

#### P-Channel 12V MOSFET

#### FEATURES

- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

#### Application

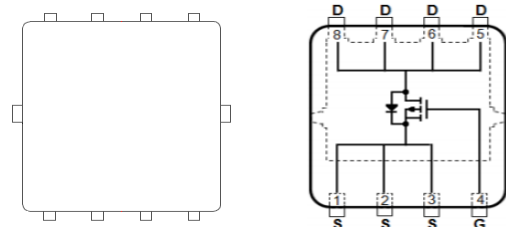
- Portable Devices
- Consumer Electronics

#### Mechanical

- Case:DFN3333 Package

| PRODUCTY SUMMARY |                                |                  |
|------------------|--------------------------------|------------------|
| $V_{DS}$         | $R_{DS(on)}$ m( $\Omega$ ) Max |                  |
| -12              | 8.5                            | @ $V_{GS}=-4.5V$ |
|                  | 11.6                           | @ $V_{GS}=-2.5V$ |

#### DFN3333



#### Packing Information

| Package | Packing       |
|---------|---------------|
| DFN3333 | 5Kpcs/13"Reel |

| Maximum Ratings ( $T_A=25^{\circ}C$ unless otherwise specified) |                |            |             |
|-----------------------------------------------------------------|----------------|------------|-------------|
| Parameter                                                       | Symbol         | Limit      | Unit        |
| Drain-Source Voltage                                            | $V_{DS}$       | -12        | V           |
| Gate-Source Voltage                                             | $V_{GS}$       | $\pm 12$   | V           |
| Continuous Drain Current <sup>1)</sup>                          | $I_D$          | -20        | A           |
| Continuous Drain Current <sup>4)</sup>                          | $I_{DM}$       | -80        | A           |
| Maximum Power Dissipation                                       | $P_D$          | 5          | W           |
| Operating Junction and Storage Temperature Range                | $T_J, T_{STG}$ | -55 to 150 | $^{\circ}C$ |

| Typical Thermal Resistance                           |                 |       |               |
|------------------------------------------------------|-----------------|-------|---------------|
| Parameter                                            | Symbol          | Limit | Unit          |
| Junction-to-Ambient Thermal Resistance <sup>3)</sup> | $R_{\theta JA}$ | 65    | $^{\circ}C/W$ |

Note:

1. Pulse width<300us, Duty cycle<2%.
2. Fused current that based on wire numbers and diameter.
3. Guaranteed by design, not subject to production testing.
4. The maximum current rating is package limited.
5. Repetitive rating, pulse width limited by junction temperature  $T_{J(MAX)}=150^{\circ}C$ . Ratings are based on low frequency and duty cycles to keep initial  $T_J=25^{\circ}C$ .

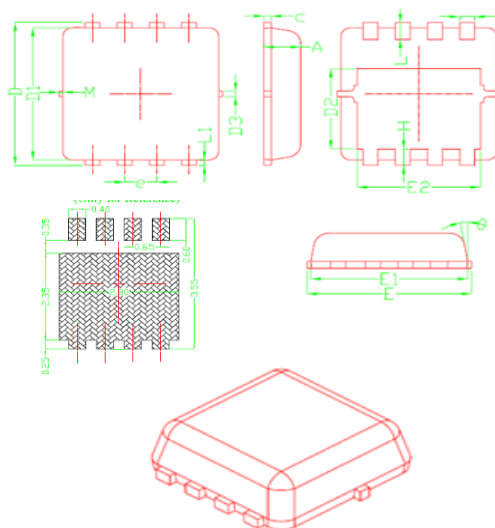
| Electrical Characteristics (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED) |                     |                                                           |        |       |       |      |
|---------------------------------------------------------------------------|---------------------|-----------------------------------------------------------|--------|-------|-------|------|
| Characteristics                                                           | Symbol              | Test Condition                                            | Limits |       |       | Unit |
|                                                                           |                     |                                                           | Min    | Typ   | Max   |      |
| Static                                                                    |                     |                                                           |        |       |       |      |
| Drain-Source Breakdown Voltage                                            | B <sub>VDSS</sub>   | V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA               | -12    | -15   | -     | V    |
| Gate Threshold Voltage                                                    | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA | -0.50  | -0.70 | -1.00 | V    |
| Drain-Source On-State Resistance                                          | R <sub>DS(on)</sub> | V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-20.0A            |        | 7.2   | 8.5   | mΩ   |
|                                                                           |                     | V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-20.0A            |        | 9.9   | 11.6  | mΩ   |
| Zero Gate Voltage Drain Current                                           | I <sub>DSS</sub>    | V <sub>DS</sub> =-12V, V <sub>GS</sub> =0V                |        |       | -1    | uA   |
| GateSource Leakage Current                                                | I <sub>GSS</sub>    | V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V                |        |       | ±100  | nA   |
| DrainSource Diode                                                         |                     |                                                           |        |       |       |      |
| Maximum Continuous Body Diode Forward Current                             | I <sub>S</sub>      | -                                                         | -      | -     | -1.2  | A    |
| Diode Forward Voltage                                                     | V <sub>SD</sub>     | I <sub>S</sub> =-1.0A, V <sub>GS</sub> =0V                | -      | -     | -1.5  | V    |

Note:

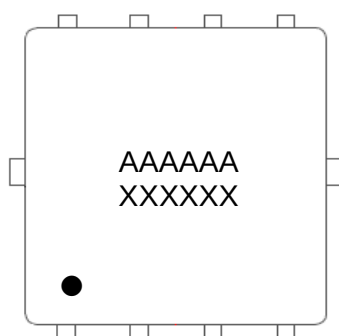
1. Pulse width<300us, Duty cycle<2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25°C.
4. The maximum current rating is package limited.
5. R<sub>QJA</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.

## Package Outline Dimensions ( inches and millimeters)

| DFN3333 |             |      |        |       |
|---------|-------------|------|--------|-------|
| SYMBOL  | Dimensions  |      |        |       |
|         | Millimeters |      | Inches |       |
|         | Min         | Max  | Min    | Max   |
| A       | 0.70        | 0.80 | 0.028  | 0.031 |
| b       | 0.25        | 0.35 | 0.010  | 0.014 |
| c       | 0.10        | 0.25 | 0.004  | 0.010 |
| D       | 3.25        | 3.45 | 0.128  | 0.136 |
| D1      | 3.00        | 3.20 | 0.118  | 0.126 |
| D2      | 1.78        | 1.98 | 0.070  | 0.078 |
| D3      | -           | 0.13 | -      | 0.005 |
| E       | 3.20        | 3.40 | 0.126  | 0.134 |
| E1      | 3.00        | 3.20 | 0.118  | 0.126 |
| E2      | 2.39        | 2.59 | 0.094  | 0.102 |
| e       | 0.65BSC     |      |        |       |
| H       | 0.30        | 0.50 | 0.012  | 0.020 |
| L       | 0.30        | 0.50 | 0.012  | 0.020 |
| L1      | 0.13        |      | -      | 0.005 |
| θ       | -           | 12 ° | -      | 12 °  |
| M       | -           | 0.15 | -      | 0.006 |



## Marking Information



AAAAAA = Product number

XXXXXX = Tracking number

Third line = Pin1 Point

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