




SPECIFICATION SHEET

| | |
|--------------------------------|--|
| SPECIFICATION SHEET NO. | N1004- DFN1006D5V0SYB |
| DATE | Oct. 04, 2021 |
| REVISION | A0 |
| DESCRIPTION | <p>SMD Plastic-Encapsulate ESD Protection Diodes, DFN1006 series ESD8D5V0 Type, Low Capacitance ESD Protection Diodes Reverse Working Voltage: 5.0V, Clamping Voltage : 11.6V Max.@ 5.0A Operating Temp. Range -55°C ~+125°C, Package in Tape/Reel, 10,000pcs/Reel RoHS/RoHS III compliant</p> |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | MDD ESD8D5V0 |
| PART CODE | DFN1006D5V0SYB |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: Oct. 04, 2021 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

SMD ESD PROTECTION DIODES DFN1006 SERIES

MAIN FEATURE

- Peak Power Dissipation 150mW (8/20µs)
- Transient protection for high speed data lines
- IEC61000-4-2 (ESD) ±15kV (air), ±8kV (contact)
- Low clamping voltage
- Low leakage current
- Working voltage: 5.0V



APPLICATION

- Cell phone handsets and accessories
- Desktops, Servers and Notebooks
- Microprocessor based equipment
- Personal Digital Assistants (PDA's)
- Portable Instrumentation
- Peripherals
- Pagers

RFQ

[Request For Quotation](#)

PART CODE GUIDE

| DFN1006 | D5V0 | S | YB |
|---------|------|---|----|
| 1 | 2 | 3 | 4 |

- 1) **DFN1006**: SMD Plastic-Encapsulate ESD Protection Diodes, DFN1006 series, 2 pads
- 2) **D5V0**: Type code for original part number ESD8D5V0
- 3) **S**: Package code, Package in Tape/Reel, 10000pcs/Reel
- 4) **YB**: Marking code "YB" on the case surface, Different Marking for different specification.

SMD ESD PROTECTION DIODES DFN1006 SERIES

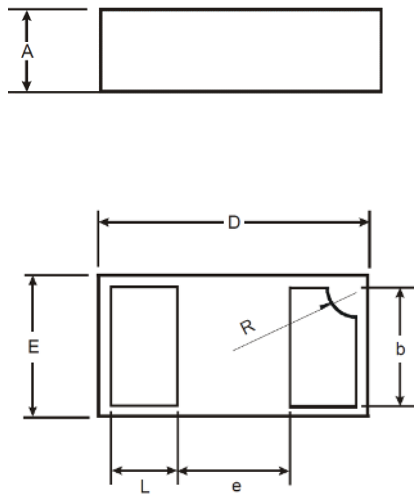
DIMENSION (Unit: mm)

Image for reference



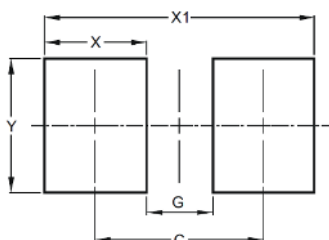
Marking: YB

DFN1006

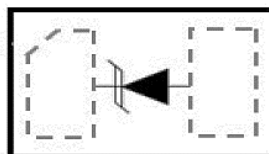


| Symbol | Value (mm) | | |
|--------|-------------|------|-------|
| | Min. | Typ. | Max. |
| A | 0.45 | 0.50 | 0.550 |
| b | 0.45 | 0.50 | 0.55 |
| D | 0.95 | 1.00 | 1.05 |
| E | 0.55 | 0.60 | 0.650 |
| e | - | 0.40 | - |
| L | 0.90 | 1.00 | 1.05 |
| R | 0.07 | 0.12 | 0.17 |

Recommend Pad Layout



Circuit Diagram



| Symbol | Unit (mm) |
|--------|-----------|
| C | 0.90 |
| G | 0.40 |
| X | 0.50 |
| X1 | 1.10 |
| Y | 0.50 |

SMD ESD PROTECTION DIODES DFN1006 SERIES
MECHANICAL DATA

| Case | Terminals | Flammability Rating | Mounting Position | Weight per piece |
|-----------------------------------|--|---------------------|-------------------|------------------|
| JEDEC DFN1006 molded plastic body | Gold plated, solderable per MIL-STD-750, Method 2026 | UL 94V-0 | - | - |

ABSOLUTE MAX. RATINGS AT Ta=25 °C (unless otherwise specified)

| Parameter | SYMBOLS | VALUE | UNITS |
|--|---------|--------------|-------|
| | | LIMIT | |
| ESD per IEC 61000-4-2 (Air) | V ESD | +/-30 | KV |
| ESD per IEC 61000-4-2 (Contact) | V ESD | +/-22 | KV |
| Total Power Dissipation on FR-5 Board (Note 1) @ Ta = 25 °C | P D | 150 | mW |
| Lead Solder Temperature – Maximum (10 Second Duration) | T L | 260(10 sec.) | °C |
| Operating Temperature Range | T OPT | -55 ~+ 125 | °C |
| Storage Temperature Range | T STG | -55 ~ +150 | °C |

Note: FR-5= 1.0*0.75*0.62 in.

SMD ESD PROTECTION DIODES DFN1006 SERIES
ELECTRICAL CHARACTERISTICS (Ta=25 °C unless otherwise specified)

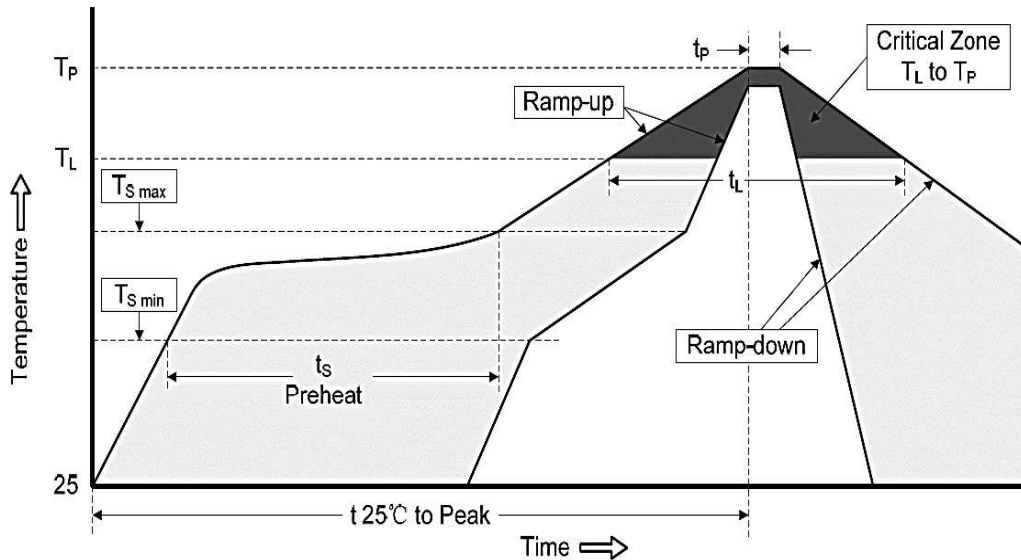
| Parameter | SYMBOLS | VALUE | | | UNITS |
|---|-----------|-------|---------|------|---------|
| | | Min. | Typical | Max. | |
| Reverse Working Voltage | V_{RWM} | | | 5.0 | V |
| Reverse Breakdown Voltage @ $I_T = 1.0mA$ | V_{BR} | 6.2 | | | V |
| Reverse Leakage Current @ $V_{RWM} = 5.0V$ | I_R | | | 1.0 | μA |
| Clamping Voltage @ $I_{PP} = 5.0A, t_p = 8/20\mu s$ | V_C | | | 11.6 | V |
| Clamping Voltage @ $I_{PP} = 7.0A, t_p = 8/20\mu s$ | V_C | | | 15.0 | V |
| Peak Power Dissipation $t_p = 8/20\mu s$ | P_{PK} | | | 105 | W |
| Capacitance $V_R = 0V, f = 1MHz$ | C_J | | | 80 | pF |

SMD ESD PROTECTION DIODES DFN1006 SERIES
RELIABILITY

| Number | Experiment Items | Experiment Method And Conditions | Reference Documents |
|--------|------------------------------------|--|---------------------------------|
| 1 | Solder Resistance Test | Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32" | MIL-STD-750D METHOD-2031.2 |
| 2 | Solderability Test | 230°C ±5°C for 5 sec. | MIL-STD-750D METHOD-2026.1 0 |
| 3 | Pull Test | 1 kg in axial lead direction for 10 sec. | MIL-STD-750D METHOD-2036.4 |
| 4 | Bend Test | 0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times | MIL-STD-750D METHOD-2036.4 |
| 5 | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80% Rated VR | MIL-STD-750D METHOD-1038.4 |
| 6 | Forward Operation Life Test | TA=25°C Rated Average Rectified Current | MIL-STD-750D METHOD-1027.3 |
| 7 | Intermittent Operation Life Test | On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles. | MIL-STD-750D METHOD-1036.3 |
| 8 | Pressure Cooker Test | 15 PSIG, TA=121°C, 4 hours | MIL-S-19500 APPENOIXC |
| 9 | Temperature Cycling Test | -55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles. | MIL-STD-750D METHOD-1051.7 |
| 10 | Thermal Shock Test | 0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles | MIL-STD-750D METHOD-1056.7 |
| 11 | Forward Surge Test | 8.3ms Single Sale Sine-wave One Surge. | MIL-STD-750D METHOD-4066.4 |
| 12 | Humidity Test | TA=65°C, RH=98% for 1000 hours. | MIL-STD-750D METHOD-1021.3 |
| 13 | High Temperature Storage life Test | 150°C for 1000 Hours | MIL-STD-750D METHOD-1031.5 |

SMD ESD PROTECTION DIODES DFN1006 SERIES

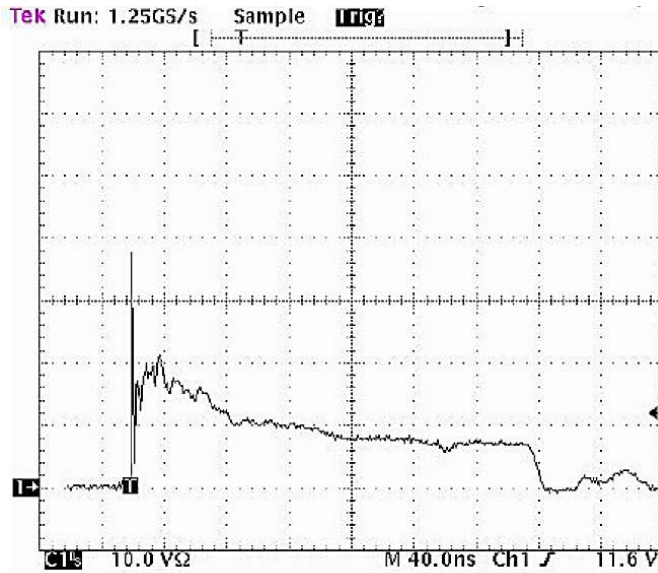
SUGGESTED REFLOW PROFILE (For Reference Only)



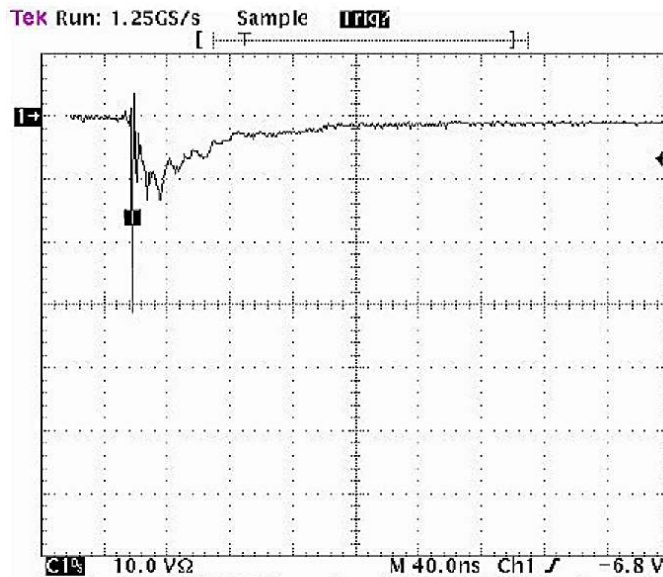
| | | |
|--|----------------------------------|-------------------|
| Profile Feature | | Pb-Free Assembly |
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 150°C |
| | Temperature Max (Ts Max.) | 200°C |
| | Time (ts Min. to ts Max.) | 60 ~ 180 seconds |
| Time maintained above | Temperature (Tl) | 217°C |
| | Time (tl) | 60 ~ 150 seconds |
| Peak/Classification Temperature (Tp) | | 260 °C |
| Time within 5°C of actual Peak Temperature (tp) | | 20 ~ 40 seconds |
| Ramp-down rate | | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature | | 8 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

SMD ESD PROTECTION DIODES DFN1006 SERIES

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)



**Figure 1. ESD Clamping Voltage Screenshot
Positive 8 kV contact per IEC 61000-4-2**



**Figure 2. ESD Clamping Voltage Screenshot
Negative 8 kV contact per IEC 61000-4-2**

SMD ESD PROTECTION DIODES DFN1006 SERIES

TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



| Item | Symbol | Tolerance | DFN1006 |
|--------------------------|--------|-----------|---------|
| Carrier width | A | 0.1 | 2.10 |
| Carrier Length | B | 0.1 | 4.00 |
| Carrier Depth | C | 0.1 | 1.60 |
| Sprocket hole | d | 0.05 | 1.55 |
| 13"Reel outside diameter | - | - | - |
| 13"Reel inner diameter | - | - | - |
| 7"Reel outside diameter | D | 2.0 | 178.00 |
| 7"Reel inner diameter | D1 | Min. | 50.00 |
| Feed hole diameter | D2 | 0.5 | 13.00 |
| Sprocket hole position | E | 0.1 | 1.75 |
| Punch hole position | F | 0.1 | 3.50 |
| Punch hole pitch | P | 0.1 | 4.00 |
| Sprocket hole pitch | P0 | 0.1 | 4.00 |
| Embossment center | P1 | 0.1 | 2.00 |
| Overall tape thickness | T | 0.1 | 0.25 |
| Tape width | W | 0.3 | 8.15 |
| Reel width | W1 | 1.0 | 10.50 |

SMD ESD PROTECTION DIODES DFN1006 SERIES

SPQ PACKAGE for Reference

| Item | Unit | Value |
|--------------|------|----------------|
| Case Code | | DFN1006 |
| Reel Size | Inch | 7 |
| Reel Size | mm | 178 |
| Tape Space | mm | / |
| SPQ /Reel | pcs | 10000 |
| Weigh /SPQ | LBS | |
| Weigh /SPQ | KGs | |
| Qty. Per Box | pcs | 20,000 |
| Inner Box | Inch | L8.0*W8.0*H1.5 |

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