## Features

- Low FOM RDS(on)×Qgd
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant

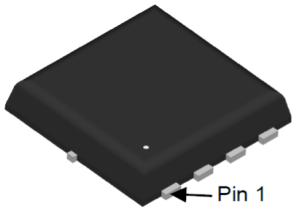
## Application

- Power Switch Circuit of Adaptor and Charger
- Battery Protection Charge/Discharge
- Notebook AC-in Load Switch

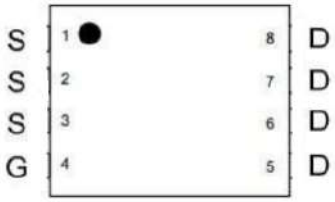
## Product Summary

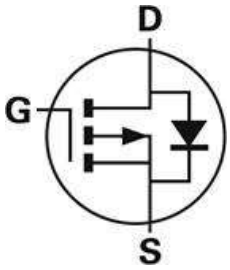
RoHS

| | | |
|---|---|---|
| $V_{DS}$ | -30 | V |
| $R_{DS(on),TYP}$@ $V_{GS}$=10 V | 6.4 | mΩ |
| $I_D$ | -55 | A |




PDFN3*3-8




## Maximum Ratings $T_A$ = 25ºC, unless otherwise noted

| | | Symbol | Values | Unit |
|---|---|---|---|---|
| -Source voltage($V_{GS}$=0V) | | $V_{DS}$ | -30 | V |
| Drain Current[2] | $_C$ = 25ºC | $I_D$ | -55 | A |
| | $_C$ = 100ºC | | -34.6 | |
| Drain Current[3] | | $I_{D,pulse}$ | -220 | A |
| -Source Voltage | | $V_{GSS}$ | ±25 | V |
| | | $E_{AS}$ | 200 | mJ |
| Dissipation | | $P_D$ | 31.2 | W |
| Junction and Storage Temperature Range | | $T_J$, $T_{stg}$ | -55~+150 | ºC |

| Parameter | Symbol | Max. | Unit |
|---|---|---|---|
| Thermal Resistance, Junction-to-Case | $R_{thJC}$ | 4 | ºC/W |
| Thermal Resistance, Junction-to-Ambient | $R_{thJA}$ | 35 | ºC/W |

**Notes**

1) L=0.5mH,VDD=-15V,Start TJ=25℃

2) Limited by maximum junction temperature.

3) Repetitive Rating: Pulse width limited by maximum junction temperature.

| **Electrical Characteristics** $T_J$ = 25ºC, unless otherwise noted | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **Value** | | | **Unit** |
| | | | **Min.** | **Typ.** | **Max.** | |
| **Static Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -250μA | -30 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = -30V<br>$V_{GS}$ = 0V, $T_J$ = 25ºC | -- | -- | -1 | μA |
| | | $V_{DS}$ = -24V,<br>$V_{GS}$ = 0V, $T_J$ = 125ºC | -- | -- | -100 | |
| Gate-Source Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±25V | -- | -- | ±100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = -250μA | -1.2 | -1.8 | -2.5 | V |
| Drain-Source On-State-Resistance | $R_{DS(on)}$ | $V_{GS}$ = -10V, $I_D$ = -20A | -- | 6.4 | 8 | mΩ |
| | | $V_{GS}$ = -4.5V, $I_D$ = -10A | -- | 10.5 | 13 | mΩ |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V,<br>$V_{DS}$ = -15V<br>f = 1.0MHz | -- | 3482 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 400 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 309 | -- | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = -15V , $I_D$ = -10A<br>$V_{GS}$ = -10V | -- | 61 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 12 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 10 | -- | |
| Gate Plateau Voltage | $V_{Plateau}$ | | -- | 3.1 | -- | V |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DS}$ = -15V , $V_{GS}$ = -10V<br>$R_G$ = 3Ω, $I_D$ = -10A | -- | 19 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 33 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 38 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 15 | -- | |
| **Drain-Source Body Diode Characteristics** | | | | | | |
| Body Diode Forward Voltage | $V_{SD}$ | $T_J$ = 25ºC, $I_{SD}$ = -10A,<br>$V_{GS}$ = 0V | -- | -- | -1.2 | V |
| Continuous Diode Forward Current | $I_S$ | | -- | -- | -55 | A |
| Reverse Recovery Time | $t_{rr}$ | $I_F$ = -10A, $di_F/dt$ = -100A/μs | -- | 45 | -- | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | -- | 29 | -- | nC |

## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

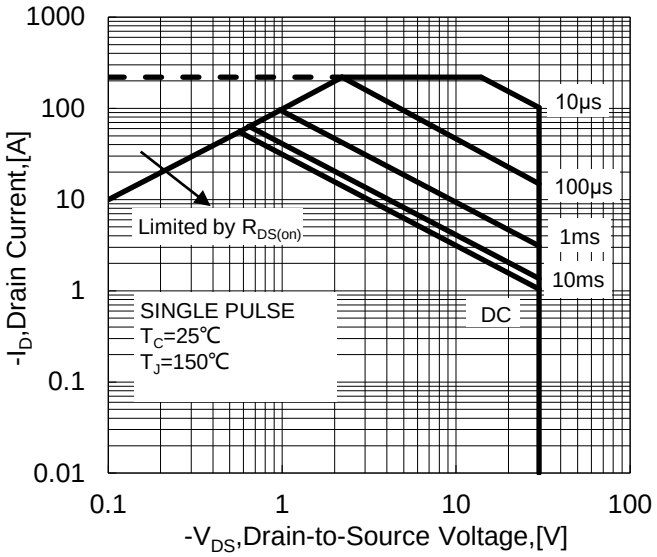



**Figure 1. Maximum Safe Operating Area**

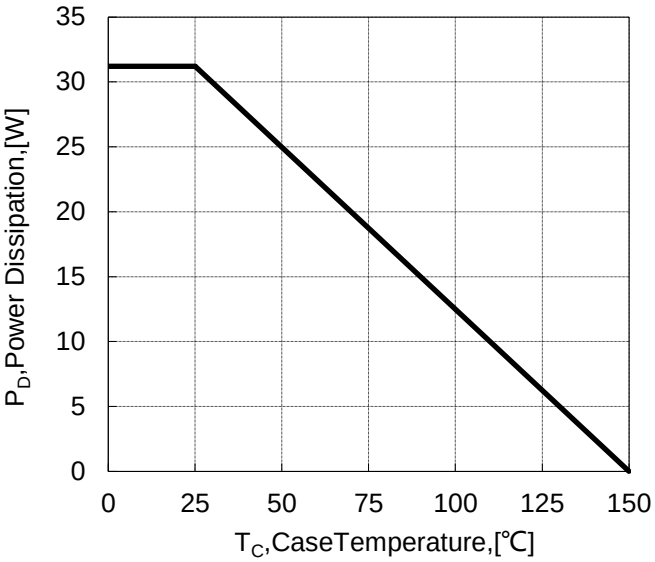



**Figure 2. Maximum Power Dissipation vs Case Temperature**

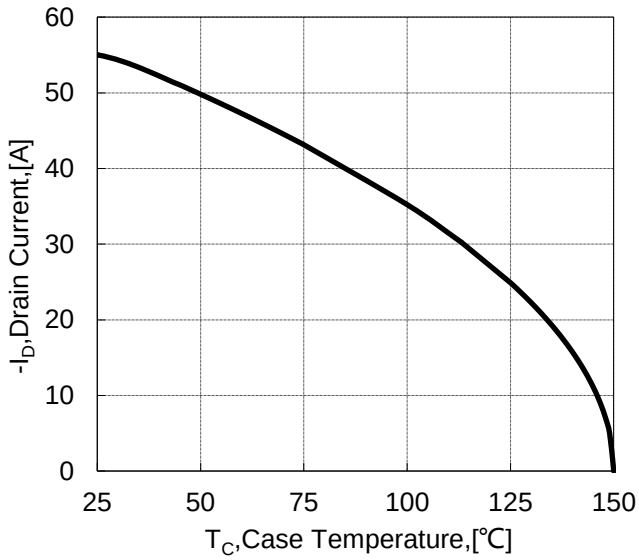



**Figure 3. Maximum Continuous Drain Current vs Case Temperature**

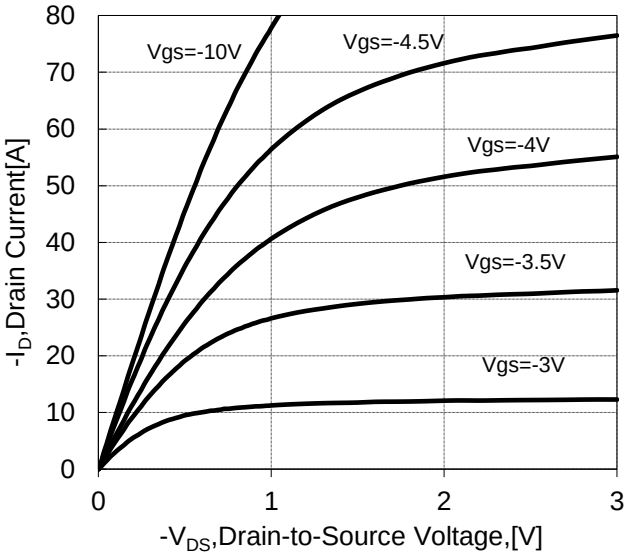



**Figure 4. Typical output Characteristics**

## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

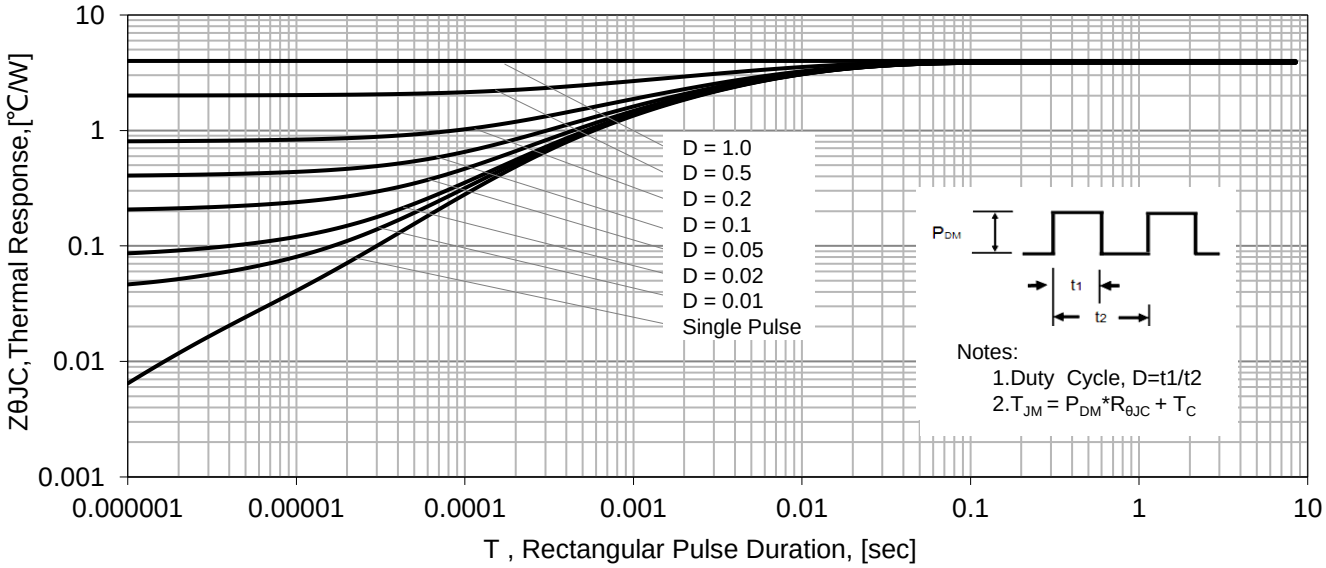



**Figure 5 Maximum Effective Thermal Impedance , Junction to Case**

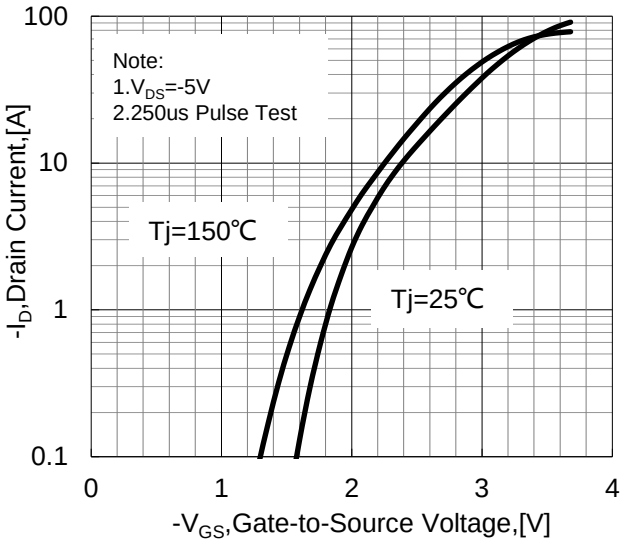



**Figure 6 Typical Transfer Characteristics**

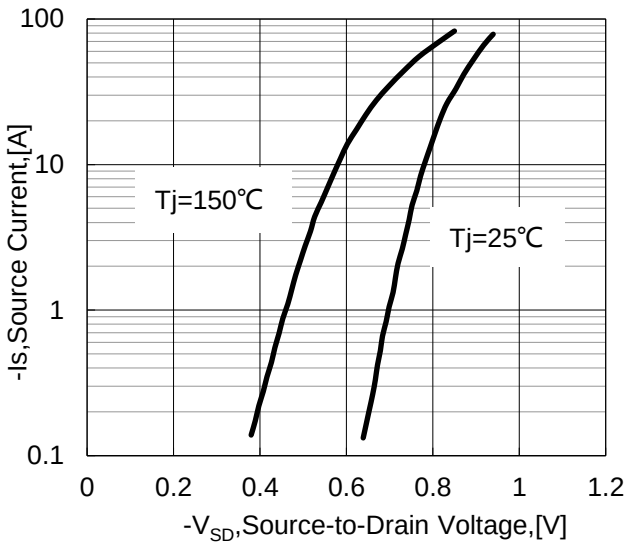



**Figure 7 Typical Body Diode Transfer Characteristics**

## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

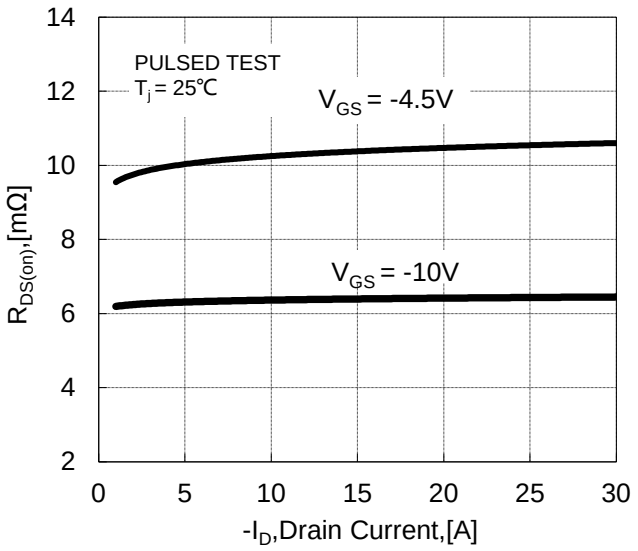



**Figure 8. Drain-to-Source On Resistance vs Drain Current**

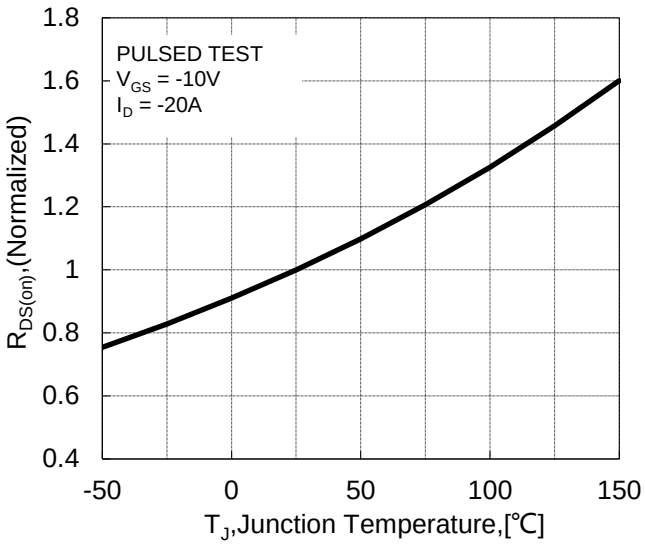



**Figure 9. Normalized On Resistance vs Junction Temperature**

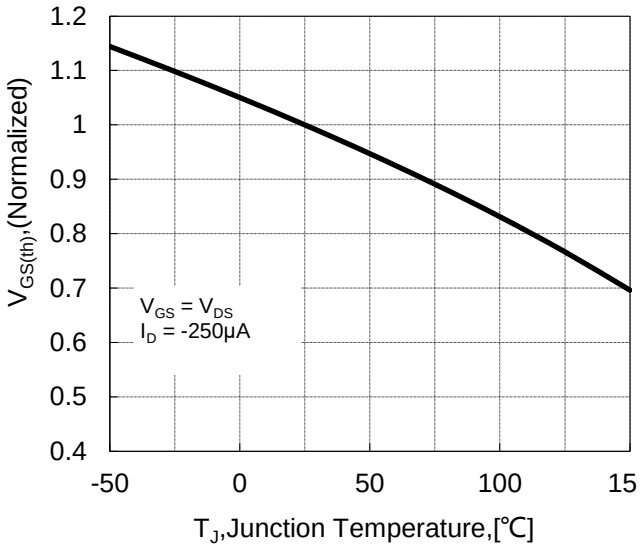



**Figure10. Normalized Threshold Voltage vs Junction Temperature**

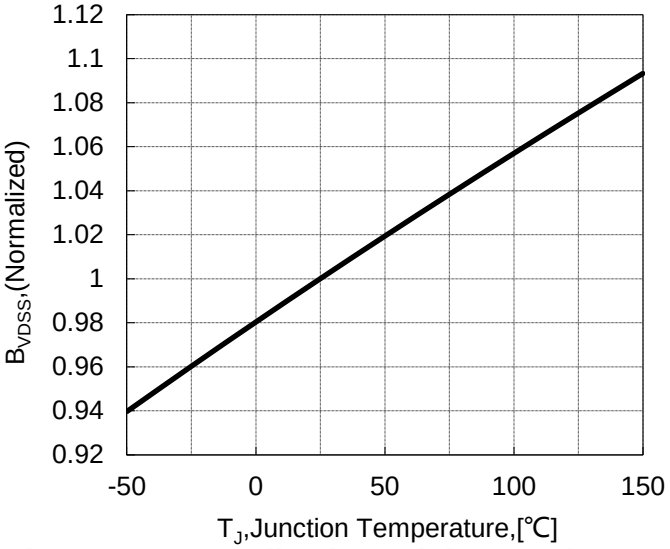



**Figure 11. Normalized Breakdown Voltage vs Junction Temperature**

## Typical Characteristics $T_J$ = 25ºC, unless otherwise noted

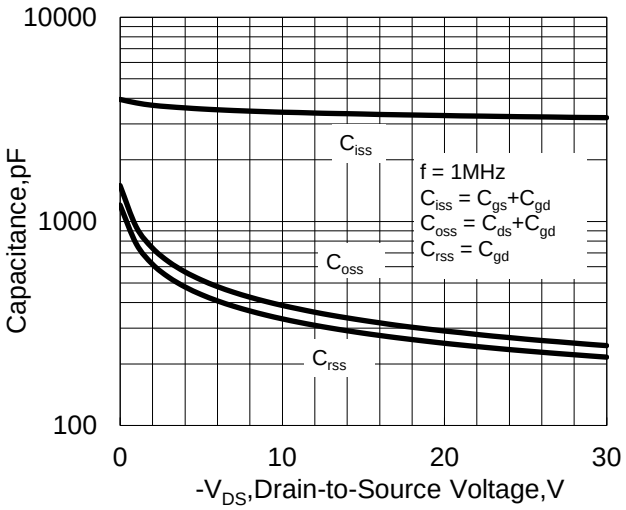



**Figure 12. Capacitance Characteristics**

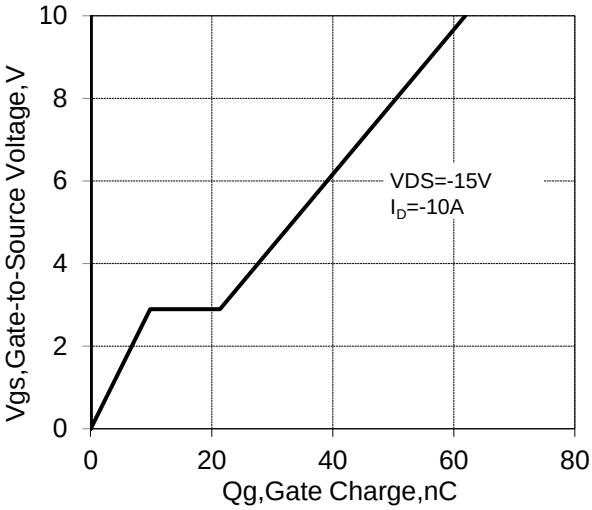
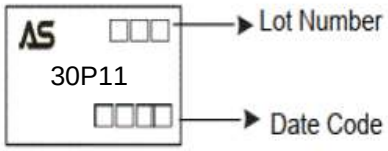


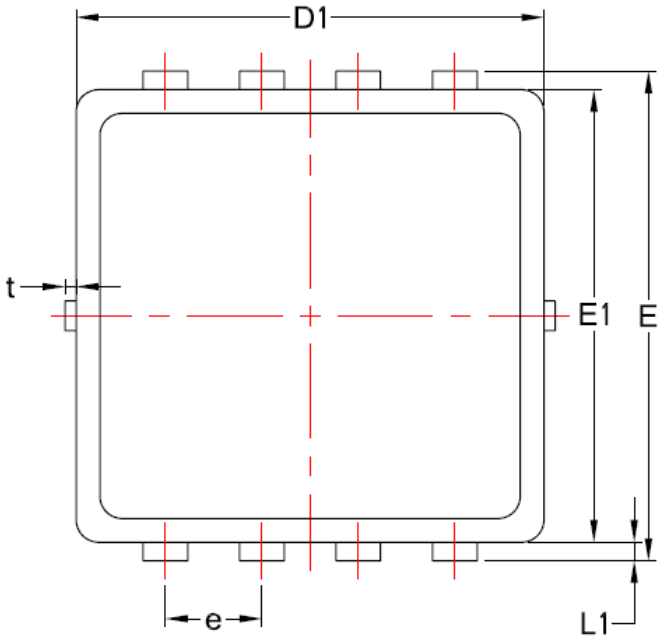

**Figure 13 Typical Gate Charge vs Gate to Source Voltage**

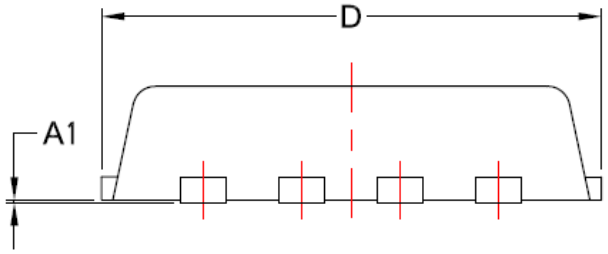
## Ordering and Marking Information

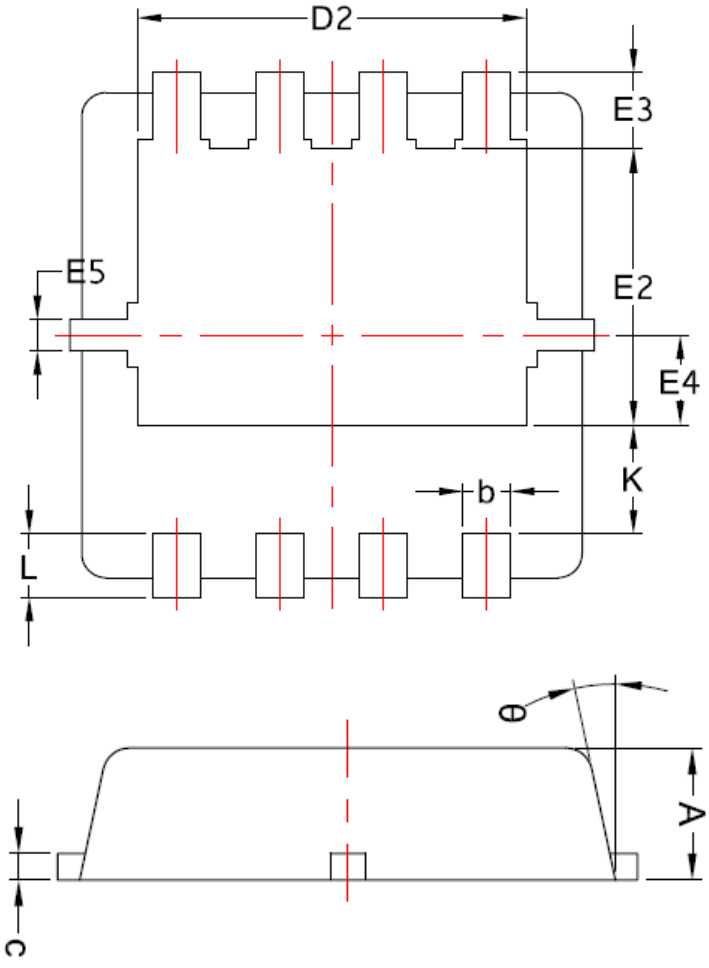
| Ordering Device No. | Marking | Package | Packing | Quantity |
|---|---|---|---|---|
| ASDM30P11TD-R | 30P11 | PDFN3*3-8 | Tape&Reel | 5000/Reel |

| PACKAGE | MARKING |
|---|---|
| PDFN3*3-8 |  |

# PDFN3*3_8 Package




| SYMBOL | COMMON | | |
|---|---|---|---|
| | MM | | |
| | MIN | NOM | MAX |
| A | 0.70 | 0.75 | 0.85 |
| A1 | / | / | 0.05 |
| b | 0.20 | 0.30 | 0.40 |
| c | 0.10 | 0.152 | 0.25 |
| D | 3.15 | 3.30 | 3.45 |
| D1 | 3.00 | 3.15 | 3.25 |
| D2 | 2.29 | 2.45 | 2.65 |
| E | 3.15 | 3.30 | 3.45 |
| E1 | 2.90 | 3.05 | 3.20 |
| E2 | 1.54 | 1.74 | 1.94 |
| E3 | 0.28 | 0.48 | 0.65 |
| E4 | 0.37 | 0.57 | 0.77 |
| E5 | 0.10 | 0.20 | 0.30 |
| e | 0.60 | 0.65 | 0.70 |
| K | 0.59 | 0.69 | 0.89 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | 0.06 | 0.125 | 0.20 |
| t | 0 | 0.075 | 0.13 |
| $\theta$ | 10° | 12° | 14° |

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