

# PB8233D

## P-Channel 20-V (D-S) MOSFET

### 1. FEATURES

- Low RDS(on) trench technology
- Low thermal impedance.
- Fast switching speed.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



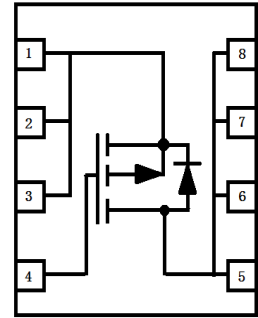
DFN3333-8A

### 2. APPLICATIONS

- Load Switches
- DC/DC Conversion
- Motor Drives

### 3. DEVICE MARKING AND RESISTOR VALUES

| Device  | Marking | Shipping       |
|---------|---------|----------------|
| PB8233D | N2A     | 2000/Tape&Reel |



### 4. MAXIMUM RATINGS(Ta = 25°C unless otherwise stated)

| Parameter                        | Symbol | Limits    | Unit |
|----------------------------------|--------|-----------|------|
| Drain-to-Source Voltage          | VDS    | -20       | V    |
| Gate-to-Source Voltage           | VGS    | ±10       | V    |
| Continuous Drain Current(Note 1) | ID     | TA =25°C  | A    |
|                                  |        | TA =70°C  |      |
| Pulsed Drain Current (Note 2)    | IDM    | -70       |      |
| Power Dissipation(Note 1)        | PD     | TA =25°C  | W    |
|                                  |        | TA =70°C  |      |
| Operating Junction Temperature   | TJ     | -55 ~+150 | °C   |
| Storage Temperature Range        | Tstg   | -55 ~+150 |      |

1.Surface Mounted on 1" x 1" FR4 Board.

2.Pulse width limited by maximum junction temperature.

### 5. THERMAL CHARACTERISTICS

| Parameter                           | Symbol | Limits       | Unit |
|-------------------------------------|--------|--------------|------|
| Maximum Junction-to-Ambient(Note 1) | RθJA   | t ≤ 10s      | °C/W |
|                                     |        | Steady State |      |
| Maximum Junction-to-Case            | RθJC   | 2.7          |      |



**6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)**

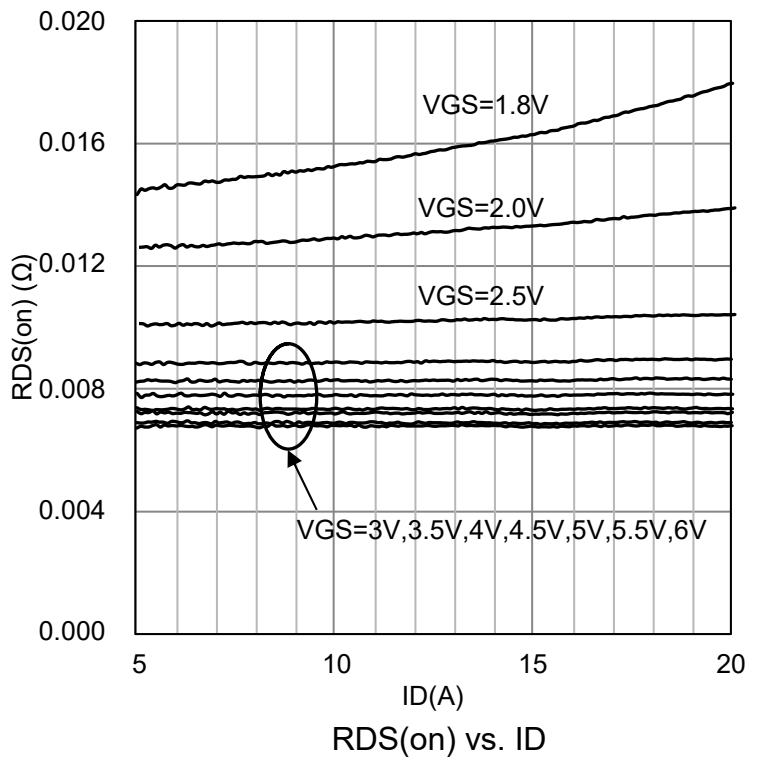
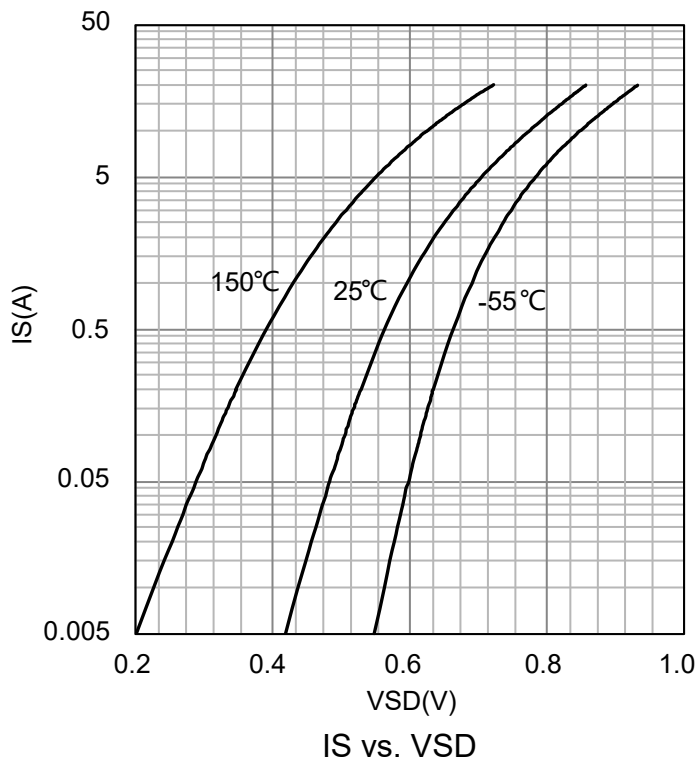
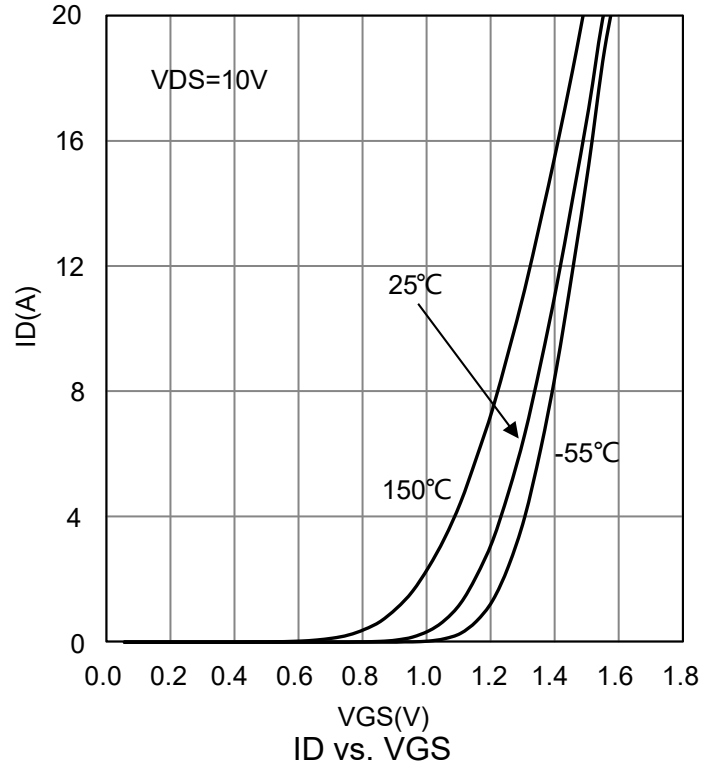
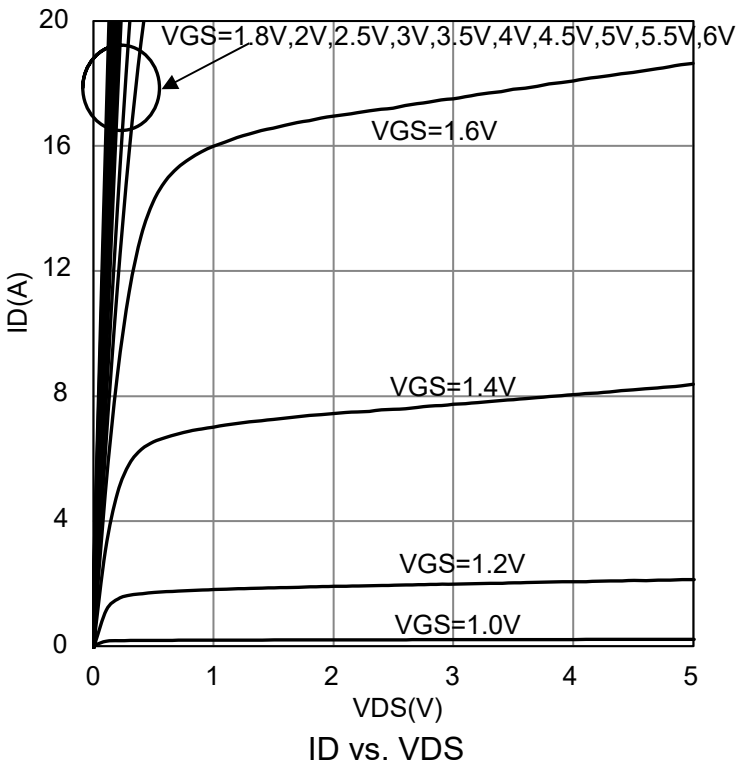
| Characteristic   | Symbol   | Min.    | Typ.  | Max. | Unit |
|--|--|---------|-------|------|------|
| <b>Static</b>  |  |         |       |      |      |
| Drain-Source Breakdown Voltage<br>(VGS = 0 V, ID = -250 μA)  | V(BR)DSS   | -20     | -     | -    | V    |
| Gate-Source Threshold Voltage<br>(VDS = VGS, ID = -250 μA)   | VGS(TH)  | -0.5    | -0.7  | -1.3 | V    |
| Gate-Body leakage current<br>(VDS = 0V, VGS = ±10V)  | IGSS   | -       | -     | ±100 | nA   |
| Zero Gate Voltage Drain Current<br>(VDS = -16 V, VGS = 0 V)<br>(VDS = -16 V, VGS = 0 V, TJ = 55°C) | IDSS   | -       | -     | -1   | μA   |
| Drain-to-Source On-Resistance(Note 3)<br>(VGS = -4.5 V, ID = -14 A)<br>(VGS = -2.5 V, ID = -11 A)  | RDS(ON)  | -       | 7.5   | 9.5  | mΩ   |
| Diode Forward Voltage(Note 3)<br>(IS = -2.5 A, VGS = 0 V)  | VSD  | -       | -0.69 | -1.2 | V    |
| <b>Dynamic(Note 4)</b>   |  |         |       |      |      |
| Total Gate Charge  | (VDS = -10 V,<br>VGS = -4.5<br>V, ID = -14.6 A)                      | Qg      | -     | 61   | -    |
| Gate to Source Charge  |  | Qgs     | -     | 11.4 | -    |
| Gate to Drain Charge   |  | Qgd     | -     | 14.7 | -    |
| Turn-on Delay Time   | (VDS=-10<br>V, RL=0.7Ω, ID=-<br>14.6A, VGEN=-<br>4.5 V, RGEN=6<br>Ω) | td(ON)  | -     | 29   | -    |
| Rise Time  |  | tr      | -     | 180  | -    |
| Turn-Off Delay Time  |  | td(OFF) | -     | 415  | -    |
| Fall Time  |  | tf      | -     | 270  | -    |
| Input Capacitance  | (VDS=-15 V,<br>VGS=0 V,<br>f=1MHz)                                   | Ciss    | -     | 5147 | -    |
| Output Capacitance   |  | Coss    | -     | 661  | -    |
| Reverse Transfer Capacitance   |  | Crss    | -     | 616  | -    |
| Gate-Resistance<br>(VDS = 0 V, VGS = 0 V, f = 1 MHz)   | Rg   | -       | 2.5   | 10   | Ω    |
| <b>Source-Drain DIODE Ratings and Characteristics(Tc= 25° C)</b>                                   |  |         |       |      |      |
| Continuous Current(Note 3)   | IS   | -       | -     | -20  | A    |
| Plused Current(Note 3)   | ISM  | -       | -     | -70  |      |
| Reverse Recovery Time<br>(IF=IS, dIf/dt=100A/us)   | trr  | -       | -     | 200  | nS   |
| Reverse Recovery Charge<br>(IF=IS, dIf/dt=100A/us)   | Qrr  | -       | -     | 96   | nC   |

3.Pulse test: PW ≤ 300us duty cycle ≤ 2%.

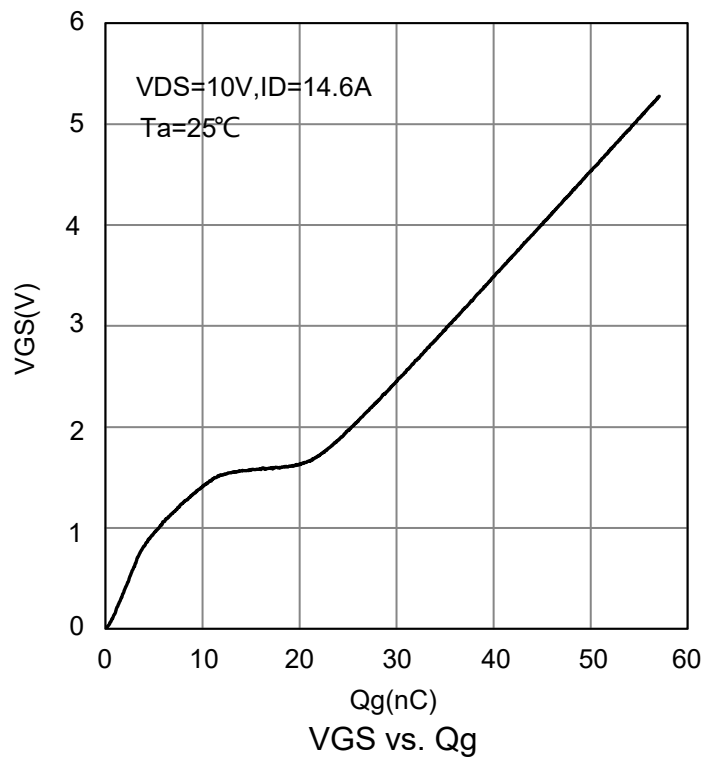
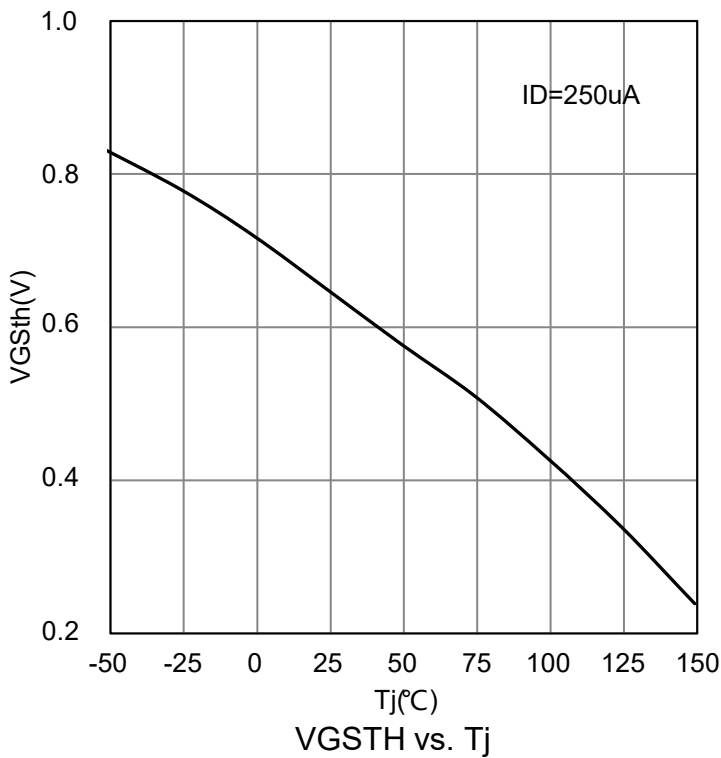
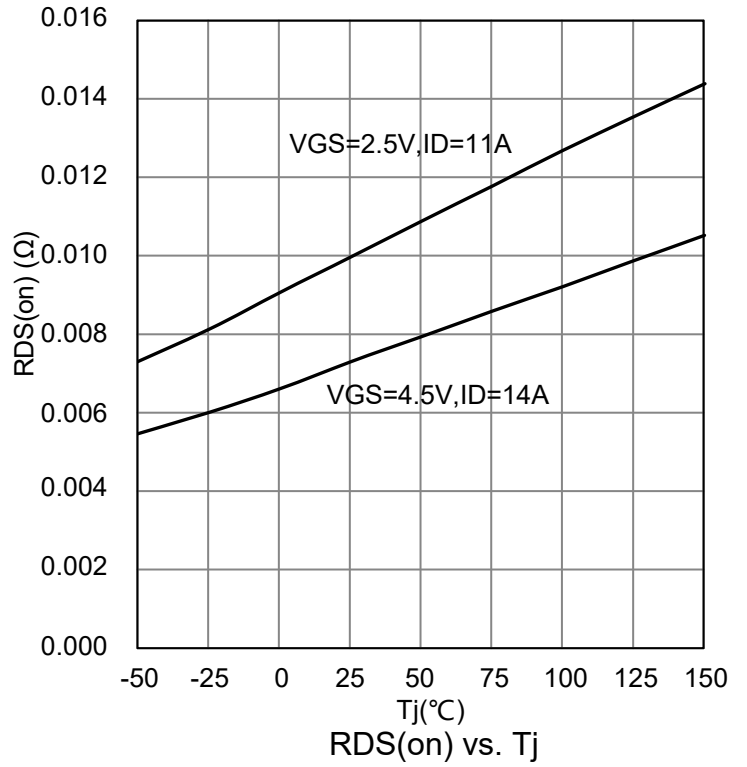
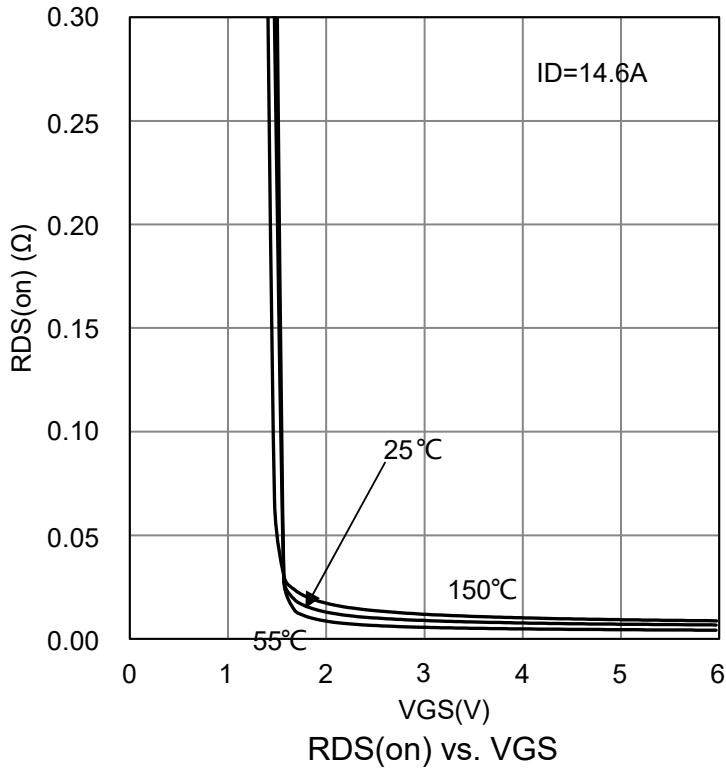
4.Guaranteed by design, not subject to production testing.



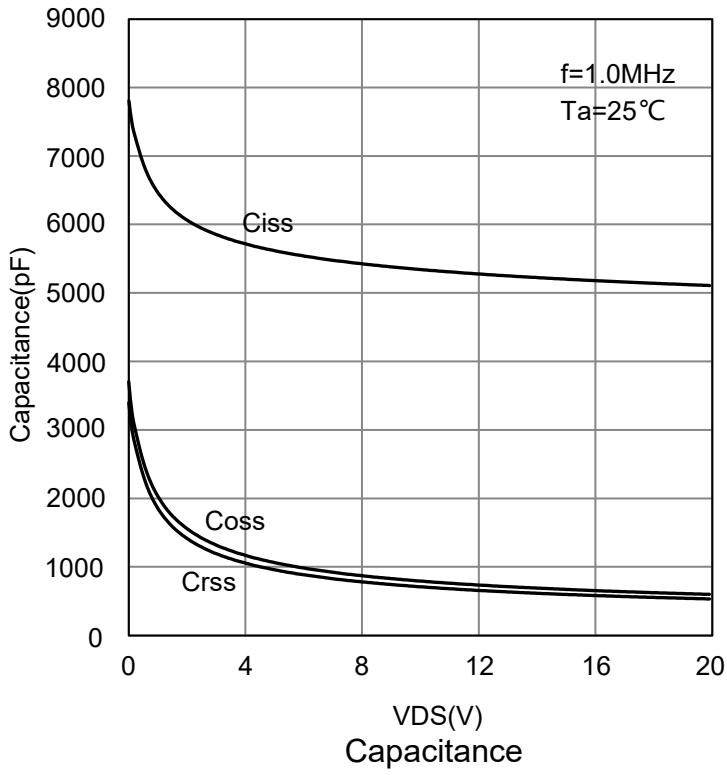
**7.ELECTRICAL CHARACTERISTICS CURVES**

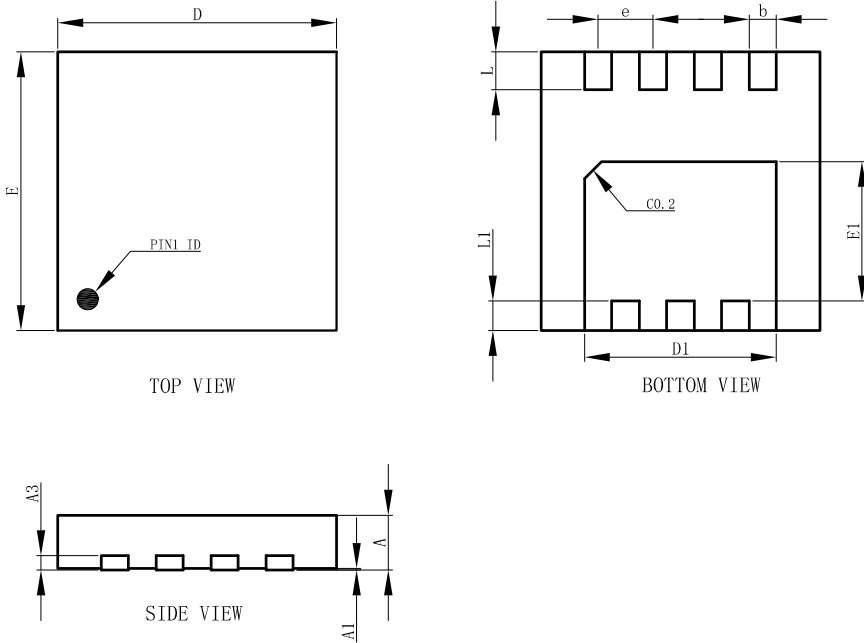


**7.ELECTRICAL CHARACTERISTICS CURVES(Con.)**

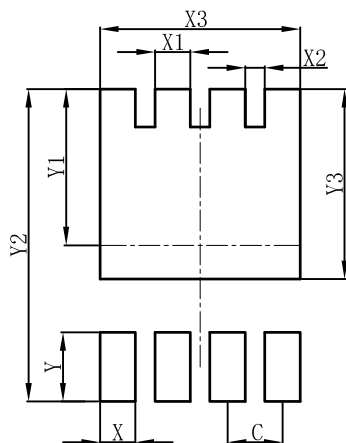


**7.ELECTRICAL CHARACTERISTICS CURVES(Con.)**



**8. OUTLINE AND DIMENSIONS**
**DFN3333-8A**


| DFN3333-8A           |           |      |      |
|----------------------|-----------|------|------|
| DIM                  | MIN       | NOR  | MAX  |
| A                    | 0.60      | 0.65 | 0.70 |
| A1                   | 0.00      | 0.03 | 0.05 |
| b                    | 0.27      | 0.32 | 0.37 |
| D                    | 3.25      | 3.30 | 3.35 |
| E                    | 3.25      | 3.30 | 3.35 |
| D1                   | 2.22      | 2.27 | 2.32 |
| E1                   | 1.60      | 1.65 | 1.70 |
| e                    | 0.65BSC   |      |      |
| L                    | 0.40      | 0.45 | 0.50 |
| L1                   | 0.30      | 0.35 | 0.40 |
| A3                   | 0.152REF. |      |      |
| All Dimensions in mm |           |      |      |

**9. SOLDERING FOOTPRINT**
**DFN3333-8A**


| DFN3333-8A |      |
|------------|------|
| DIM        | (mm) |
| C          | 0.65 |
| X          | 0.42 |
| X1         | 0.42 |
| X2         | 0.23 |
| X3         | 2.37 |
| Y          | 0.70 |
| Y1         | 1.85 |
| Y2         | 3.70 |
| Y3         | 2.25 |

