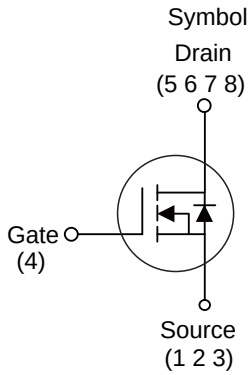
## ■ PRODUCT CHARACTERISTICS

| | |
|---|---|
| $V_{DSS}$ | 30V |
| $R_{DS(ON)}$ Typ(@$V_{GS}$=10V) | 1.06mΩ |
| $R_{DS(ON)}$ Typ(@$V_{GS}$=4.5V) | 1.3mΩ |
| $I_D$ | 245A |

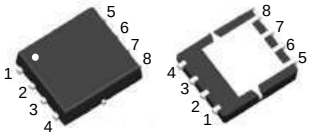



## ■ APPLICATIONS

* Electronic lamp ballasts based on half bridge
* Load Switching,Quick/Wirelss Charge.
* Motor Driving

## ■ FEATURE

* Low Gate Charge
* Pb-Free Lead Plating




PDFN5X6

## ■ ORDER INFORMATION

| Order Codes | | Package | Packing |
|---|---|---|---|
| Halogen-Free | Halogen | | |
| N/A | MOT3111G | PDFN5X6 | 5000 pieces/Reel |

## ■ ABSOLUTE MAXIMUM RATINGS($T_C$=25°C,unless otherwise specified)

| Parameter | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 30 | V |
| Gate-Source Voltage | $V_{GSS}$ | ±20 | V |
| Drain Current Continuous(@$V_{GS}$=10V ,$T_C$=25°C ) | $I_D$ | 245 | A |
| Drain Current Continuous(@$V_{GS}$=10V ,$T_C$=100°C) | $I_D$ | 155 | A |
| Drain Current Pulsed | $I_{DM}$ | 980 | A |
| Avalanche Energy * | $E_{AS}$ | 930 | mJ |
| Power Dissipation | $P_D$ | 100 | W |
| Junction Temperature | $T_J$ | +150 | °C |
| Storage Temperature | $T_{STG}$ | -55~ +150 | °C |

## ■ THERMAL CHARACTERISTICS

| Parameter | Symbol | Typ | Unit |
|---|---|---|---|
| Junction to Case | $R_{thJC}$ | 1.25 | °C/W |

Note: * EAS condition: $T_J$=25°C ,$V_{DD}$=20V,$V_G$=10V ,L=0.5mH,$R_g$=25Ω

■ ELECTRICAL CHARACTERISTICS ($T_C$=25°C, unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Off characteristics | | | | | | |
| Drain to Source Breakdown Voltage | $V_{DSS}$ | $V_{GS}$=0V,$I_D$=250μA | 30 | - | - | V |
| Drain to Source Leakage Current | $I_{DSS}$ | $V_{DS}$=30V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate to Source Forward Leakage | $I_{GSS(F)}$ | $V_{GS}$=+20V,$V_{DS}$=0V | - | - | 100 | nA |
| Gate to Source Reverse Leakage | $I_{GSS(R)}$ | $V_{GS}$=-20V ,$V_{DS}$=0V | - | - | -100 | nA |
| On characteristics | | | | | | |
| Drain to Source On-Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V,$I_D$=20A | - | 1.06 | 1.2 | mΩ |
| | | $V_{GS}$=4.5V,$I_D$=20A | - | 1.3 | 1.5 | mΩ |
| Gate Threshold Voltage | $V_{GS(TH)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1 | 1.5 | 2.5 | V |
| Dynamic characteristics | | | | | | |
| Gate Resistance | $R_g$ | $V_{GS}$=0V,$V_{DS}$=0V ,f=1.0MHz | - | 1.3 | - | Ω |
| Forward Transconductance | $g_{fs}$ | $V_{DS}$=5V,$I_D$=5A | - | 33 | - | S |
| Input Capacitance | $C_{iss}$ | $V_{DS}$=15V,$V_{GS}$=0V f=1.0MHz | - | 5003 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 1609 | - | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 77 | - | pF |
| Resistive Switching Characteristics | | | | | | |
| Turn-on Delay Time | $t_{d(ON)}$ | $V_{GS}$=10V, $V_{DS}$=15V, $I_D$=20A ,$R_G$=6Ω | - | 6.2 | - | ns |
| Rise Time | $t_r$ | | - | 7.8 | - | ns |
| Turn-off Delay Time | $t_{d(OFF)}$ | | - | 35 | - | ns |
| Fall Time | $t_f$ | | - | 20 | - | ns |
| Total Gate Charge | $Q_g$ | $I_D$=20 A, $V_{DS}$=15V $V_{GS}$=10V | - | 68 | - | nC |
| Gate to Source Charge | $Q_{gs}$ | | - | 17 | - | nC |
| Gate to Drain("Miller") Charge | $Q_{gd}$ | | - | 8.4 | - | nC |
| Source-Drain Diode Characteristics | | | | | | |
| Continuous Source Current(Body Diode) | $I_S$ | | - | - | 245 | A |
| Maximum Pulsed Current(Body Diode) | $I_{SM}$ | | - | - | 980 | A |
| Diode Forward Voltage | $V_{SD}$ | $I_{SD}$=3A, $V_{GS}$=0V | - | 0.68 | 1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | $I_{SD}$=20A, $T_J$=25°C dI/dt=100A/μs | - | 54 | - | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | - | 60 | - | nC |

## ■ TYPICAL CHARACTERISTICS

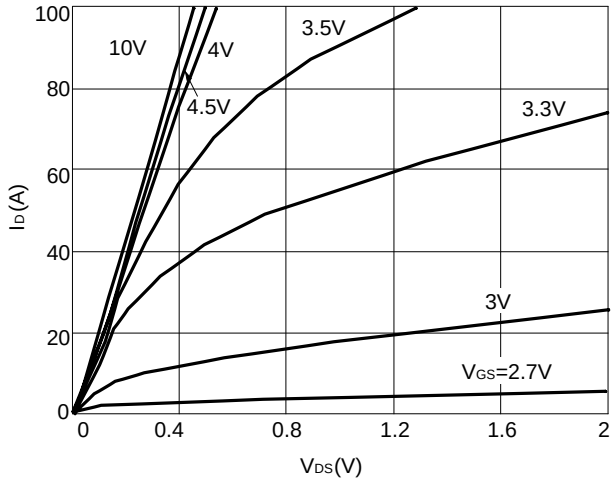



Figure 1: Output Characteristics

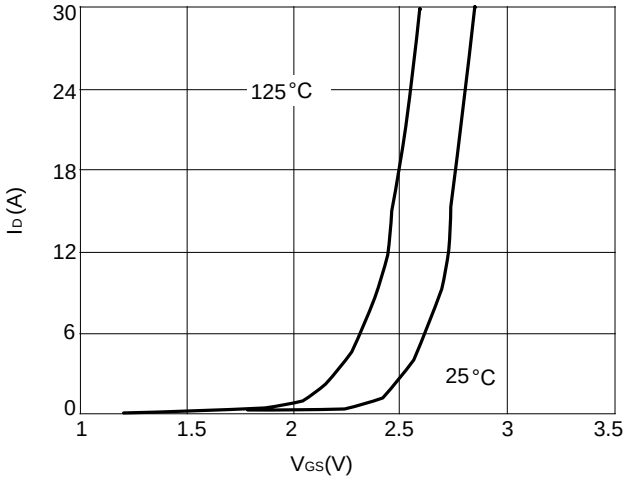



Figure 2: Typical Transfer Characteristics

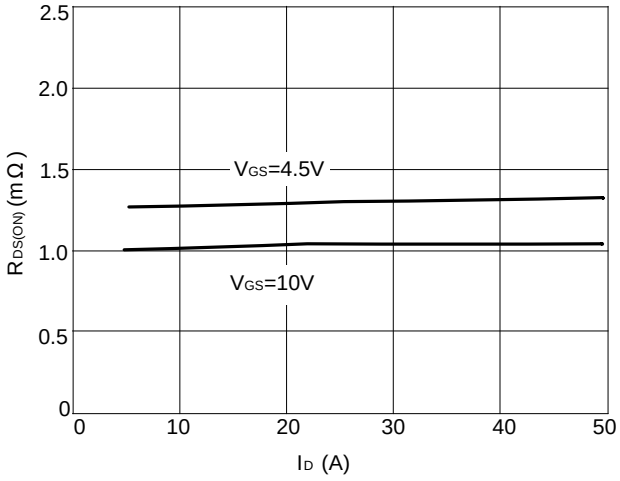



Figure 3: On-Resistance vs. Drain Current

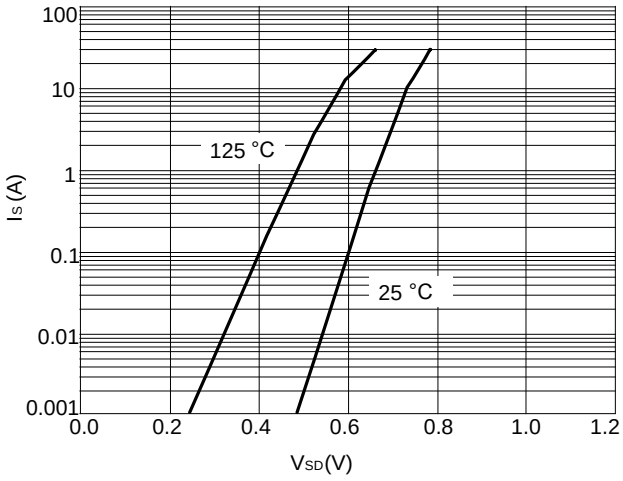



Figure 4: Body Diode Characteristics

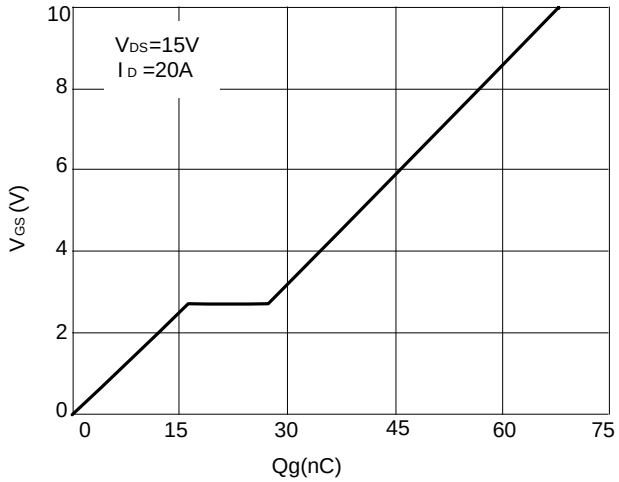



Figure 5: Gate Charge Characteristics

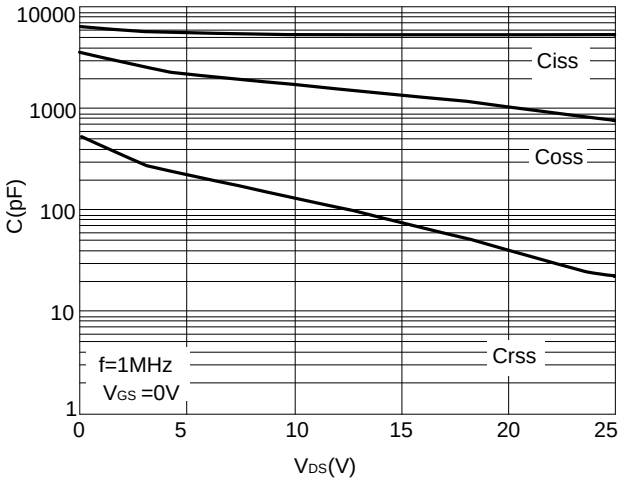



Figure 6: Cpacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

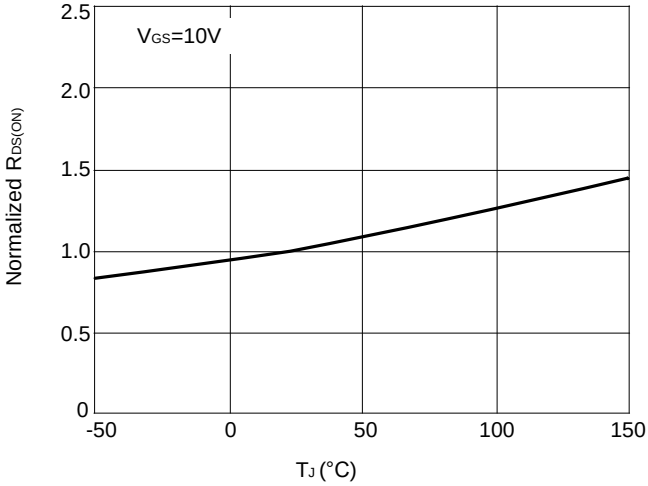



Figure 7: Normalized on-Resistance vs. Junction Temperature

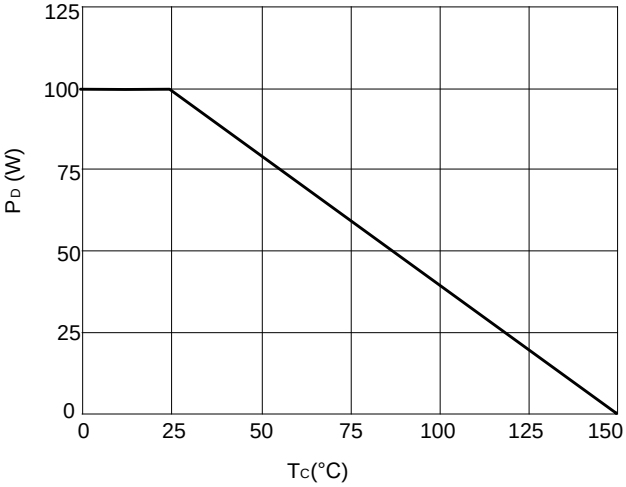



Figure 8: Power De-rating

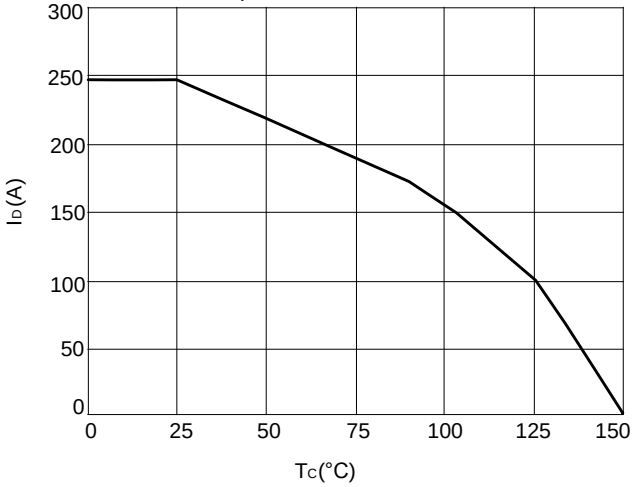



Figure 9: Current De-rating

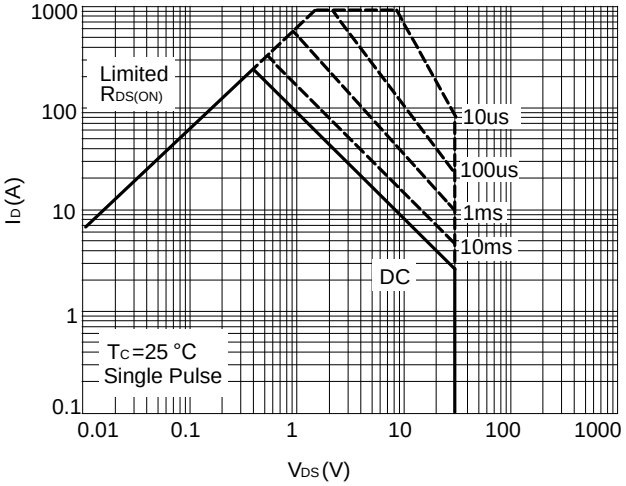
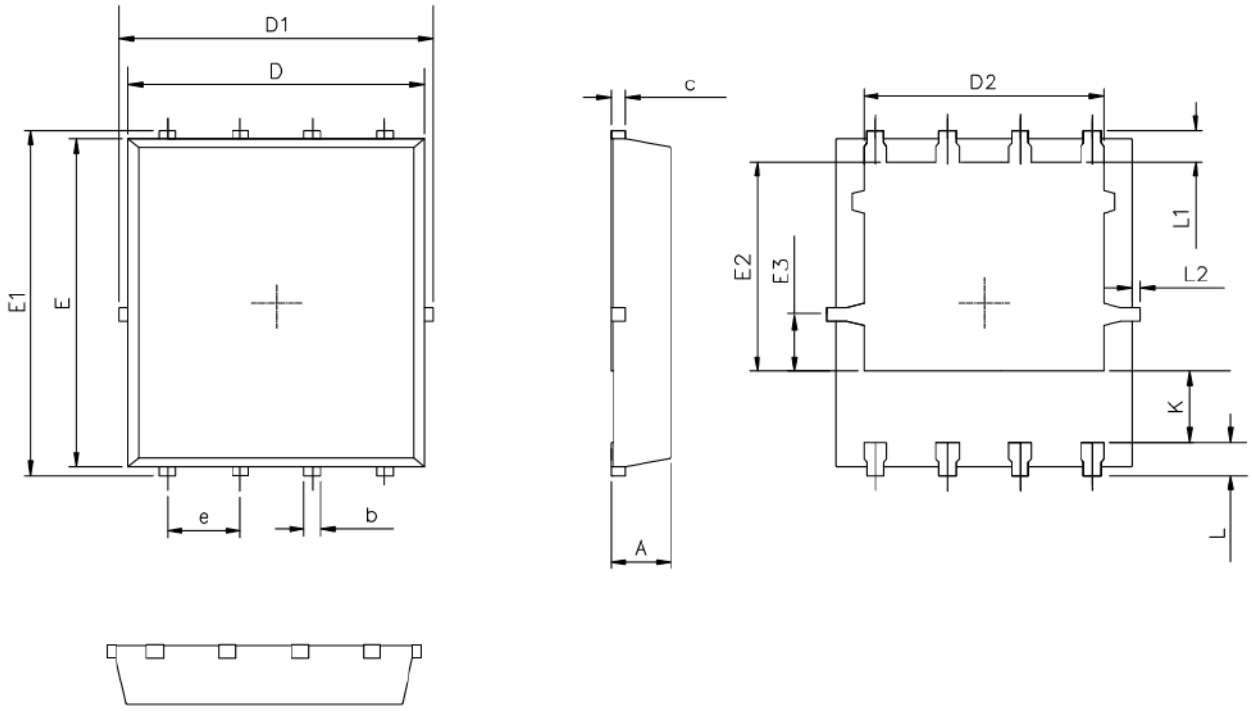



Figure 10: Maximum Safe Operating Area

■ PDFN5X6 PACKAGE OUTLINE DIMENSIONS




UNIT:mm

| | MIN | NOM | MAX |
|---|---|---|---|
| A | 0.90 | 1.00 | 1.10 |
| b | 0.25 | 0.35 | 0.50 |
| c | 0.10 | 0.20 | 0.30 |
| D | 4.80 | 5.00 | 5.30 |
| D1 | 4.90 | 5.10 | 5.50 |
| D2 | 3.92 | 4.02 | 4.20 |
| E | 5.65 | 5.75 | 5.85 |
| E1 | 5.90 | 6.05 | 6.20 |
| E2 | 3.325 | 3.525 | 3.775 |
| E3 | 0.80 | 0.90 | 1.00 |
| e | | 1.27 | |
| L | 0.40 | 0.55 | 0.70 |
| L1 | | 0.65 | |
| L2 | 0.00 | | 0.15 |
| K | 1.00 | 1.30 | 1.50 |

RECOMMENDED LAND PATTERN

