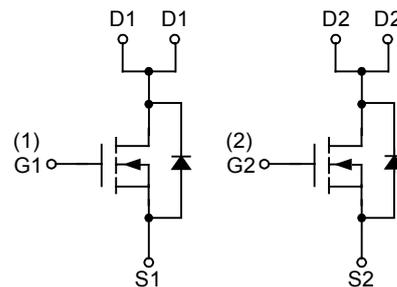


■ PRODUCT CHARACTERISTICS

| | |
|------------------------------------|--------------|
| V_{DSS} | 40V |
| $R_{DS(ON)}$ Typ(@ $V_{GS}=10V$) | 14m Ω |
| $R_{DS(ON)}$ Typ(@ $V_{GS}=4.5V$) | 18m Ω |
| I_D | 20A |

Symbol

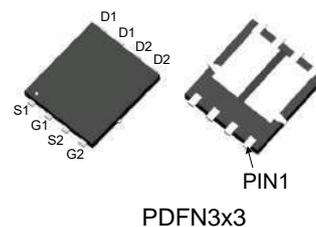


■ APPLICATIONS

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

■ FEATURE

- * Low Gate Charge
- * Pb-Free Lead Plating



■ ORDER INFORMATION

| Order Codes | | Package | Packing |
|--------------|----------|---------|------------------|
| Halogen-Free | Halogen | | |
| N/A | MOT4617J | PDFN3x3 | 5000 pieces/Reel |

■ ABSOLUTE MAXIMUM RATINGS($T_A=25^{\circ}C$, unless otherwise specified)

| Parameter | Symbol | Ratings | Unit |
|--|-----------|-----------|-------------|
| Drain-Source Voltage | V_{DSS} | 40 | V |
| Gate-Source Voltage | V_{GSS} | ± 20 | V |
| Drain Current Continuous(@ $V_{GS}=10V, T_A=25^{\circ}C$) | I_D | 20 | A |
| Drain Current Pulsed | I_{DM} | 80 | A |
| Avalanche Energy | E_{AS} | 25 | mJ |
| Power Dissipation | P_D | 12 | W |
| Junction Temperature | T_J | +150 | $^{\circ}C$ |
| Storage Temperature | T_{STG} | -55~ +150 | $^{\circ}C$ |

■ THERMAL CHARACTERISTICS

| Parameter | Symbol | Typ | Unit |
|------------------|------------|------|---------------|
| Junction to Case | R_{thJC} | 10.4 | $^{\circ}C/W$ |

■ 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 | 40 | - | - | V |
| Drain to Source Leakage Current | I _{DSS} | V _{DS} =40V, 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 =10A | - | 14 | 17 | mΩ |
| | | V _{GS} =4.5V, I _D =10A | - | 18 | 22 | mΩ |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =V _{GS} , I _D =250μA | 1 | 1.5 | 2.5 | V |
| Dynamic characteristics | | | | | | |
| Gate capacitance | R _g | V _{GS} =0V, V _{DS} =0V, f=1.0MHz | 1.5 | - | - | Ω |
| Forward Transconductance | g _{fs} | V _{DS} =10V, I _D =3A | 5 | - | - | S |
| Input Capacitance | C _{iss} | V _{DS} =20V, V _{GS} =0V f=1.0MHz | - | 1250 | - | pF |
| Output Capacitance | C _{oss} | | - | 114 | - | pF |
| Reverse Transfer Capacitance | C _{rss} | | - | 85 | - | pF |
| Resistive Switching Characteristics | | | | | | |
| Turn-on Delay Time | t _{d(ON)} | V _{GS} =10V, V _{DS} =20V, I _D =10A, R _G =3Ω | - | 10 | - | ns |
| Rise Time | t _r | | - | 9 | - | ns |
| Turn-off Delay Time | t _{d(OFF)} | | - | 32 | - | ns |
| Fall Time | t _f | | - | 16 | - | ns |
| Total Gate Charge | Q _g | I _D =10A, V _{DS} =20V V _{GS} =10V | - | 20 | - | nC |
| Gate to Source Charge | Q _{gs} | | - | 3.5 | - | nC |
| Gate to Drain("Miller") Charge | Q _{gd} | | - | 4.2 | - | nC |
| Source-Drain Diode Characteristics | | | | | | |
| Continuous Source Current(Body Diode) | I _s | | - | - | 20 | A |
| Maximum Pulsed Current(Body Diode) | I _{SM} | | - | - | 80 | A |
| Diode Forward Voltage | V _{SD} | I _{SD} =1A, V _{GS} =0V | - | 0.74 | 1.2 | V |
| Reverse Recovery Time | t _{rr} | I _{SD} =10A, T _J =25°C | - | 22 | - | ns |
| Reverse Recovery Charge | Q _{rr} | di/dt=100A/μs | - | 11 | - | nC |

■ TYPICAL CHARACTERISTICS

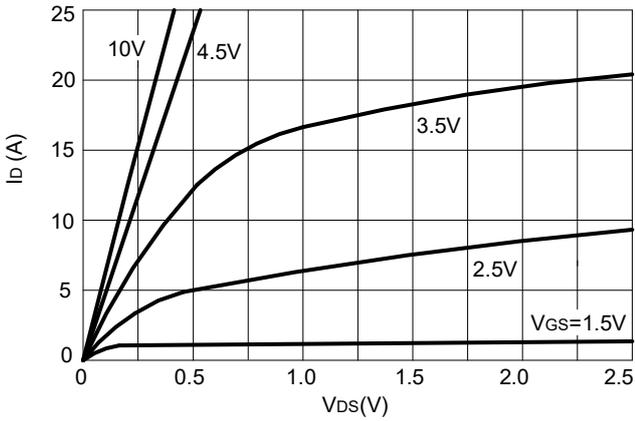


Figure 1: Output Characteristics

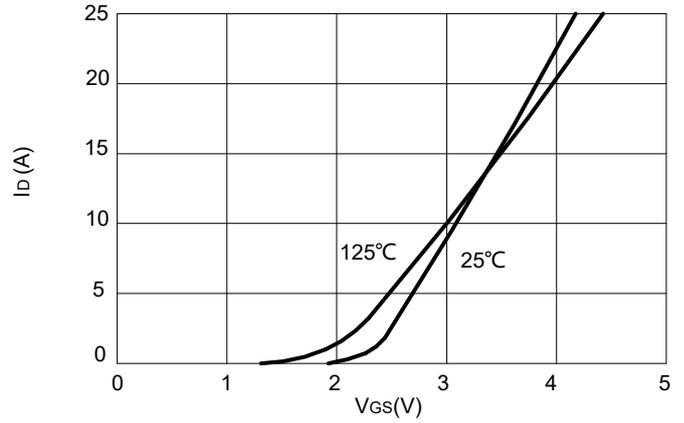


Figure 2: Transfer Characteristics

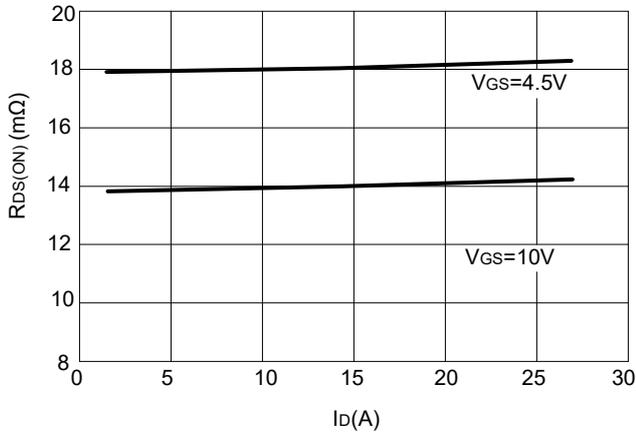


Figure 3: On-resistance vs. Drain Current

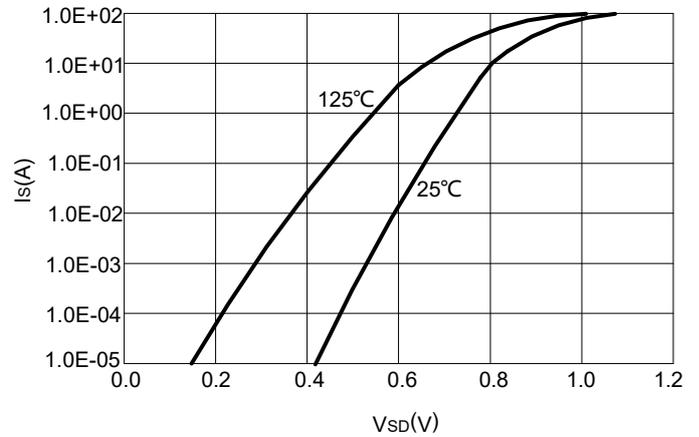


Figure 4: Body Diode Characteristics

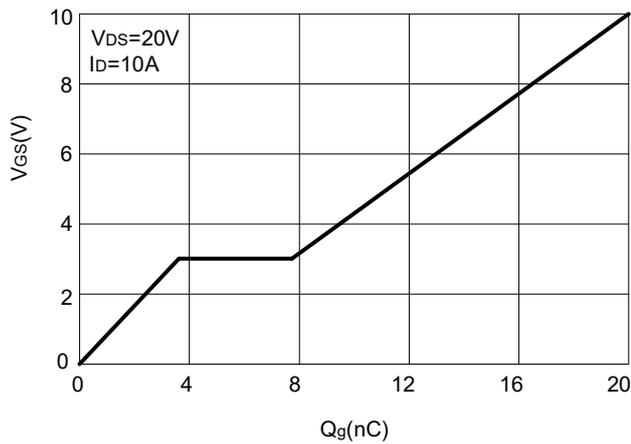


Figure 5: Gate Charge Characteristics

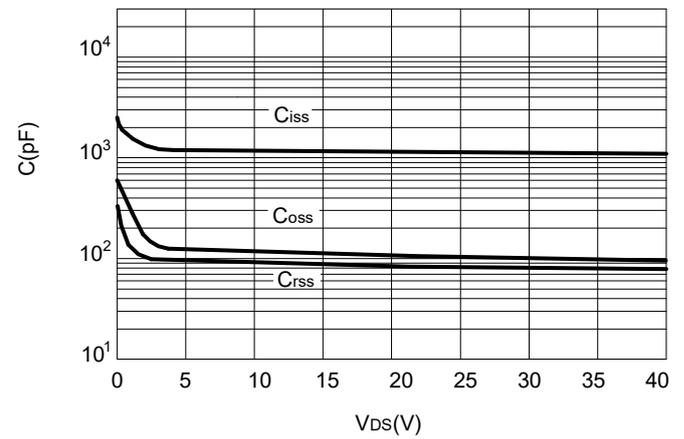


Figure 6: Capacitance Characteristics

■ TYPICAL CHARACTERISTICS(Cont.)

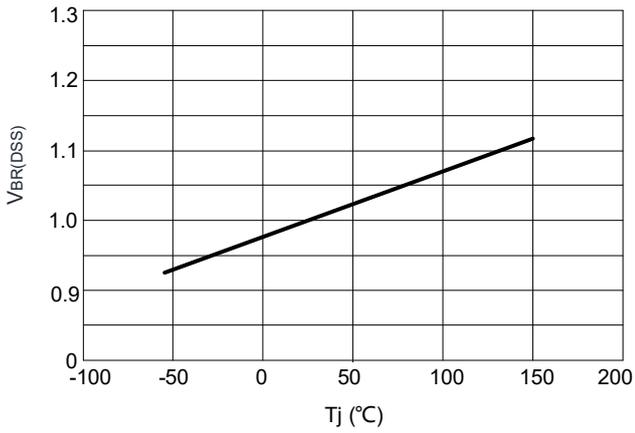


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

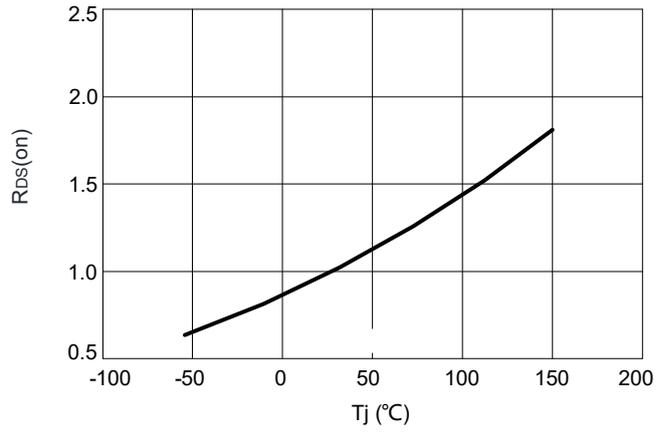


Figure 8: Normalized on Resistance vs. Junction Temperature

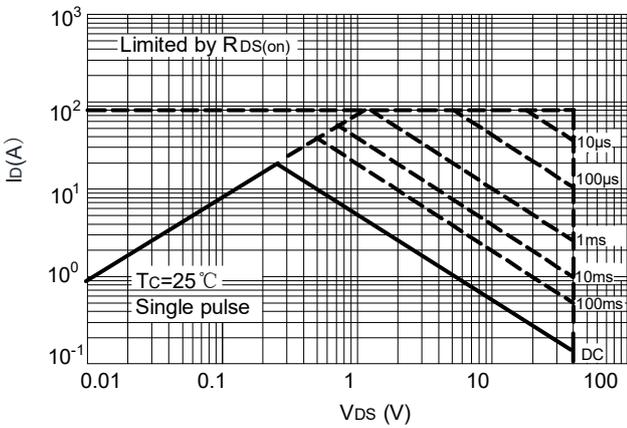


Figure 9: Maximum Safe Operating Area

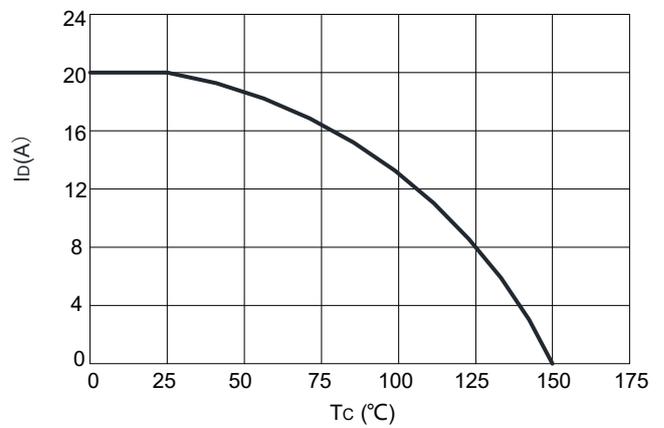
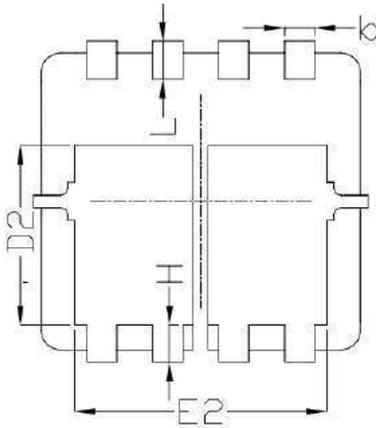
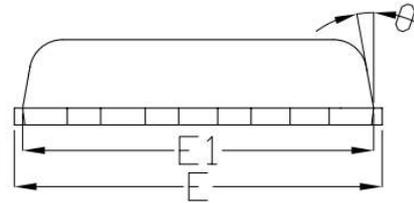
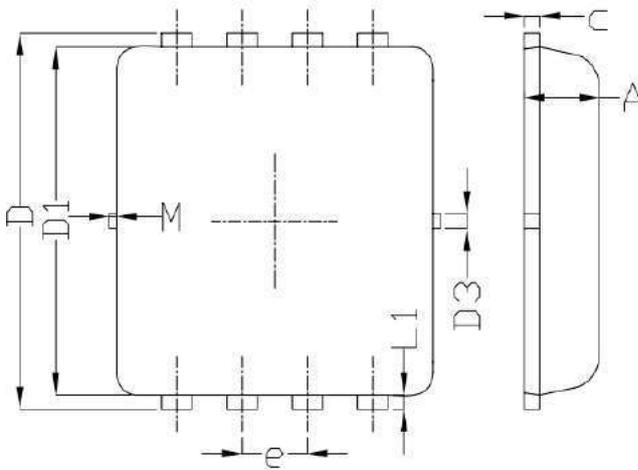


Figure 10: Maximum Conditions Drain Current vs. Case Temperature

■ PDFN3X3 Package Mechanical Data



| SYMBOL | DIMENSIONAL REOMTS | | |
|-----------------|--------------------|------|------|
| | 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 | | | |