

NB8610HD

N-Channel Power Trench MOSFET

1. FEATURES

- Max RDS(on) = 13 mΩ at VGS = 10 V, ID = 8 A
- Advanced Package and Silicon combination for low RDS(on) and high efficiency.
- We declare that the material of product compliance with RoHS requirements and Halogen Free.



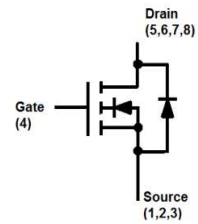
DFN3333-8A

2. APPLICATIONS

- DC-DC Conversion

3. DEVICE MARKING AND RESISTOR VALUES

| Device | Marking | Shipping |
|----------|---------|----------------|
| NB8610HD | B1H | 2000/Tape&Reel |



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

| Parameter | Symbol | Limits | Unit | |
|--|--------|-----------|------|---|
| Drain-to-Source Voltage | VDSS | 100 | V | |
| Gate-to-Source Voltage | VGS | +20/-12 | V | |
| Avalanche Current | IAS | 24 | A | |
| Avalanche energy L=0.1mH | EAS | 28.8 | mJ | |
| Continuous Drain Current(Note 1) | ID | TA =25°C | 14 | A |
| | | TA =70°C | 9 | |
| Pulsed Drain Current (Note 2) | IDM | 56 | | |
| Continuous Source Current (Diode Conduction)(Note 1) | IS | 3.5 | A | |
| Power Dissipation(Note 1) | PD | TA =25°C | 3.5 | W |
| | | TA =70°C | 2 | |
| 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

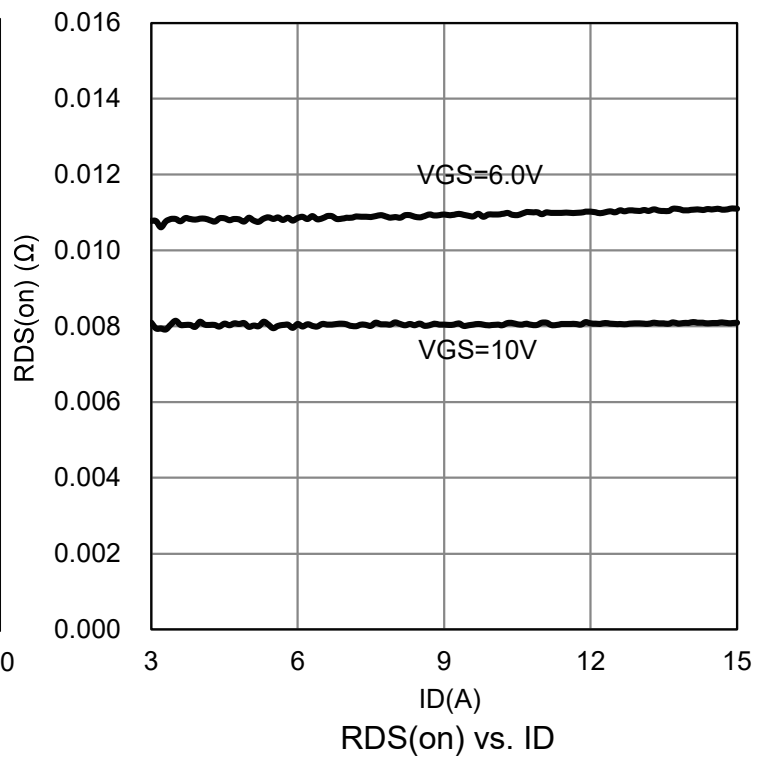
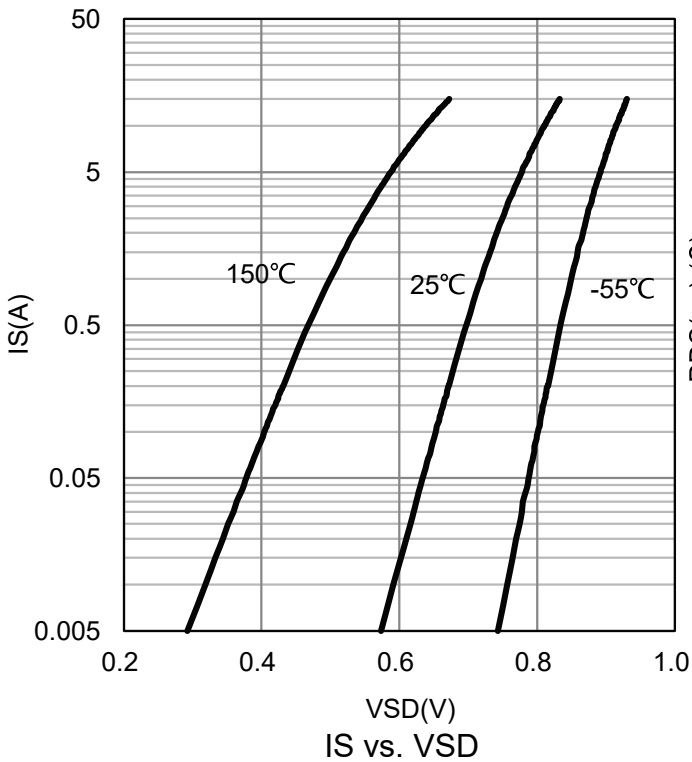
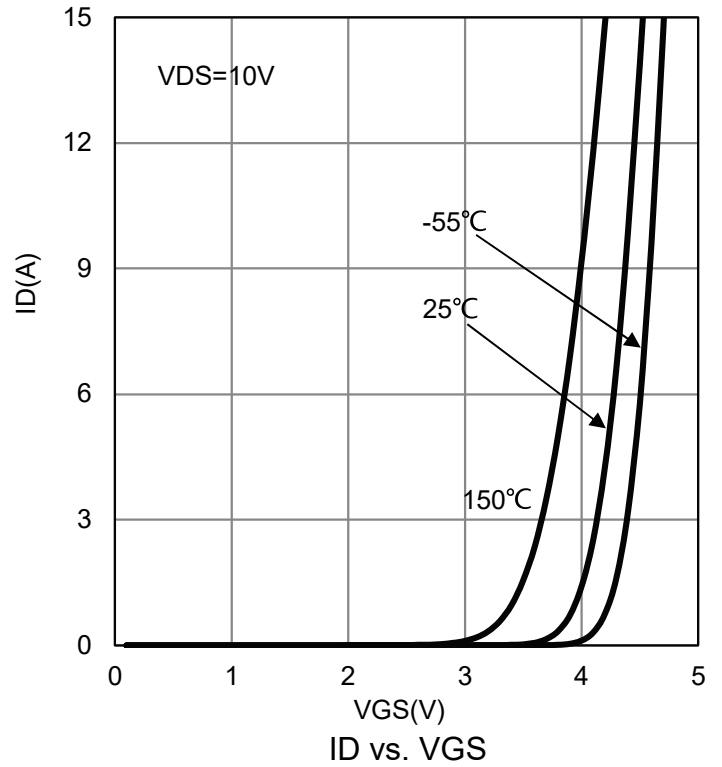
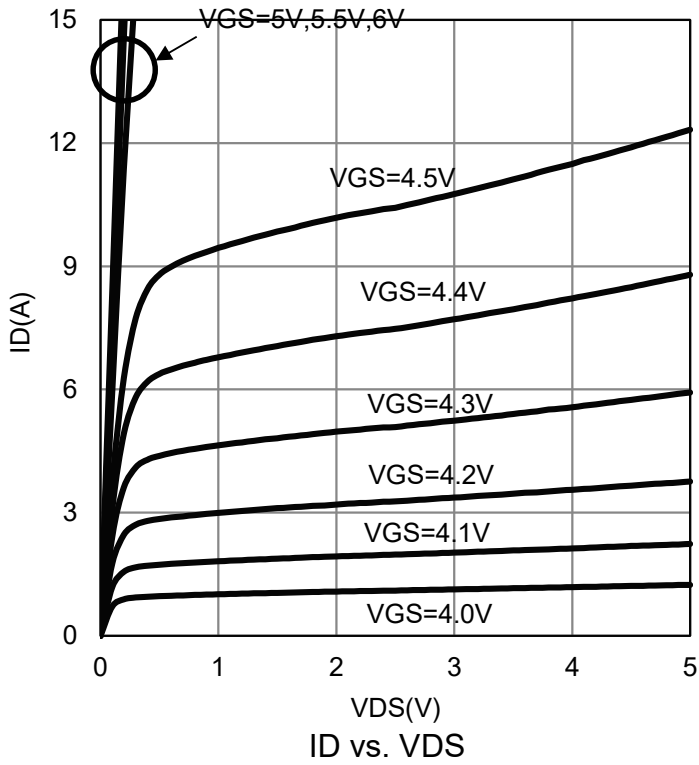
| Parameter | Symbol | Limits | Unit | |
|-------------------------------------|--------|--------------|------|------|
| Maximum Junction-to-Ambient(Note 1) | RθJA | t ≤ 10s | 35 | °C/W |
| | | Steady State | 81 | |



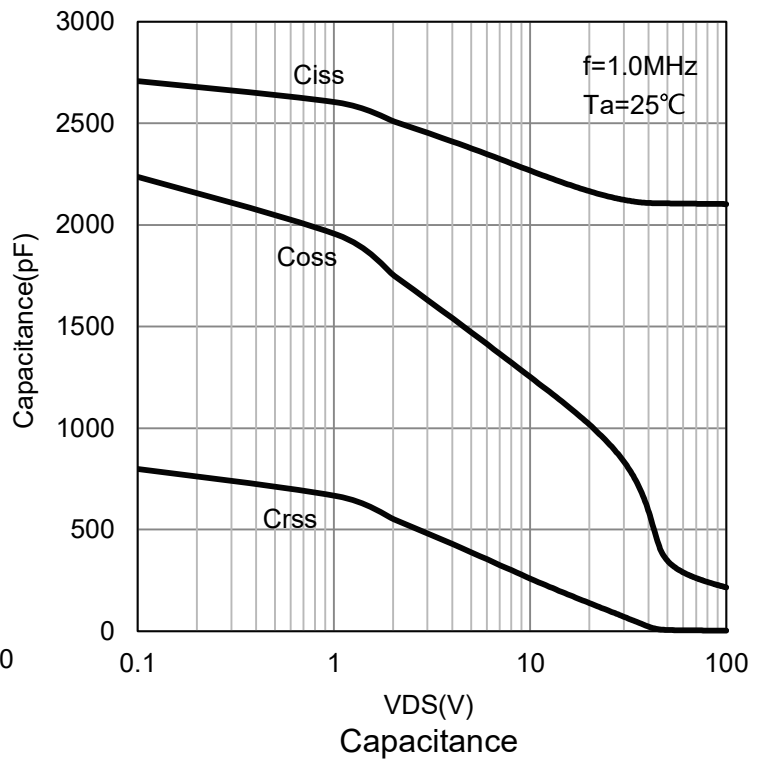
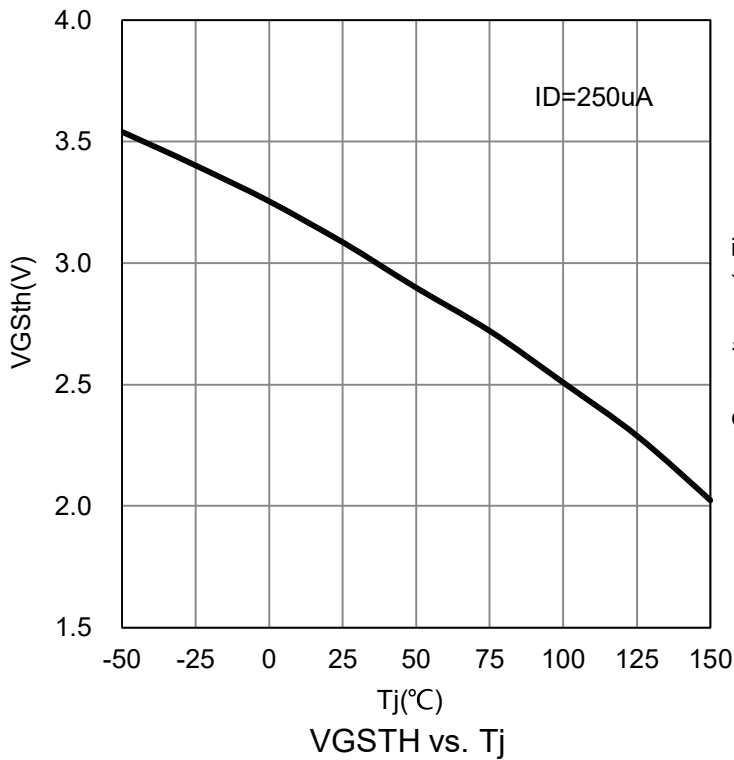
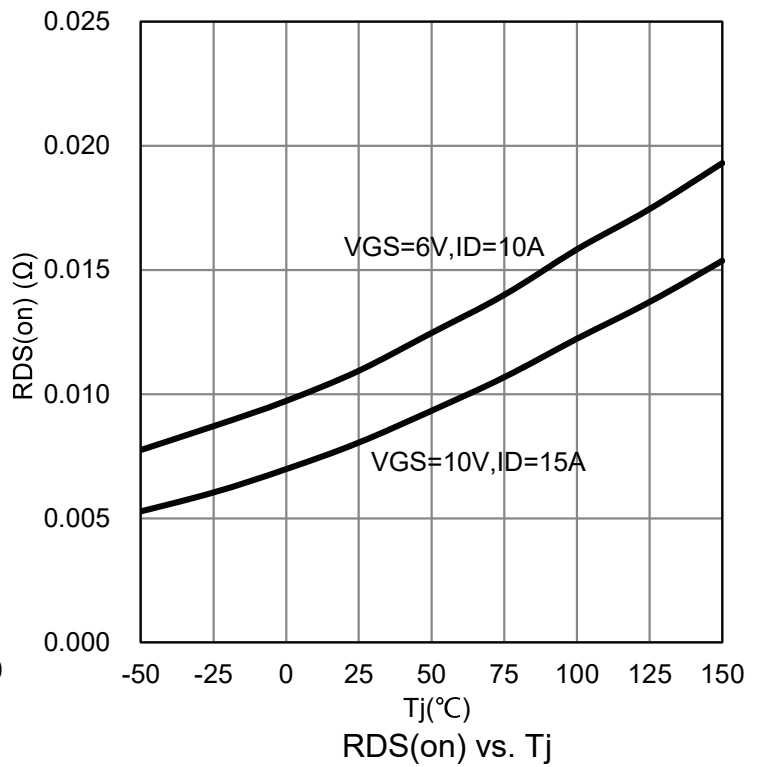
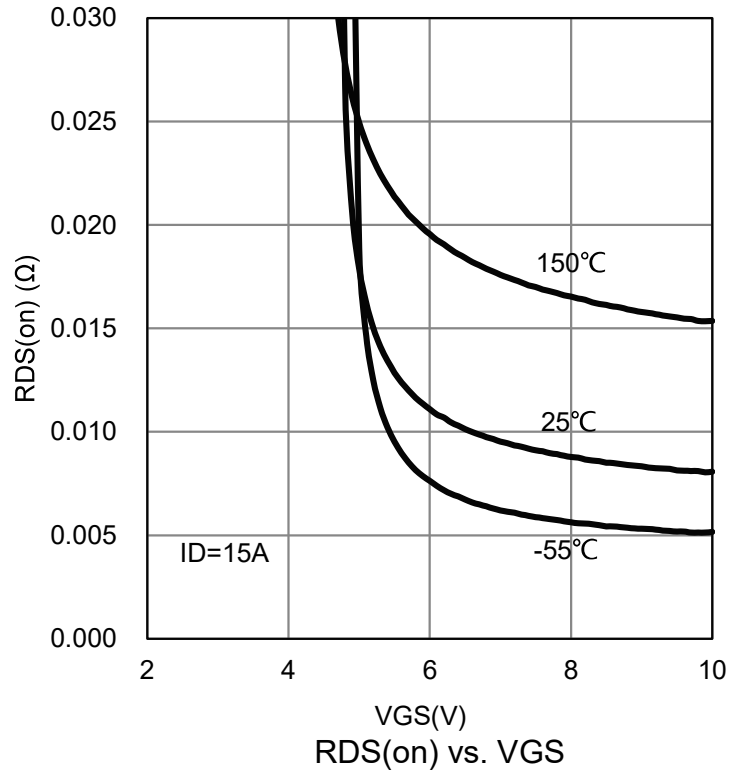
6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

| Characteristic | Symbol | Min. | Typ. | Max. | Unit | |
|--|--|--------|------------|------------|------|----|
| Drain to Source Breakdown Voltage (VGS = 0V, ID = 250μA) | VDSS | 100 | - | - | V | |
| Drain-to-Source Leakage Current (VDS = 80V, VGS = 0V) | IDSS | - | - | 800 | nA | |
| Gate-Body leakage current (VDS = 0V, VGS = ±20V) | IGSS | - | - | ±100 | nA | |
| Gate Threshold Voltage (VDS = VGS , ID = 250μA) | VGS(TH) | 2 | - | 4 | V | |
| Drain-to-Source On-Resistance (VGS = 10 V, ID = 8 A) (VGS = 6 V, ID = 5 A) | RDS(ON) | - - | 9 11 | 13 18 | mΩ | |
| Gate Resistance | Rg | - | 0.6 | - | Ω | |
| Forward Transconductance (VDS = 10V, ID = 13A) | gfs | - | 16 | - | S | |
| Total Gate Charge VGS(0 ~10 V) | (ID = 13A, VDD = 50V) | | Qg | 37 | - | nC |
| Total Gate Charge VGS(0 ~5 V) | | | Qg | 24 | - | |
| Gate to Source Charge | | | Qgs | 8.5 | - | |
| Gate to Drain Charge | | | Qgd | 12 | - | |
| Turn-on Delay Time | (VDD = 50V, ID = 13A, RG = 6 Ω, VGS = 10V) | | td(ON) | 15 | - | nS |
| Rise Time | | | tr | 8 | - | |
| Turn-Off Delay Time | | | td(OFF) | 23 | - | |
| Fall Time | | | tf | 7 | - | |
| Input Capacitance | (VGS = 0V, VDS = 50V, f = 1MHz) | | Ciss | 2100 | - | pF |
| Output Capacitance | | | Coss | 340 | - | |
| Reverse Transfer Capacitance | | | Crss | 6.8 | - | |
| Diode Forward Voltage (VGS = 0 V, IS = 2.1 A) (VGS = 0 V, IS = 13 A) | VSD | - - | 0.7 0.8 | 1.2 1.3 | V | |
| Reverse Recovery Time (IF = 13 A, di/dt = 100 A/μs) | trr | - | 56 | - | nS | |
| Reverse Recovery Charge (IF = 13 A, di/dt = 100 A/μs) | Qrr | - | 80 | - | nC | |

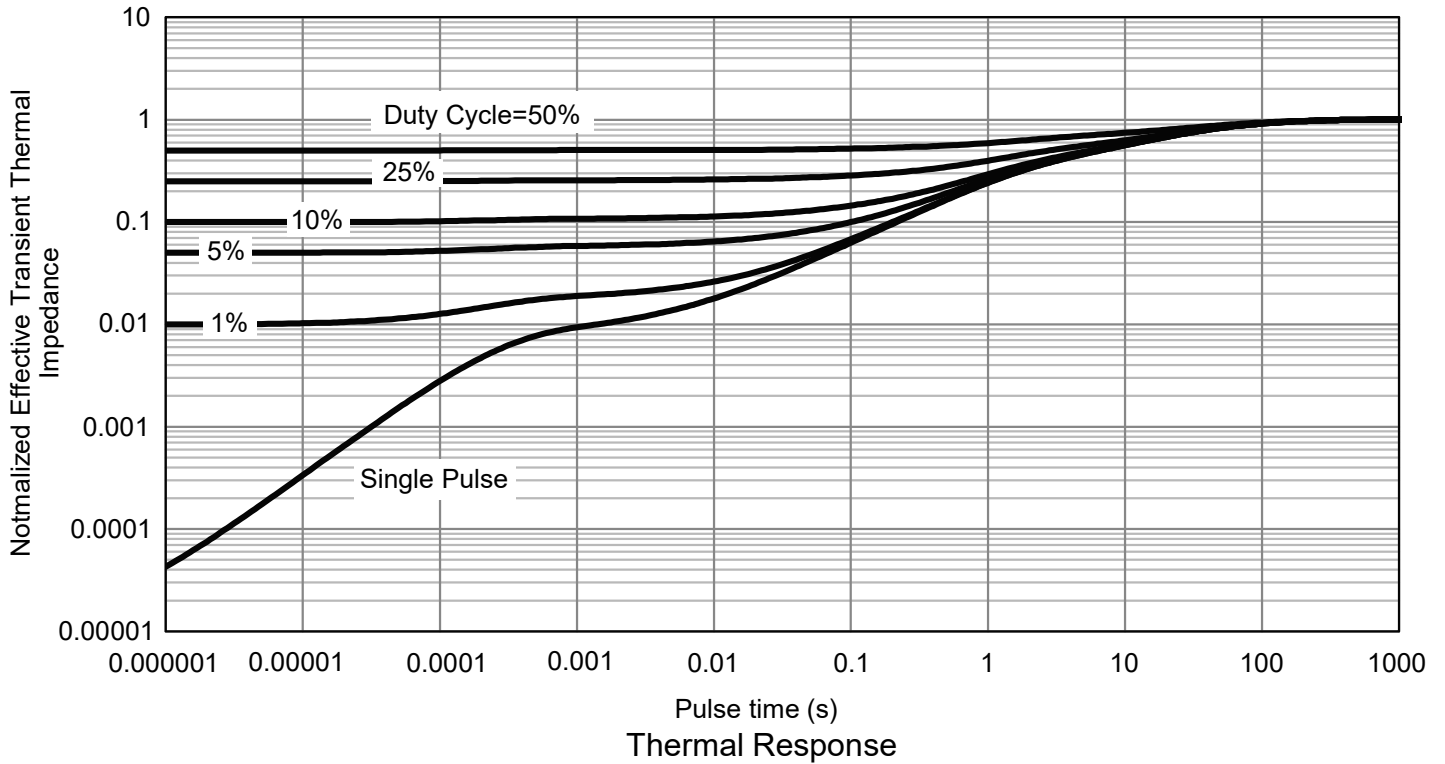
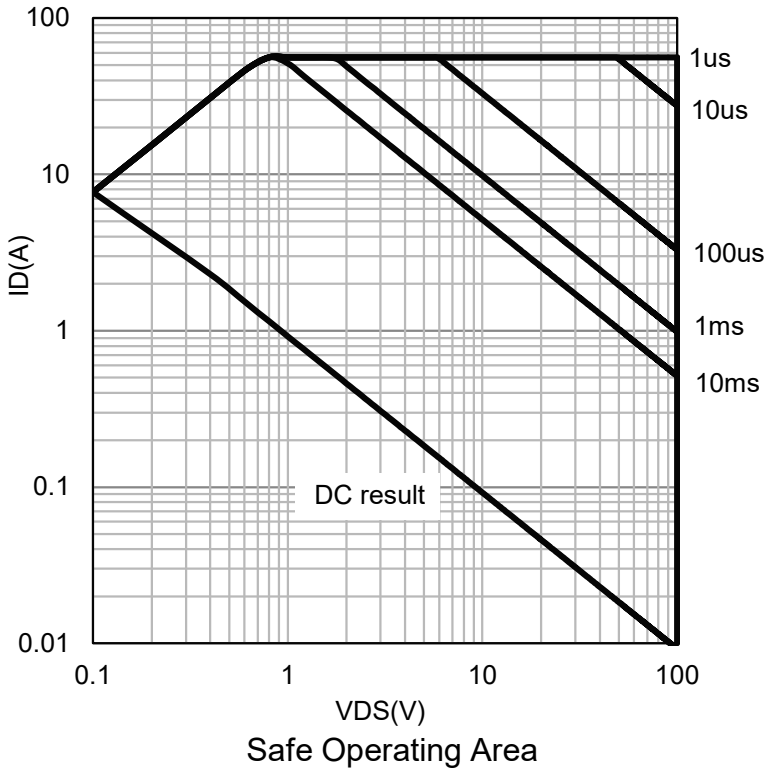


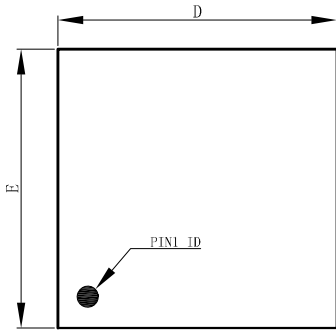
7.ELECTRICAL CHARACTERISTICS CURVES


7.ELECTRICAL CHARACTERISTICS CURVES(Con.)

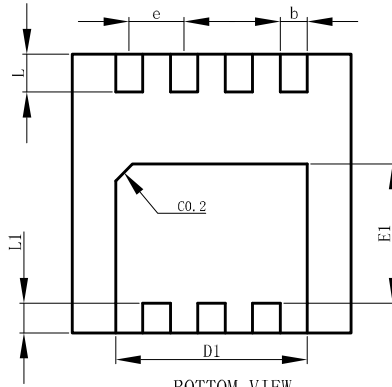


7.ELECTRICAL CHARACTERISTICS CURVES(Con.)

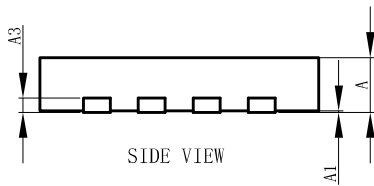


8.OUTLINE AND DIMENSIONS
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TOP VIEW

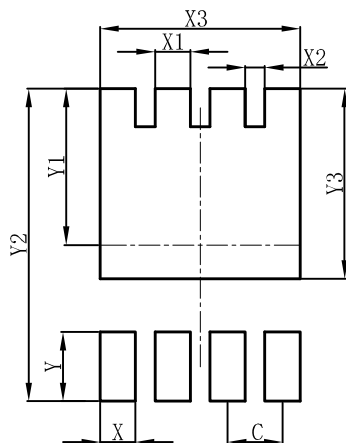


BOTTOM VIEW



SIDE VIEW

| 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 |

