

# PJQ2460-AU

## 60V N-Channel Enhancement Mode MOSFET

|                |             |                |             |
|----------------|-------------|----------------|-------------|
| <b>Voltage</b> | <b>60 V</b> | <b>Current</b> | <b>3.2A</b> |
|----------------|-------------|----------------|-------------|

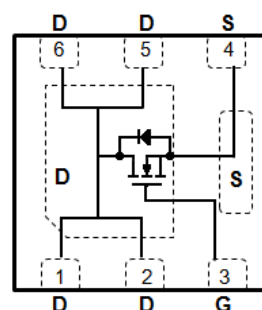
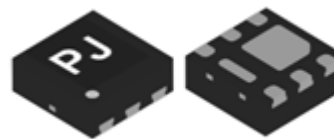
### Features

- $R_{DS(ON)}$  ,  $V_{GS}@10V$ ,  $I_D@3.2A < 75m\Omega$
- $R_{DS(ON)}$  ,  $V_{GS}@4.5V$ ,  $I_D@2.0A < 90m\Omega$
- Advanced Trench Process Technology
- High density cell design for ultra low on-resistance
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case : DFN2020B-6L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0003 ounces, 0.0086 grams

### DFN2020B-6L



## Maximum Ratings and Thermal Characteristics ( $T_A=25^{\circ}C$ unless otherwise noted)

| PARAMETER                                        |                      | SYMBOL                            | LIMIT   | UNITS |
|--------------------------------------------------|----------------------|-----------------------------------|---------|-------|
| Drain-Source Voltage                             |                      | V <sub>DS</sub>                   | 60      | V     |
| Gate-Source Voltage                              |                      | V <sub>GS</sub>                   | ±20     | V     |
| Continuous Drain Current                         |                      | I <sub>D</sub>                    | 3.2     | A     |
| Pulsed Drain Current                             |                      | I <sub>DM</sub>                   | 12.8    | A     |
| Power Dissipation                                | T <sub>a</sub> =25°C | P <sub>D</sub>                    | 2.4     | W     |
|                                                  | Derate above 25°C    |                                   | 16      | mW/°C |
| Operating Junction and Storage Temperature Range |                      | T <sub>J</sub> , T <sub>STG</sub> | -55~175 | °C    |
| Typical Thermal Resistance                       |                      | R <sub>θJA</sub>                  | 62.5    | °C/W  |
| - Junction to Ambient, t<10s (Note 3)            |                      |                                   |         |       |



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## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

| PARAMETER                                             | SYMBOL              | TEST CONDITION                                                                                          | MIN. | TYP. | MAX. | UNITS |
|-------------------------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------|------|------|------|-------|
| Static                                                |                     |                                                                                                         |      |      |      |       |
| Drain-Source Breakdown Voltage                        | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA                                                              | 60   | -    | -    | V     |
| Gate Threshold Voltage                                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA                                                | 1.0  | 1.8  | 2.5  | V     |
| Drain-Source On-State Resistance                      | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =3.2A                                                              | -    | 53   | 75   | mΩ    |
|                                                       |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.0A                                                             | -    | 61   | 90   |       |
| Zero Gate Voltage Drain Current                       | I <sub>DSS</sub>    | V <sub>DS</sub> =48V, V <sub>GS</sub> =0V                                                               | -    | -    | 1    | uA    |
| Gate-Source Leakage Current                           | I <sub>GSS</sub>    | V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V                                                              | -    | -    | ±100 | nA    |
| Dynamic (Note 6)                                      |                     |                                                                                                         |      |      |      |       |
| Total Gate Charge                                     | Q <sub>g</sub>      | V <sub>DS</sub> =48V, I <sub>D</sub> =3.0A,<br>V <sub>GS</sub> =10V (Note 1,2)                          | -    | 9.3  | -    | nC    |
| Gate-Source Charge                                    | Q <sub>gs</sub>     |                                                                                                         | -    | 2.2  | -    |       |
| Gate-Drain Charge                                     | Q <sub>gd</sub>     |                                                                                                         | -    | 1.9  | -    |       |
| Input Capacitance                                     | C <sub>iss</sub>    | V <sub>DS</sub> =15V, V <sub>GS</sub> =0V,<br>f=1.0MHZ                                                  | -    | 509  | -    | pF    |
| Output Capacitance                                    | C <sub>oss</sub>    |                                                                                                         | -    | 47   | -    |       |
| Reverse Transfer Capacitance                          | C <sub>rss</sub>    |                                                                                                         | -    | 23   | -    |       |
| Turn-On Delay Time                                    | td <sub>(on)</sub>  | V <sub>DD</sub> =30V, I <sub>D</sub> =3.0A,<br>V <sub>GS</sub> =10V,<br>R <sub>G</sub> =3.3Ω (Note 1,2) | -    | 3.2  | -    | ns    |
| Turn-On Rise Time                                     | tr                  |                                                                                                         | -    | 9.7  | -    |       |
| Turn-Off Delay Time                                   | td <sub>(off)</sub> |                                                                                                         | -    | 18.5 | -    |       |
| Turn-Off Fall Time                                    | tf                  |                                                                                                         | -    | 6.4  | -    |       |
| Drain-Source Diode                                    |                     |                                                                                                         |      |      |      |       |
| Maximum Continuous Drain-Source Diode Forward Current | I <sub>S</sub>      | ---                                                                                                     | -    | -    | 3.2  | A     |
| Diode Forward Voltage                                 | V <sub>SD</sub>     | I <sub>S</sub> =1A, V <sub>GS</sub> =0V                                                                 | -    | 0.75 | 1.2  | V     |

### NOTES :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. Repetitive rating, pulse width limited by junction temperature T<sub>J</sub>(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub> = 25°C.
5. R<sub>θJA</sub> is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch<sup>2</sup> with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

# PJQ2460-AU

## TYPICAL CHARACTERISTIC CURVES

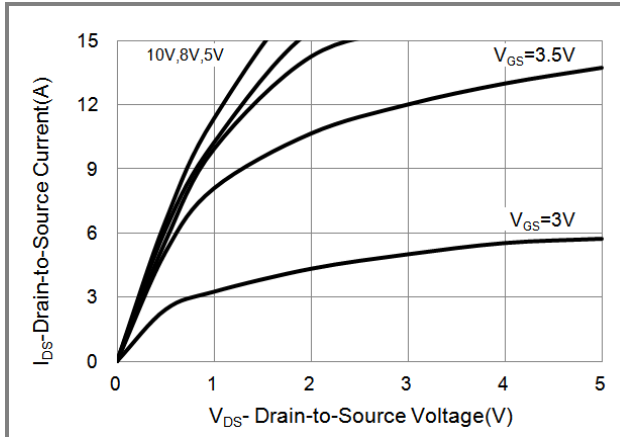


Fig.1 On-Region Characteristics

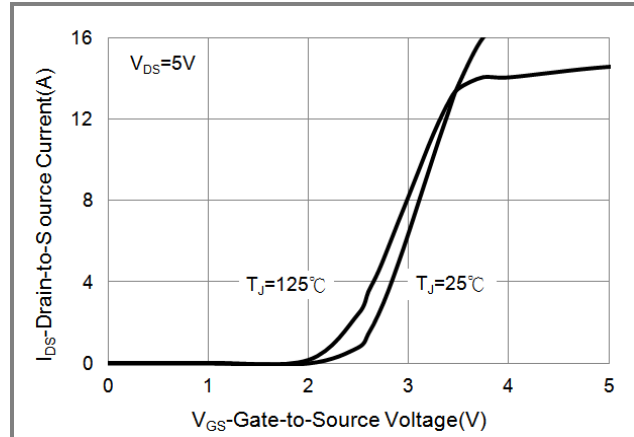


Fig.2 Transfer Characteristics

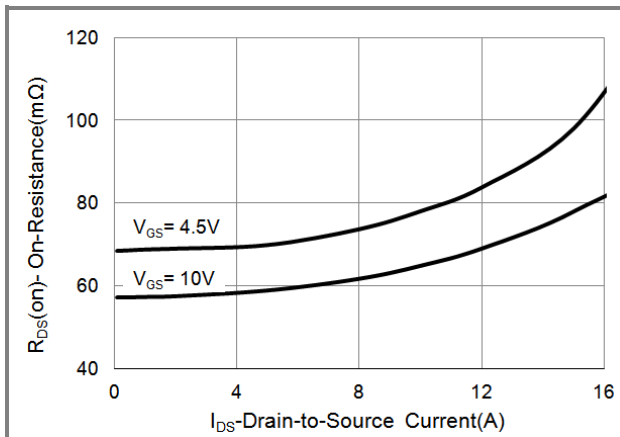


Fig.3 On-Resistance vs. Drain Current

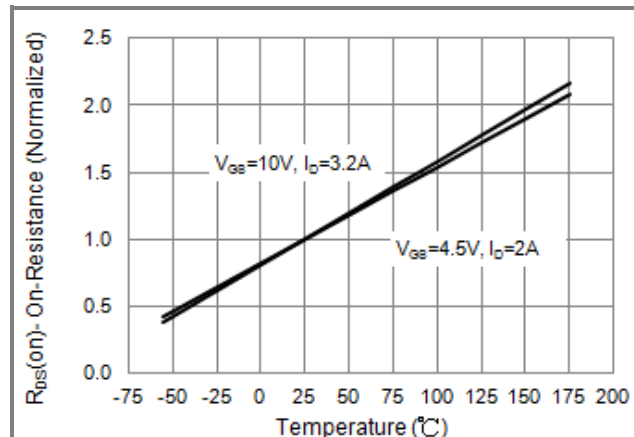


Fig.4 On-Resistance vs. Junction temperature

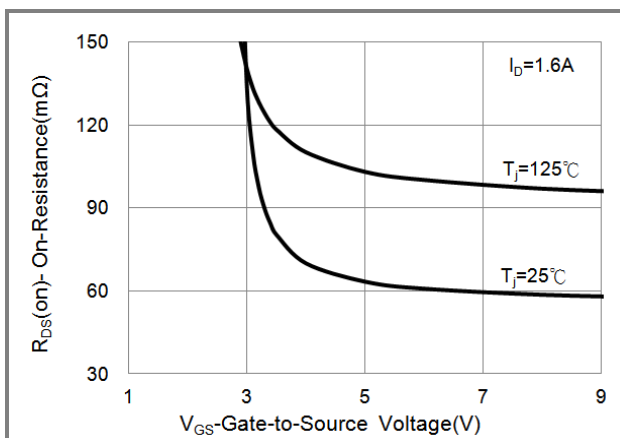


Fig.5 On-Resistance Variation with VGS.

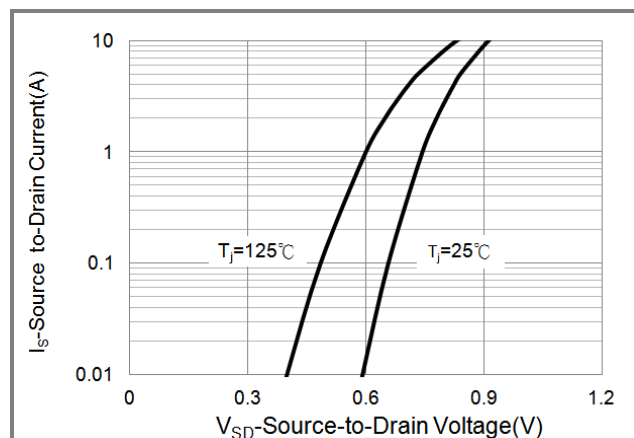


Fig.6 Body Diode Characteristics



## PJQ2460-AU

### TYPICAL CHARACTERISTIC CURVES

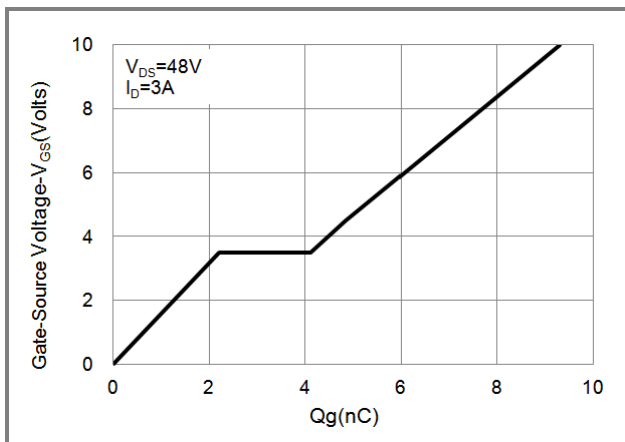


Fig.7 Gate-Charge Characteristics

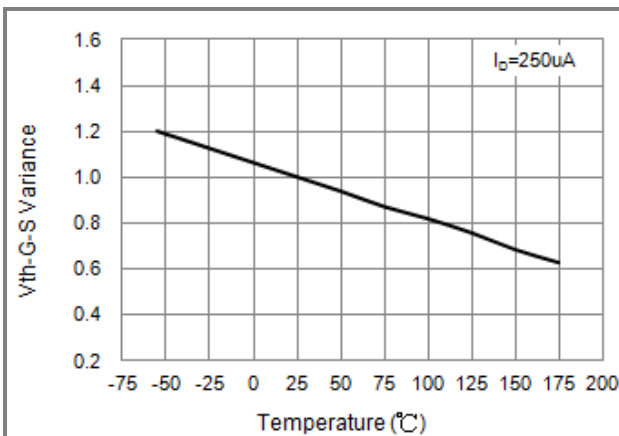


Fig.8 Threshold Voltage Variation with Temperature.

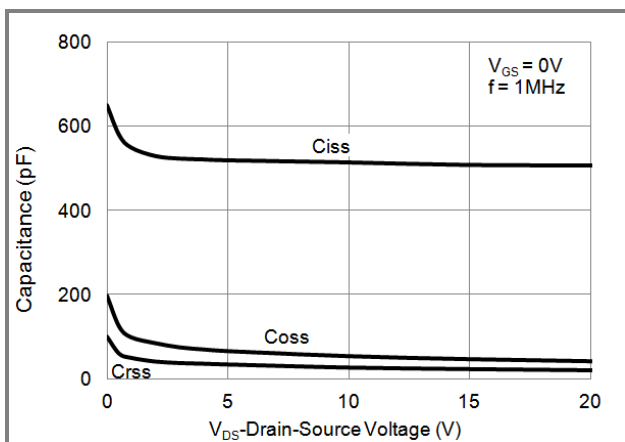


Fig.9 Capacitance vs. Drain-Source Voltage.

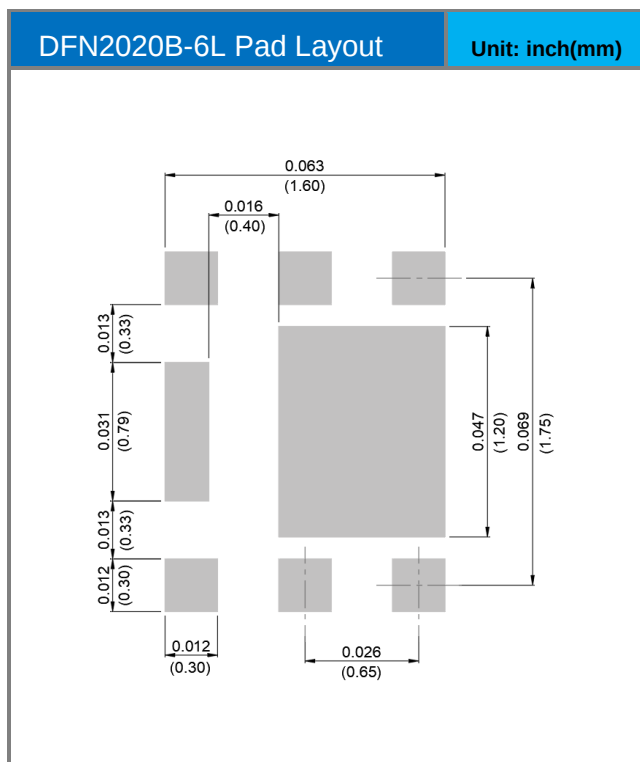
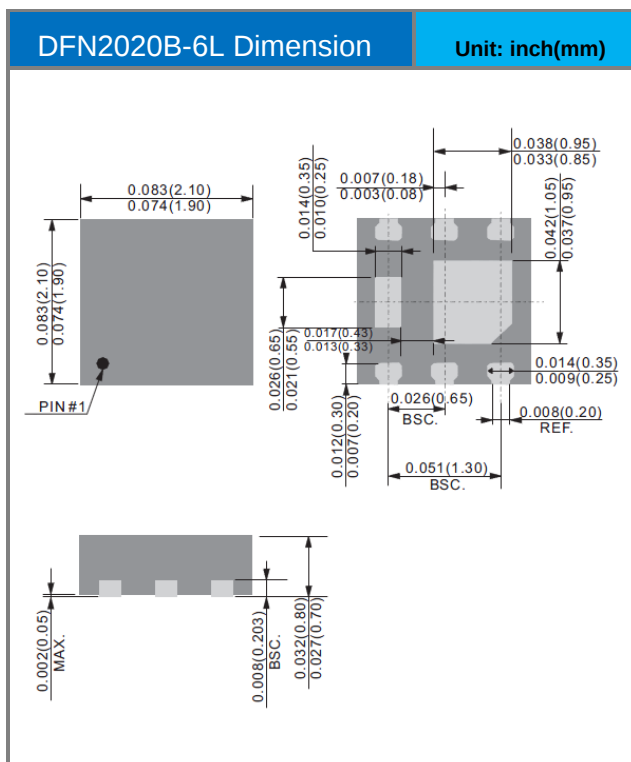


# PJQ2460-AU

Part No. Packing Code Version

| Part No. Packing Code | Package Type | Packing Type     | Marking | Version                        |
|-----------------------|--------------|------------------|---------|--------------------------------|
| PJQ2460-AU_R1_000A1   | DFN2020B-6L  | 3K pcs / 7" reel | 460     | Halogen free<br>RoHS compliant |

## Packaging Information & Mounting Pad Layout





## PJQ2460-AU

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