

## ■ DESCRIPTION

The 4826 is the N-Channel logic enhancement mode power field effect transistor, is produced using high cell density advanced trench technology.

This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, notebook computer power management and other battery powered circuits.

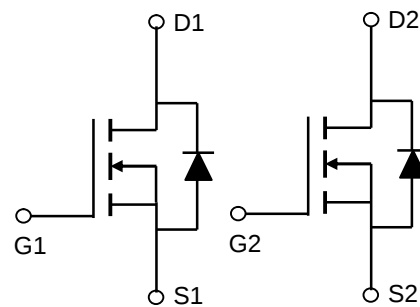
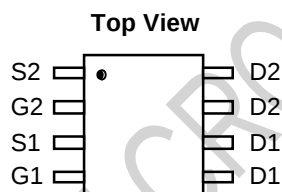
## ■ FEATURE

- ◆ 60V/8.0A,  $R_{DS(ON)}=24m\Omega$  (typ.)@VGS= 10V
- ◆ 60V/5.0A,  $R_{DS(ON)}=32m\Omega$  (typ.)@VGS= 4.5V
- ◆ Super high design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and Maximum DC current capability
- ◆ Full RoHS compliance
- ◆ SOP8 package design

## ■ APPLICATIONS

- ◆ Power Management
- ◆ Portable Equipment
- ◆ DC/DC Converter
- ◆ Load Switch
- ◆ DSC
- ◆ LCD Display inverter

## ■ PIN CONFIGURATION



## ■ PART NUMBER INFORMATION

4826AA-BB C

A= Package Code

S: SOP

BB=Handing Code

TR: Tape&Reel

C=Lead Plating Code

G: Green Product

# **■ ABSOLUTE MAXIMUM RATINGS** ( $T_A = 25^\circ\text{C}$ Unless otherwise noted)

| Parameter                              | Symbol         | Maximum                        | Units            |
|----------------------------------------|----------------|--------------------------------|------------------|
| Drain-Source Voltage                   | $V_{DS}$       | 60                             | V                |
| Gate-Source Voltage                    | $V_{GS}$       | $\pm 20$                       | V                |
| Continuous Drain Current <sup>A</sup>  | $I_D$          | $T_A=25^\circ\text{C}$<br>8.0  | A                |
|                                        |                | $T_A=70^\circ\text{C}$<br>5    |                  |
| Pulsed Drain Current <sup>B</sup>      | $I_{DM}$       | 40                             |                  |
| Power Dissipation                      | $P_D$          | $T_A=25^\circ\text{C}$<br>2    | W                |
|                                        |                | $T_A=70^\circ\text{C}$<br>1.28 |                  |
| Junction and Storage Temperature Range | $T_J, T_{STG}$ | -55 to 150                     | $^\circ\text{C}$ |

| Thermal Characteristics                  |                     |                 |     |      |                    |
|------------------------------------------|---------------------|-----------------|-----|------|--------------------|
| Parameter                                |                     | Symbol          | Typ | Max  | Units              |
| Maximum Junction-to-Ambient <sup>A</sup> | $t \leq 10\text{s}$ | $R_{\theta JA}$ | 50  | 62.5 | $^\circ\text{C/W}$ |
| Maximum Junction-to-Ambient <sup>A</sup> | Steady-State        |                 | 73  | 110  | $^\circ\text{C/W}$ |
| Maximum Junction-to-Lead <sup>C</sup>    | Steady-State        | $R_{\theta JL}$ | 31  | 40   | $^\circ\text{C/W}$ |

**Note:** Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress rating only and functional device operation is not implied

# **■ ELECTRICAL CHARACTERISTICS**( $T_A=25^\circ\text{C}$ Unless otherwise noted)

| Symbol               | Parameter                       | Condition                                                                                    | Min | Typ  | Max  | Unit |
|----------------------|---------------------------------|----------------------------------------------------------------------------------------------|-----|------|------|------|
| Static Parameters    |                                 |                                                                                              |     |      |      |      |
| V <sub>(BR)DSS</sub> | Drain-Source Breakdown Voltage  | V <sub>GS</sub> =0V, I <sub>D</sub> = 250uA                                                  | 60  |      |      | V    |
| V <sub>GS(th)</sub>  | Gate Threshold Voltage          | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = 250uA                                    | 1.0 | 1.8  | 3.0  | V    |
| I <sub>GSS</sub>     | Gate Leakage Current            | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V                                                   |     |      | ±100 | nA   |
| I <sub>DSS</sub>     | Zero Gate Voltage Drain Current | V <sub>DS</sub> = 60V, V <sub>GS</sub> =0                                                    |     |      | 1    | uA   |
|                      |                                 | V <sub>DS</sub> = 60V, V <sub>GS</sub> =0<br>T <sub>J</sub> =55℃                             |     |      | 5    |      |
| R <sub>DS(ON)</sub>  | Drain-Source On-Resistance      | V <sub>GS</sub> = 10V, I <sub>D</sub> = 7.0A                                                 |     | 23   | 30   | mΩ   |
|                      |                                 | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.0A                                                |     | 31   | 45   |      |
| Source-Drain Diode   |                                 |                                                                                              |     |      |      |      |
| V <sub>SD</sub>      | Diode Forward Voltage           | I <sub>S</sub> = 1.0A, V <sub>GS</sub> =0V                                                   |     | 0.8  | 1.3  | V    |
| Dynamic Parameters   |                                 |                                                                                              |     |      |      |      |
| Q <sub>g</sub>       | Total Gate Charge               | V <sub>DS</sub> =<br>30VV <sub>GS</sub> =<br>10V                                             |     | 15.6 | 16   | nC   |
| Q <sub>gs</sub>      | Gate-Source Charge              |                                                                                              |     | 1.3  |      |      |
| Q <sub>gd</sub>      | Gate-Drain Charge               |                                                                                              |     | 4.5  |      |      |
| C <sub>iss</sub>     | Input Capacitance               | V <sub>DS</sub> =50V<br>V <sub>GS</sub> =0V<br>f=1MHz                                        |     | 520  |      | pF   |
| C <sub>oss</sub>     | Output Capacitance              |                                                                                              |     | 105  |      |      |
| C <sub>rss</sub>     | Reverse Transfer Capacitance    |                                                                                              |     | 60   |      |      |
| T <sub>d(on)</sub>   | Turn-On Time                    | V <sub>DS</sub> = 30V<br>I <sub>D</sub> = 1A<br>V <sub>GEN</sub> = 10V<br>R <sub>G</sub> =6Ω |     | 8    | 16   | nS   |
| T <sub>r</sub>       |                                 |                                                                                              |     | 6    | 12   |      |
| T <sub>d(off)</sub>  | Turn-Off Time                   |                                                                                              |     | 25   | 46   |      |
| T <sub>f</sub>       |                                 |                                                                                              |     | 4    | 8    |      |

**Note:** 1. Pulse test: pulse width $\leq 300\mu\text{s}$ , duty cycle $\leq 2\%$

2. Static parameters are based on package level with recommended wire bonding

# TYPICAL CHARACTERISTICS (25 °C Unless Note)

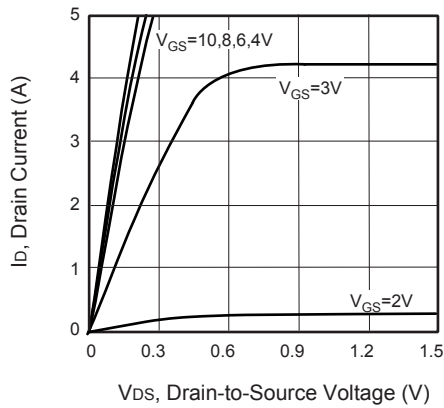


Figure 1. Output Characteristics

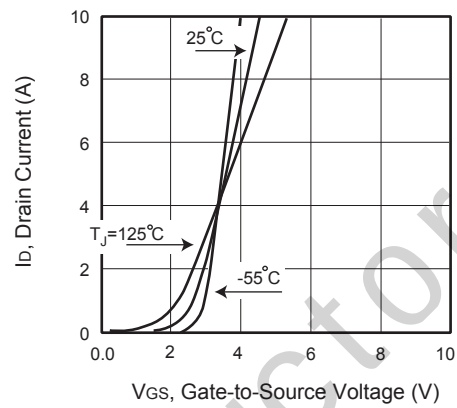


Figure 2. Transfer Characteristics

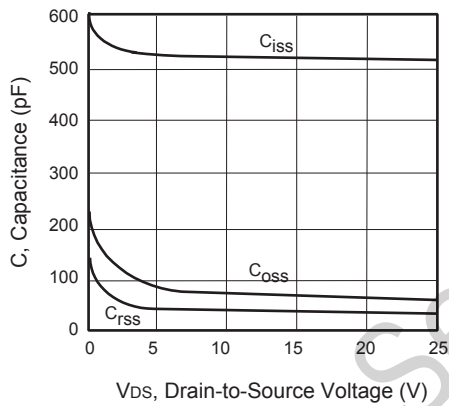


Figure 3. Capacitance

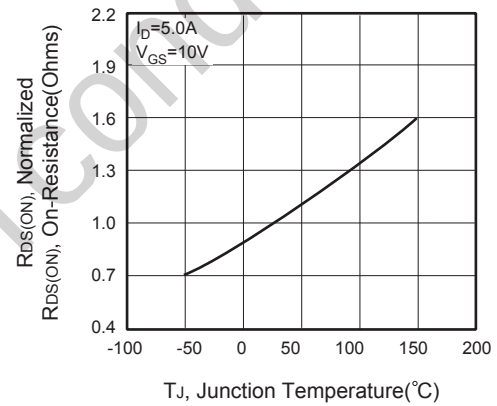


Figure 4. On-Resistance Variation with Temperature

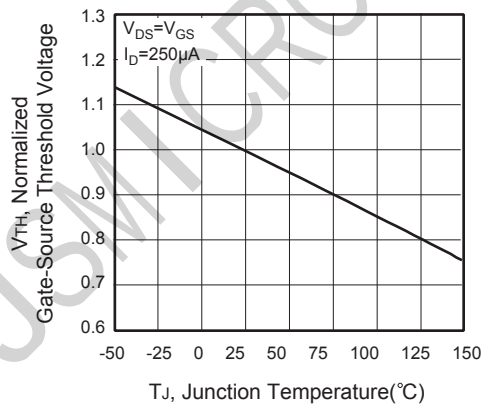


Figure 5. Gate Threshold Variation with Temperature

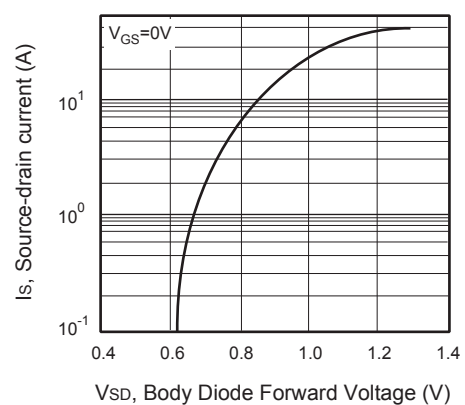
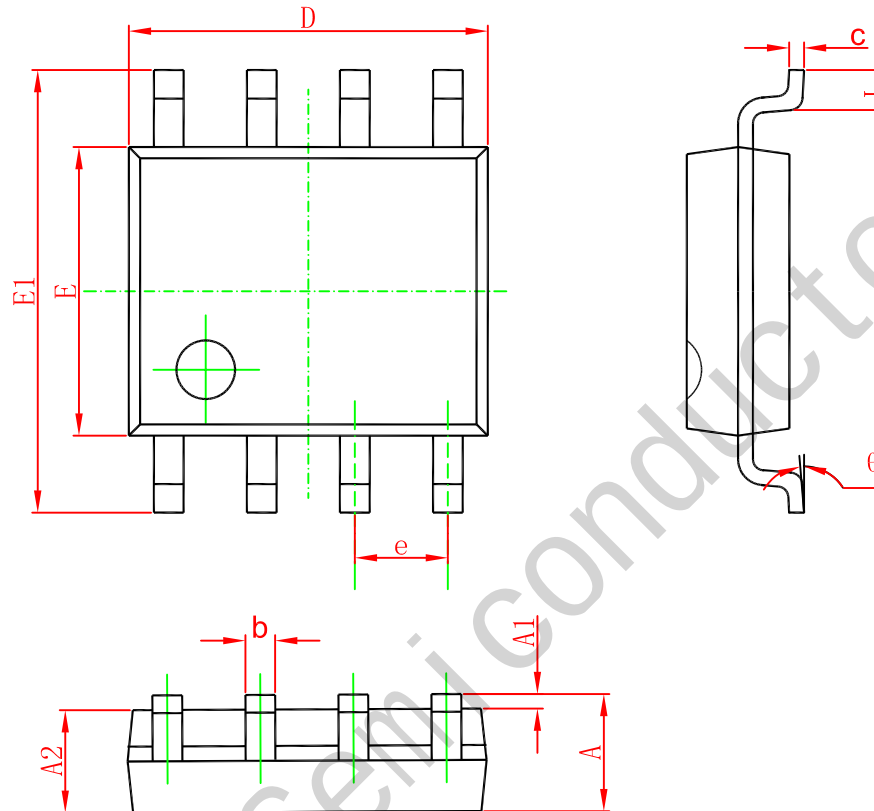


Figure 6. Body Diode Forward Voltage Variation with Source Current

■ SOP8 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.350                     | 1.750 | 0.053                | 0.069 |
| A1     | 0.100                     | 0.250 | 0.004                | 0.010 |
| A2     | 1.350                     | 1.550 | 0.053                | 0.061 |
| b      | 0.330                     | 0.510 | 0.013                | 0.020 |
| c      | 0.170                     | 0.250 | 0.006                | 0.010 |
| D      | 4.700                     | 5.100 | 0.185                | 0.200 |
| E      | 3.800                     | 4.000 | 0.150                | 0.157 |
| E1     | 5.800                     | 6.200 | 0.228                | 0.244 |
| e      | 1.270 (BSC)               |       | 0.050 (BSC)          |       |
| L      | 0.400                     | 1.270 | 0.016                | 0.050 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |