

## FEATURES

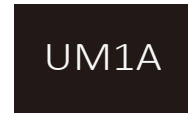
- | 90W Peak Pulse Power per Line (tp=8/20μs)
- | Protects Two High Speed Lines
- | Low Clamping Voltage
- | Working voltages : 5 V
- | Low leakage current

## APPLICATIONS

- | USB 3.0/USB 3.1 Interfaces
- | HDMI 1.4/HDMI 2.0 Interfaces
- | Video Graphics Cards
- | Keypads, Side Keys, LCD Displays
- | Notebooks & Desktop Computers
- | Portable Instrumentation
- | Peripherals



DFN1109MP6



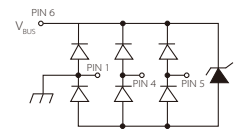
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## IEC COMPATIBILITY

- | IEC61000-4-2 (ESD) ±17kV (air), ±15kV (contact)
- | IEC61000-4-4 (EFT) 40A (5/50ns)

## APPROVALS

- |             |                                    |
|-------------|------------------------------------|
| <b>RoHS</b> | Compliance with 2011/65/EU         |
| <b>HF</b>   | Compliance with IEC61249-2-21:2003 |



Schematic Symbol

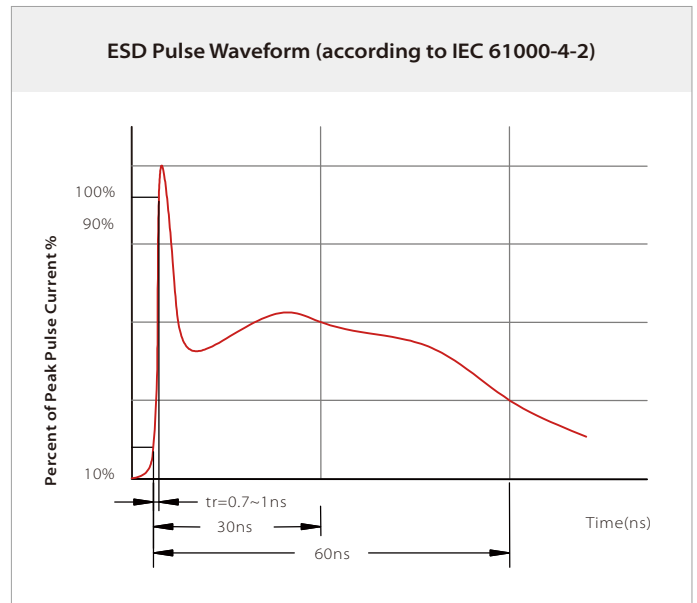
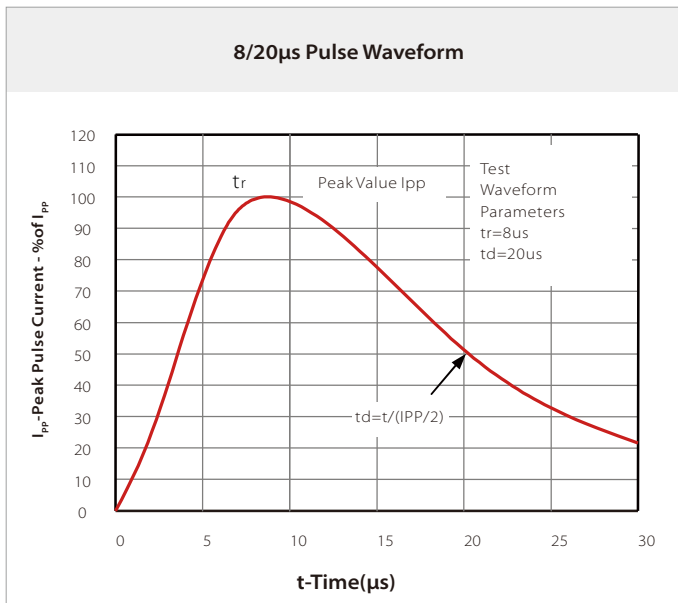
## THERMAL CONSIDERATIONS

| Symbol    | Parameter                             | Value       | Unit  |
|-----------|---------------------------------------|-------------|-------|
| $P_{PP}$  | Peak Pulse Power (tp=8/20μs waveform) | 90          | Watts |
| $T_J$     | Operating Temperature Range           | -55 to +150 | °C    |
| $T_{STG}$ | Storage Temperature Range             | -55 to +150 | °C    |

## ELECTRICAL CHARACTERISTICS

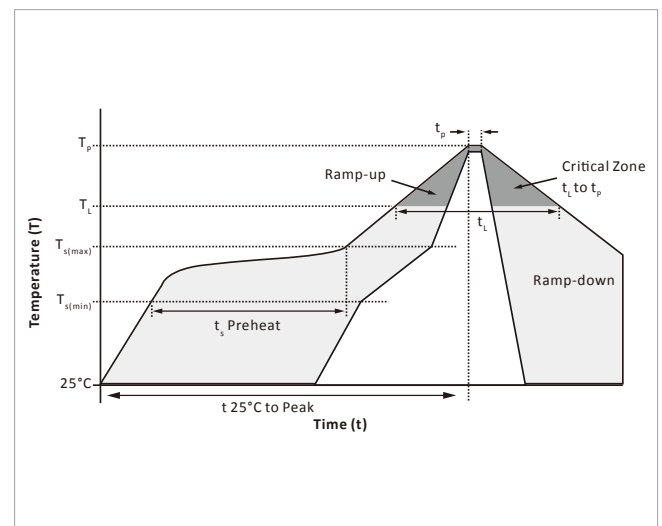
| Symbol    | Parameter                      | Condition                              | Min. | Typ. | Max. | Unit |
|-----------|--------------------------------|--|------|------|------|------|
| $V_{RWM}$ | Reverse Stand-off Voltage      |  |      |      | 5    | V    |
| $V_{BR}$  | Reverse Breakdown Voltage      | $I_T=1\text{ mA}$                      | 6    |      |      | V    |
| $I_R$     | Reverse Leakage Current        | $V_{RWM}=5\text{ V}$                   |      |      | 0.1  | μA   |
| $V_C$     | Clamping Voltage (Tp=8/20us)   | $I_{pp}=1\text{ A}, tp=8/20\text{ us}$ |      |      | 18   | V    |
| $V_C$     | Clamping Voltage (Tp=8/20us)   | $I_{pp}=3\text{ A}, tp=8/20\text{ us}$ |      |      | 30   | V    |
| $I_{pp}$  | Peak Pulse Current (Tp=8/20us) | tp=8/20us                              |      |      | 3    | A    |
| $C_J$     | Off State Junction Capacitance | $V_R=0\text{ V}, f=1\text{ MHz}$       |      | 0.25 |      | pF   |

## CHARACTERISTIC CURVES

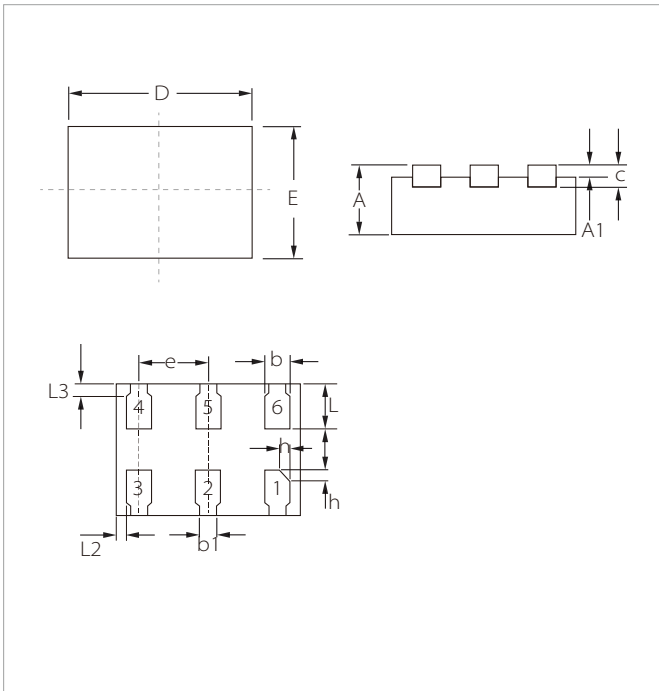


## SOLDERING PARAMETERS

| Reflow Condition                                       |                                  | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat   | Temperature Max ( $T_{s(min)}$ ) | 150°C              |
|  | Temperature Max ( $T_{s(max)}$ ) | 200°C              |
|  | Time (min to max) ( $t_s$ )      | 60 – 180 secs      |
| Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak) |                                  | 3°C/second max     |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                   |                                  | 3°C/second max     |
| Reflow   | Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|  | Time (min to max) ( $t_L$ )      | 60 – 150 seconds   |
| Peak Temperature ( $T_p$ )                             |                                  | 260°C              |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                  | 20 – 40 seconds    |
| Ramp-down Rate   |                                  | 6°C/second max     |
| Time 25°C to peak Temperature ( $T_p$ )                |                                  | 8 minutes max.     |
| Do not exceed  |                                  | 260°C              |

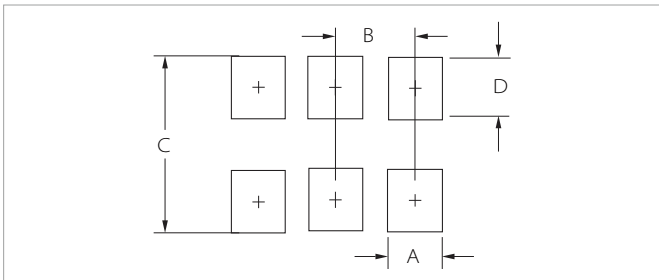


## DFN1109MP6 PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches   |       |
|------|-------------|------|----------|-------|
|      | Min.        | Max. | Min.     | Max.  |
| A    | 0.45        | 0.55 | 0.018    | 0.022 |
| A1   | 0           | 0.05 | 0        | 0.002 |
| b    | 0.15        | 0.25 | 0.006    | 0.010 |
| b1   | 0.14REF     |      | 0.005REF |       |
| c    | 0.10        | 0.20 | 0.004    | 0.008 |
| D    | 1.05        | 1.15 | 0.041    | 0.045 |
| e    | 0.40BSC     |      | 0.016BSC |       |
| E    | 0.85        | 0.95 | 0.033    | 0.037 |
| L    | 0.30        | 0.40 | 0.012    | 0.016 |
| L2   | 0.05REF     |      | 0.002REF |       |
| L3   | 0.10REF     |      | 0.004REF |       |
| h    | 0.05        | 0.15 | 0.008    | 0.012 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches  |
|------|-------------|---------|
|      | Nominal     | Nominal |
| A    | 0.25        | 0.010   |
| B    | 0.40        | 0.016   |
| C    | 1.10        | 0.043   |
| D    | 0.45        | 0.018   |

## ORDERING INFORMATION

| Part Number   | Component Package | QTY/Reel | Reel Size |
|---------------|-------------------|----------|-----------|
| SE11F09B5.0UD | DFN1109MP6        | 3000PCS  | 7"        |

**Headquarters**

No.3387 Shendu Road Pujiang  
I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

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