东沃电子
DOWOSEMI

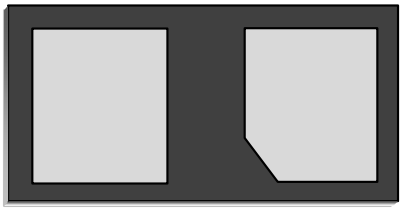
# DW05DLCS-B-01-E

**Order Code: DW05DLCS-B-01-E**

**Transient Voltage Suppressor**

## Features

- Small Body Outline Dimensions: 0.60 mm x 0.30 mm
- Bidirectional ESD Protection of one line
- Low Clamping Voltage
- Low Capacitance:3 pF
- Working Voltage: 5 V
- Low Leakage Current



**DFN0603-2L**

## IEC COMPATIBILITY (EN61000-4)

- **IEC 61000-4-2 (ESD)±8kV (contact)**
- **IEC 61000-4-4 (EFT) 40A (5/50ns)**
- **IEC 61000-4-5 (Lightning)3.5A (8/20μs)**

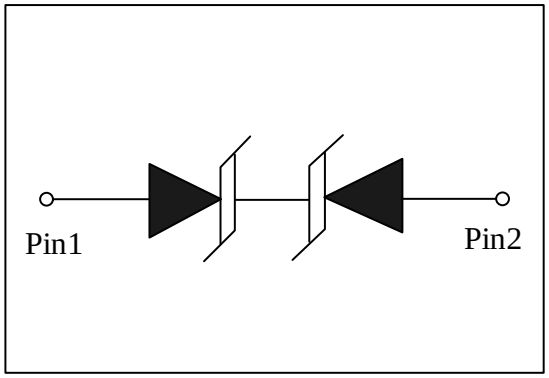
## Mechanical Characteristics

- DFN0603-2L package
- Molding compound flammability rating: UL 94V-0
- Marking: Marking Code
- Packaging: Tape and Reel per EIA 481
- RoHS Compliant

## Applications

- Cellular handsets and accessories
- Portable electronics
- Communication systems
- Computers and peripherals

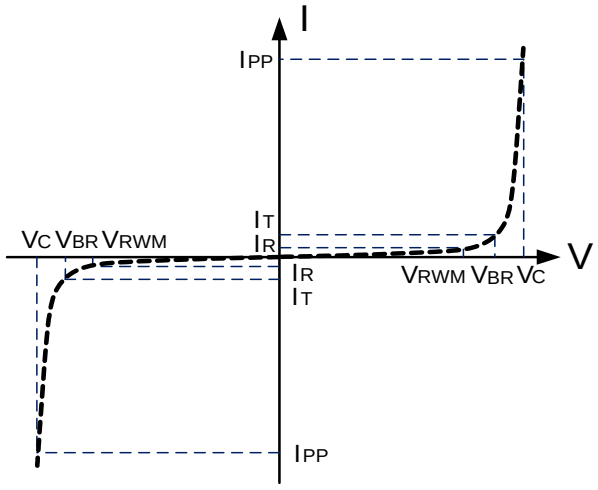
## Schematic & PIN Configuration



| Absolute Maximum Rating | | | |
|---|---|---|---|
| **Rating** | **Symbol** | **Value** | **Units** |
| Peak Pulse Power（$t_p$ =8/20μs） | $P_{PP}$ | 50 | W |
| Peak Pulse Current ( $t_p$ = 8/20μs ) | $I_{pp}$ | 3.5 | A |
| Operating Temperature | $T_J$ | -55 to + 125 | °C |
| Storage Temperature | $T_{STG}$ | -55 to +150 | °C |

## Electrical Parameters (T=25℃)

| 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 |




## Electrical Characteristics

| DW05DLCS-B-01-E | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Conditions** | **Minimum** | **Typical** | **Maximum** | **Units** |
| Reverse Stand-Off Voltage | $V_{RWM}$ | | | | 5.0 | V |
| Reverse Breakdown Voltage | $V_{BR}$ | $I_T$=1mA | 5.5 | | 9.5 | V |
| Reverse Leakage Current | $I_R$ | $V_{RWM}$=5V, T=25°C | | | 100 | nA |
| Clamping Voltage | $V_C$ | $I_{PP}$=3.5A, $t_p$=8/20μs | | | 13.5 | V |
| Dynamic Resistance[1,2] | $R_{DYN}$ | TLP=0.2/100ns | | 0.3 | | Ω |
| ESD Clamping Voltage[1] | $V_C$ | IPP = 4A,<br>tp = 0.2/100ns (TLP) | | 6.5 | | V |
| ESD Clamping Voltage[1] | $V_C$ | IPP = 16A,<br>tp = 0.2/100ns (TLP) | | 10.3 | | V |
| Junction Capacitance | $C_j$ | $V_R$ = 0V, f= 1MHz | | 3 | 3.5 | pF |

Notes：1、TLP Setting：$t_p$=100ns, $t_r$=0.2ns, $I_{TLP}$ and $V_{TLP}$ sample window:$t_1$=70ns to $t_2$=90ns.
2、Dynamic resistance calculated from $I_{PP}$=4A to $I_{PP}$=16A using “Best Fit”.

## Typical Characteristics

**Figure 1: Peak Pulse Power vs. Pulse Time**

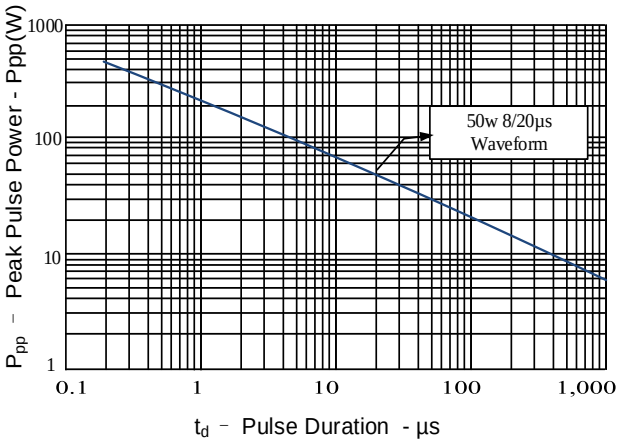



**Figure 2: Power Derating Curve**

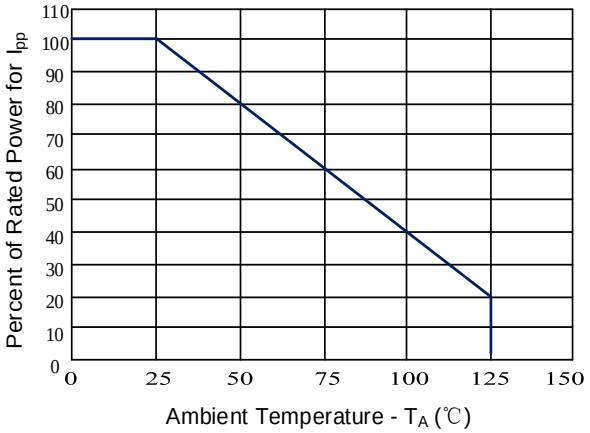



**Figure 3: Clamping Voltage vs. Peak Pulse Current**

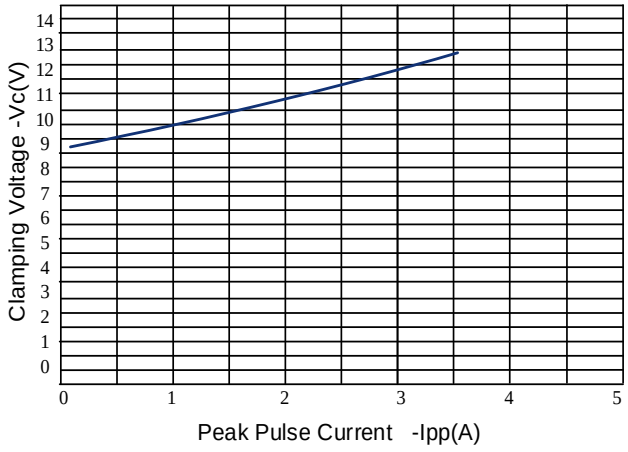



**Figure 4: Normalized Junction Capacitance vs. Reverse Voltage**

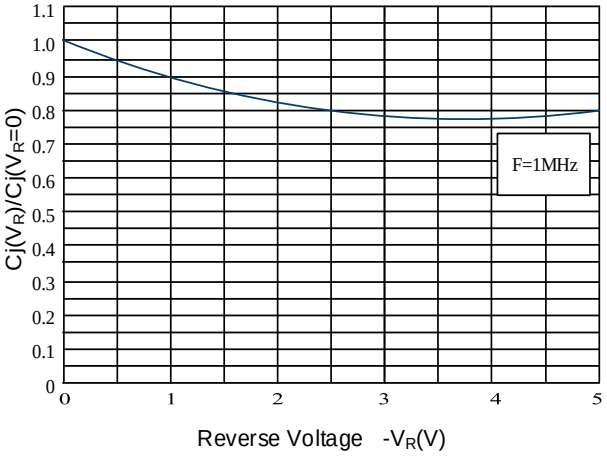



**Figure 5: TLP Positive I-V Curve**

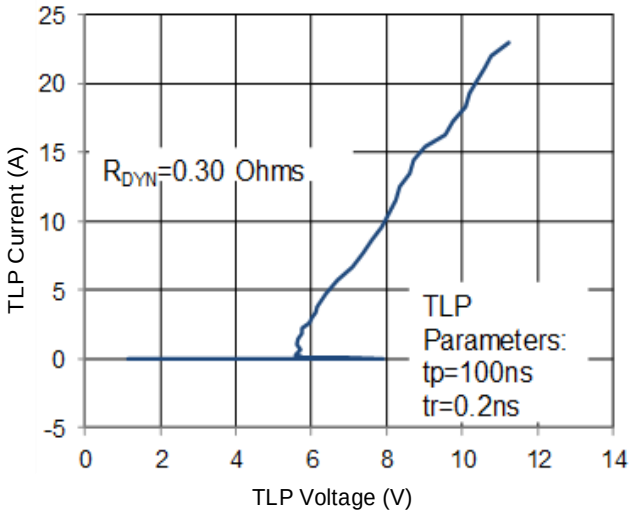
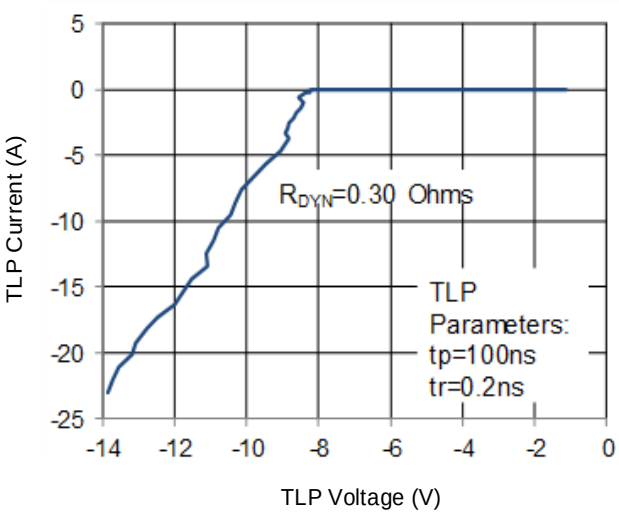
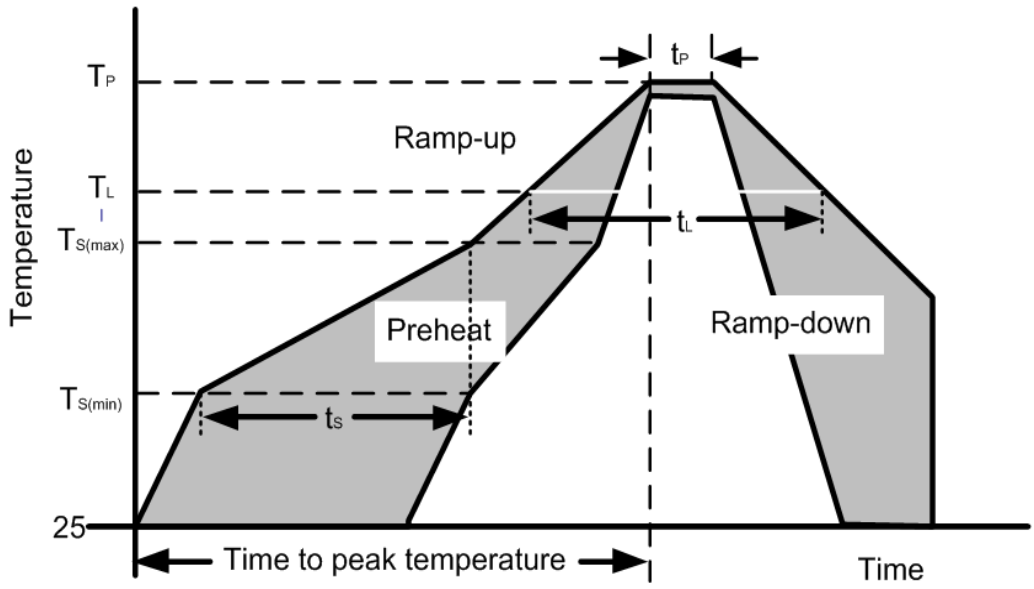



**Figure 6: TLP Negetive I-V Curve**



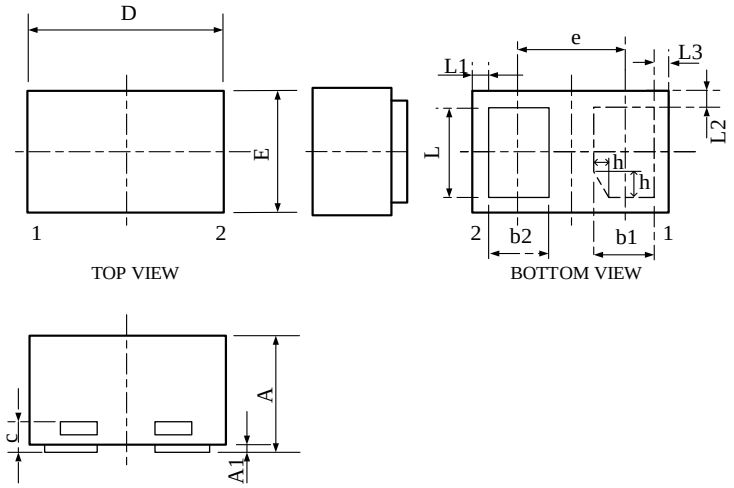
## Soldering Parameters

| 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) (ts ) | 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 –DFN0603-2L

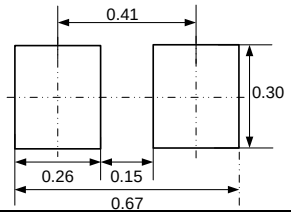
**PACKAGE OUTLINE**




DFN0603-2L

| SYMBOL | MILIMETER | |
|---|---|---|
| | MIN | MAX |
| A | 0.28 | 0.32 |
| A1 | 0.00 | 0.05 |
| b1 | 0.13 | 0.23 |
| b2 | 0.14 | 0.24 |
| c | 0.05 | 0.15 |
| D | 0.55 | 0.65 |
| e | 0.350BSC | |
| L1 | 0.030BSC | |
| L2 | 0.025BSC | |
| L3 | 0.035BSC | |
| E | 0.25 | 0.35 |
| L | 0.20 | 0.30 |
| h | 0.00 | 0.10 |

**Land Pattern**




## Marking Codes

| Part Number | Marking Code |
|---|---|
| DW05DLCS-B-01-E | PIN 1<br>C M<br>C = Specific Device Code<br>M = Month Code |

## Package Information

Qty：15k/Reel