

PRODUCT CHARACTERISTICS

| | |
|------------------------------------|--------------|
| V_{DSS} | 20V |
| $R_{DS(on)}$ Typ(@ $V_{GS}=4.5V$) | 8m Ω |
| $R_{DS(on)}$ Typ(@ $V_{GS}=2.5V$) | 11m Ω |
| I_D | 12A |

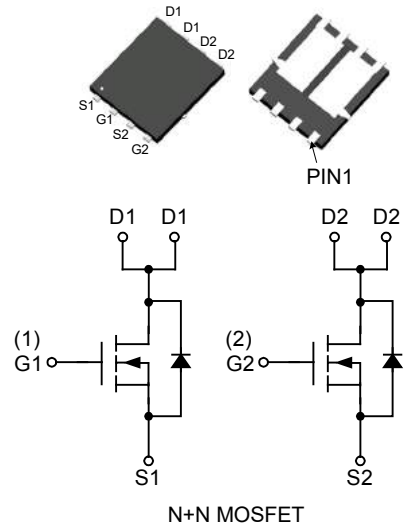
APPLICATIONS

DC/DC converter
Ideal for high-frequency switching and synchronous rectification

FEATURES

Very low on-resistance $R_{DS(on)}$
Pb-free lead plating

Pin description



N+N MOSFET

ORDER INFORMATION

| Order codes | | Package | Packing |
|--------------|----------|---------|-----------------|
| Halogen-free | Halogen | | |
| N/A | MOT2914J | PDFN3X3 | 5000pieces/Reel |

ABSOLUTE MAXIMUM RATINGS($T_C=25^\circ C$, unless otherwise specified)

| Parameter | Symbol | Value | Unit | |
|----------------------|-------------------|----------|------------|---|
| Drain-source voltage | V_{DSS} | 30 | V | |
| Gate-source voltage | V_{GSS} | ± 12 | V | |
| Drain current | $T_C=25^\circ C$ | I_D | 12 | A |
| | $T_C=100^\circ C$ | I_D | 7 | A |
| Pulsed drain current | I_{DM} | 48 | A | |
| Power dissipation | P_D | 1.5 | W | |
| Junction temperature | T_J | +150 | $^\circ C$ | |
| Storage temperature | T_{STG} | -55~+150 | $^\circ C$ | |

■ ELECTRICAL CHARACTERISTICS ($T_C=25$, unless otherwise specified)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|--|--------------|---|-----|------|-----|------------|
| Off characteristics | | | | | | |
| Drain-source breakdown voltage | BV_{DSS} | $V_{GS}=0V, I_{DS}=250\mu A$ | 20 | - | - | V |
| Drain-source leakage current | I_{DSS} | $V_{DS}=20V, V_{GS}=0V$ | - | - | 1 | μA |
| Gate-source leakage current | I_{GSS} | $V_{GS}=\pm 12V, V_{DS}=0V$ | - | - | 100 | nA |
| On characteristics | | | | | | |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | 1 | - | 2.5 | V |
| On-state characteristics | $R_{DS(ON)}$ | $V_{GS}=4.5V, I_D=4A$ | - | 8 | 14 | m Ω |
| | | $V_{GS}=2.5V, I_D=4A$ | - | 11 | 21 | m Ω |
| Forward transconductance | g_{FS} | $V_{DS}=10V, I_D=4A$ | 10 | - | - | S |
| Dynamic characteristics | | | | | | |
| Input capacitance | C_{iss} | $V_{GS}=0V, V_{DS}=10V$ $f=1MHz$ | - | 1255 | - | pF |
| Out capacitance | C_{oss} | | - | 220 | - | pF |
| Reverse transfer capacitance | C_{rss} | | - | 168 | - | pF |
| Switching characteristics | | | | | | |
| Total gate charge | Q_g | $V_{GS}=10V$ $V_{DS}=10V, I_D=10A$ | - | 42 | - | nC |
| Gate-source charge | Q_{gs} | | - | 10.8 | - | nC |
| Gate-drain charge | Q_{gd} | | - | 9.2 | - | nC |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}=10V, I_D=5A$ $R_G=3\Omega, V_{GS}=10V$ | - | 4 | - | nS |
| Turn-on rise time | t_r | | - | 11 | - | nS |
| Turn-off delay time | $t_{d(off)}$ | | - | 24 | - | nS |
| Turn-off fall time | t_f | | - | 2 | - | nS |
| Source-drain diode ratings and characteristics | | | | | | |
| Continuous diode forward current | I_{SD} | | - | - | 12 | A |
| Diode forward current | V_{SD} | $V_{GS}=0V, I_{SD}=12A$ | - | - | 1.2 | V |

■ TYPICAL CHARACTERISTICS

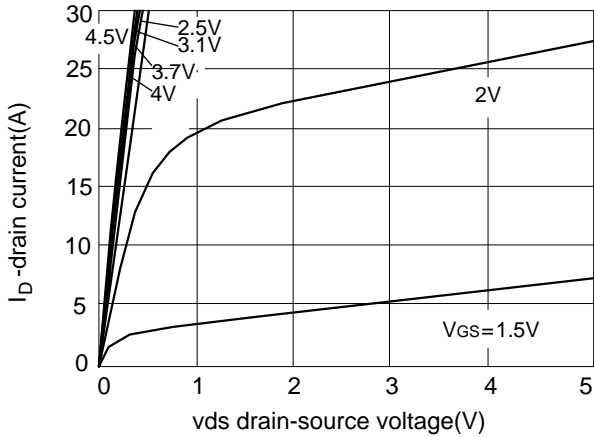


Fig.1 output characteristics

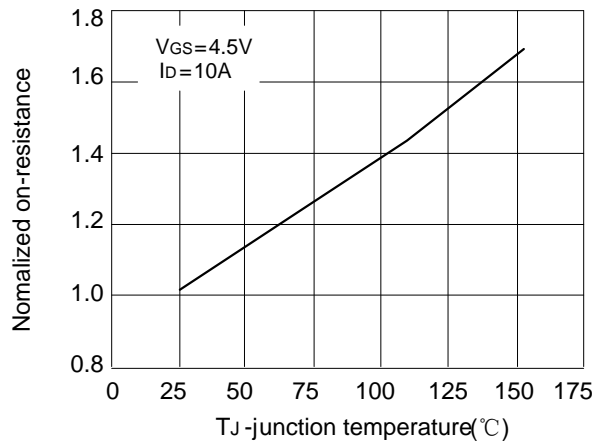


Fig.2 rdson-junction temperature

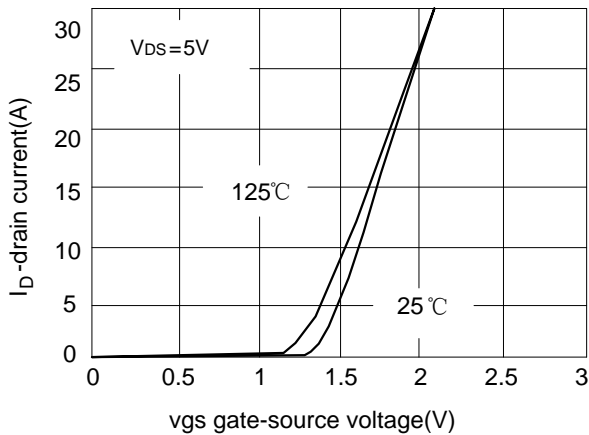


Fig.3 transfer characteristics

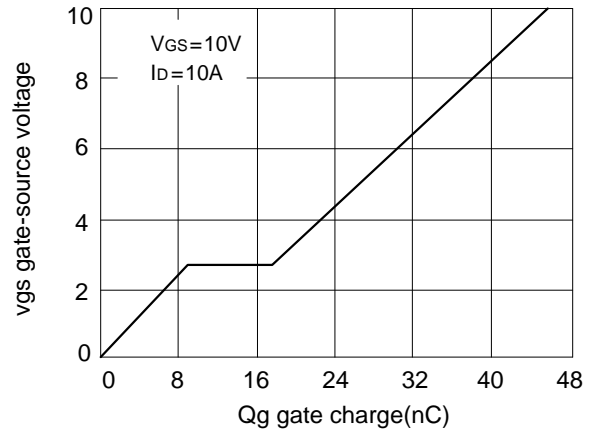


Fig.4 gate charge

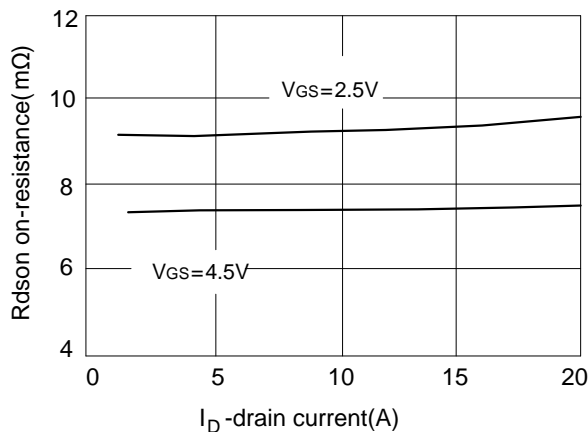


Fig.5 rdson-drain current

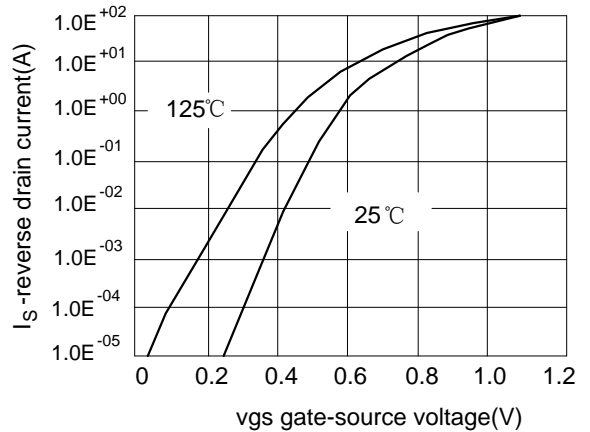


Fig.6 source-drain diode forward

■ TYPICAL CHARACTERISTICS(Cont.)

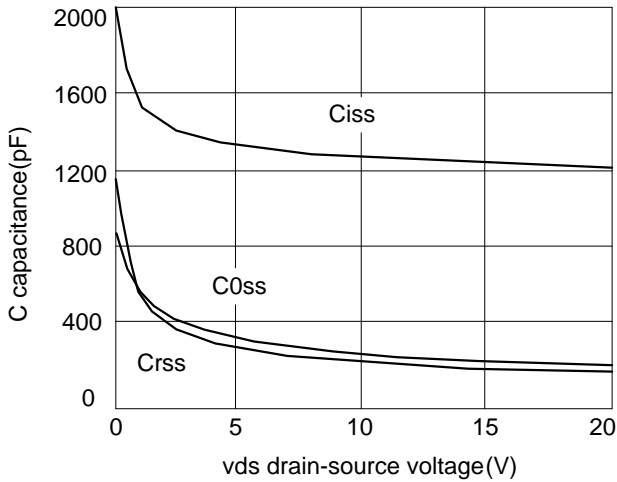


Fig.7 capacitance vs vds

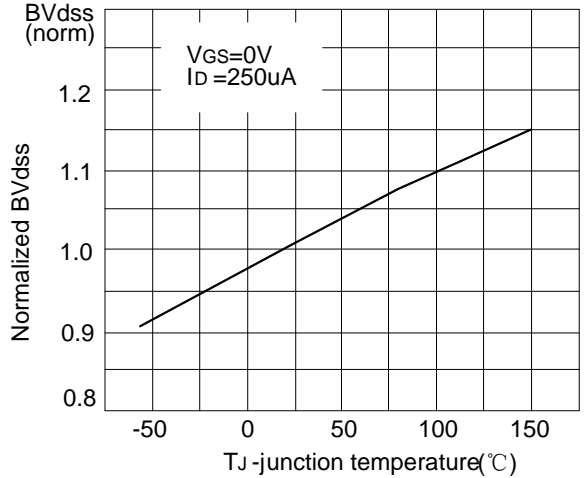


Fig.8 BVdss vs junction temperature

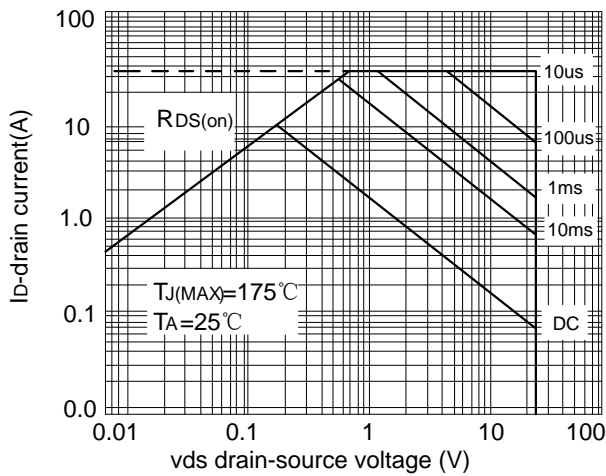


Fig.9 safe operation area

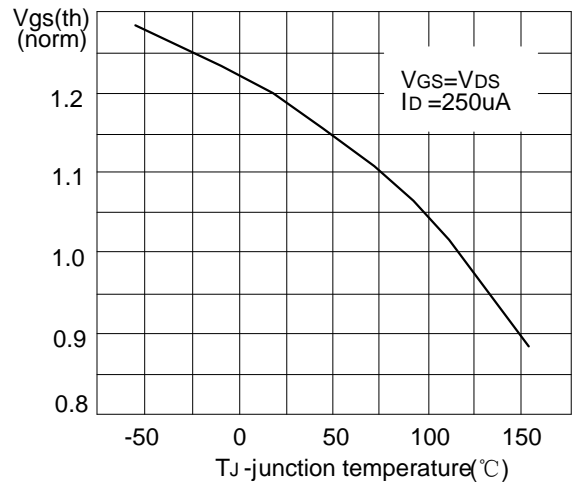


Fig.10 VGS(th) vs junction temperature

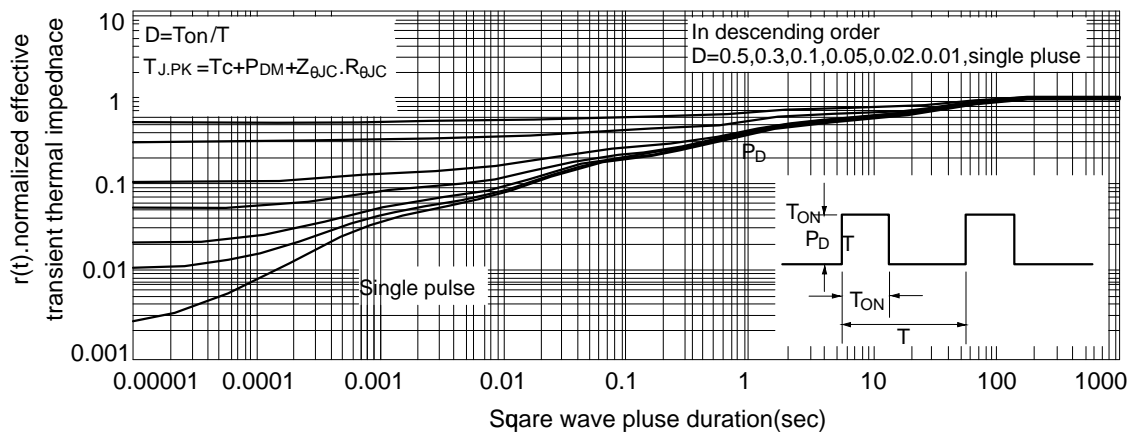
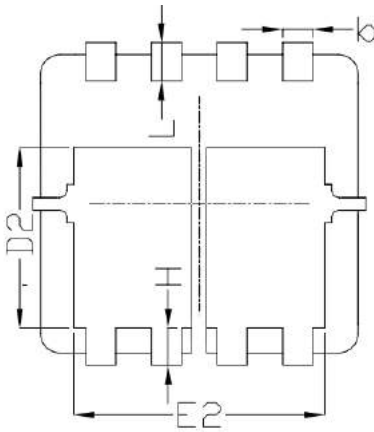
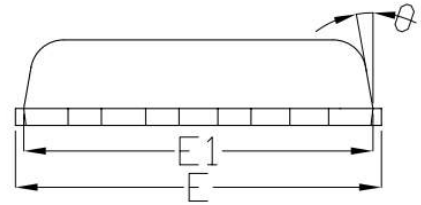
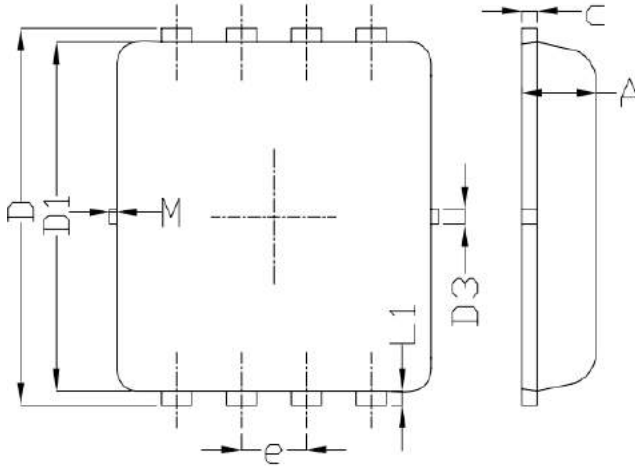


Fig.11 normalized maximum transient thermal impedance

■ PDFN3X3-8L Package Mechanical Data



| SYMBOL | DIMENSIONAL REQMTS | | |
|-----------------|--------------------|------|------|
| | 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 | 1.78 | 1.88 | 1.98 |
| 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 | --- |
| θ | --- | 10° | 12° |
| M | * | * | 0.15 |
| * Not specified | | | |

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