



Description

The PJQ4524S6P-AU_R2_002A1 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 30V$ $I_D = 90A$

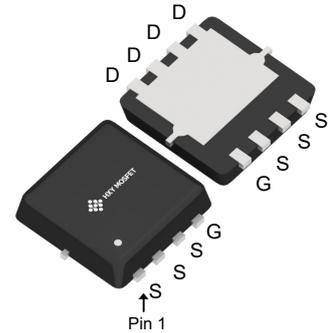
$R_{DS(ON)} < 4.6 m\Omega @ V_{GS}=10V$

Application

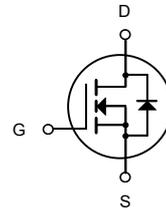
Battery protection

Load switch

Uninterruptible power supply



DFN3X3-8L



N-Channel MOSFET

Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|------------------------|-----------|------------|----------|
| PJQ4524S6P-AU_R2_002A1 | DFN3X3-8L | HXY MOSFET | 5000 |

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|----------------------|--|------------|--------------|
| V_{DS} | Drain-Source Voltage | 30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D@T_C=25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 90 | A |
| $I_D@T_C=75^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V$ | 45 | A |
| IDM | Pulsed Drain Current | 290 | A |
| EAS | Single Pulse Avalanche Energy | 196 | mJ |
| IAS | Avalanche Current | 36 | A |
| $P_D@T_C=25^\circ C$ | Total Power Dissipation | 46 | W |
| TSTG | Storage Temperature Range | -55 to 175 | $^\circ C$ |
| T_J | Operating Junction Temperature Range | -55 to 175 | $^\circ C$ |
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient | 62 | $^\circ C/W$ |
| $R_{\theta JC}$ | Thermal Resistance Junction-Case | 1.72 | $^\circ C/W$ |



Electrical Characteristics (T_J=25°C, unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-------------------------------------|--|--|------|------|------|-------|
| BV _{DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250uA | 30 | --- | --- | V |
| ΔBV _{DSS} /ΔT _J | BV _{DSS} Temperature Coefficient | Reference to 25°C, I _D =1mA | --- | --- | --- | V/°C |
| R _{DS(ON)} | Static Drain-Source On-Resistance ² | V _{GS} =10V, I _D =30A | --- | 3.5 | 4.6 | mΩ |
| | | V _{GS} =4.5V, I _D =15A | --- | 7.8 | 10 | |
| V _{GS(th)} | Gate Threshold Voltage | V _{GS} =V _{DS} , I _D =250uA | 1.2 | 1.6 | 2.5 | V |
| ΔV _{GS(th)} | V _{GS(th)} Temperature Coefficient | | --- | --- | --- | mV/°C |
| I _{DSS} | Drain-Source Leakage Current | V _{DS} =30V, V _{GS} =0V, T _J =25°C | --- | --- | 1 | uA |
| | | V _{DS} =30V, V _{GS} =0V, T _J =100°C | --- | --- | 100 | |
| I _{GSS} | Gate-Source Leakage Current | V _{GS} =±20V, V _{DS} =0V | --- | --- | ±100 | nA |
| g _{fs} | Forward Transconductance | V _{DS} =10V, I _D =30A | --- | 80 | --- | S |
| R _g | Gate Resistance | V _{DS} =0V, V _{GS} =0V, f=1MHz | --- | 2 | --- | Ω |
| Q _g | Total Gate Charge | V _{DS} =15V, V _{GS} =4.5V, I _D =30A | --- | 20 | --- | nC |
| Q _{gs} | Gate-Source Charge | | --- | 5 | --- | |
| Q _{gd} | Gate-Drain Charge | | --- | 7.2 | --- | |
| T _{d(on)} | Turn-On Delay Time | V _{GS} =10V, V _{DD} =15V, R _G =3Ω, I _D =30A | --- | 9 | --- | ns |
| T _r | Rise Time | | --- | 16 | --- | |
| T _{d(off)} | Turn-Off Delay Time | | --- | 43 | --- | |
| T _f | Fall Time | | --- | 12 | --- | |
| C _{iss} | Input Capacitance | V _{DS} =15V, V _{GS} =0V, f=1MHz | --- | 2088 | --- | pF |
| C _{oss} | Output Capacitance | | --- | 277 | --- | |
| C _{rss} | Reverse Transfer Capacitance | | --- | 209 | --- | |

Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|-----------------|--|---|------|------|------|------|
| I _S | Continuous Source Current ^{1,5} | V _G =V _D =0V, Force Current | --- | --- | 90 | A |
| V _{SD} | Diode Forward Voltage ² | V _{GS} =0V, I _S =1A, T _J =25°C | --- | --- | 1.2 | V |

Note :

1 The data is tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2 The data is tested by pulsed pulse width ≤ 300us duty cycle ≤ 2%

3 The EAS data shows Max. heating at the test condition as V_{RM} × I_O, V_{DD}=24V, V_{GS}=10V, L=0.1mH, I_{AS}=36A.

4 The power dissipation is limited by 150°C junction temperature

5 The data is theoretically the same as I_D and I_{DMA}. In real applications it should be limited by total power dissipation.



Typical Characteristics

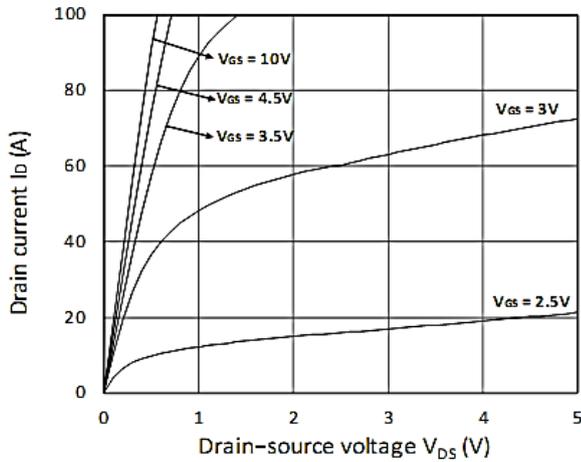


Figure 1. Output Characteristics

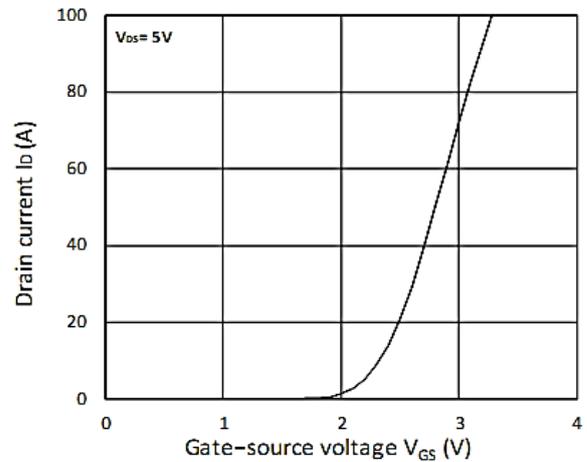


Figure 2. Transfer Characteristics

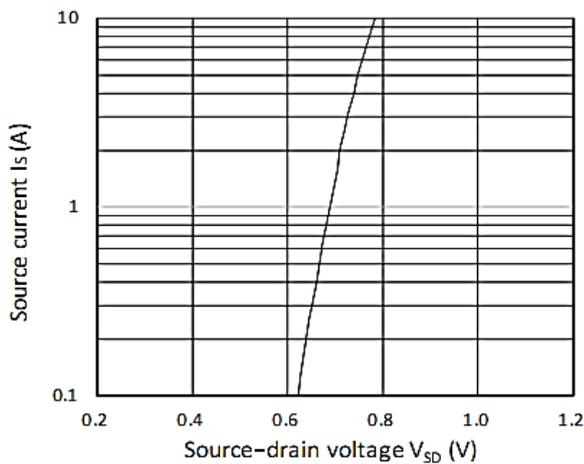


Figure 3. Forward Characteristics of Reverse

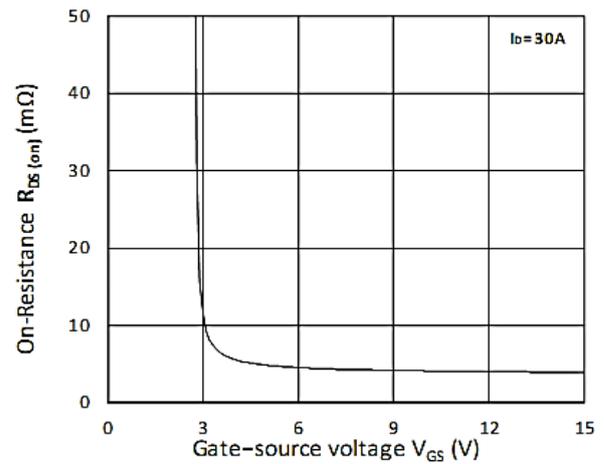


Figure 4. R_DS(ON) vs. V_GS

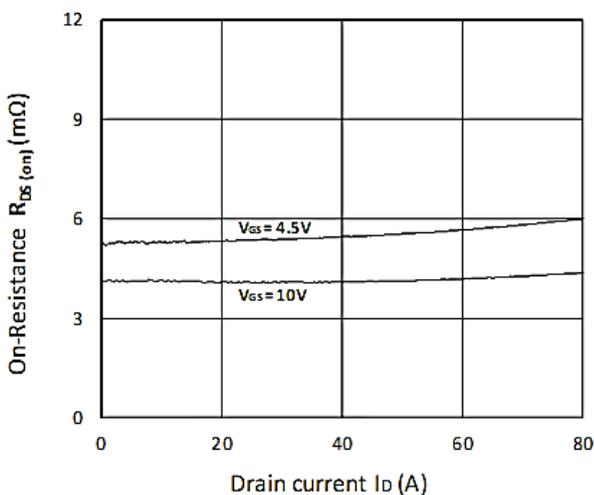


Figure 5. R_DS(ON) vs. I_D

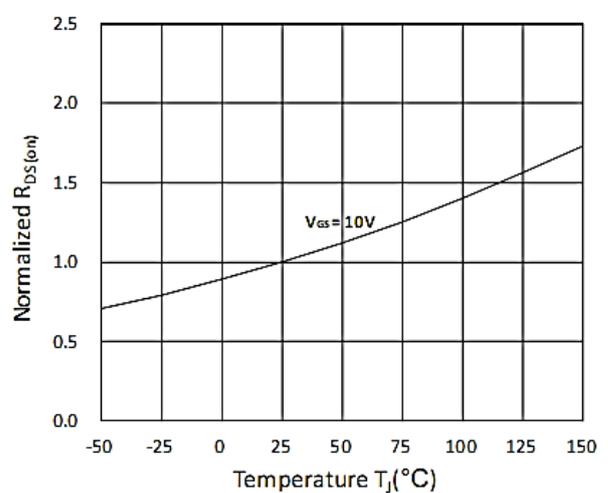


Figure 6. Normalized R_DS(on) vs. Temperature

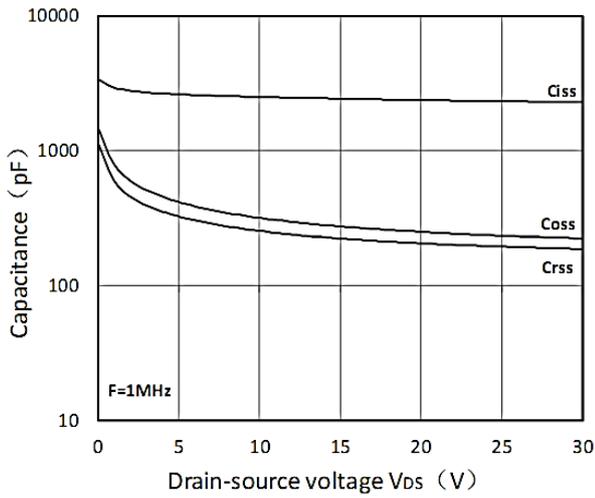


Figure 7. Capacitance Characteristics

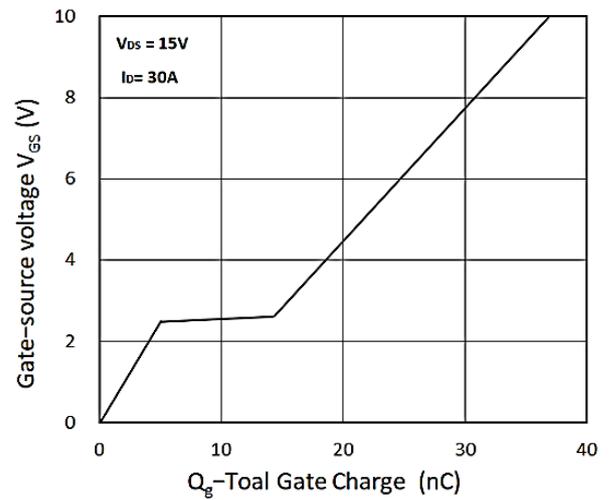


Figure 8. Gate Charge Characteristics

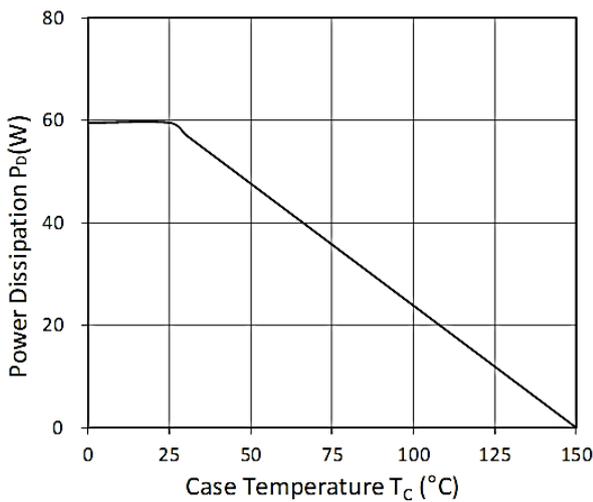


Figure 9. Power Dissipation

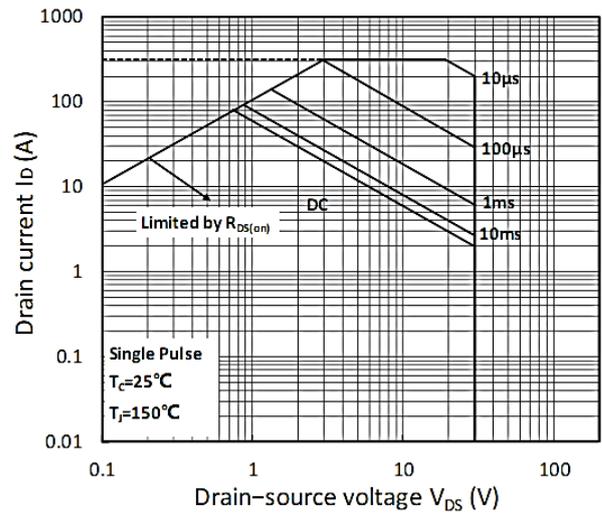


Figure 10. Safe Operating Area

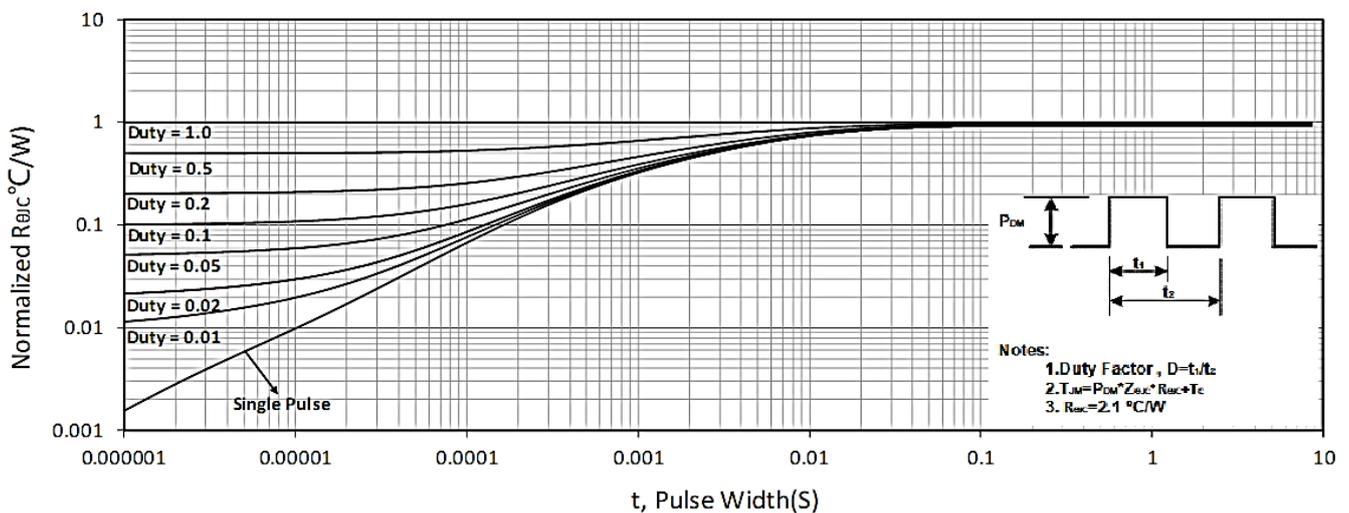
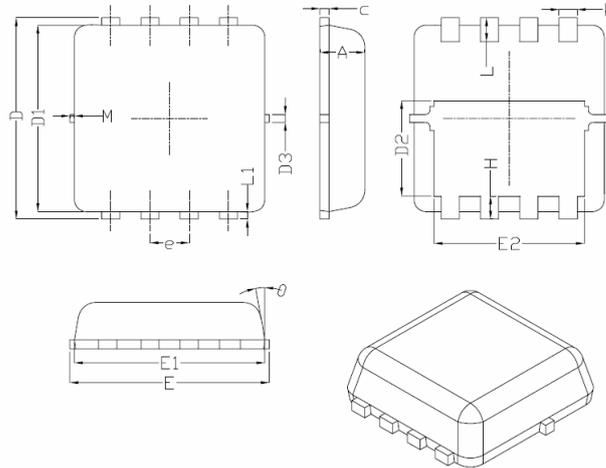


Figure 11. Normalized Maximum Transient Thermal Impedance



DFN3X3-8L Package Information



| Symbol | Dimensions In Millimeters | | |
|----------|---------------------------|------|------|
| | Min. | Nom. | Max. |
| A | 0.70 | 0.75 | 0.80 |
| b | 0.25 | 0.30 | 0.35 |
| c | 0.10 | 0.15 | 0.25 |
| D | 3.25 | 3.35 | 3.45 |
| D1 | 3.00 | 3.10 | 3.20 |
| D2 | 1.48 | 1.58 | 1.68 |
| D3 | - | 0.13 | - |
| E | 3.20 | 3.30 | 3.40 |
| E1 | 3.00 | 3.15 | 3.20 |
| E2 | 2.39 | 2.49 | 2.59 |
| e | 0.65BSC | | |
| H | 0.30 | 0.39 | 0.50 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | - | 0.13 | - |
| M | * | * | 0.15 |
| θ | | 10° | 12° |



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