

➤ General Description

This PAN4442S N-Channel enhancement mode power field effect transistor is the high density trench technology and this advanced technology can provide excellent $R_{ds(On)}$ performance and efficiency for power switching and load switching application., this device also comply with the RoHS and Green Product requirement with full function reliability approved.

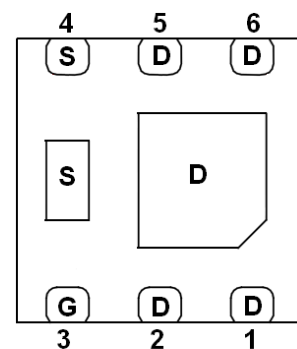
➤ Feature

- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- DFN2X2-6L package design

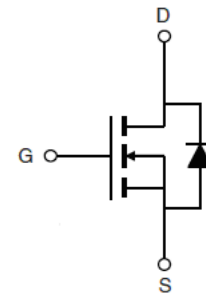
➤ Application

- DC/DC Converter
- High Frequency Switching

➤ DFN2X2-6L



BOTTOM VIEW



N-Channel MOSFET

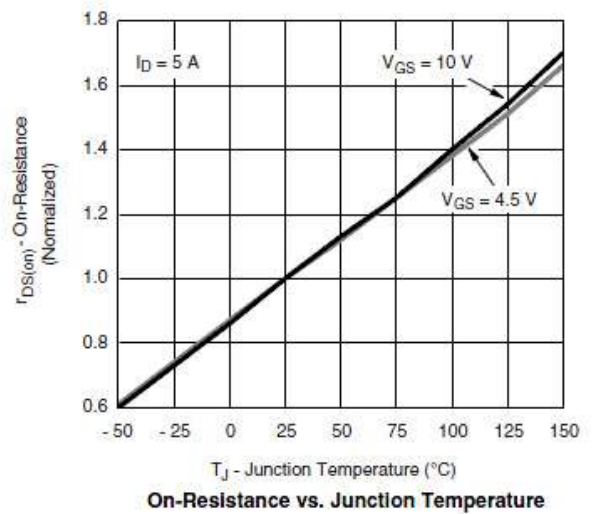
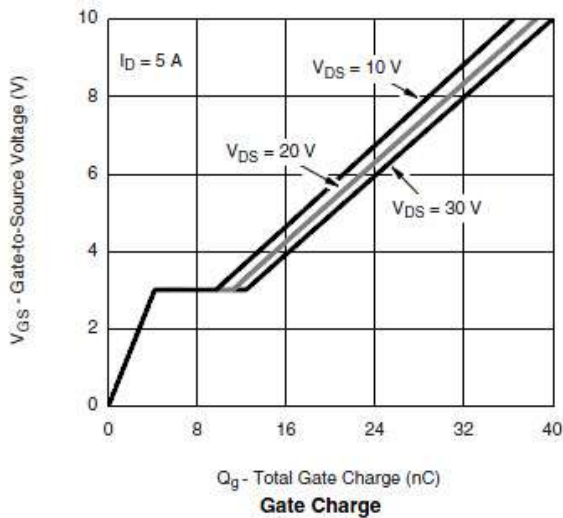
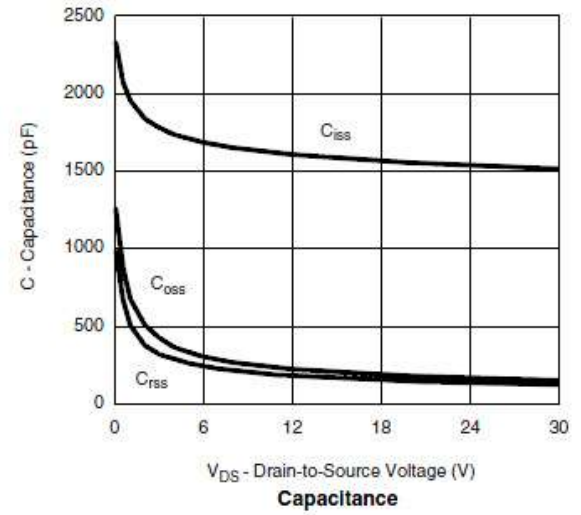
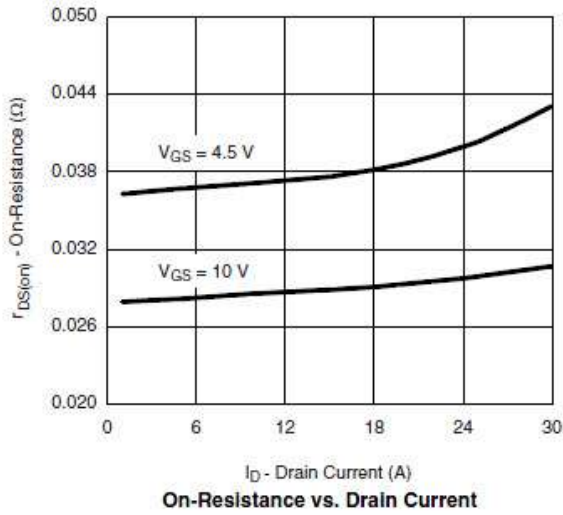
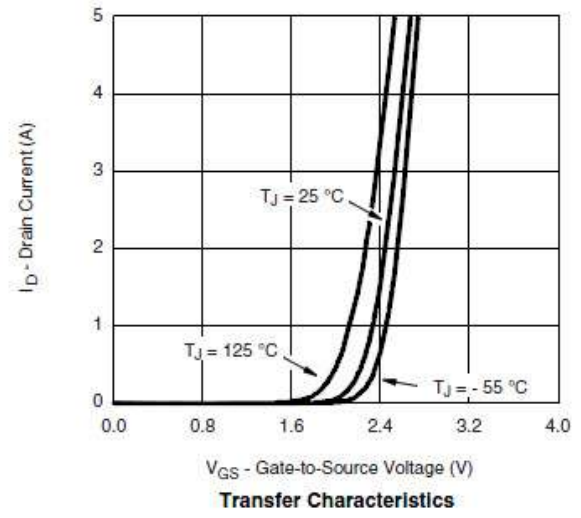
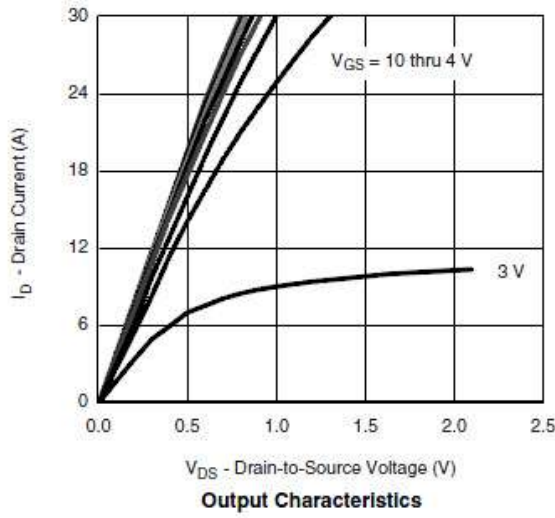
➤ Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|---|-----------------|------------------|--------------|
| Drain-Source Voltage | V_{DSS} | 40 | V |
| Gate –Source Voltage | V_{GSS} | ± 20 | V |
| Continuous Drain Current($T_J=150^\circ C$) | I_D | $T_A=25^\circ C$ | 8 |
| | | $T_A=70^\circ C$ | 6 |
| Pulsed Drain Current | I_{DM} | 20 | A |
| Continuous Source Current(Diode Conduction) | I_S | 8 | A |
| Power Dissipation | P_D | $T_A=25^\circ C$ | 2 |
| | | $T_A=70^\circ C$ | 1.5 |
| Operating Junction Temperature | T_J | 150 | $^\circ C$ |
| Storage Temperature Range | T_{STG} | -55/150 | $^\circ C$ |
| Thermal Resistance-Junction to Ambient | $R_{\theta JA}$ | 56 | $^\circ C/W$ |

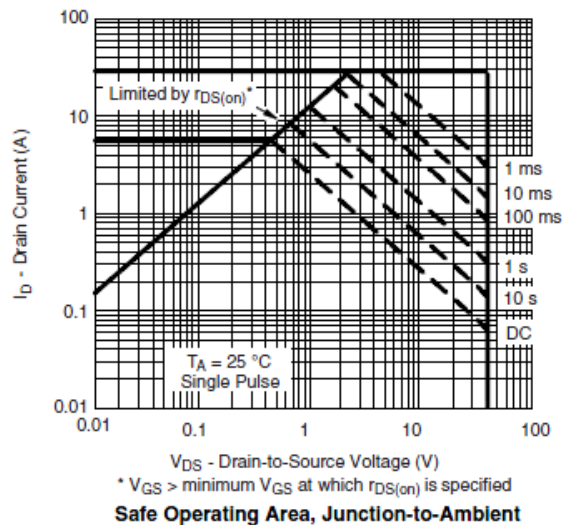
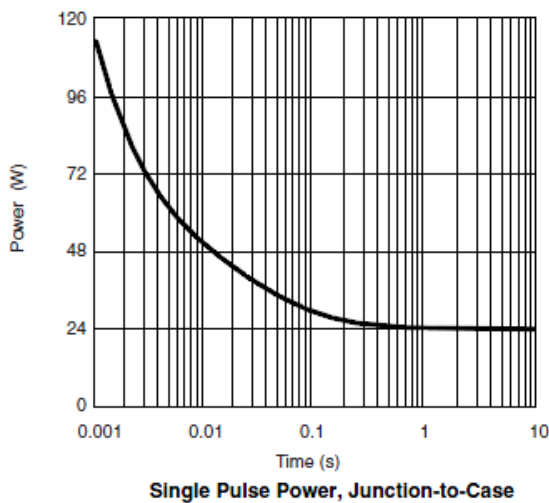
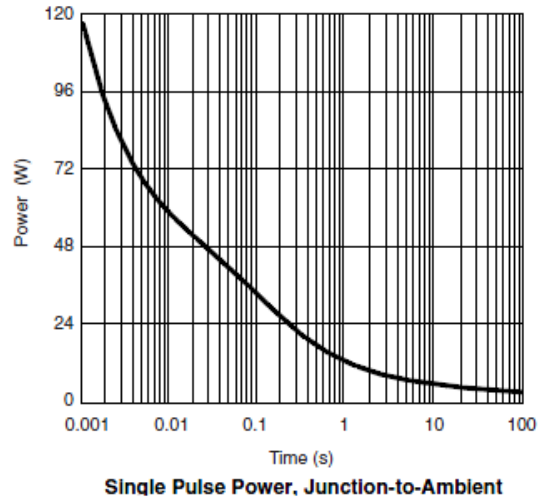
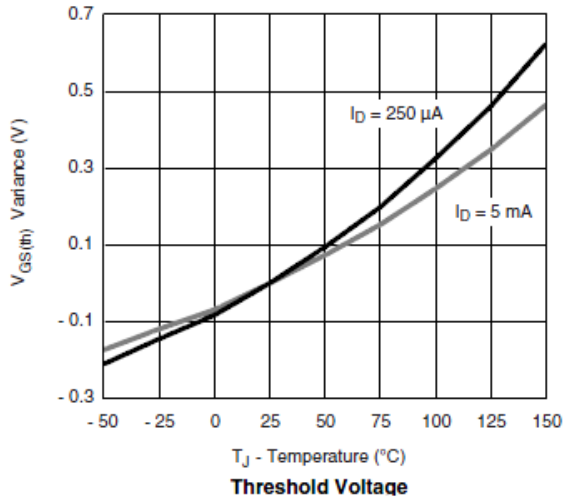
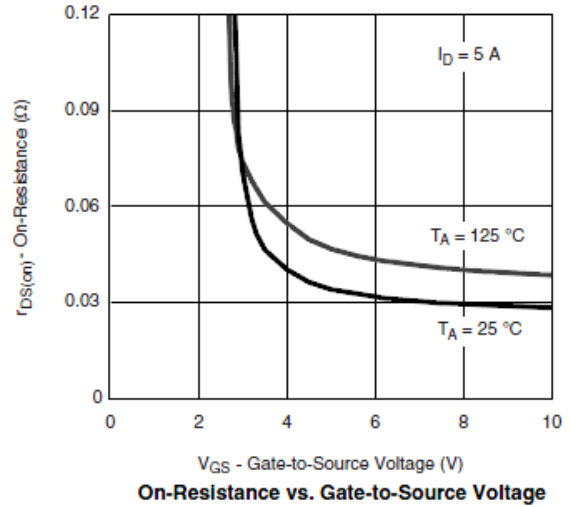
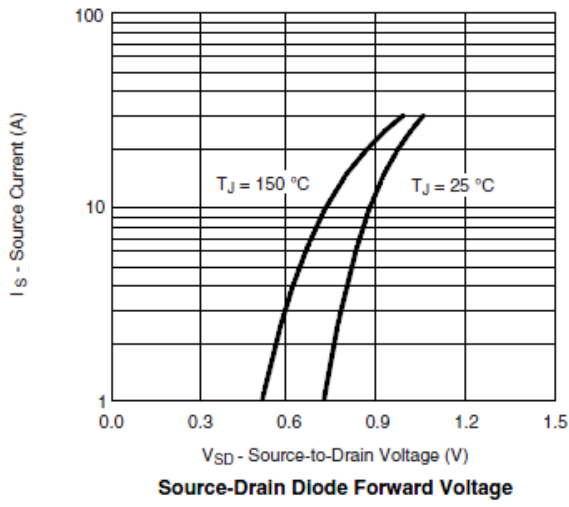
➤ **Electrical Characteristics ($T_A=25^\circ C$ Unless otherwise noted)**

| Parameter | Symbol | Conditions | Min. | Typ | Max. | Unit |
|---------------------------------|---------------|---|------|------|-----------|------------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D=250\mu A$ | 40 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | | 3.0 | |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 16V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=32V, V_{GS}=0V$ | | | 1 | uA |
| | | $V_{DS}=32V, V_{GS}=0V$ $T_J=85^\circ C$ | | | 10 | |
| On-State Drain Current | $I_{D(on)}$ | $V_{DS} \geq 5V, V_{GS}=10V$ | 15 | | | A |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10V, I_D=8A$ | | 18 | 24 | m Ω |
| | | $V_{GS}=4.5V, I_D=6A$ | | 25 | 34 | |
| Forward Transconductance | g_{FS} | $V_{DS}=15V, I_D=5.0A$ | | 25 | | S |
| Diode Forward Voltage | V_{SD} | $I_S=2A, V_{GS}=0V$ | | 0.85 | 1.2 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=20V, V_{GS}=4.5V$ $I_D=5A$ | | 10 | 14 | nC |
| Gate-Source Charge | Q_{gs} | | | 2.8 | | |
| Gate-Drain Charge | Q_{gd} | | | 3.2 | | |
| Input Capacitance | C_{iss} | $V_{DS}=20V, V_{GS}=0V$ $f=1MHz$ | | 850 | | pF |
| Output Capacitance | C_{oss} | | | 110 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 75 | | |
| Turn-On Time | $t_{d(on)}$ | $V_{DD}=20V, R_L=4\Omega$ $I_D=5.0A, V_{GEN}=10V$ $R_G=1\Omega$ | | 6 | 12 | ns |
| | t_r | | | 10 | 20 | |
| Turn-Off Time | $t_{d(off)}$ | | | 20 | 36 | |
| | t_f | | | 6 | 12 | |

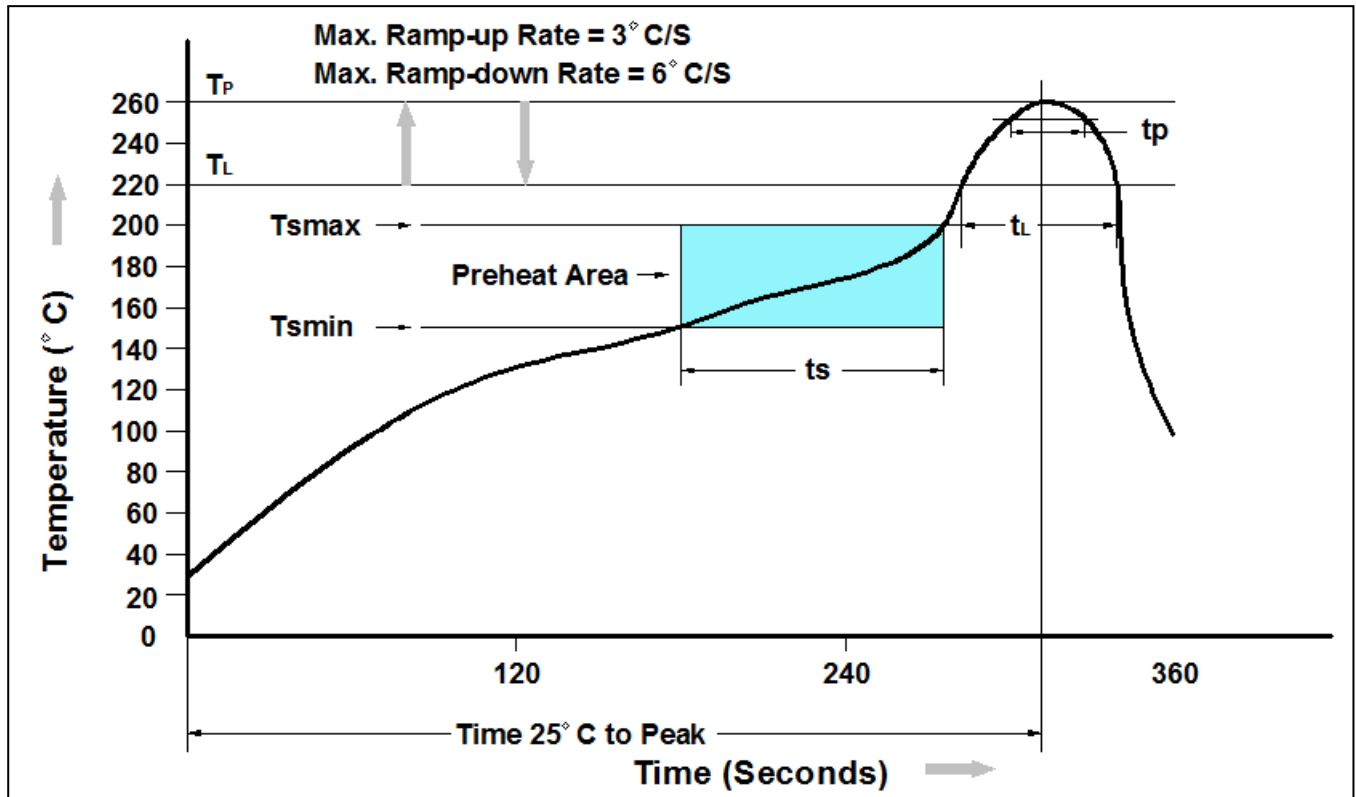
➤ Typical Characteristics



N-Ch 40V Fast Switching MOSFET
 $V_{DS}=40V$, $I_D=8.0A$, $R_{DS(on)}=24m\Omega$



➤ Recommand IR Reflow Soldering Thermal Profile

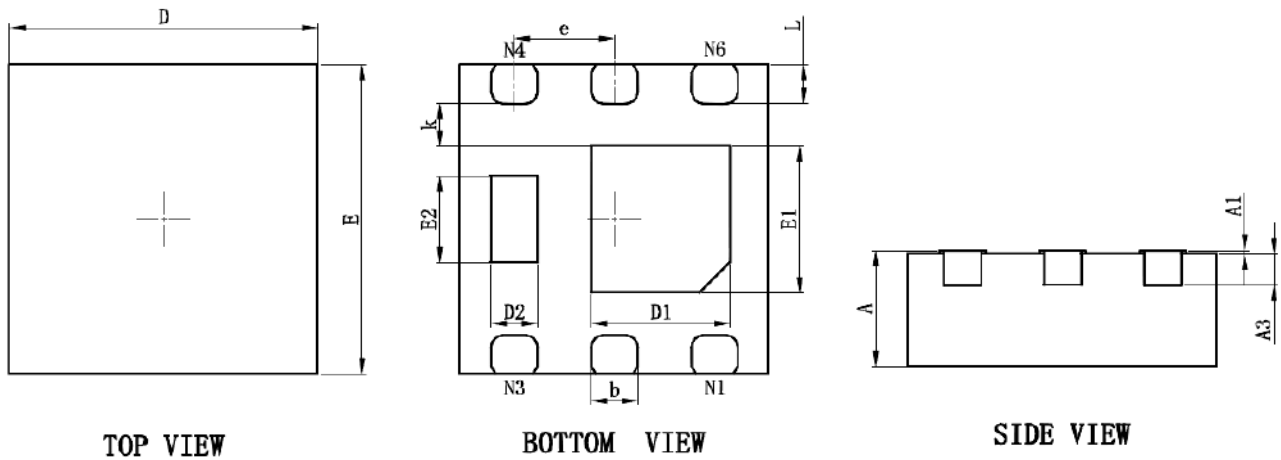


| Profile Feature | Pb-Free Assembly Profile |
|--|--------------------------|
| Temperature Min. (T_{smin}) | 150°C |
| Temperature Max. (T_{smax}) | 200°C |
| Time (t_s) from (T_{smin} to T_{smax}) | 60-120 seconds |
| Average Ramp-up Rate (t_L to t_P) | 3°C/second max. |
| Liquidous Temperature (T_L) | 217°C |
| Time (t_L) Maintained Above (T_L) | 60 – 150 seconds |
| Peak Temperature | 260°C +0°C / -5°C |
| Time (t_P) within 5°C of actual Peak Temperature | 30 seconds |
| Ramp-down Rate (T_P to T_L) | 6°C/second max |
| Time 25°C to Peak Temperature | 8 minutes max. |

➤ Ordering Information

| Part Number | Description | Quantity |
|-------------|----------------|----------|
| PAN4442S | DFN2X2-6L Reel | 4000 pcs |

➤ **Package Information (DFN2X2-6L)**



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.800 | 0.028 | 0.031 |
| A1 | 0.000 | 0.050 | 0.000 | 0.002 |
| A3 | 0.203REF. | | 0.008REF. | |
| D | 1.924 | 2.076 | 0.076 | 0.082 |
| E | 1.924 | 2.076 | 0.076 | 0.082 |
| D1 | 0.800 | 1.000 | 0.031 | 0.039 |
| E1 | 0.850 | 1.050 | 0.033 | 0.041 |
| D2 | 0.200 | 0.400 | 0.008 | 0.016 |
| E2 | 0.460 | 0.660 | 0.018 | 0.026 |
| k | 0.200MIN. | | 0.008MIN. | |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| e | 0.650TYP. | | 0.026TYP. | |
| L | 0.174 | 0.326 | 0.007 | 0.013 |

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