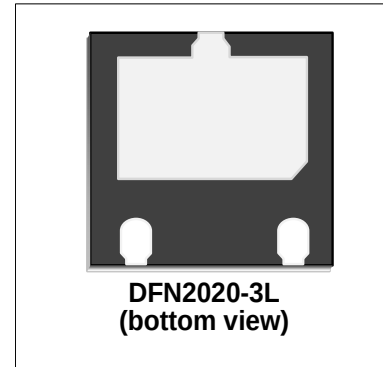


**Features**

- 4500 Watts Peak Power ( $t_p = 8/20\mu s$ )
- Fast Response time: Typically  $<1ns$
- Excellent Clamping Capability
- Low Inductance
- Low profile package

**IEC COMPATIBILITY (EN61000-4)**

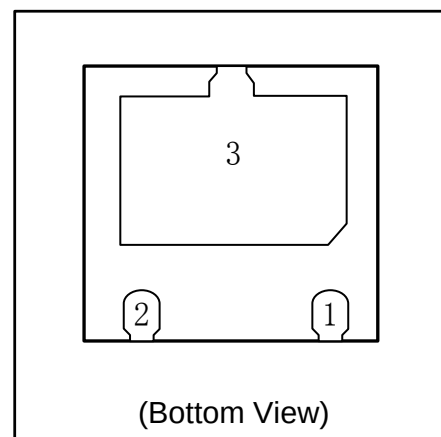
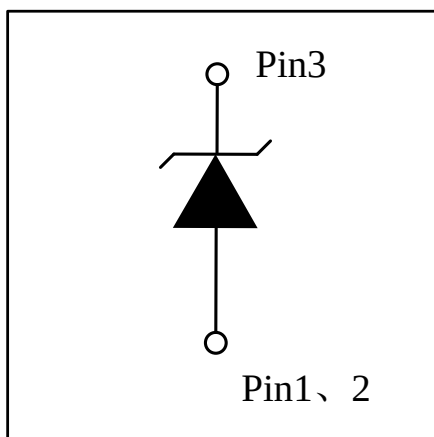
- IEC 61000-4-2 (ESD)  $\pm 30kV$  (air),  $\pm 30kV$  (contact)
- IEC 61000-4-4 (EFT) 40A (5/50ns)
- IEC 61000-4-5 (Lightning) 250A (8/20 $\mu s$ )

**Mechanical Characteristics**

- DFN2020-3L package
- Molding compound flammability rating: UL 94V-0
- Marking : Making Code
- Packaging : Tape and Reel per EIA 481
- RoHS Compliant

**Applications**

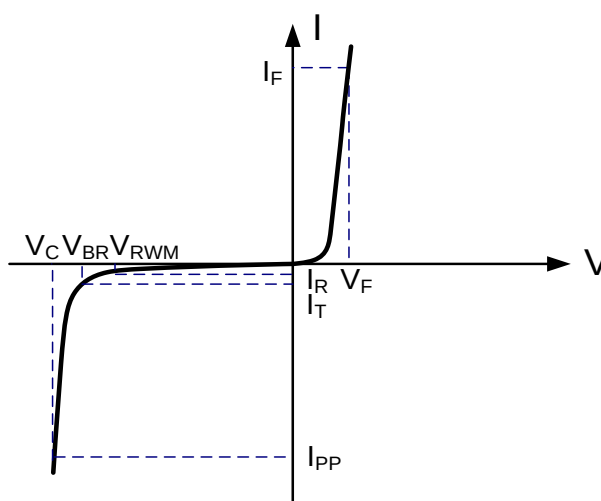
- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Computer & Consumer Electronics
- Industrial Electronics
- Microcontroller Input Protection

**PIN Configuration**

| Absolute Maximum Rating                |           |             |       |
|----------------------------------------|-----------|-------------|-------|
| Rating                                 | Symbol    | Value       | Units |
| Peak Pulse Power ( $t_p=8/20\mu s$ )   | $P_{PP}$  | 4500        | Watts |
| Peak Pulse Current ( $t_p=8/20\mu s$ ) | $I_{PP}$  | 250         | A     |
| Operating Temperature                  | $T_J$     | -55 to +125 | °C    |
| Storage Temperature                    | $T_{STG}$ | -55 to +150 | °C    |

### Electrical Parameters (T=25°C)

| Symbol    | Parameter                           |
|-----------|-------------------------------------|
| $I_{PP}$  | Reverse Peak Pulse Current          |
| $V_C$     | Clamping Voltage @ $I_{PP}$         |
| $V_{RWM}$ | Reverse Stand-Off Voltage           |
| $I_R$     | Reverse Leakage Current @ $V_{RWM}$ |
| $V_{BR}$  | Breakdown Voltage @ $I_T$           |
| $I_T$     | Test Current                        |
| $I_F$     | Forward Current                     |
| $V_F$     | Forward Voltage @ $I_F$             |



### Electrical Characteristics

| WS07P4N3                      |           |                              |         |         |         |       |
|-------------------------------|-----------|------------------------------|---------|---------|---------|-------|
| Parameter                     | Symbol    | Conditions                   | Minimum | Typical | Maximum | Units |
| Reverse Stand-Off Voltage     | $V_{RWM}$ |                              |         |         | 7       | V     |
| Reverse Breakdown Voltage     | $V_{BR}$  | $I_T=1mA$                    | 7.7     |         |         | V     |
| Reverse Leakage Current       | $I_R$     | $V_{RWM}=7V, T=25^\circ C$   |         |         | 200     | nA    |
| Clamping Voltage <sup>1</sup> | $V_C$     | $I_{PP}=1A, t_p=8/20\mu s$   |         | 9       | 12      | V     |
| Clamping Voltage <sup>1</sup> | $V_C$     | $I_{PP}=150A, t_p=8/20\mu s$ |         | 13      | 15      | V     |
| Clamping Voltage <sup>1</sup> | $V_C$     | $I_{PP}=250A, t_p=8/20\mu s$ |         | 16      | 18      | V     |
| Junction Capacitance          | $C_j$     | $V_R = 0V, f = 1MHz$         |         | 1500    | 1800    | pF    |

Note: 1、Measured from pin 3 to pin 1 & pin 2.

## Typical Characteristics

Figure 1: Peak Pulse Power vs. Pulse Time

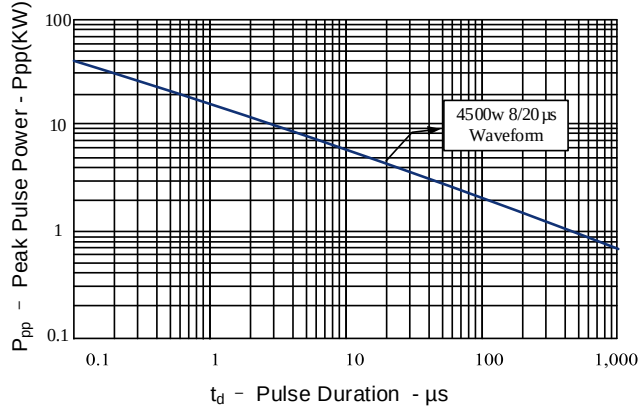


Figure 2: Power Derating Curve

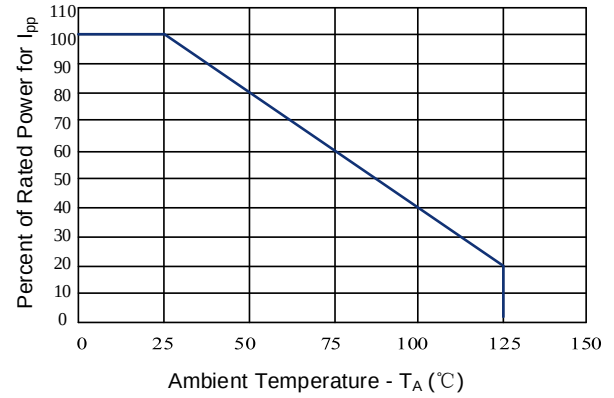


Figure 3: Clamping Voltage vs. Peak Pulse Current

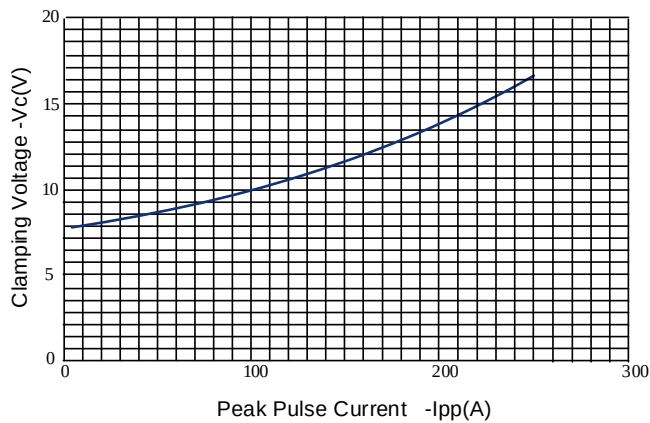


Figure 4: Normalized Junction Capacitance vs. Reverse Voltage

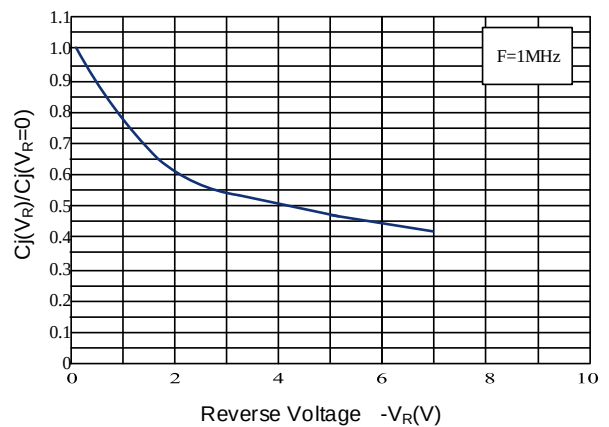
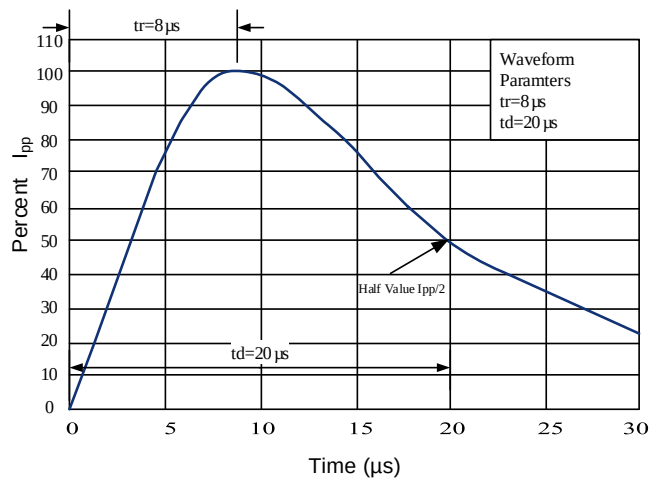
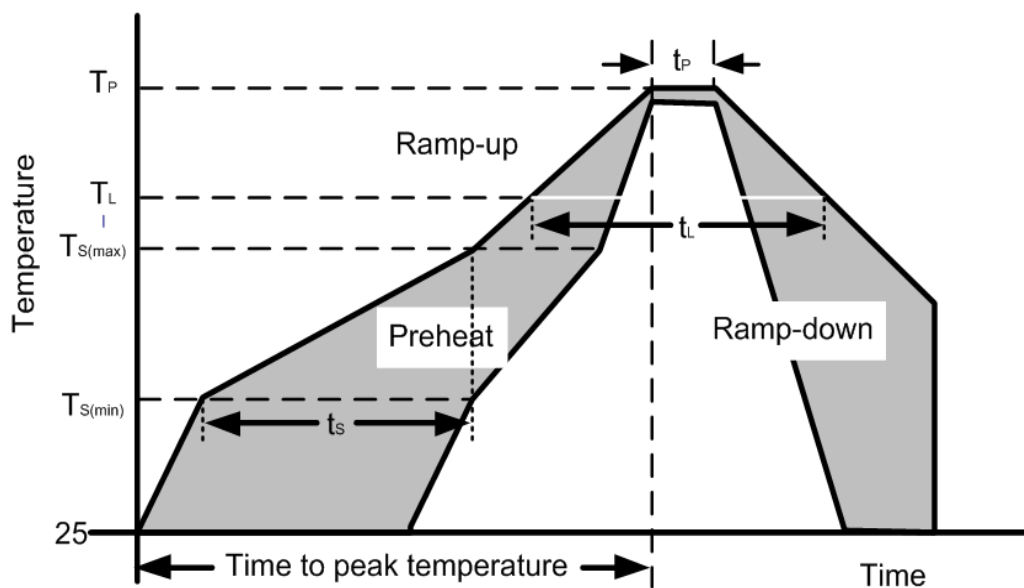


Figure 5: 8/20 $\mu s$  Pulse Waveform

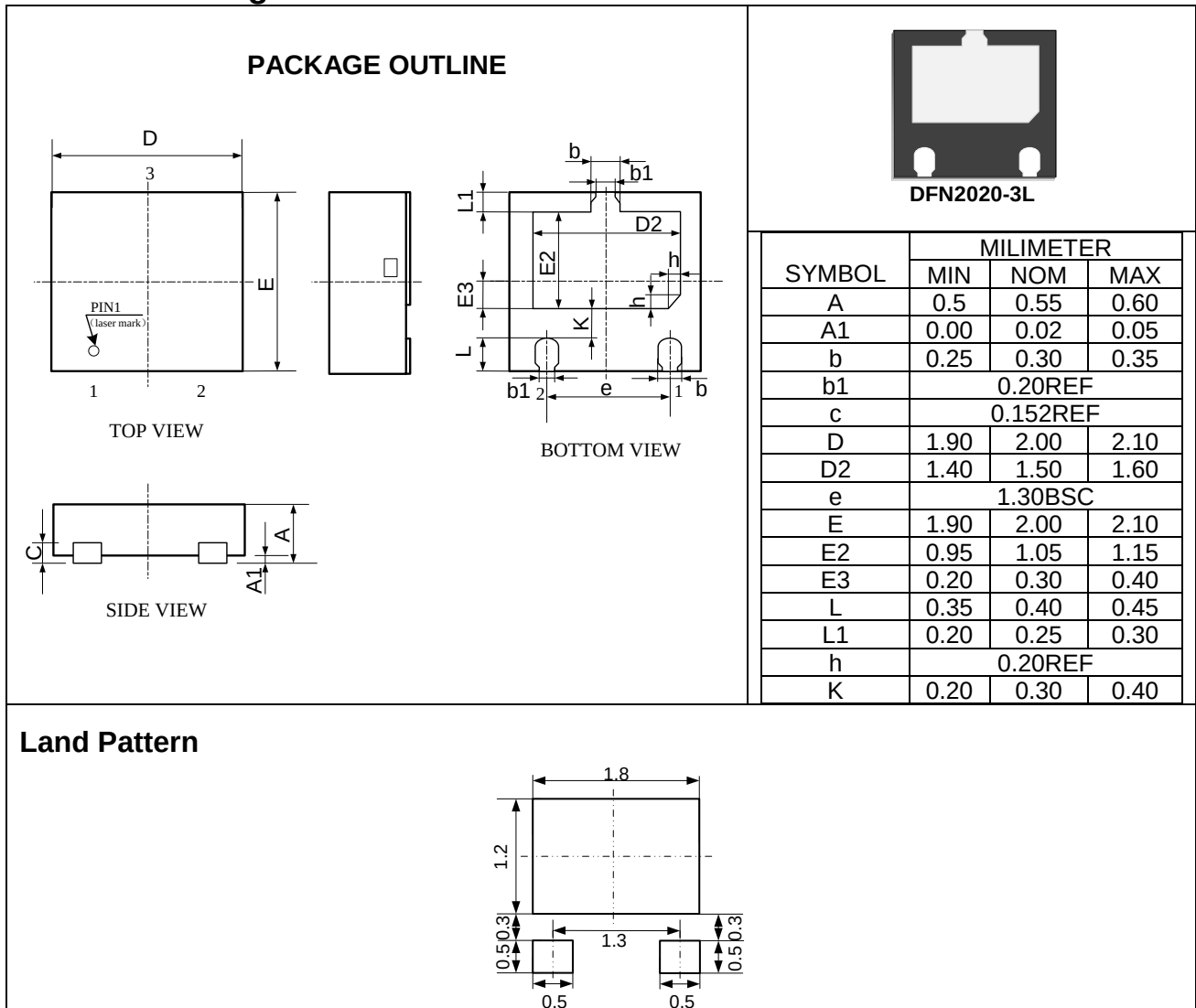


## Soldering Parameters

| Reflow Condition                                       |                                  | Pb – Free assembly |
|--------------------------------------------------------|----------------------------------|--------------------|
| Pre Heat                                               | Temperature Min ( $T_{S(min)}$ ) | 150°C              |
|                                                        | Temperature Max ( $T_{S(max)}$ ) | 200°C              |
|                                                        | Time (min to max) ( $t_s$ )      | 60 – 190 secs      |
| Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak |                                  | 5°C/second max     |
| $T_{S(max)}$ to $T_L$ ——Ramp-up Rate                   |                                  | 5°C/second max     |
| Reflow                                                 | Temperature ( $T_L$ ) (Liquidus) | 217°C              |
|                                                        | Temperature ( $t_L$ )            | 60 – 150 seconds   |
| Peak Temperature ( $T_P$ )                             |                                  | 260+0/-5 °C        |
| Time within actual peak Temperature ( $t_p$ )          |                                  | 20 – 40 seconds    |
| Ramp-down Rate                                         |                                  | 5°C/second max     |
| Time 25°C to peak Temperature ( $T_P$ )                |                                  | 8 minutes Max.     |
| Do not exceed                                          |                                  | 280°C              |



## Outline Drawing –DFN2020-3L



## Marking Codes

| Part Number | Marking Code                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WS07P4N3    | <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 10px;"> <div style="text-align: center;">3</div> <div style="display: flex; justify-content: space-between;"> <div>M07A</div> <div>XXXX</div> </div> <div style="display: flex; justify-content: space-between;"> <div>1</div> <div>2</div> </div> </div> <div> M07A=Specific Device Code<br/> XXXX=Lot Code </div> </div> |

## Package Information

Qty: 3k/Reel

## CONTACT INFORMATION

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For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time. Users should verify actual device performance in their specific applications.