

- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

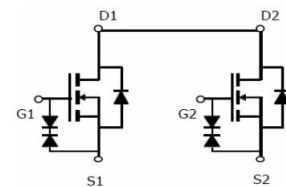
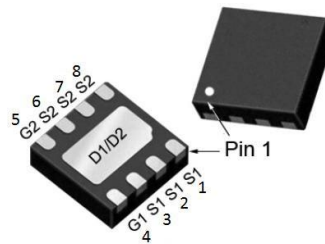
Description

The XR33230M is the high cell density trenched N-ch MOSFETs, which provides excellent RDS(on) and efficiency for most of the small power switching and load switch applications. The XR3330M meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

| BVDSS | RDS(on) | ID |
|-------|---------|-----|
| 20V | 5.8mΩ | 30A |

DFN3030-8L Pin Configuration



ABSOLUTE MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|------------------|----------|------|
| Drain-Source Voltage | V _{DS} | 20 | V |
| Gate-Source Voltage | V _{GS} | ±12 | V |
| Continuous Drain Current | I _D | 30 | A |
| Pulsed Drain Current (note 1) | I _{DM} | 100 | A |
| Thermal Resistance from Junction to Ambient (note 2) | R _{θJA} | 38 | °C/W |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature | T _{STG} | -55~+150 | °C |
| Lead Temperature for Soldering Purposes(1/8" from case for 10 s) | T _L | 260 | °C |

MOSFET ELECTRICAL CHARACTERISTICS
T_a =25 °C unless otherwise specified

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|----------------------|---|-----|-------|-----|------|
| STATIC CHARACTERISTICS | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D =250μA | 20 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =19V, V _{GS} = 0V | | | 1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} =±12V, V _{DS} = 0V | | | ±7 | μA |
| Gate threshold voltage (note 3) | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 0.5 | 0.7 | 1.0 | V |
| Drain-source on-resistance (note 3) | R _{DS(on)} | V _{GS} =4.5V, I _D =8.0A | | 5.8 | 6.6 | mΩ |
| | | V _{GS} =2.5V, I _D =6.0A | | 6.8 | 9.5 | mΩ |
| Forward transconductance (note 3) | g _{FS} | V _{DS} =5V, I _D =4A | | 10 | | S |
| Diode forward voltage (note 3) | V _{SD} | I _S =1.50A, V _{GS} = 0V | | | 1.0 | V |
| DYNAMIC CHARACTERISTICS (note4) | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =10V, V _{GS} =0V, f =1MHz | | 1827 | | pF |
| Output Capacitance | C _{oss} | | | 241.5 | | pF |
| Reverse Transfer Capacitance | C _{rss} | | | 225.4 | | pF |
| SWITCHING CHARACTERISTICS (note 4) | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{GS} =4.5V, V _{DS} =10V, I _D =6A R _{GEN} =3Ω | | 6.4 | | ns |
| Turn-on rise time | t _r | | | 24.5 | | ns |
| Turn-off delay time | t _{d(off)} | | | 260.4 | | ns |
| Turn-off fall time | t _f | | | 143 | | ns |
| Total Gate Charge | Q _g | V _{DS} =10V, V _{GS} =4.5V, I _D =6A | | 25.2 | | nC |
| Gate-Source Charge | Q _{gs} | | | 2.24 | | nC |
| Gate-Drain Charge | Q _{gd} | | | 9.1 | | nC |

Notes :

- 1.Repetitive rating: Pluse width limited by maximum junction temperature
- 2.Surface Mounted on FR4 board, t ≤ 10 sec.
3. Pulse test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTIC

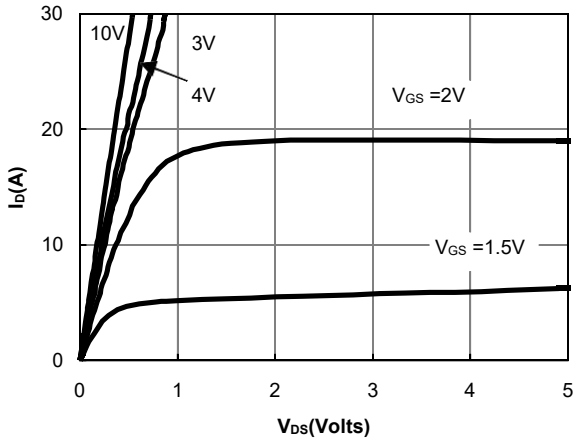


Figure 1: On-Regions Characteristic CS

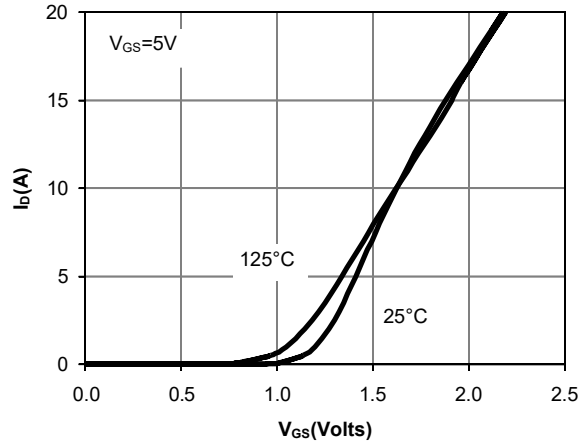


Figure 2: Transfer Characteristics

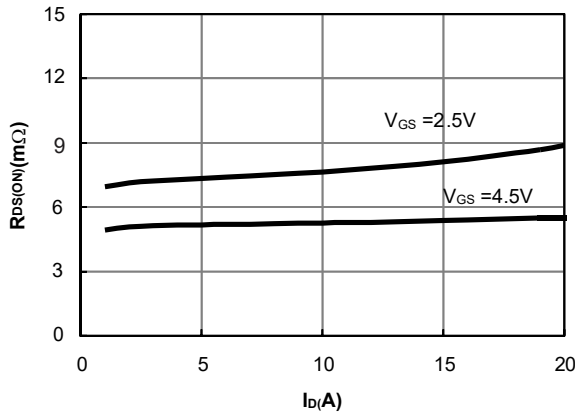


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

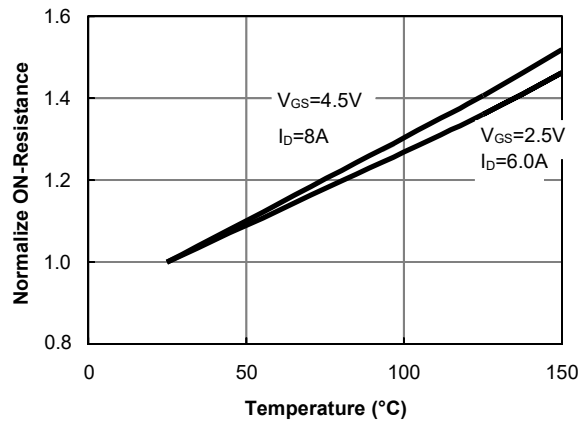


Figure 4: On-Resistance vs. Junction Temperature

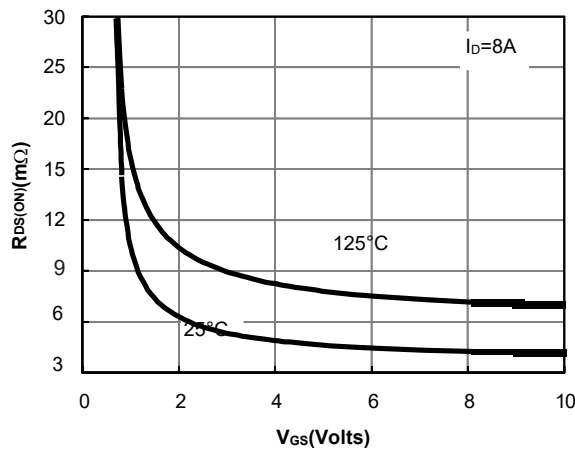


Figure 5: On-Resistance vs. Gate-Source Voltage

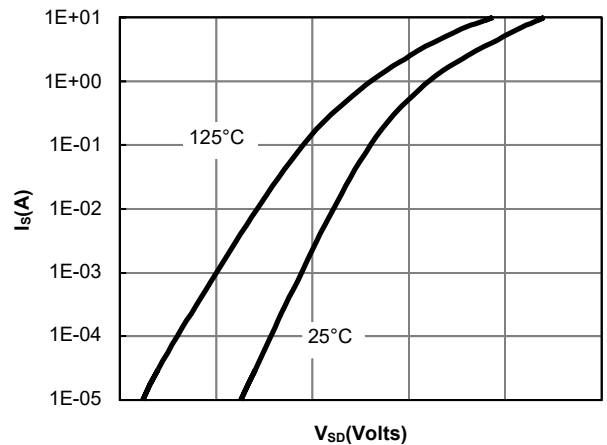


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTIC

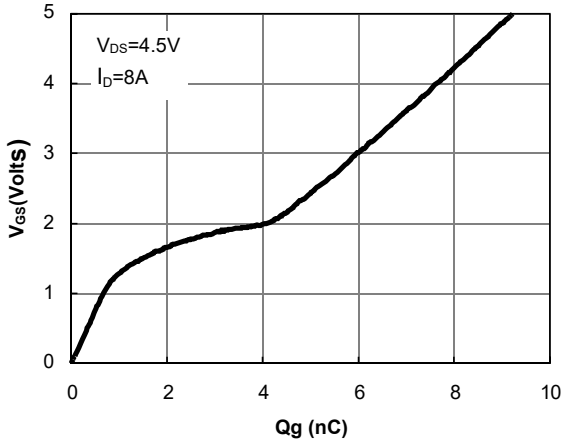


Figure 7: Gate-Charge Characteristics

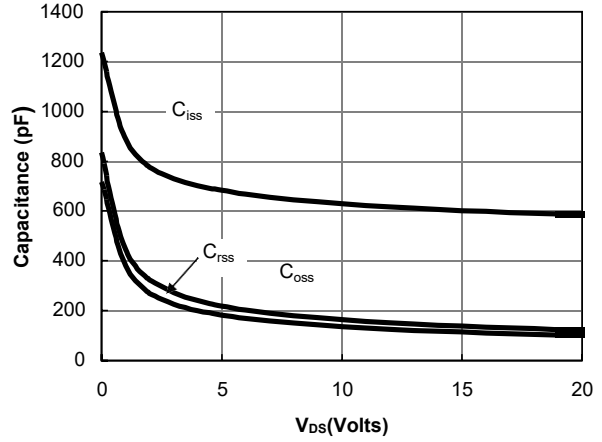


Figure 8: Capacitance Characteristics

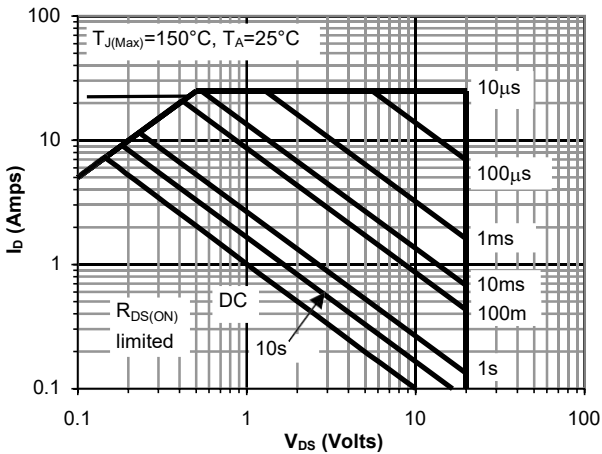


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

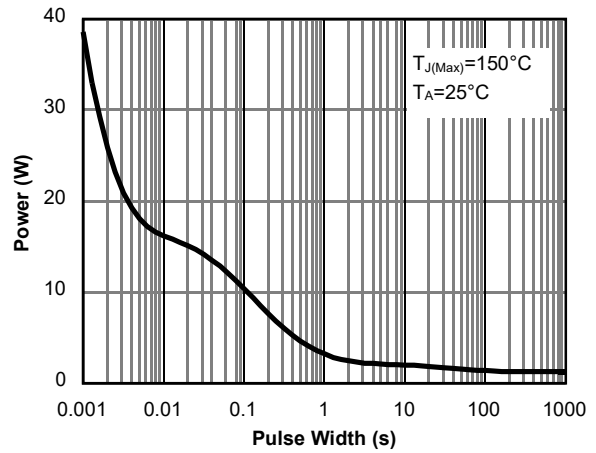


Figure 10: Single Pulse Power Rating Junction-to-Air

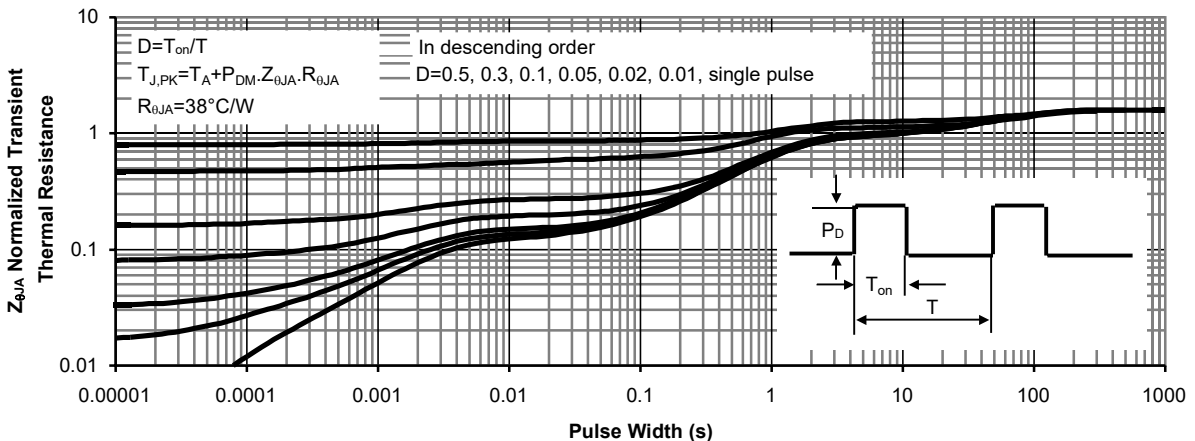
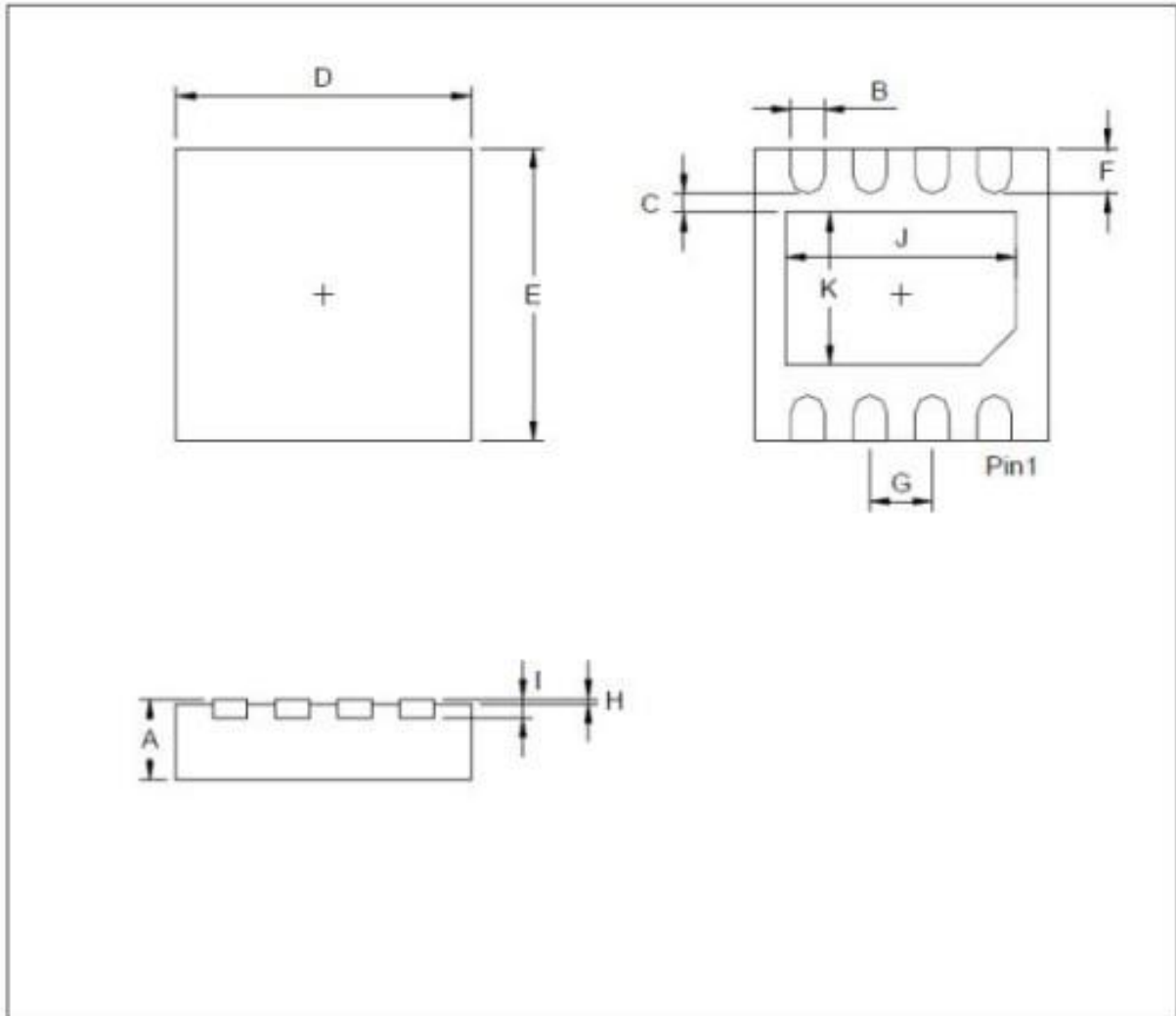


Figure 11: Normalized Maximum Transient Thermal Impedance

DFN3030-8L Package Outline Data



| Dimension | mm | | | Dimension | mm | | |
|-----------|-------|------|-------|-----------|------|-------|------|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 0.7 | | 0.8 | I | | 0.203 | |
| B | 0.25 | | 0.35 | J | 2.2 | | 2.4 |
| C | 0.2 | | | K | 1.4 | | 1.6 |
| D | 2.924 | | 3.076 | | | | |
| E | 2.924 | | 3.076 | | | | |
| F | 0.324 | | 0.476 | | | | |
| G | | 0.65 | | | | | |
| H | 0 | | 0.05 | | | | |