

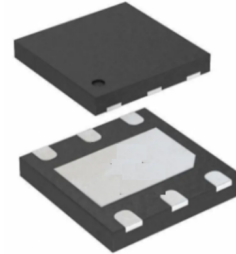
Features

- 20V/20A,
 $R_{DS(ON)} = 12m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
 $R_{DS(ON)} = 16m\Omega(\text{typ.}) @ V_{GS} = 2.5V$
- 100% UIS Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- ESD Protected

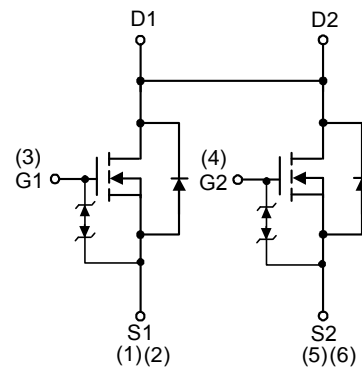
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



DFN2X2-6



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Rating | Unit |
|-------------------|--|------------------------|--------------------|
| V_{DSS} | Drain-Source Voltage | 20 | V |
| V_{GSS} | Gate-Source Voltage | ± 12 | |
| I_D | Continue Drain Current | $T_A=25^\circ\text{C}$ | 20 |
| | | $T_A=70^\circ\text{C}$ | 15 |
| I_{DM} | Pulsed Drain Current | $T_A=25^\circ\text{C}$ | 60 |
| I_S | Diode continuous forward current | 20 | A |
| T_J | Maximum Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 150 | |
| P_D | Maximum Power Dissipation | $T_A=25^\circ\text{C}$ | 1.25 |
| | | $T_A=70^\circ\text{C}$ | 0.8 |
| $R_{\theta JA}^*$ | Thermal Resistance-Junction to Ambient | 100 | $^\circ\text{C/W}$ |

Note * : Surface Mounted on 1in^2 pad area, $t \leq 10\text{sec}$.

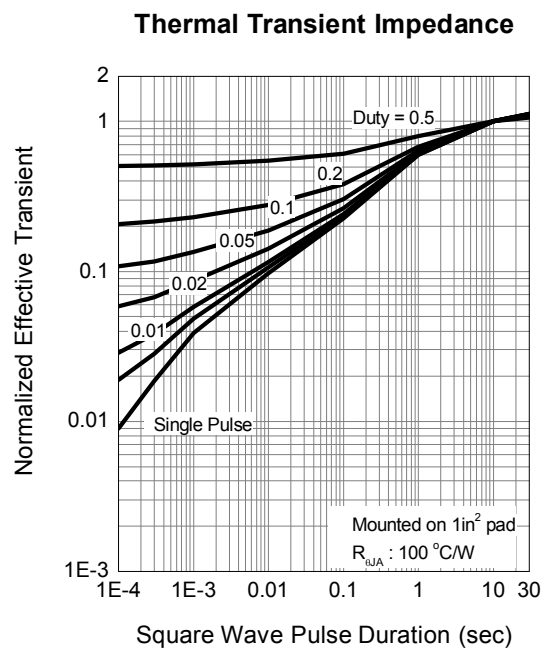
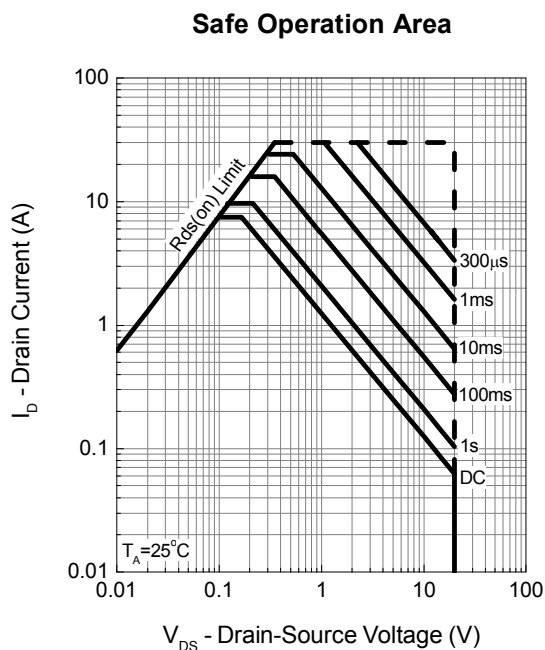
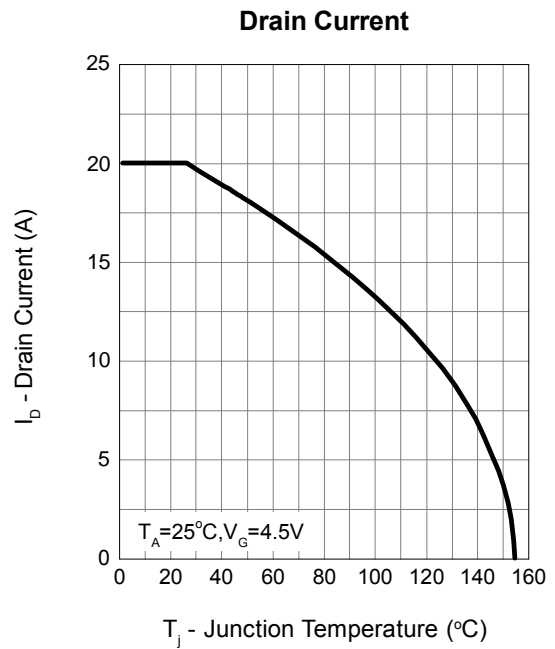
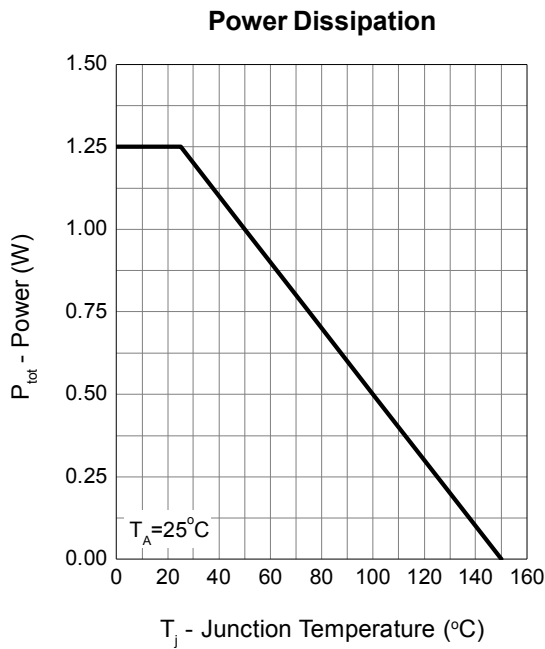
Electrical Characteristics ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|--|----------------------------------|--|------|------|----------|-----------|
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | 20 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=16V, V_{GS}=0V$ | - | - | 1 | μA |
| | | $T_J=85^\circ C$ | - | - | 30 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | 0.5 | 0.7 | 1.1 | V |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 10V, V_{DS}=0V$ | - | - | ± 10 | μA |
| $R_{DS(ON)}^a$ | Drain-Source On-state Resistance | $V_{GS}=4.5V, I_{DS}=4A$ | - | 12 | 15 | $m\Omega$ |
| | | $V_{GS}=2.5V, I_{DS}=3A$ | - | 16 | 19 | |
| Diode Characteristics | | | | | | |
| V_{SD}^a | Diode Forward Voltage | $I_{SD}=1A, V_{GS}=0V$ | - | 0.7 | 1.3 | V |
| t_{rr} | Reverse Recovery Time | $I_{SD}=7.5A, di_{SD}/dt=100A/\mu s$ | - | 10 | - | nS |
| Q_{rr} | Reverse Recovery Charge | | - | 3.5 | - | nC |
| Dynamic Characteristics^b | | | | | | |
| R_G | Gate Resistance | $V_{GS}=0V, V_{DS}=0V, F=1MHz$ | - | 8 | - | Ω |
| C_{iss} | Input Capacitance | $V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz | - | 713 | - | pF |
| C_{oss} | Output Capacitance | | - | 118 | - | |
| C_{rss} | Reverse Transfer Capacitance | | - | 96 | - | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}=10V, R_L=10\Omega,$ $I_{DS}=1A, V_{GEN}=4.5V,$ $R_G=6\Omega$ | - | 9 | 16 | ns |
| t_r | Turn-on Rise Time | | - | 13 | 23 | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | - | 55 | 99 | |
| t_f | Turn-off Fall Time | | - | 36 | 65 | |
| Gate Charge Characteristics^b | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=10V, V_{GS}=4.5V,$ $I_{DS}=7.5A$ | - | 9.8 | 12.8 | nC |
| Q_{gs} | Gate-Source Charge | | - | 0.5 | - | |
| Q_{gd} | Gate-Drain Charge | | - | 3.6 | - | |

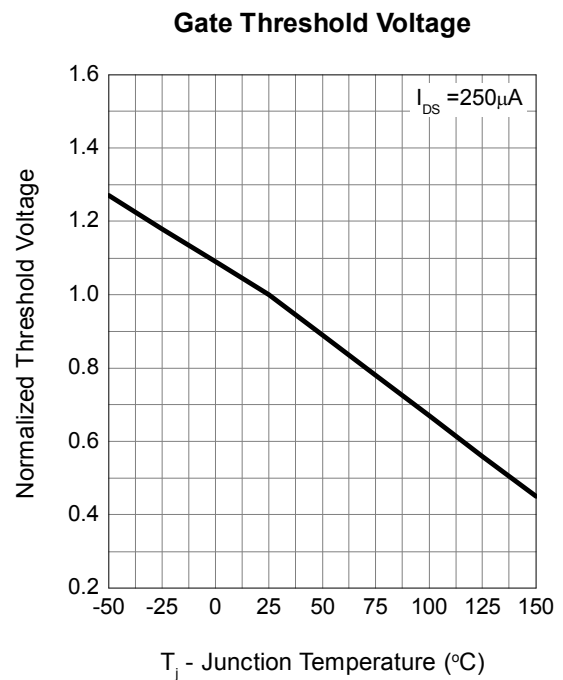
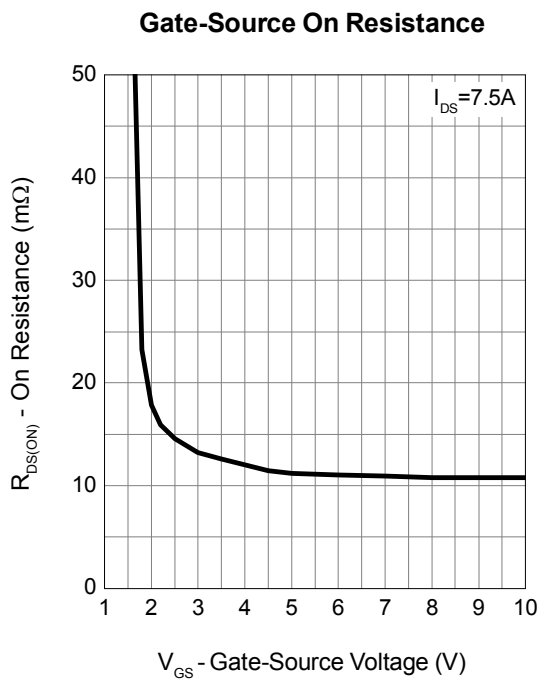
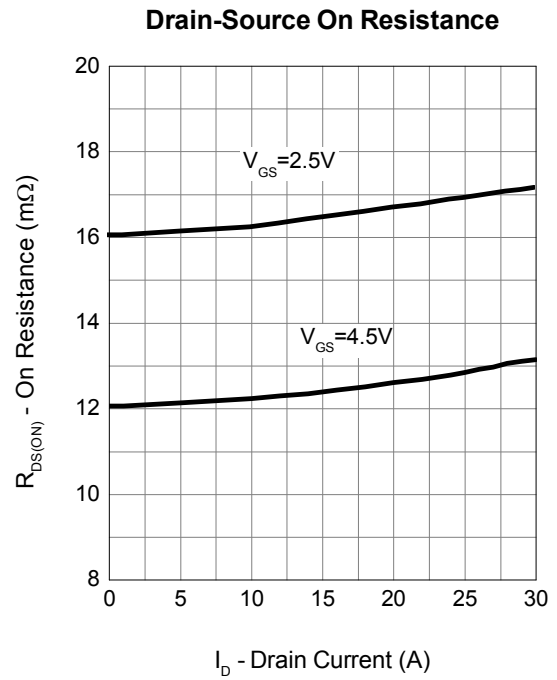
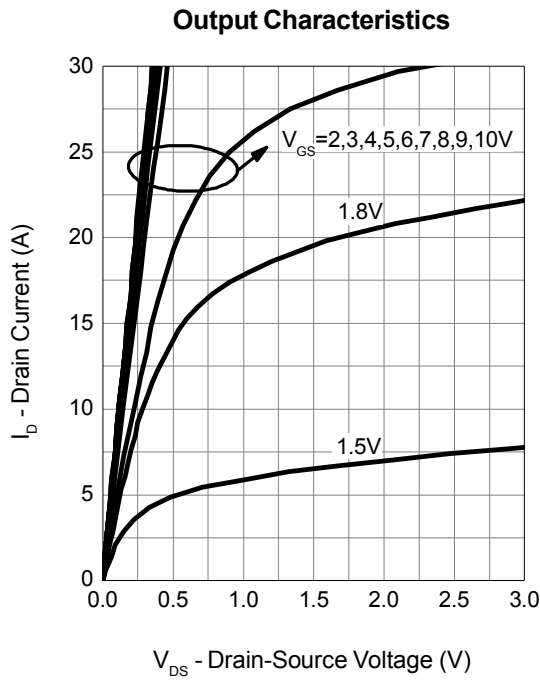
Note a Pulse test ; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note b Guaranteed by design, not subject to production testing.

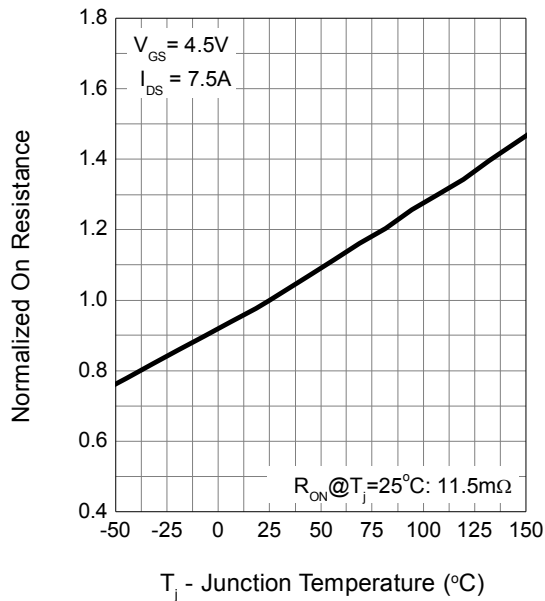
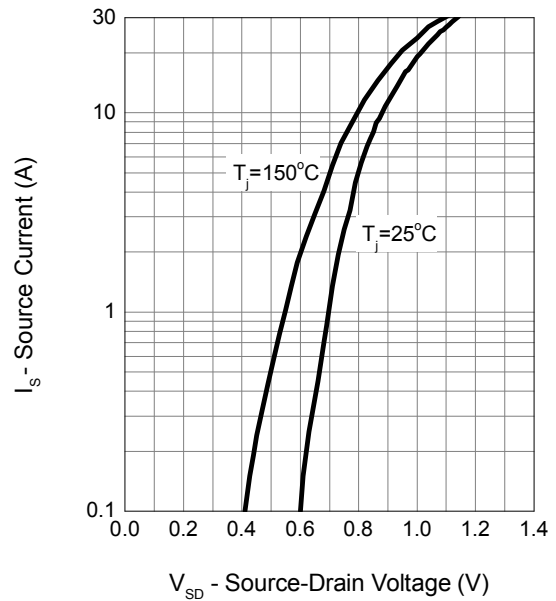
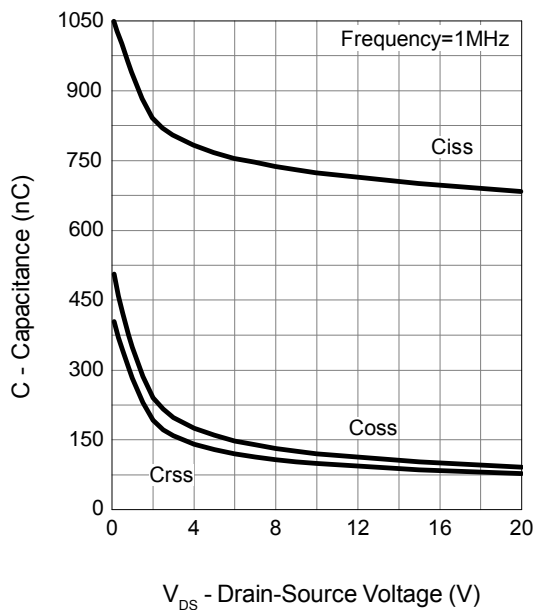
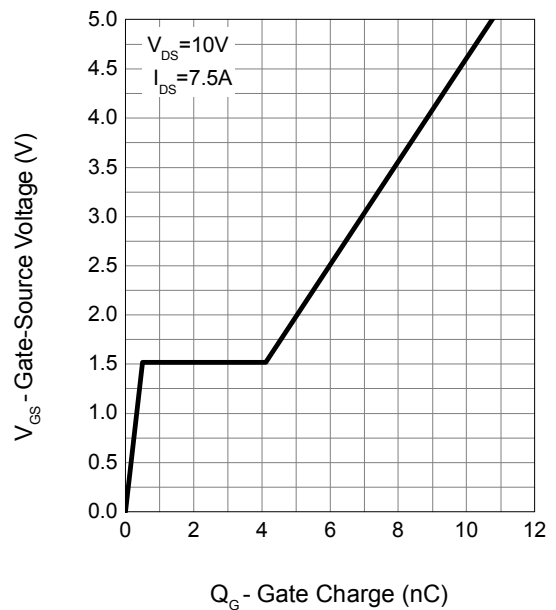
Typical Operating Characteristics



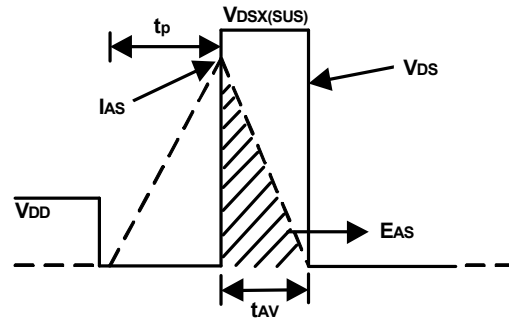
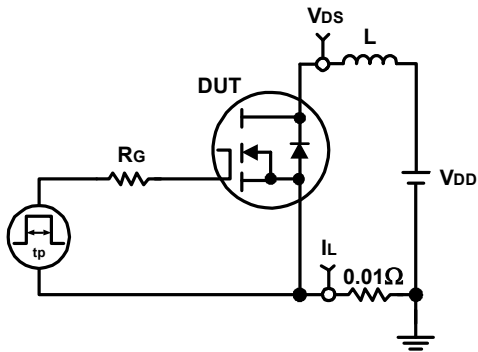
Typical Operating Characteristics (Cont.)



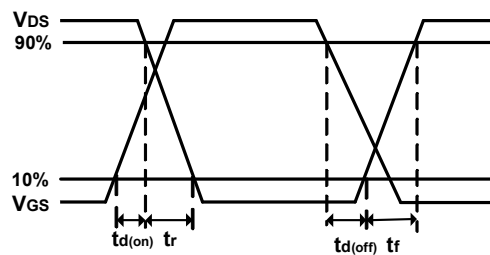
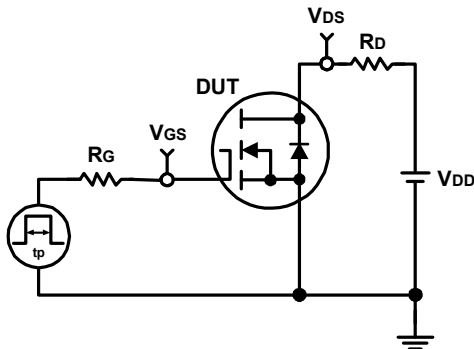
Typical Operating Characteristics (Cont.)

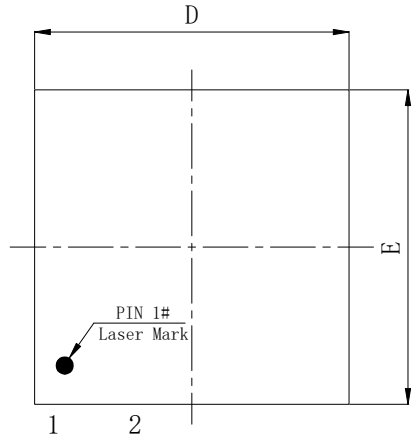
Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


Avalanche Test Circuit and Waveforms

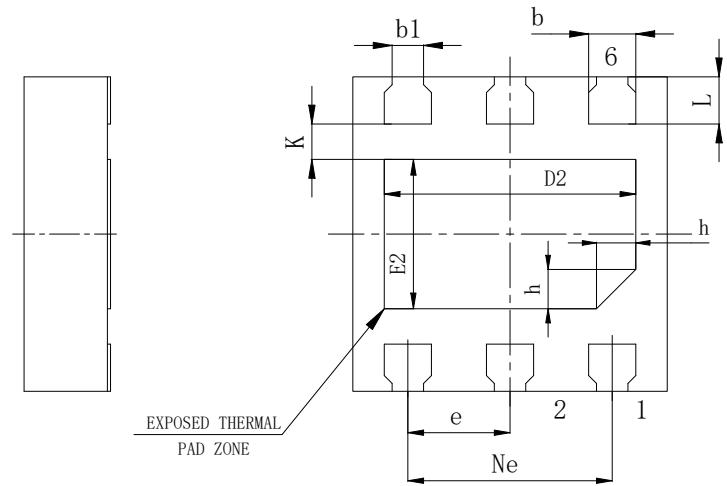


Switching Time Test Circuit and Waveforms

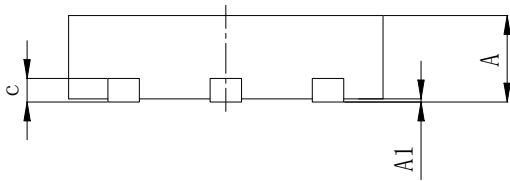




TOP VIEW



BOTTOM VIEW



SIDE VIEW

| SYMBOL | MILLIMETER | | |
|-----------------|------------|-------|------|
| | MIN | NOM | MAX |
| A | 0.60 | 0.70 | 0.80 |
| A1 | 0 | 0.02 | 0.05 |
| b | 0.25 | 0.30 | 0.35 |
| b1 | 0.15 | 0.20 | 0.25 |
| c | 0.10 | 0.15 | 0.20 |
| D | 1.90 | 2.00 | 2.10 |
| D2 | 1.50 | 1.60 | 1.70 |
| e | 0.65BSC | | |
| N_e | 1.30BSC | | |
| E | 1.90 | 2.00 | 2.10 |
| E2 | 0.85 | 0.95 | 1.05 |
| L | 0.25 | 0.30 | 0.35 |
| h | 0.20 | 0.25 | 0.30 |
| K | 0.20 | 0.225 | 0.28 |
| L/F载体尺寸 (MM) | 1.80X1.15 | | |