



### General Description

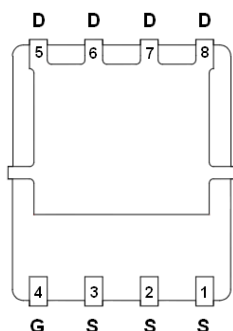
AFN6202S, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge.

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.

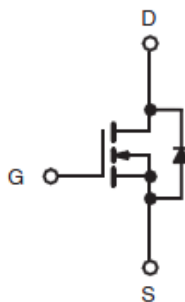
### Features

- 30V/15A,  $R_{DS(ON)}=5.2m\Omega@V_{GS}=10V$
- 30V/10A,  $R_{DS(ON)}=7.0m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN 5X6-8L package design

### Pin Description ( DFN 5X6-8L )



BOTTOM VIEW



SYMBOL



TOP VIEW

### Application

- Notebook PC Core  
- Low Side / High Side

### Pin Define

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1   | S      | Source      |
| 2   | S      | Source      |
| 3   | S      | Source      |
| 4   | G      | Gate        |
| 5   | D      | Drain       |
| 6   | D      | Drain       |
| 7   | D      | Drain       |
| 8   | D      | Drain       |

### Ordering Information

| Part Ordering No. | Part Marking | Package    | Unit        | Quantity |
|-------------------|--------------|------------|-------------|----------|
| AFN6202SFN568RG   | 6202S        | DFN 5X6-8L | Tape & Reel | 2500 EA  |

※ 6202S : Parts Code

※ YYMMDD : Date Code

※ AFN6202SFN568RG : 13" Tape & Reel ; Pb- Free ; Halogen -Free



### Absolute Maximum Ratings

(T<sub>A</sub>=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> | ±20     | V    |
| Continuous Drain Current(T <sub>J</sub> =150°C) | I <sub>D</sub>   | 23      | A    |
|                                                 |                  | 18      |      |
| Pulsed Drain Current                            | I <sub>DM</sub>  | 70      | A    |
| Continuous Source Current(Diode Conduction)     | I <sub>S</sub>   | 40      | A    |
| Power Dissipation                               | P <sub>D</sub>   | 48      | W    |
|                                                 |                  | 31      |      |
| Operating 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> | 120     | °C/W |

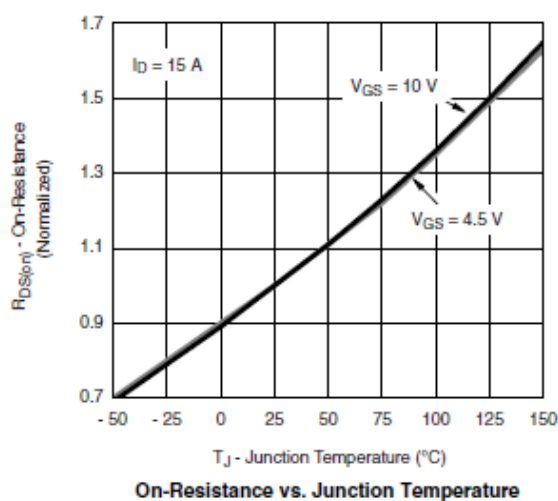
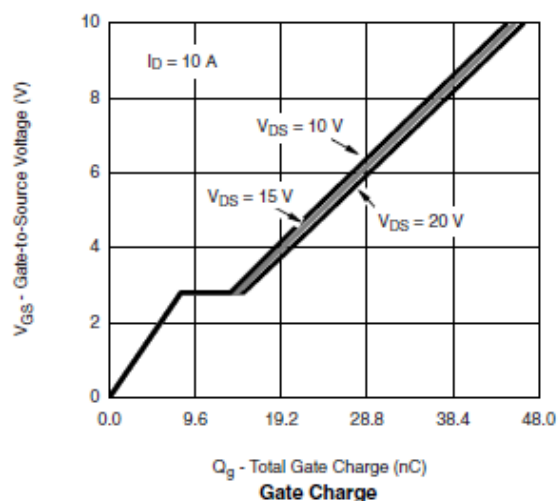
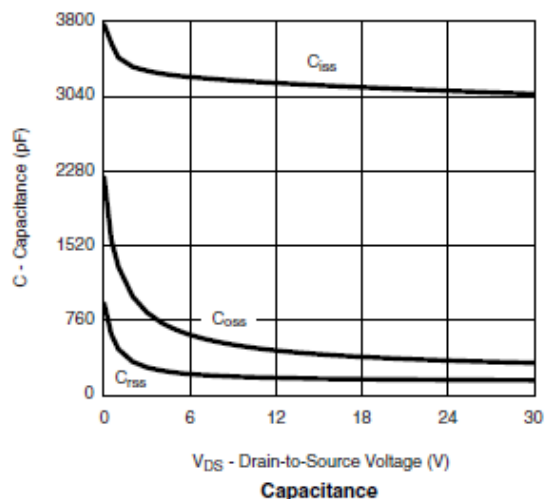
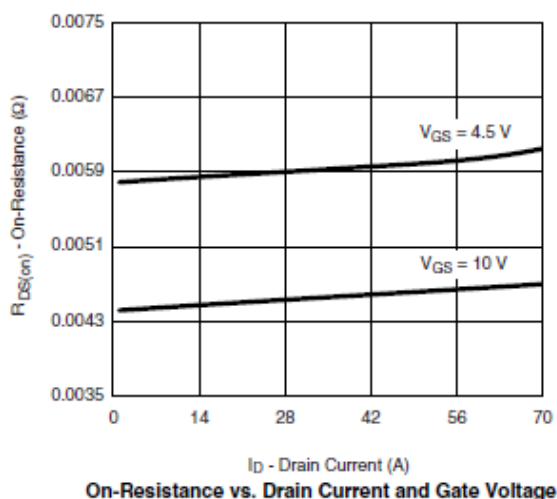
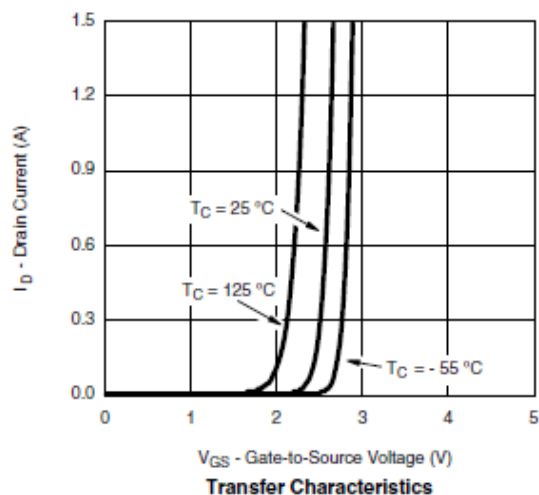
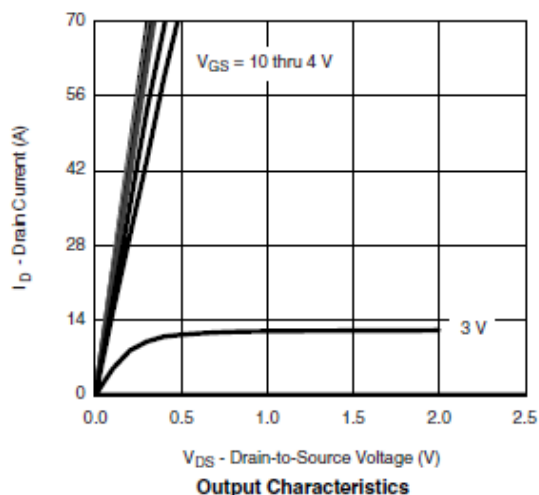
### Electrical Characteristics

(T<sub>A</sub>=25°C Unless otherwise noted)

| Parameter                       | Symbol               | Conditions                                                                                                        | Min. | Typ  | Max. | Unit |
|---------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| <b>Static</b>                   |                      |                                                                                                                   |      |      |      |      |
| Drain-Source Breakdown Voltage  | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA                                                                        | 30   |      |      | V    |
| Gate Threshold Voltage          | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA                                                          | 1.0  |      | 2.0  |      |
| Gate Leakage Current            | I <sub>GSS</sub>     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V                                                                        |      |      | ±100 | nA   |
| Zero Gate Voltage Drain Current | I <sub>DSS</sub>     | V <sub>DS</sub> =24V, V <sub>GS</sub> =0V                                                                         |      |      | 1    | uA   |
|                                 |                      | V <sub>DS</sub> =24V, V <sub>GS</sub> =0V<br>T <sub>J</sub> =85°C                                                 |      |      | 10   |      |
| On-State Drain Current          | I <sub>D(on)</sub>   | V <sub>DS</sub> ≥5V, V <sub>GS</sub> =10V                                                                         | 30   |      |      | A    |
| Drain-Source On-Resistance      | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =15A                                                                         |      | 3.8  | 5.2  | mΩ   |
|                                 |                      | V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A                                                                        |      | 5.5  | 7.0  |      |
| Forward Transconductance        | g <sub>FS</sub>      | V <sub>DS</sub> =15V, I <sub>D</sub> =15A                                                                         |      | 78   |      | S    |
| Diode Forward Voltage           | V <sub>SD</sub>      | I <sub>S</sub> =3A, V <sub>GS</sub> =0V                                                                           |      | 0.8  | 1.3  | V    |
| <b>Dynamic</b>                  |                      |                                                                                                                   |      |      |      |      |
| Total Gate Charge               | Q <sub>g</sub>       | V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V<br>I <sub>D</sub> ≡10A                                                |      | 22   | 35   | nC   |
| Gate-Source Charge              | Q <sub>gs</sub>      |                                                                                                                   |      | 8    |      |      |
| Gate-Drain Charge               | Q <sub>gd</sub>      |                                                                                                                   |      | 7    |      |      |
| Input Capacitance               | C <sub>iss</sub>     | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V<br>f=1MHz                                                               |      | 3200 |      | pF   |
| Output Capacitance              | C <sub>oss</sub>     |                                                                                                                   |      | 420  |      |      |
| Reverse Transfer Capacitance    | C <sub>rss</sub>     |                                                                                                                   |      | 180  |      |      |
| Turn-On Time                    | t <sub>d(on)</sub>   | V <sub>DD</sub> =15V, R <sub>L</sub> =1.50Ω<br>I <sub>D</sub> ≡10A, V <sub>GEN</sub> =10V<br>R <sub>G</sub> =1.0Ω |      | 15   | 30   | ns   |
|                                 | t <sub>r</sub>       |                                                                                                                   |      | 10   | 20   |      |
| Turn-Off Time                   | t <sub>d(off)</sub>  |                                                                                                                   |      | 35   | 60   |      |
|                                 | t <sub>f</sub>       |                                                                                                                   |      | 10   | 20   |      |

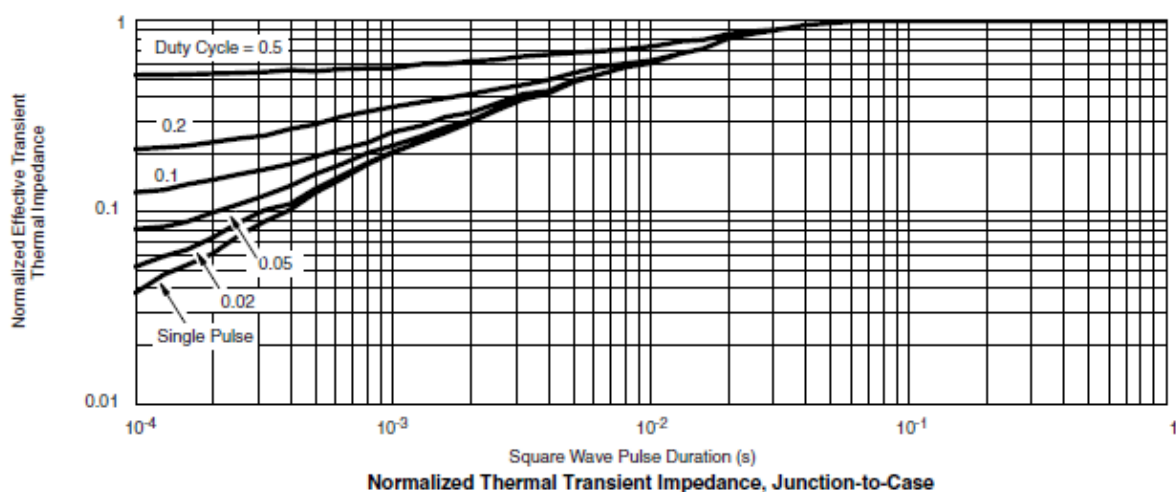
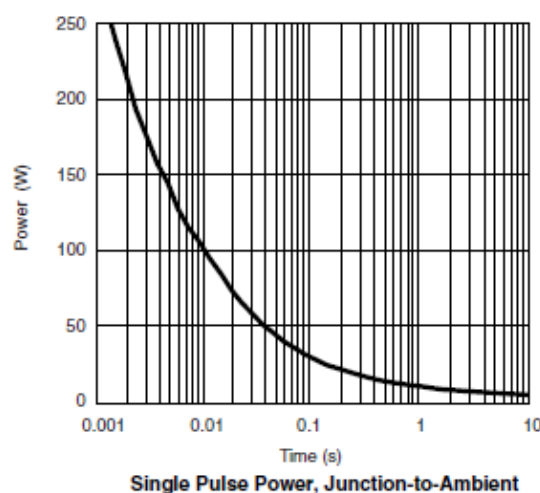
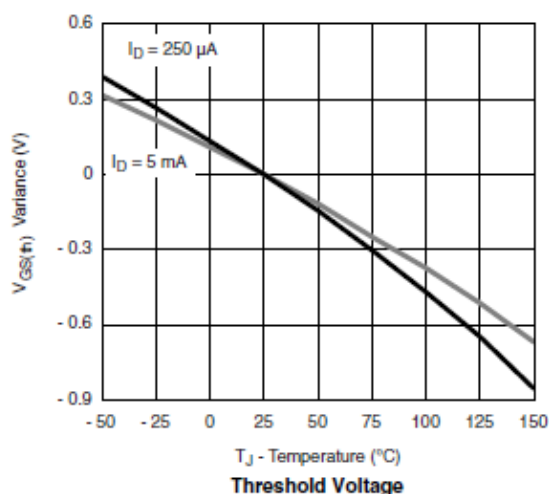
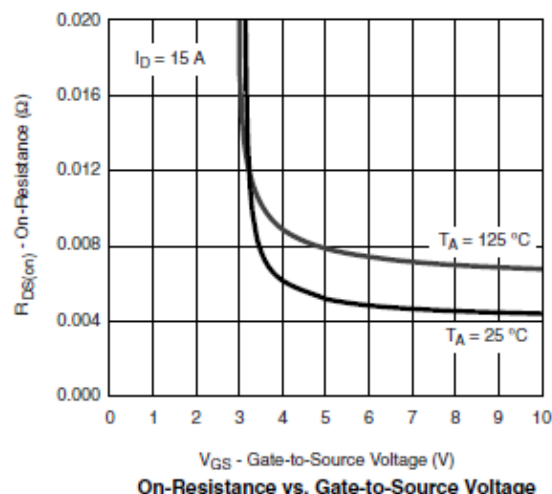
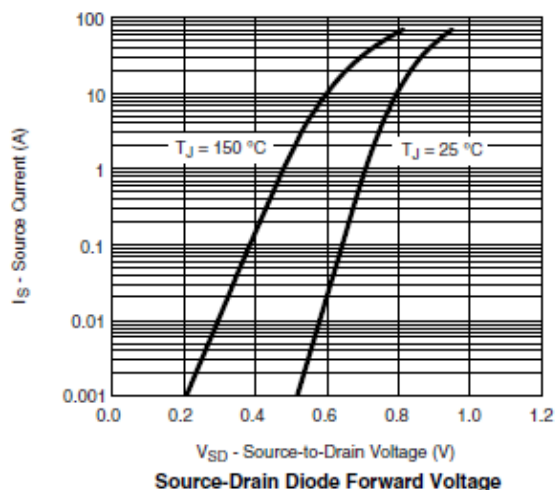


## Typical Characteristics





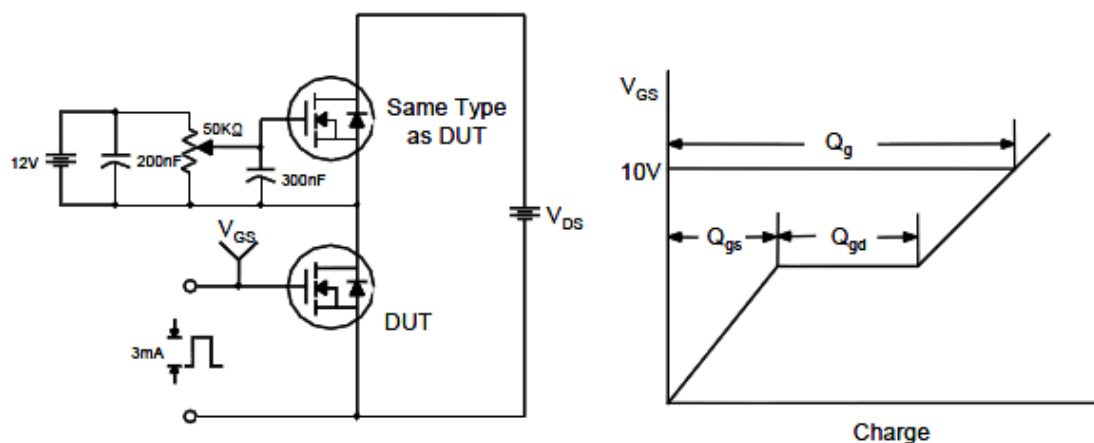
### Typical Characteristics



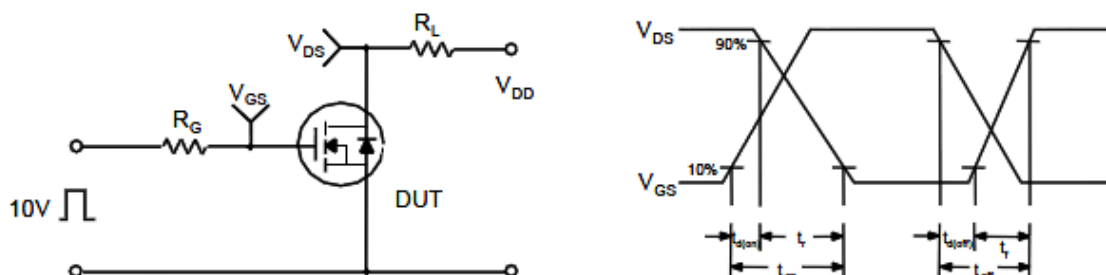


## Typical Characteristics

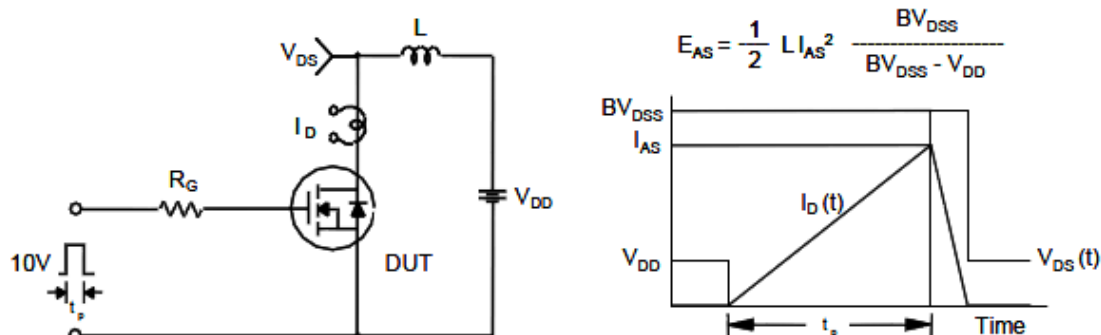
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

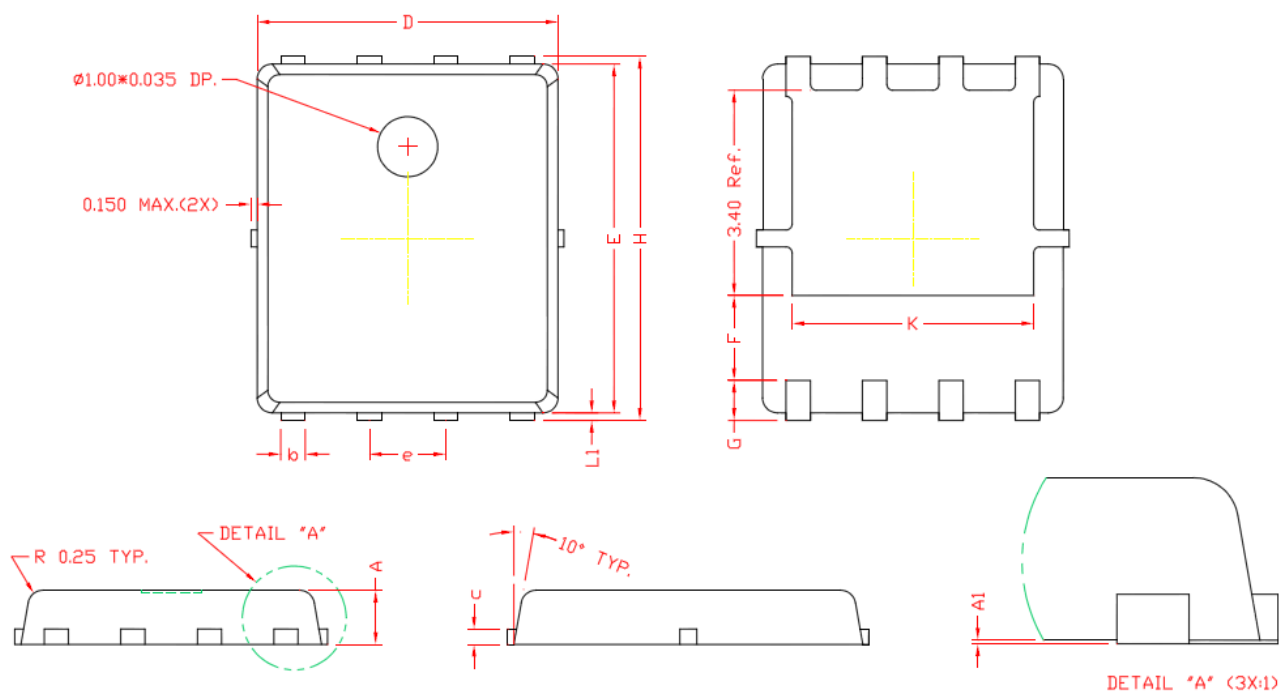


Unclamped Inductive Switching Test Circuit & Waveforms





### Package Information ( DFN 5X6-8L )



### DIMENSIONS

| REF. | Millimeters |      | REF. | Millimeters |      |
|------|-------------|------|------|-------------|------|
|      | Min.        | Max. |      | Min.        | Max. |
| A    | 0.80        | 1.00 | E    | 5.70        | 5.90 |
| A1   | 0.00        | 0.05 | e    | 1.27 BSC.   |      |
| b    | 0.35        | 0.49 | H    | 5.95        | 6.20 |
| c    | 0.254 Ref.  |      | L1   | 0.10        | 0.18 |
| D    | 4.90        | 5.10 | G    | 0.60 Ref.   |      |
| F    | 1.40 Ref.   |      | K    | 4.00 Ref.   |      |

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 2F, No.80, Sec.1, Cheng Kung Rd., Nan Kang Dist., Taipei City 115, Taiwan (R.O.C.)  
 Tel : 886 2) 2651 3928  
 Fax : 886 2) 2786 8483  
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