

# BRES5V0M1B2ZA

Rev.A Aug.-2024

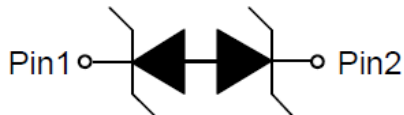
DFN0603

ESD

DFN0603 Plastic Package 1-Line,Bi-directional , ESD Protection Diode.

- ◆ Stand-off voltage:  $\pm 5V$  Max.
- ◆ Transient protection for each line according to
  - IEC61000-4-2(ESD):  $\pm 30kV$  (contact)
  - IEC61000-4-4 (EFT): 80A (5/50ns)
  - IEC61000-4-5(surge): 20A (8/20 $\mu s$ )
- ◆ Ultra-low capacitance:  $C_J = 35pF$  typ.
- ◆ Low leakage current:
- ◆ Low clamping voltage:  $V_{CL} = 7.8V$  typ. @  $I_{PP} = 16A$  (TLP)
- ◆ Solid-state silicon technology
- ◆ HF Product

- ◆ Battery Line Protection
- ◆ Audio Line Protection
- ◆ Microphone Line Protection
- ◆ GPIO Protection

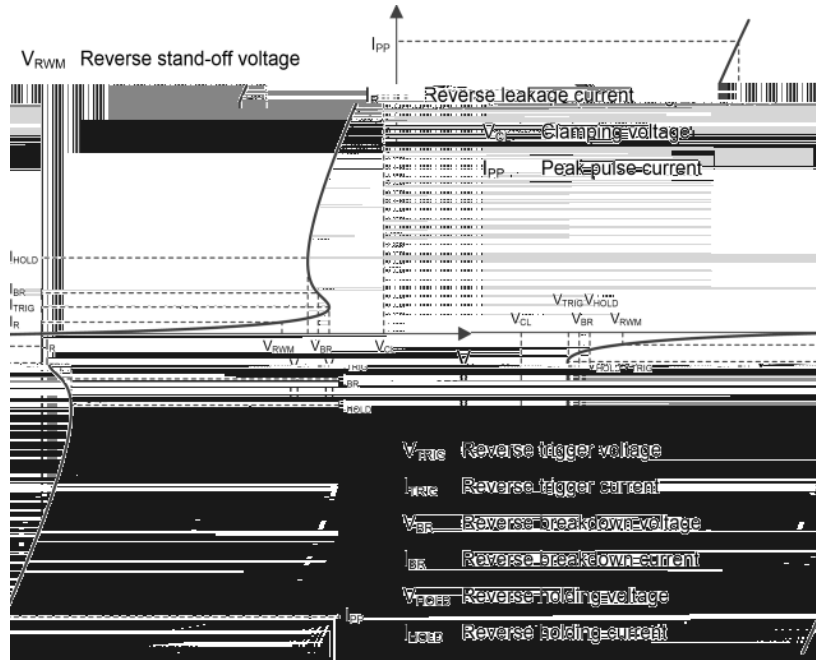


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## / Absolute Maximum Ratings

| Parameter                                       | Symbol    | Rating   | Unit |
|-------------------------------------------------|-----------|----------|------|
| Peak Pulse Power( $t_p = 8/20\mu s$ )           | $P_{PK}$  | 230      | W    |
| Peak Pulse Current( $t_p = 8/20\mu s$ )         | $I_{PP}$  | 20       | A    |
| ESD according to IEC61000-4-2 air discharge     | $V_{ESD}$ | $\pm 30$ | KV   |
| ESD according to IEC61000-4-2 contact discharge |           | $\pm 30$ |      |
| Junction temperature                            | $T_J$     | 125      |      |
| Operating temperature                           | $T_{OP}$  | -40~85   |      |
| Lead temperature                                | $T_L$     | 260      |      |
| Storage Temperature                             | $T_{STG}$ | -55~+150 |      |

## / Electrical Characteristics(Ta=25 )



## Definitions of electrical characteristics

| Parameter                        | Symbol     | Test Conditions                      | Min | Typ | Max       | Unit     |
|----------------------------------|------------|--------------------------------------|-----|-----|-----------|----------|
| Reverse maximum working voltage  | $V_{RWM}$  |                                      |     |     | $\pm 5.0$ | V        |
| Reverse leakage current          | $I_R$      | $V_{RWM} = 5.0V$                     |     |     | 100       | nA       |
| Reverse breakdown voltage        | $V_{BR}$   | $I_{BR}=1mA$                         | 5.1 |     |           | V        |
| Reverse holding voltage          | $V_{HOLD}$ | $I_{HOLD}=50mA$                      | 5.1 |     |           | V        |
| Clamping voltage <sup>1)</sup>   | $V_{CL}$   | $I_{PP}=16A \quad t_p=100ns$         |     | 7.8 |           | V        |
| Dynamic resistance <sup>1)</sup> | $R_{DYN}$  |                                      |     | 0.1 |           | $\Omega$ |
| Clamping voltage <sup>2)</sup>   | $V_{CL}$   | $V_{ESD}= 8kV$                       |     | 8.0 |           | V        |
| Clamping voltage <sup>3)</sup>   | $V_{CL}$   | $I_{PP} = 1A \quad t_p = 8/20\mu s$  |     | 6.2 | 8         | V        |
|                                  |            | $I_{PP} = 20A \quad t_p = 8/20\mu s$ |     | 9.5 | 11.5      | V        |
| Junction Capacitance             | $C_J$      | $V_R = 0V \quad f = 1MHz$            |     | 35  | 45        | pF       |
|                                  | $C_J$      | $V_R = 5V \quad f = 1MHz$            |     | 25  | 35        | pF       |

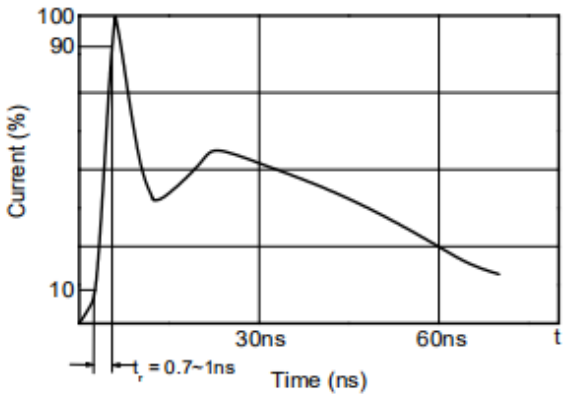
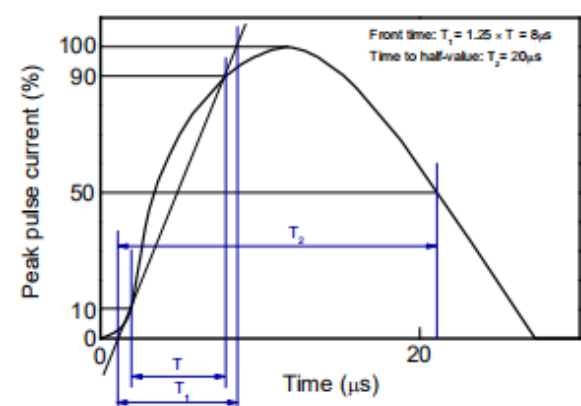
## Notes:

1) TLP parameter:  $Z_0 = 50\Omega$ ,  $t_p = 100ns$ ,  $t_r = 2ns$ , averaging window from 60ns to 80ns.  $R_{DYN}$  is calculated from 4A to 16A.

2) Contact discharge mode, according to IEC61000-4-2.

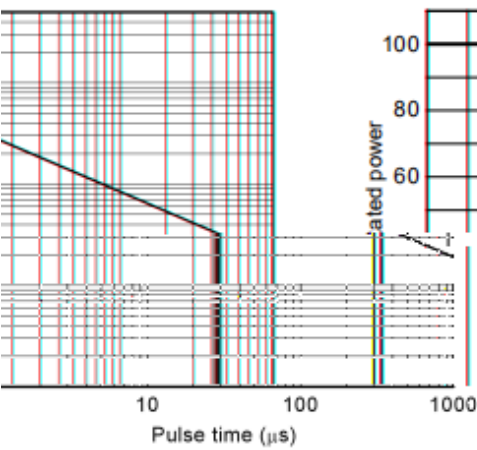
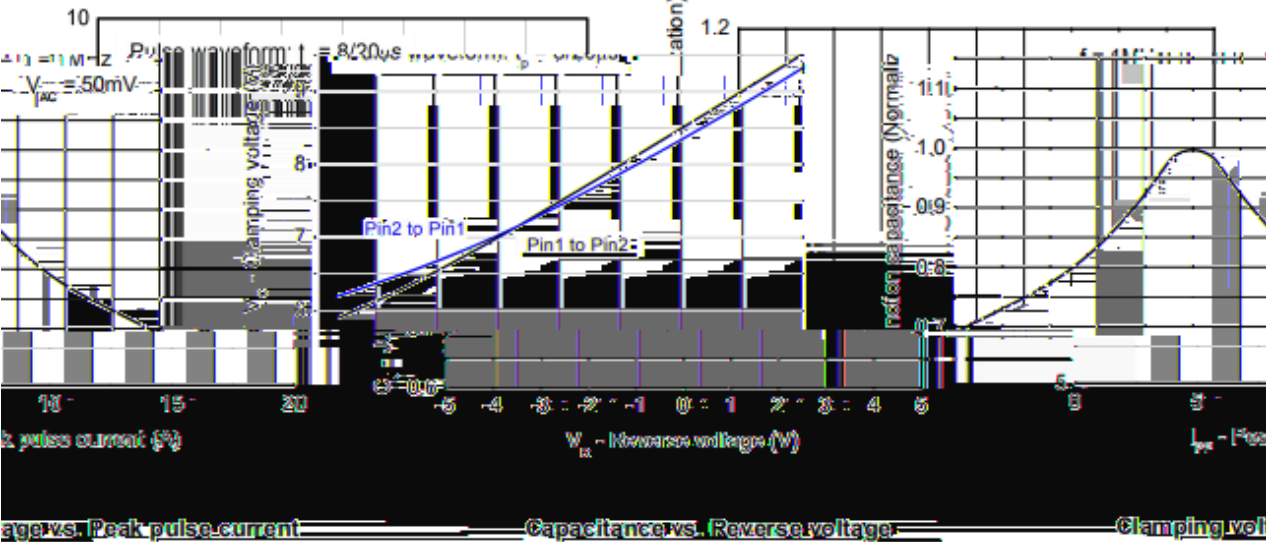
3) Non-repetitive current pulse, according to IEC61000-4-5.

/ Electrical Characteristic Curve(Ta=25 )

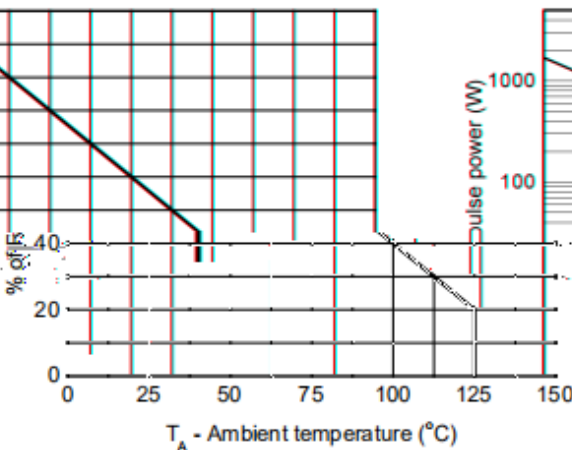


8/20μs waveform per IEC61000-4-5

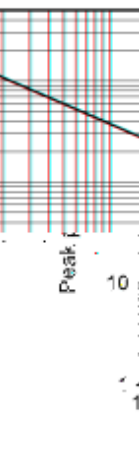
Contact discharge current waveform per IEC61000-4-2



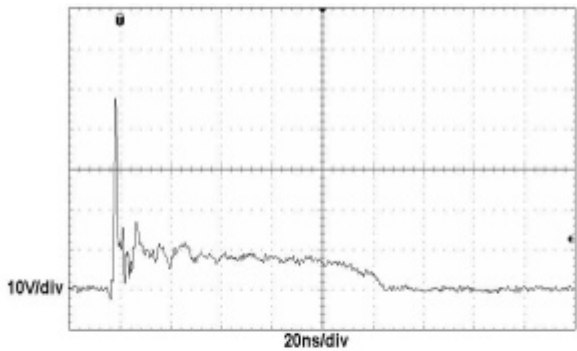
Ion-repetitive peak pulse power vs. Pulse time



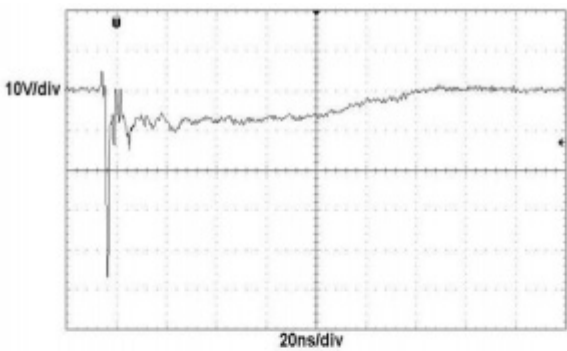
Power derating vs. Ambient temperature



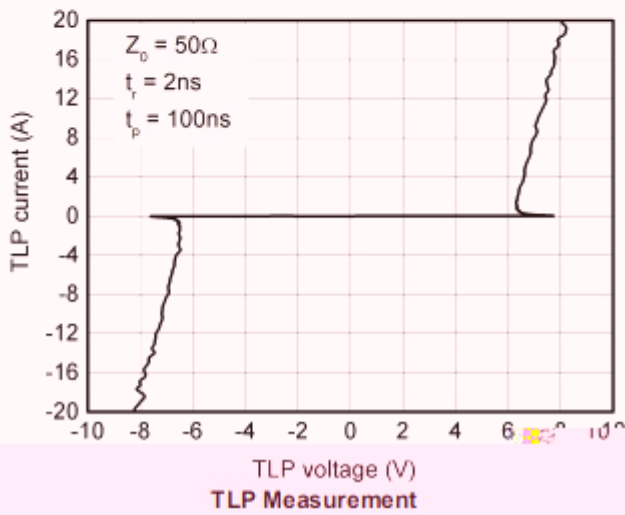
/ Electrical Characteristic Curve(Ta=25 )



ESD clamping  
(+8kV contact discharge per IEC61000-4-2)



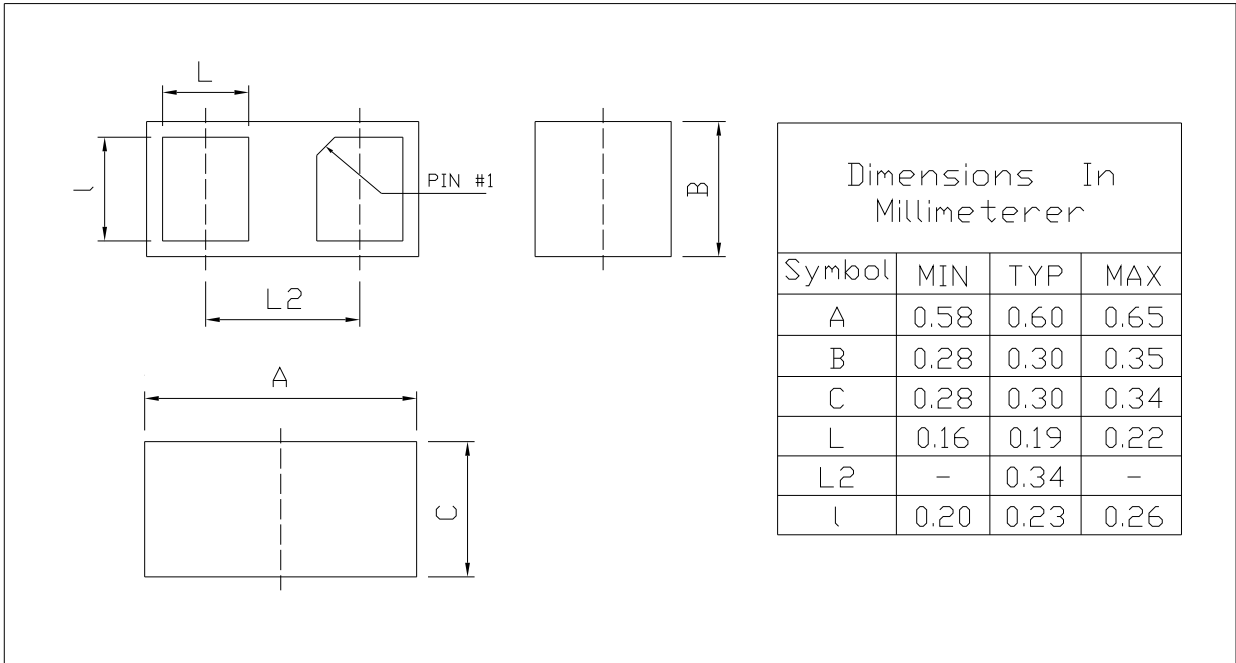
ESD clamping  
(-8kV contact discharge per IEC61000-4-2)



/ Package Dimensions

DFN0603

Unit:mm



Rev.02 202102

**/ Marking Instructions**

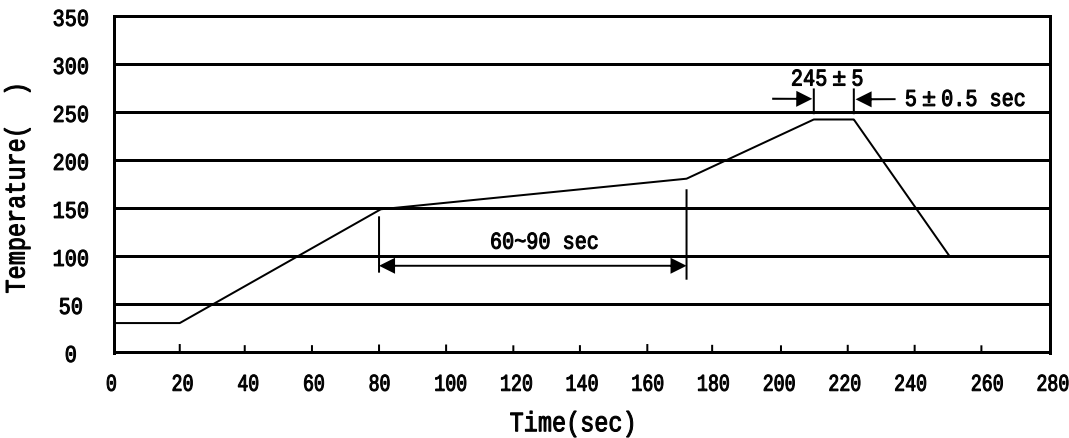


5B

Note

5B                  Product Type Code

( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

- 1

150 180

60 90sec;

1.Preheating:150~180 , Time:60~90sec.
- 2

245±5

5±0.5sec;

2.Peak Temp.:245±5 , Duration:5±0.5sec.
- 3

2 10 /sec.

3. Cooling Speed: 2~10 /sec.

/ Resistance to Soldering Heat Test Conditions

260±5                      10±1 sec.                      Temp.:260±5                      Time:10±1 sec

/ Packaging SPEC.

/ REEL

| Package Type<br>封装形式 | Units 包装数量 |      |         |     |         | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|------------|------|---------|-----|---------|-----------------------------------------|-------------|-------------|
|                      | 只 卷盘       | 卷盘 盒 | 只 盒     | 盒 箱 | 只 箱     |                                         | 盒           | 箱           |
| DFN0603              | 15,000     | 10   | 150,000 | 4   | 600,000 | 7 ×8                                    | 210×205×205 | 445×435×230 |

/ Notices