**Preliminary Datasheet**

## N Channel 20V (DS) MOSFET

### FEATURES

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

| PRODUCTY SUMMARY | | | |
|---|---|---|---|
| $V_{DS}$ | $R_{DS(on)}$ m(Ω) | | $I_D$(A) |
| 20 | 2.2 | @$V_{GS}$=4.5V | 20 |
| | 4.0 | @$V_{GS}$=2.5V | 20 |

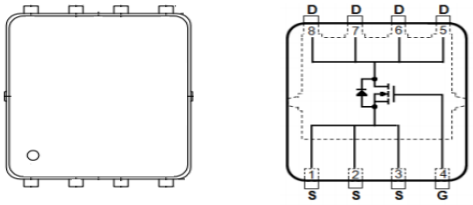
### Application

- Portable Devices
- Consumer Electronics

### Mechanical

- Case: DFN5060 Package

**DFN5060**




### Packing Information

| Package | Packing |
|---|---|
| DFN5060 | 3Kpcs/13"Reel |

| Maximum Ratings ($T_A$=25°C unless otherwise specified) | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Limit** | **Unit** |
| DrainSource Voltage | $V_{DS}$ | 20 | V |
| GateSource Voltage | $V_{GS}$ | ±12 | V |
| Continuous Drain Current [1)] | $I_D$ | 20 | A |
| Maximum Power Dissipation | $P_D$ | 6 | W |
| Pulsed Drain Current [2)] | $I_{DM}$ | 80 | A |
| Operating Junction and Storage Temperature Range | $T_J$, $T_{STG}$ | 55~150 | °C |

| Typical Thermal Resistance | | | |
|---|---|---|---|
| **Parameter** | **Symbol** | **Limit** | **Unit** |
| JunctiontoAmbient Thermal Resistance [3)] | $R_{\theta JA}$ | 62.5 | °C/W |

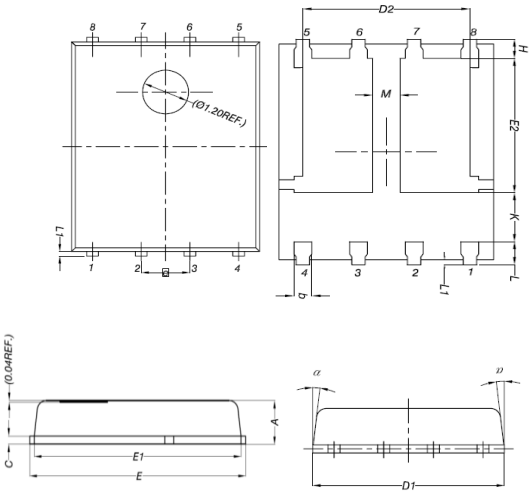
Note:
1. Fused current that based on wire numbers and diameter
2. Repetitive Rating: Pulse width limited by the maximum junction temperature
3. 1-in2 2oz Cu PCB board

| Electrical Characteristics ($T_A$ = 25°C UNLESS OTHERWISE NOTED) | | | | | | |
|---|---|---|---|---|---|---|
| Characteristics | Symbol | Test Condition | Limits | | | Unit |
| | | | Min | Typ | Max | |
| **Static** | | | | | | |
| DrainSource Breakdown Voltage | $B_{VDSS}$ | $V_{GS}$ = 0V, $I_D$ =250uA | 20 | - | - | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$, $I_D$=250uA | 0.50 | 0.63 | 1.50 | V |
| DrainSource OnState Resistance | $R_{DS(on)}$ | $V_{GS}$=4.5V, $I_D$=20.0A | - | 1.9 | 2.2 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=20.0A | - | 3.4 | 4.0 | mΩ |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=20V, $V_{GS}$=0V | - | - | 1 | uA |
| GateSource Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V, $V_{DS}$=0V | - | - | ±100 | nA |
| | | | | | | |
| **Dynamic** [3)] | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V,$V_{GS}$=4.5V,$I_D$=20A | - | 62 | 99.2 | nC |
| GateSource Charge | $Q_{gs}$ | | - | 4 | - | nC |
| GateDrain Charge | $Q_{gd}$ | | - | 21 | - | nC |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=10V,$V_{GS}$=0V,F=1MHz | - | 4000 | 6400 | pF |
| Output Capacitance | $C_{oss}$ | | - | 780 | - | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 625 | - | pF |
| | | | | | | |
| **Switching** | | | | | | |
| TurnOn Delay Time | $t_{d(on)}$ | $V_{DS}$=10V,$R_G$=3.3Ω $V_{GS}$=5V,$I_D$=1A | - | 12 | - | ns |
| TurnOn Rise Time | $t_r$ | | - | 20 | - | ns |
| TurnOff Delay Time | $t_{d(off)}$ | | - | 100 | - | ns |
| TurnOff Fall Time | $t_f$ | | - | 80 | - | ns |
| | | | | | | |
| **DrainSource Diode** | | | | | | |
| Maximum Continuous Body Diode Forward Current | $I_S$ | VG=VD=0V , Force Current | - | - | 1.2 | A |
| Diode Forward Voltage | $V_{SD}$ | IS=1.0A, VGS=0V | - | - | 1.5 | V |

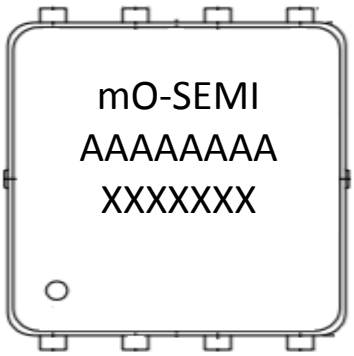
NOTES :
1. Pulse width<300us, Duty cycle<2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature TJ(MAX)=150°C. Ratings are based on low frequency and duty cycles to keep initial TJ =25°C.
4. The maximum current rating is package limited.
5. RQJA is the sum of the junctiontocase and casetoambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch2 with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

## Package Outline Dimensions ( inches and millimeters)

| DFN5*6 | | | | |
|---|---|---|---|---|
| SYMBOL | Dimensions | | | |
| | Millimeters | | Inches | |
| | Min | Max | Min | Max |
| A | 0.90 | 1.10 | 0.04 | 0.04 |
| b | 0.33 | 0.51 | 0.01 | 0.02 |
| C | 0.20 | 0.30 | 0.01 | 0.01 |
| D1 | 4.80 | 5.00 | 0.19 | 0.20 |
| D2 | 3.61 | 3.96 | 0.14 | 0.16 |
| E | 5.90 | 6.10 | 0.23 | 0.24 |
| E1 | 5.70 | 5.80 | 0.22 | 0.23 |
| E2 | 3.38 | 3.78 | 0.13 | 0.15 |
| e | 1.27bsc | | | |
| H | 0.41 | 0.61 | 0.02 | 0.02 |
| K | 1.10 | - | 0.04 | - |
| L | 0.51 | 0.71 | 0.02 | 0.03 |
| L1 | 0.06 | 0.20 | 0.00 | 0.01 |
| M | 0.50 | - | 0.02 | - |
| α | 0° | 12° | - | - |




## Marking Information




First line: company name

AAAAAAAA = Product number

XXXXXXX = Tracking number