



## General Description

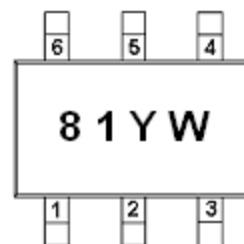
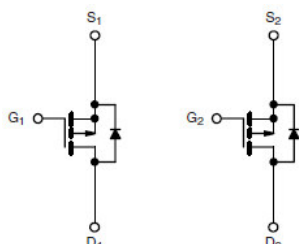
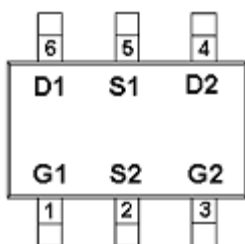
AFP6801, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

These devices are particularly suited for low voltage power management, such as smart phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

## Features

- -30V/-3.8A,  $R_{DS(ON)}=135m\Omega@V_{GS}=-10.0V$
- -30V/-2.8A,  $R_{DS(ON)}=175m\Omega@V_{GS}=-4.5V$
- -30V/-1.8A,  $R_{DS(ON)}=245m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

## Pin Description ( TSOP-6 )



## Application

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Net Working System

## Pin Define

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1   | G      | Gate        |
| 2   | S      | Source      |
| 3   | D      | Drain       |

## Ordering Information

| Part Ordering No. | Part Marking | Package | Unit        | Quantity |
|-------------------|--------------|---------|-------------|----------|
| AFP6801TS6RG      | 81YW         | TSOP-6  | Tape & Reel | 3000 EA  |

- ※ 81 parts code
- ※ Y year code ( 0 ~ 9 )
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFP6801TS6RG : 7" Tape & Reel ; Pb- Free ; Halogen- Free



## Absolute Maximum Ratings

( $T_A=25^{\circ}\text{C}$  Unless otherwise noted)

| Parameter   | Symbol          | Typical                  | Unit                 |
|---|-----------------|--------------------------|----------------------|
| Drain-Source Voltage                                  | $V_{DSS}$       | -30                      | V                    |
| Gate -Source Voltage                                  | $V_{GSS}$       | $\pm 12$                 | V                    |
| Continuous Drain Current( $T_J=150^{\circ}\text{C}$ ) | $I_D$           | $T_A=25^{\circ}\text{C}$ | -3.8                 |
|   |                 | $T_A=70^{\circ}\text{C}$ | -1.8                 |
| Pulsed Drain Current                                  | $I_{DM}$        | -20                      | A                    |
| Continuous Source Current(Diode Conduction)           | $I_S$           | -1.7                     | A                    |
| Power Dissipation                                     | $P_D$           | $T_A=25^{\circ}\text{C}$ | 2.0                  |
|   |                 | $T_A=70^{\circ}\text{C}$ | 1.3                  |
| Operating Junction Temperature                        | $T_J$           | 150                      | $^{\circ}\text{C}$   |
| Storage Temperature Range                             | $T_{STG}$       | -55/150                  | $^{\circ}\text{C}$   |
| Thermal Resistance-Junction to Ambient                | $R_{\theta JA}$ | 120                      | $^{\circ}\text{C/W}$ |

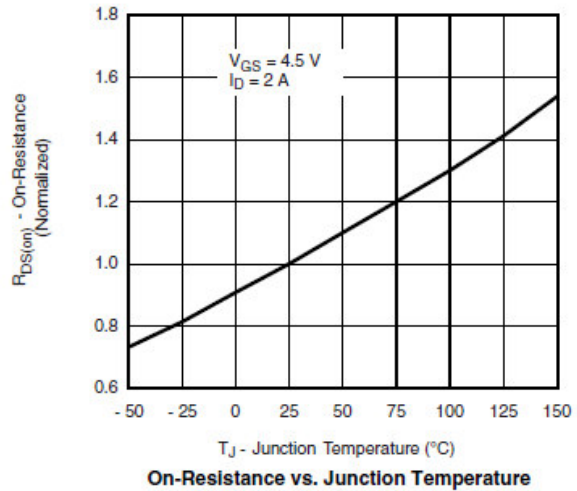
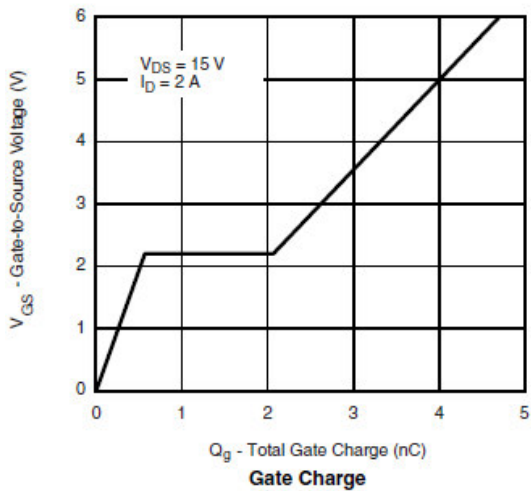
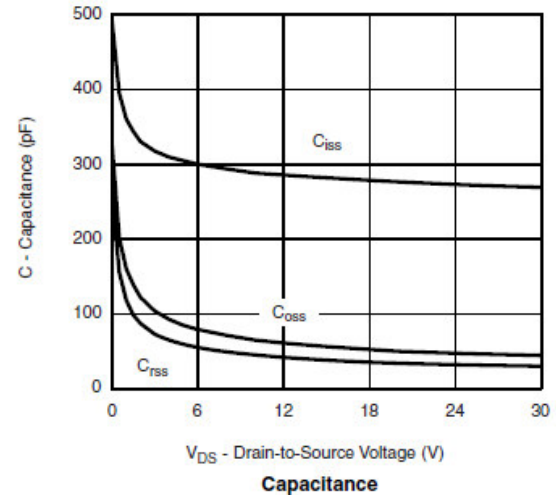
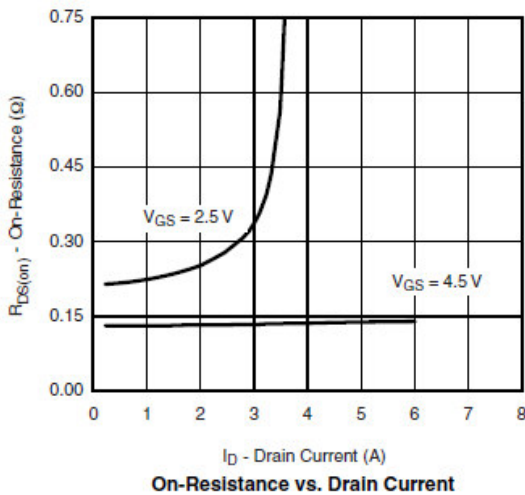
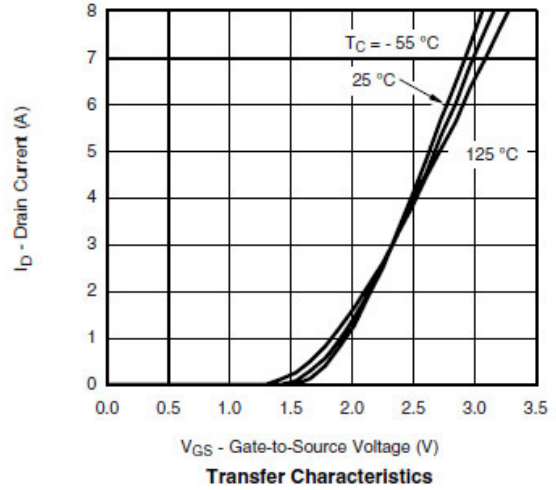
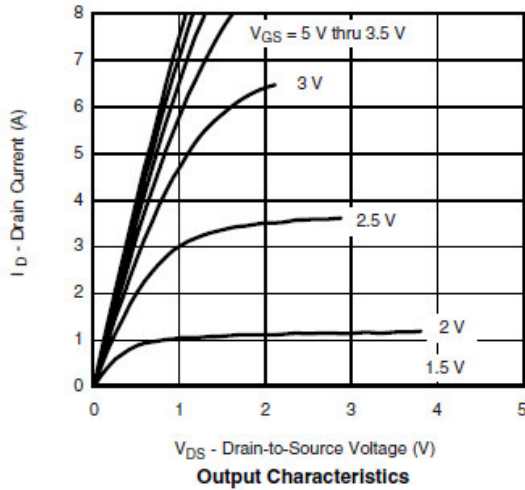
## Electrical Characteristics

( $T_A=25^{\circ}\text{C}$  Unless otherwise noted)

| Parameter                       | Symbol        | Conditions   | Min. | Typ  | Max.      | Unit       |
|---------------------------------|---------------|--|------|------|-----------|------------|
| <b>Static</b>                   |               |  |      |      |           |            |
| Drain-Source Breakdown Voltage  | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=-250\mu A$   | -30  |      |           | V          |
| Gate Threshold Voltage          | $V_{GS(th)}$  | $V_{DS}=V_{GS}, I_D=-250\mu A$   | -0.6 |      | -1.4      |            |
| 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>$T_A=85^{\circ}\text{C}$                             |      |      | -30       |            |
| On-State Drain Current          | $I_{D(on)}$   | $V_{DS} \leq -5V, V_{GS}=-10V$   | -10  |      |           | A          |
| Drain-Source On-Resistance      | $R_{DS(on)}$  | $V_{GS}=-10V, I_D=-3.8A$   |      | 104  | 135       | m $\Omega$ |
|                                 |               | $V_{GS}=-4.5V, I_D=-2.8A$  |      | 132  | 175       |            |
|                                 |               | $V_{GS}=-2.5V, I_D=-1.8A$  |      | 190  | 245       |            |
| Forward Transconductance        | $g_{FS}$      | $V_{DS}=-5V, I_D=-4.0A$  |      | 10   |           | S          |
| Diode Forward Voltage           | $V_{SD}$      | $I_S=-1.7A, V_{GS}=0V$   |      | -0.7 | -1.3      | V          |
| <b>Dynamic</b>                  |               |  |      |      |           |            |
| Total Gate Charge               | $Q_g$         | $V_{DS}=-15V, V_{GS}=-4.5V$<br>$I_D \equiv -2.0A$                                |      | 4    | 6         | nC         |
| Gate-Source Charge              | $Q_{gs}$      |  |      | 0.6  |           |            |
| Gate-Drain Charge               | $Q_{gd}$      |  |      | 1.5  |           |            |
| Input Capacitance               | $C_{iss}$     | $V_{DS}=-15V, V_{GS}=0V$<br>$f=1\text{MHz}$                                      |      | 230  |           | pF         |
| Output Capacitance              | $C_{oss}$     |  |      | 40   |           |            |
| Reverse Transfer Capacitance    | $C_{rss}$     |  |      | 25   |           |            |
| Turn-On Time                    | $t_{d(on)}$   | $V_{DD}=-15V, R_L=15\Omega$<br>$I_D \equiv -1.0A, V_{GEN}=-10V$<br>$R_G=6\Omega$ |      | 5    | 10        | ns         |
|                                 | $t_r$         |  |      | 8    | 15        |            |
| Turn-Off Time                   | $t_{d(off)}$  |  |      | 15   | 30        |            |
|                                 | $t_f$         |  |      | 15   | 30        |            |

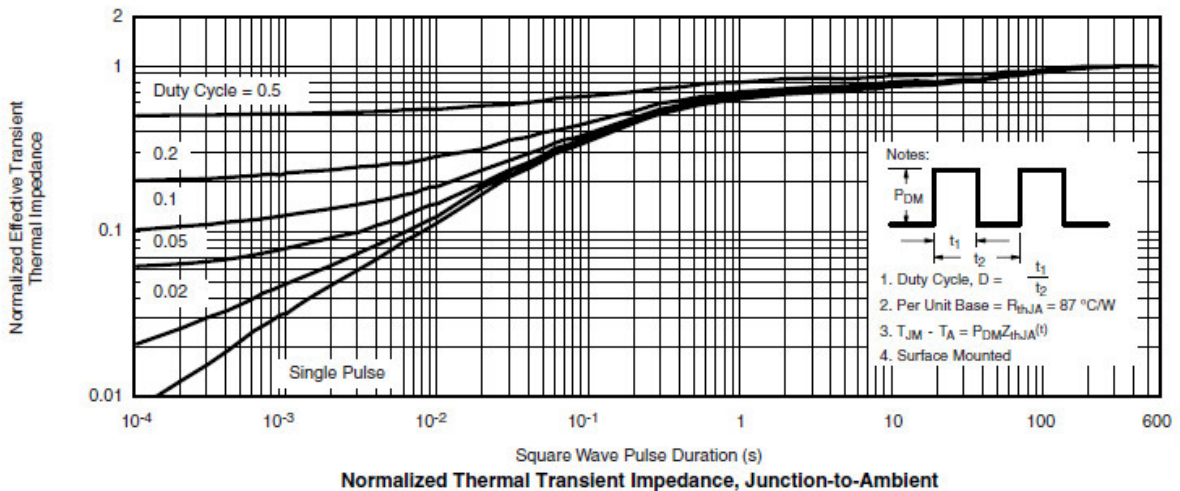
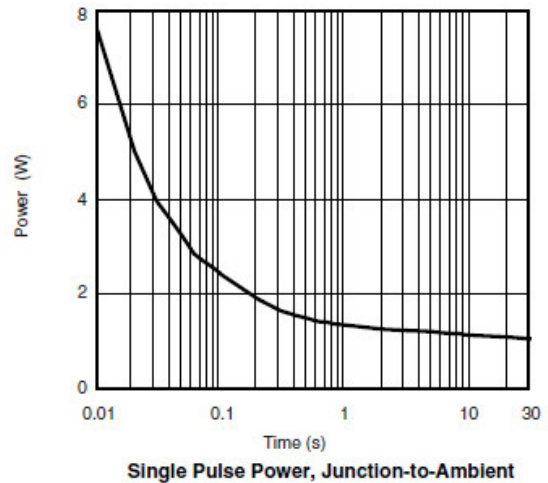
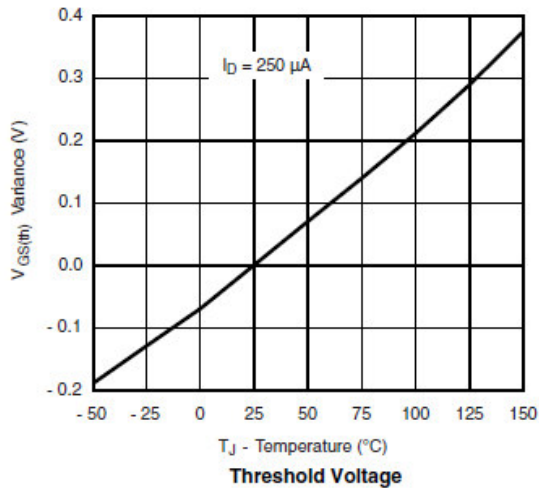
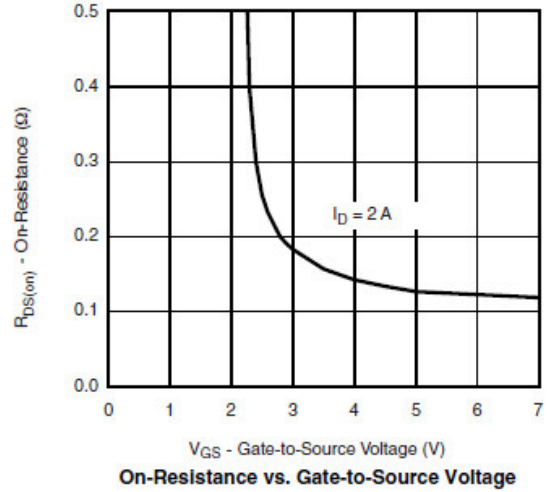
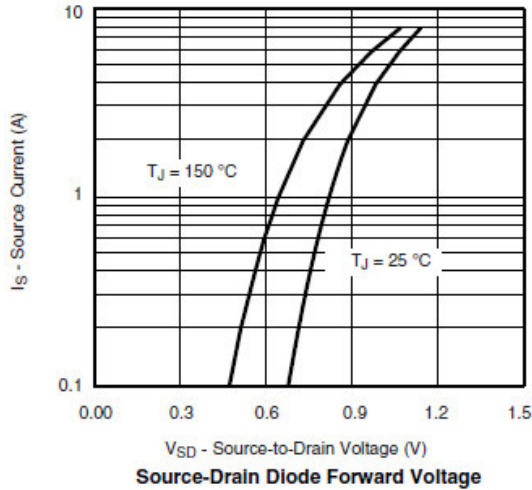


## Typical Characteristics





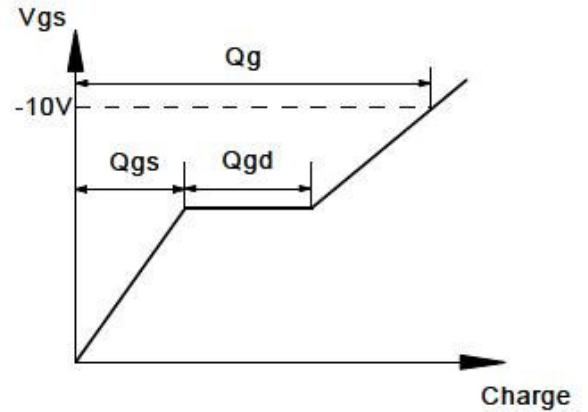
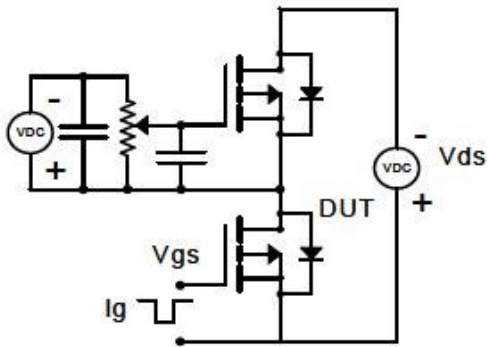
**Typical Characteristics**



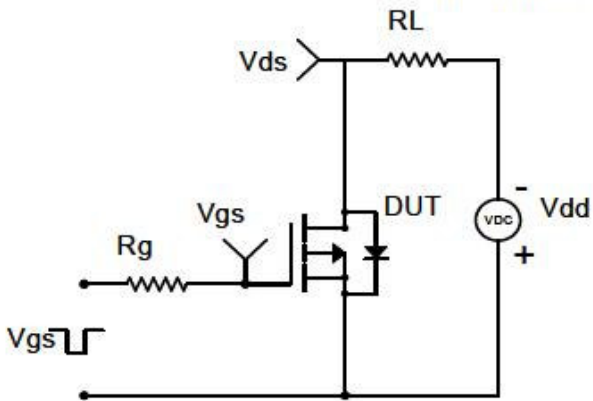


**Typical Characteristics**

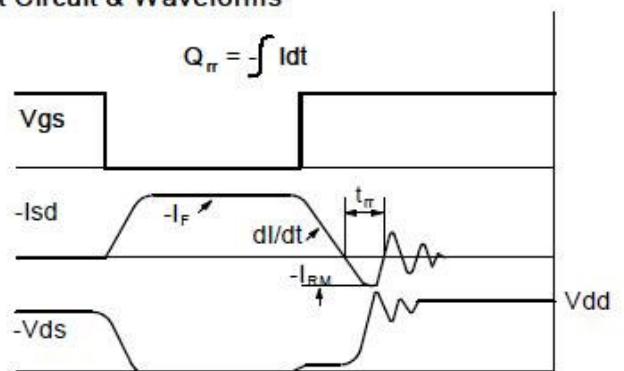
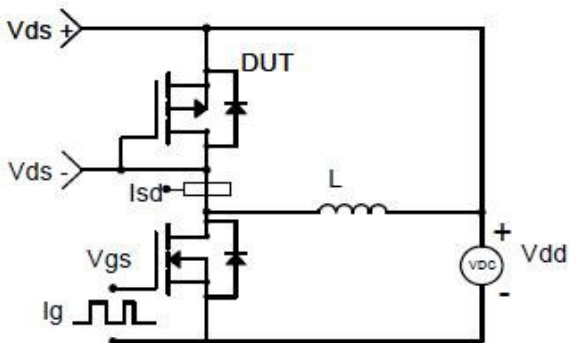
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

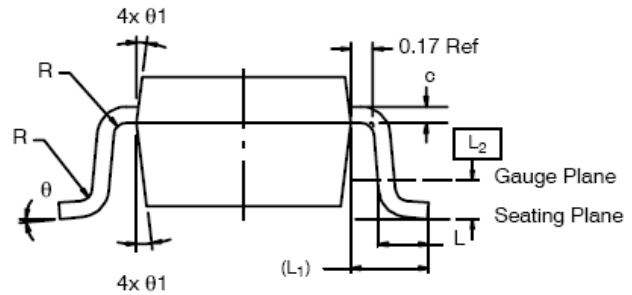
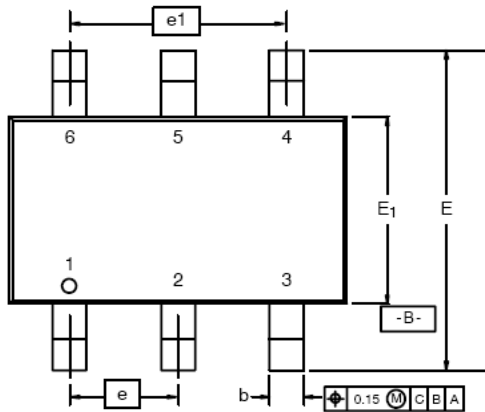


Diode Recovery Test Circuit & Waveforms





**Package Information ( TSOP-6 )**



| Dim            | MILLIMETERS |      |      | INCHES     |       |       |
|----------------|-------------|------|------|------------|-------|-------|
|                | Min         | Nom  | Max  | Min        | Nom   | Max   |
| A              | 0.91        | -    | 1.10 | 0.036      | -     | 0.043 |
| A <sub>1</sub> | 0.01        | -    | 0.10 | 0.0004     | -     | 0.004 |
| A <sub>2</sub> | 0.90        | -    | 1.00 | 0.035      | 0.038 | 0.039 |
| b              | 0.30        | 0.32 | 0.45 | 0.012      | 0.013 | 0.018 |
| c              | 0.10        | 0.15 | 0.20 | 0.004      | 0.006 | 0.008 |
| D              | 2.95        | 3.05 | 3.10 | 0.116      | 0.120 | 0.122 |
| E              | 2.70        | 2.85 | 2.96 | 0.106      | 0.112 | 0.117 |
| E <sub>1</sub> | 1.55        | 1.65 | 1.70 | 0.061      | 0.065 | 0.067 |
| e              | 1.00 BSC    |      |      | 0.0394 BSC |       |       |
| e <sub>1</sub> | 1.90        | 2.00 | 2.10 | 0.075      | 0.080 | 0.085 |
| L              | 0.35        | -    | 0.50 | 0.014      | -     | 0.020 |
| L <sub>1</sub> | 0.60 Ref    |      |      | 0.024 Ref  |       |       |
| L <sub>2</sub> | 0.25 BSC    |      |      | 0.010 BSC  |       |       |
| R              | 0.10        | -    | -    | 0.004      | -     | -     |
| θ              | 0°          | 4°   | 8°   | 0°         | 4°    | 8°    |
| θ <sub>1</sub> | 7° Nom      |      |      | 7° Nom     |       |       |

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