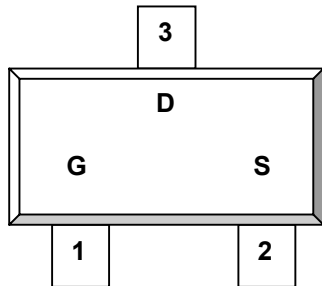
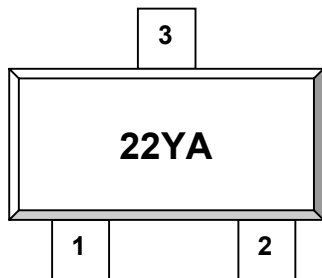


**DESCRIPTION**

The ST3422A 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-23-3L**


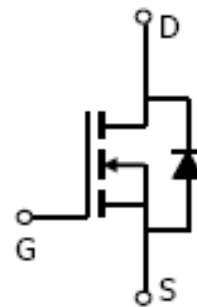
1.Gate 2.Source 3.Drain

**PART MARKING  
SOT-23-3L**


Y: Year Code A: Week Code

**FEATURE**

- 60V/6.0A,  $R_{DS(ON)} = 28m\Omega$  (Typ.) @ $V_{GS} = 10V$
- 60V/2.5A,  $R_{DS(ON)} = 38m\Omega$  @ $V_{GS} = 4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23-3L package design





**ST3422A**  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 <sub>DSS</sub> | 60                          | V    |
| Gate-Source Voltage                              | V <sub>GSS</sub> | ±20                         | V    |
| Continuous Drain Current (T <sub>J</sub> =150°C) | I <sub>D</sub>   | T <sub>A</sub> =25°C<br>6.0 | A    |
|  |                  | T <sub>A</sub> =70°C<br>4.6 |      |
| Pulsed Drain Current                             | I <sub>DM</sub>  | 20                          | A    |
| Continuous Source Current (Diode Conduction)     | I <sub>S</sub>   | 1.7                         | A    |
| Power Dissipation                                | P <sub>D</sub>   | T <sub>A</sub> =25°C<br>2.0 | W    |
|  |                  | T <sub>A</sub> =70°C<br>1.3 |      |
| Operation Junction Temperature                   | T <sub>J</sub>   | -55/150                     | °C   |
| Storage Temperature Range                        | T <sub>STG</sub> | -55/150                     | °C   |
| Thermal Resistance-Junction to Ambient           | R <sub>θJA</sub> | 75                          | °C/W |



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

| Parameter                       | Symbol         | Condition  | Min | Typ      | Max       | Unit      |
|---------------------------------|----------------|--|-----|----------|-----------|-----------|
| <b>Static</b>                   |                |  |     |          |           |           |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$  | $V_{GS}=0V, I_D=250\mu A$  | 60  |          |           | V         |
| Gate Threshold Voltage          | $V_{GS(th)}$   | $V_{DS}=V_{GS}, I_D=250\mu A$  | 1   |          | 3         | V         |
| Gate Leakage Current            | $I_{GSS}$      | $V_{DS}=0V, V_{GS}=\pm 20V$  |     |          | $\pm 100$ | nA        |
| Zero Gate Voltage Drain Current | $I_{DSS}$      | $V_{DS}=48V, V_{GS}=0V$  |     |          | 1         | uA        |
|                                 |                | $V_{DS}=48V, V_{GS}=0V$<br>$T_J=55^\circ C$                                    |     |          | 10        |           |
| Drain-source On-Resistance      | $R_{DS(on)}$   | $V_{GS}=10V, I_D=6.0A$<br>$V_{GS}=4.5V, I_D=2.5A$                              |     | 28<br>38 | 35<br>45  | $m\Omega$ |
| Forward Transconductance        | $g_{fs}$       | $V_{DS}=4.5V, I_D=5.8A$  |     | 11       |           | S         |
| Diode Forward Voltage           | $V_{SD}$       | $I_S=1.7A, V_{GS}=0V$  |     |          | 1.2       | V         |
| <b>Dynamic</b>                  |                |  |     |          |           |           |
| Total Gate Charge               | $Q_g$          | $V_{DS}=15V$<br>$V_{GS}=10V$<br>$I_D=6.7A$                                     |     | 10       | 22        | nC        |
| Gate-Source Charge              | $Q_{gs}$       |  |     | 1.8      |           |           |
| Gate-Drain Charge               | $Q_{gd}$       |  |     | 3.8      |           |           |
| Input Capacitance               | $C_{iss}$      | $V_{DS}=15V$<br>$V_{GS}=0V$<br>$F=1MHz$  |     | 455      |           | pF        |
| Output Capacitance              | $C_{oss}$      |  |     | 243      |           |           |
| 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>$R_G=6\Omega$ |     | 8        | 15        | nS        |
|                                 |                |  |     | 10       | 20        |           |
| Turn-Off Time                   | $t_{d(off)tf}$ |  |     | 20       | 40        |           |
|                                 |                |  |     | 11       | 20        |           |

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

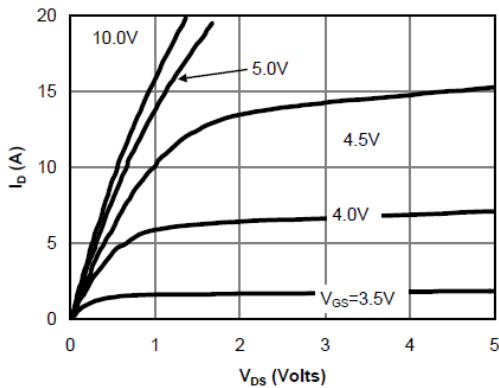


Fig 1: On-Region Characteristics

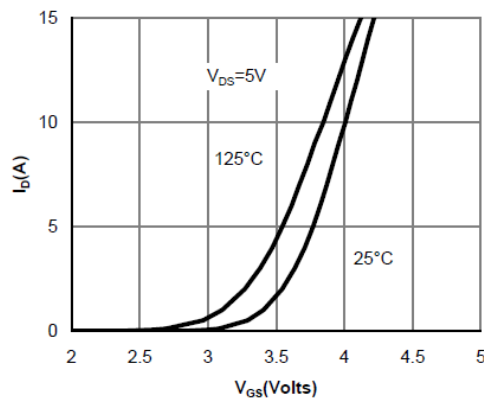


Figure 2: Transfer Characteristics

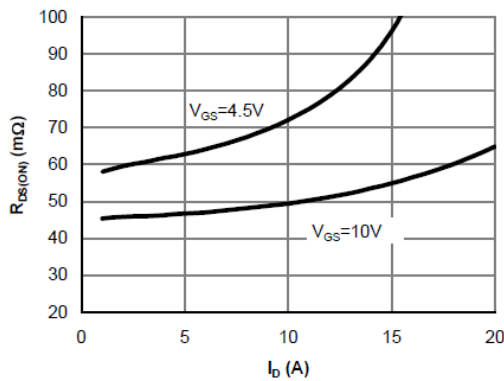


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

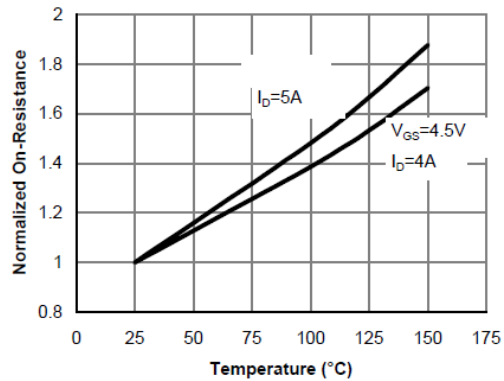


Figure 4: On-Resistance vs. Junction Temperature

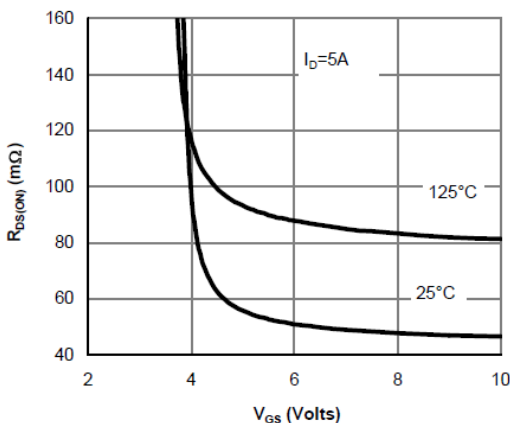


Figure 5: On-Resistance vs. Gate-Source Voltage

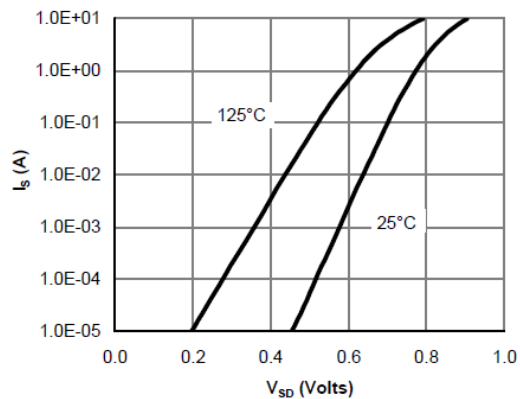


Figure 6: Body-Diode Characteristics

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

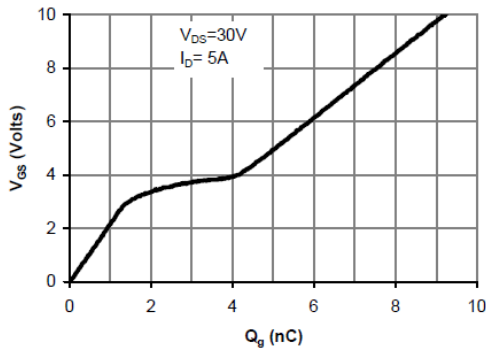


Figure 7: Gate-Charge Characteristics

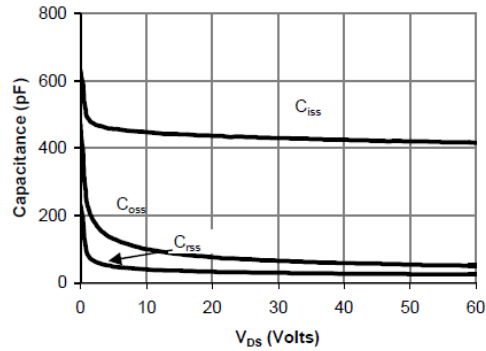


Figure 8: Capacitance Characteristics

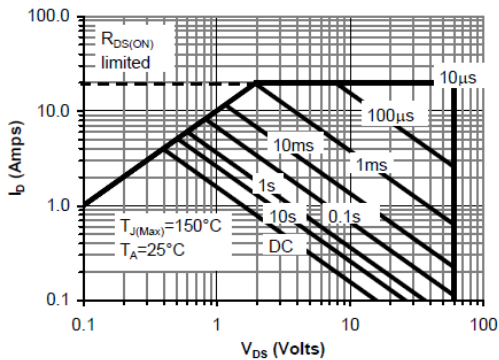


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

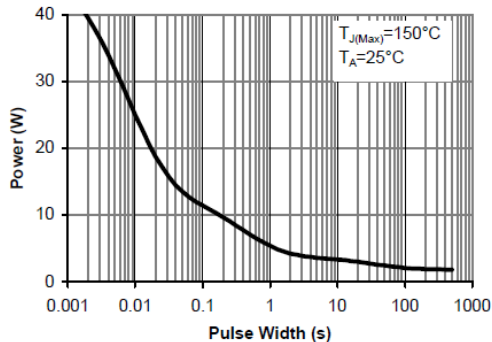


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

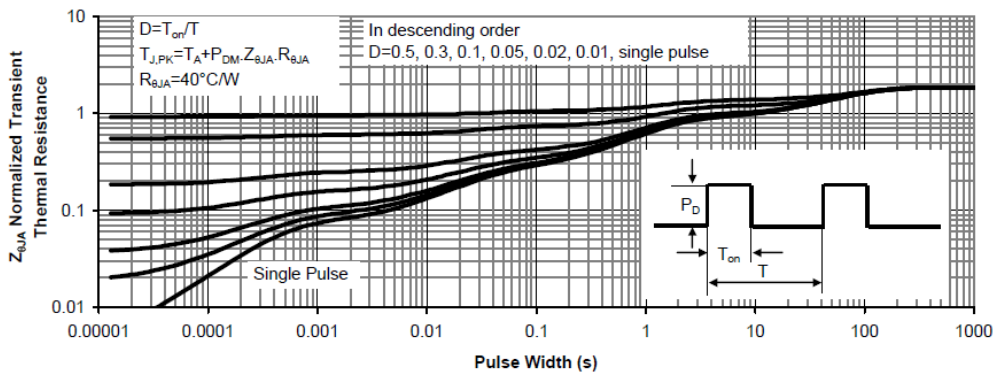
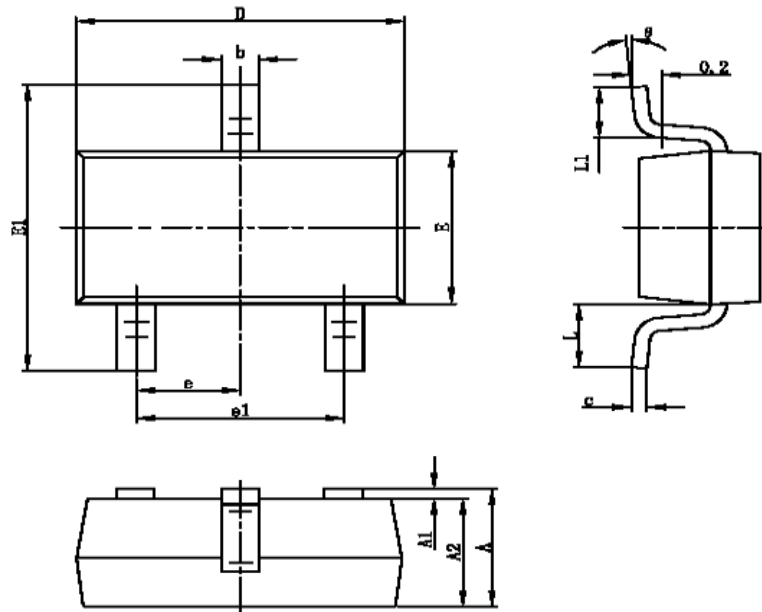


Figure 11: Normalized Maximum Transient Thermal Impedance

**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°    |