_{GS}=10V, I_D=2.8A$<br>$V_{GS}=4.5V, I_D=4.5A$<br>$V_{GS}=2.5V, I_D=1.5A$   |     | 48<br>53<br>80 |           | mΩ   |
| Forward Transconductance        | $g_{fs}$       | $V_{DS}=4.5V, I_D=5.8A$                                                        |     | 12             |           | S    |
| Diode Forward Voltage           | $V_{SD}$       | $I_S=1.25A, V_{GS}=0V$                                                         |     | 0.8            | 1.2       | V    |
| Dynamic                         |                |                                                                                |     |                |           |      |
| Total Gate Charge               | $Q_g$          | $V_{DS}=15V$<br>$V_{GS}=4.5V$<br>$I_D\equiv 2.0A$                              |     | 4.2            | 6         | nC   |
| Gate-Source Charge              | $Q_{gs}$       |                                                                                |     | 0.6            |           |      |
| Gate-Drain Charge               | $Q_{gd}$       |                                                                                |     | 1.5            |           |      |
| Input Capacitance               | $C_{iss}$      | $V_{DS}=15V$<br>$V_{GS}=0V$<br>$F=1MHz$                                        |     | 350            |           | pF   |
| Output Capacitance              | $C_{oss}$      |                                                                                |     | 55             |           |      |
| Reverse Transfer Capacitance    | $C_{rss}$      |                                                                                |     | 41             |           |      |
| Turn-On Time                    | $t_{d(on)tr}$  | $V_{DD}=15V$<br>$R_L=10\Omega$<br>$I_D=1.0A$<br>$V_{GEN}=10V$<br>$R_G=3\Omega$ |     | 2.5            |           | nS   |
|                                 |                |                                                                                |     | 2.5            |           |      |
| Turn-Off Time                   | $t_{d(off)tf}$ |                                                                                |     | 20             |           |      |
|                                 |                |                                                                                |     | 4              |           |      |

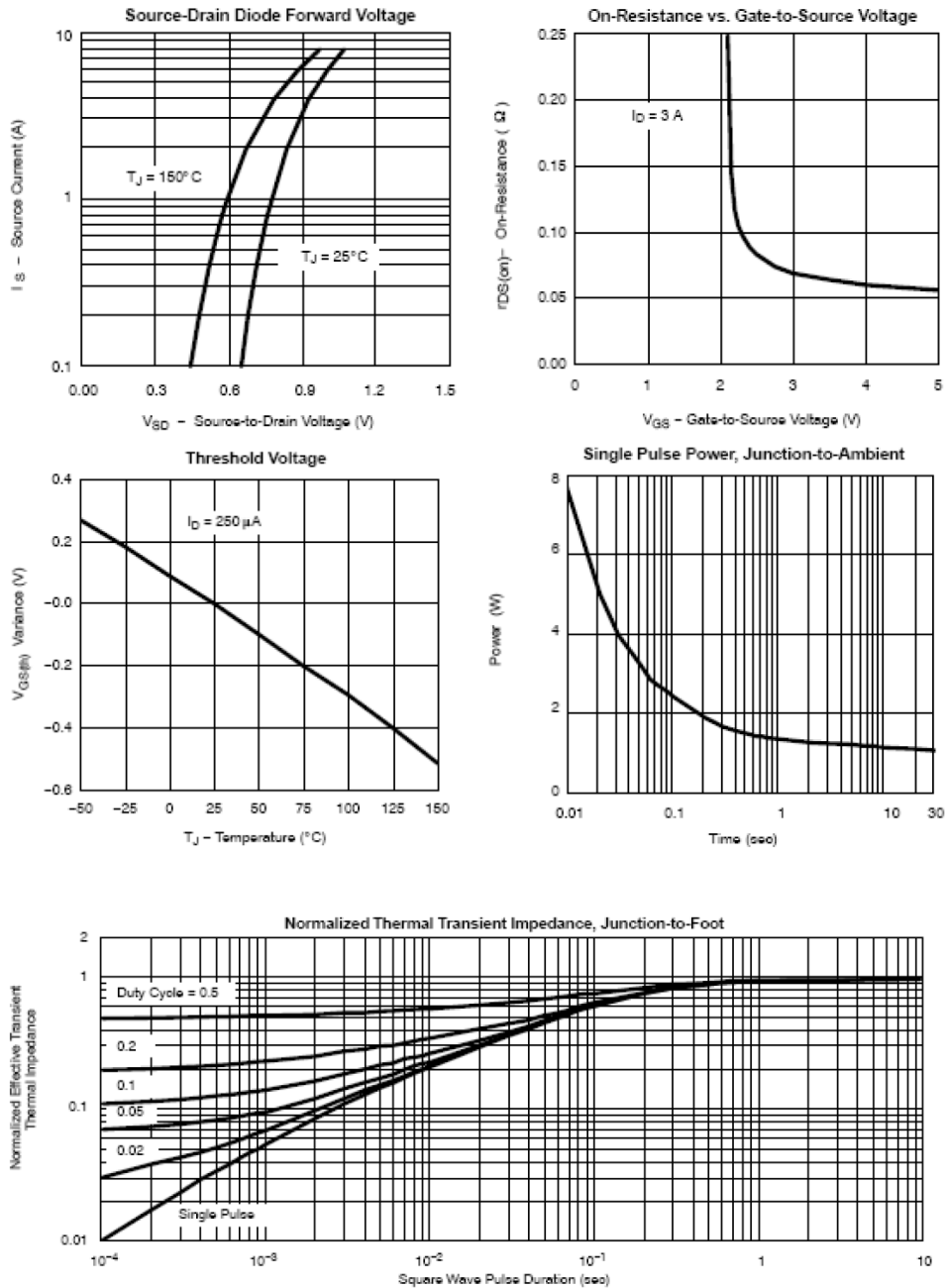


## TYPICAL CHARACTERISTICS (25°C unless otherwise noted)



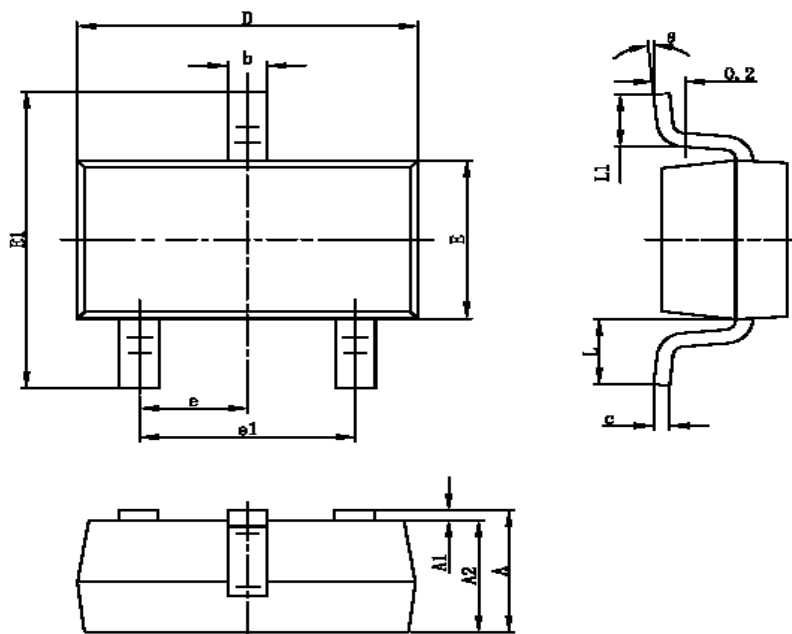


## TYPICAL CHARACTERISTICS (25°C unless otherwise noted)





## 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 |
| $\theta$ | 0°                        | 8°    | 0°                   | 8°    |