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DY2M5Z0C0L1

For bidirectional ESD protection and transient voltage suppressor

■ Features

- IEC 61000-4-2 (ESD) ±15 kV (Contact and Air)
- IEC 61000-4-5 (Lightning) 1.9 A (8/20 μs)
- Low leak current
- Halogen-free / RoHS compliant
(EU RoHS / UL-94 V-0 / MSL: Level 1 compliant)

■ Marking Symbol: 

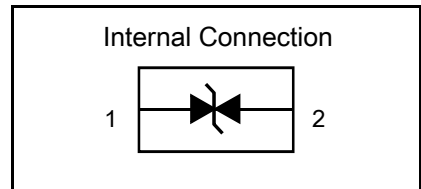
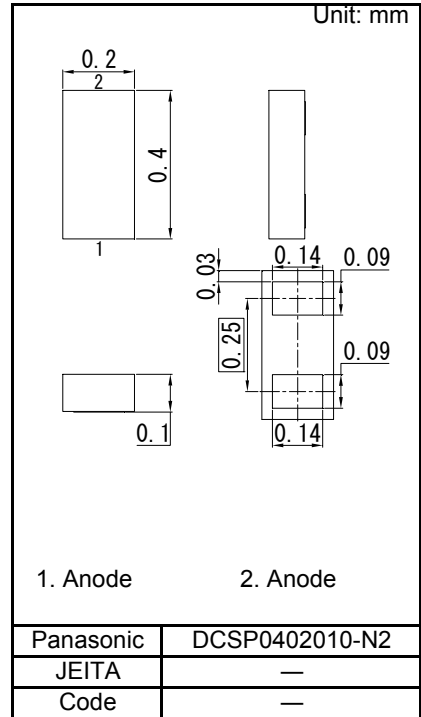
■ Packaging

Embossed type (Thermo-compression sealing) : 20 000 pcs / reel (standard)

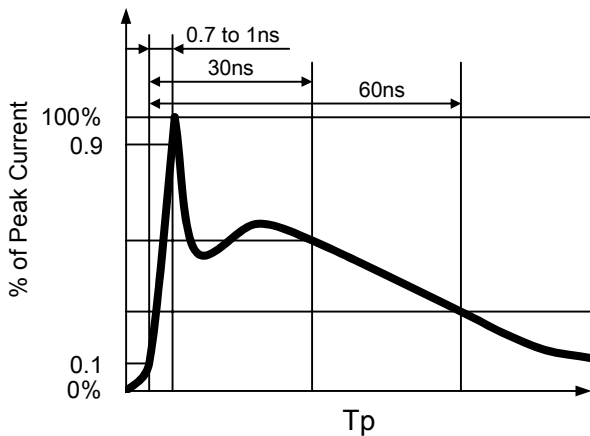
■ Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit |
|--|--------|-----|-----|------|
| Total Power Dissipation ^{*1, 2} | PT | - | 150 | mW |
| Electrostatic Discharge ^{*1, 3} | ESD | - | ±15 | kV |
| Peak Pulse Power ^{*1, 4} | Ppp | - | 20 | W |
| Peak Pulse Current ^{*1, 4} | Ipp | - | 1.9 | A |
| Operating Junction Temperature ^{*5} | Tj | - | 150 | °C |
| Ambient Temperature | Ta | -40 | 150 | °C |
| Storage Temperature | Tstg | -55 | 150 | °C |

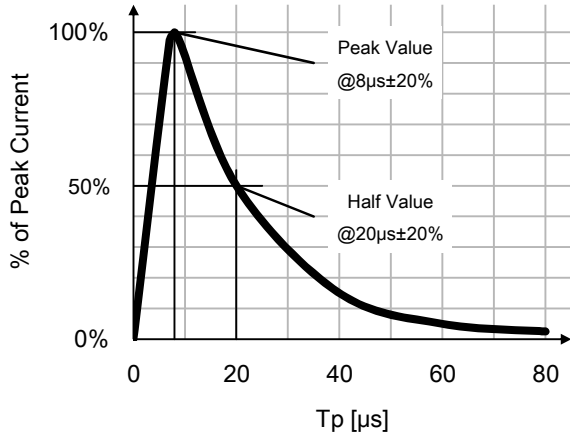
- Note) *1: Ta = Tj = 25°C
 *2: Device mounted on a FR4 PCB (25.4mm×25.4mm , 1mm thick), copper wiring (27.6mm² area , 36μm thick).
 *3: Test method: IEC61000-4-2 (C = 150 pF , R = 330 Ω , Contact and Air discharge: 10 times)
 *4: Test method: IEC61000-4-5 (Tp = 8/20 μs , Unrepeated)
 *5: Power derating is necessary so that Tj < 150°C .



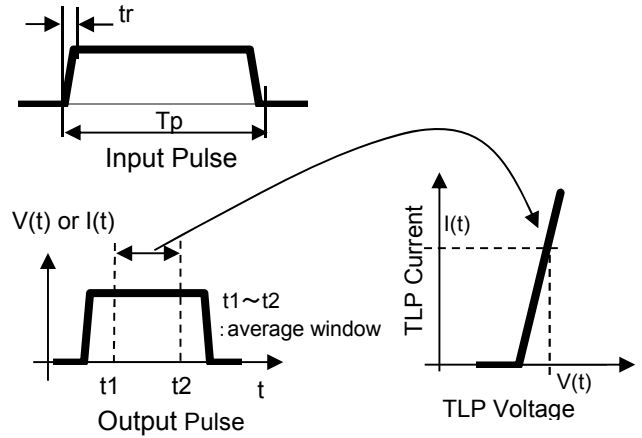
(IEC61000-4-2 Pulse)



(IEC61000-4-5 Pulse)



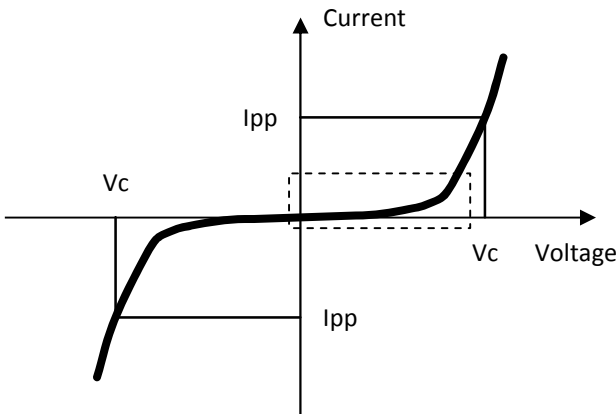
(TLP Pulse)



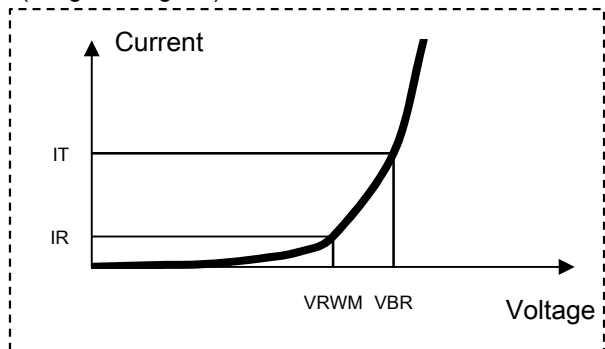
■ Electrical Characteristics Ta = 25°C ± 3°C

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|------------------------------|--------|---------------------------|-----|------|------|------|
| Reverse Stand-off Voltage | VRWM | - | | | 5.0 | V |
| Reverse Breakdown Voltage *1 | VBR | IT = 0.1 mA | 7.0 | 7.5 | 8.0 | V |
| Reverse Breakdown Voltage *1 | VBR | IT = 5 mA | 7.0 | 7.6 | 8.0 | V |
| Reverse Leakage Current | IR | VR = 5 V | | | 50 | nA |
| Clamping Voltage *2 | Vc | Ipp = 1.9 A, Tp = 8/20 μs | | 10.6 | 12.7 | V |
| Clamping Voltage *3 | Vc-TLP | Ipp = 8 A | | 12.0 | | V |
| Clamping Voltage *3 | Vc-TLP | Ipp = 16 A | | 16.0 | | V |
| Terminal Capacitance | Ct | VR = 0 V, f = 1 MHz | | 6.0 | | pF |

- Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7031 measuring methods for diodes.
 2. Absolute frequency of input and output is 5 MHz.
 3. *1: VBR guaranteed 20 ms after current flow.
 *2: conditions : 8/20 μs Pulse Waveform
 *3: conditions : TLP parameter Z = 50 Ω, Tp = 100 ns, tr = 0.2ns, average window t1 = 54.4ns, t2 = 94.4ns



(Magnified figure)

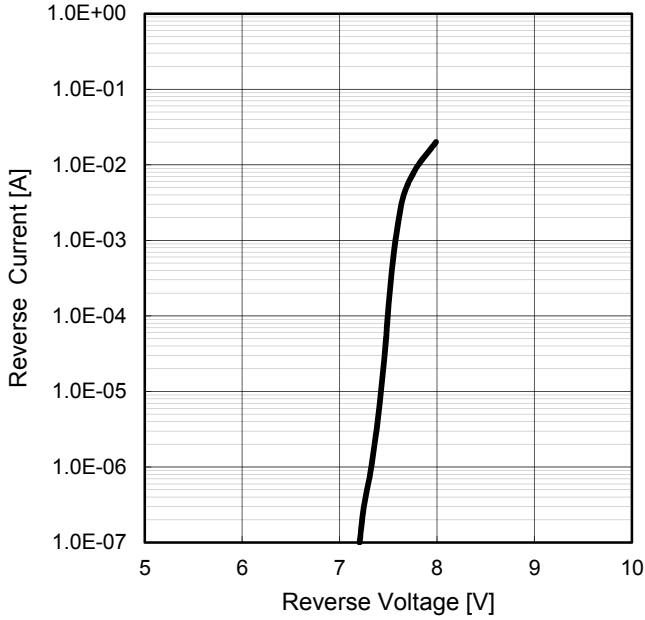


| Symbol | Parameter |
|--------|--------------------------------|
| Ipp | Peak Pulse Current |
| Vc | Clamping Voltage @ Ipp |
| IR | Reverse Leakage Current @ VRWM |
| VRWM | Reverse Stand-off Voltage |
| IT | Test Current |
| VBR | Breakdown Voltage @ IT |

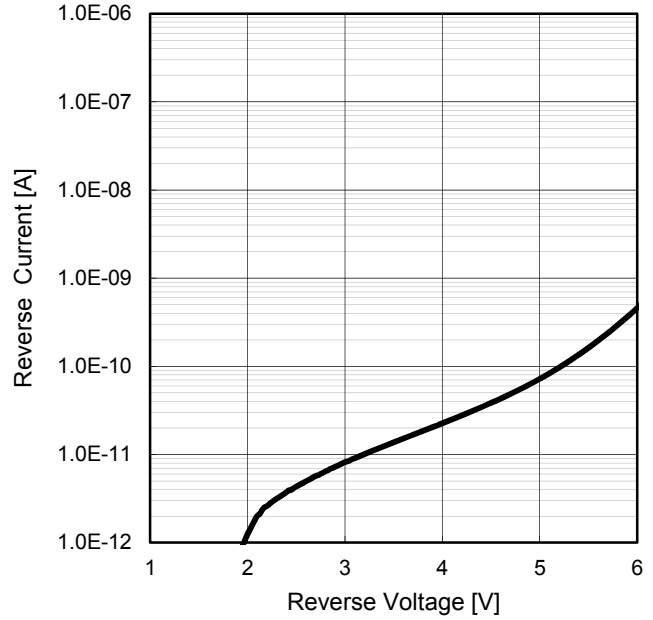


Typical Characteristics at Ta = 25°C, unless otherwise specified

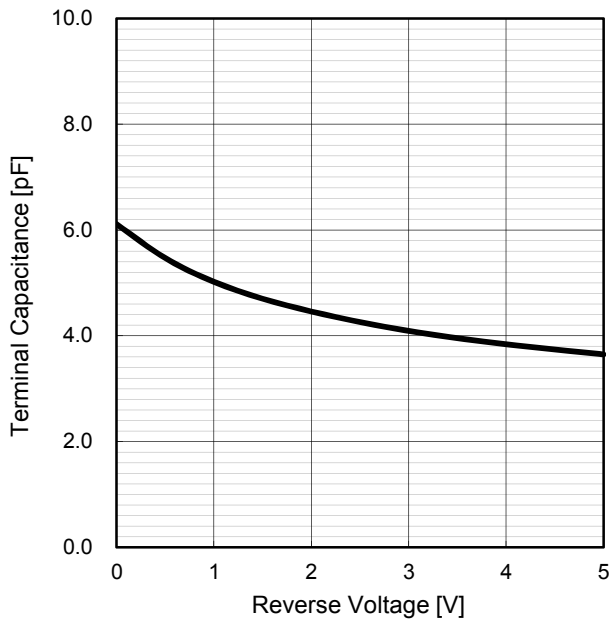
Reverse Breakdown Voltage



Reverse Leakage Current



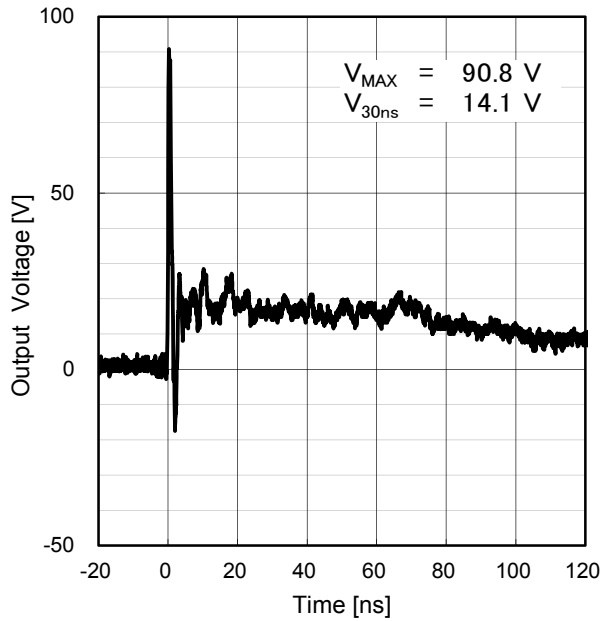
Terminal Capacitance *1



Note) *1: Test Condition : f = 1 MHz

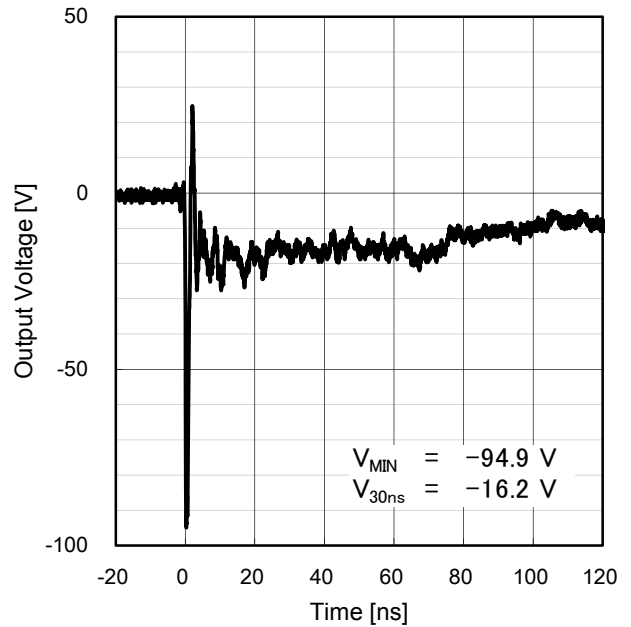
Typical Characteristics at Ta = 25°C, unless otherwise specified

ESD Clamping (Positive Pulse)^{*1}



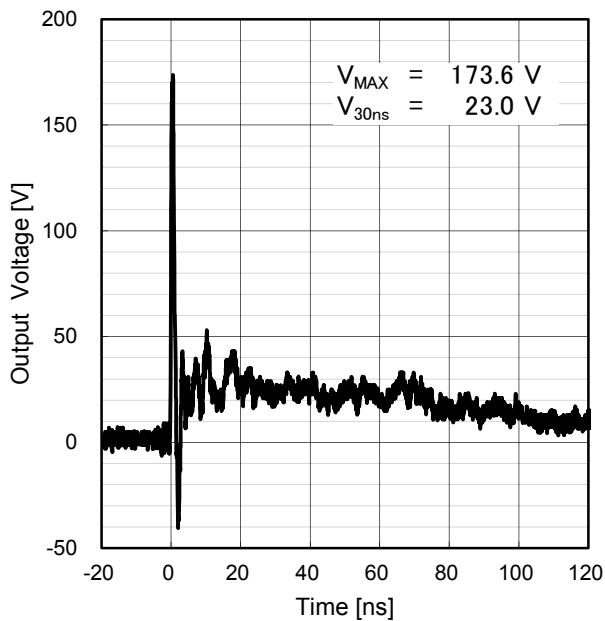
Note) *1: Input Pulse :
 IEC61000-4-2 / Contact / + 8 kV

ESD Clamping (Negative Pulse)^{*2}



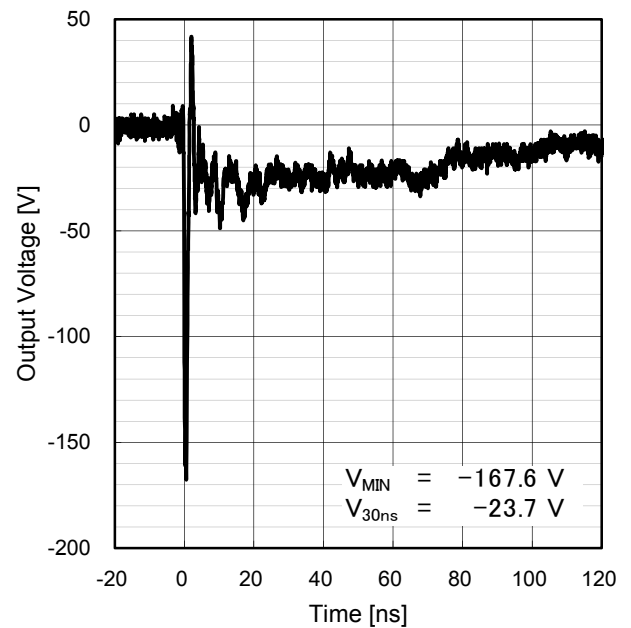
Note) *2: Input Pulse :
 IEC61000-4-2 / Contact / - 8 kV

ESD Clamping (Positive Pulse)^{*3}



Note) *3: Input Pulse :
 IEC61000-4-2 / Contact / + 15 kV

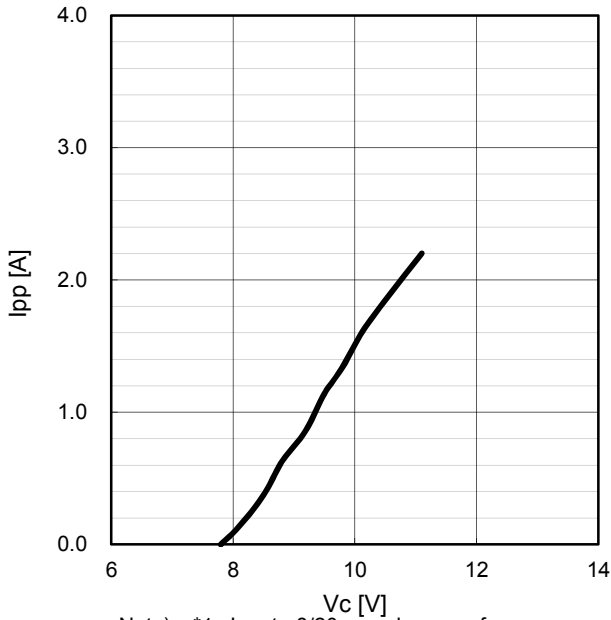
ESD Clamping (Negative Pulse)^{*4}



Note) *4: Input Pulse :
 IEC61000-4-2 / Contact / - 15 kV

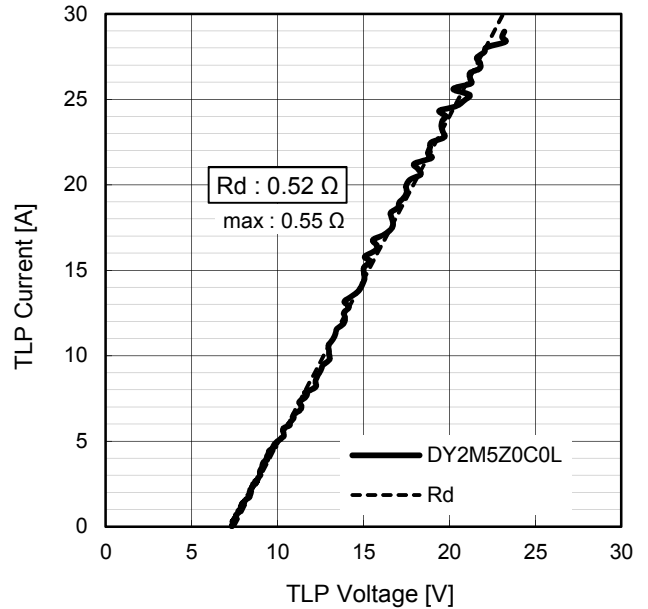
Typical Characteristics at Ta = 25°C, unless otherwise specified

Clamping Voltage^{*1}



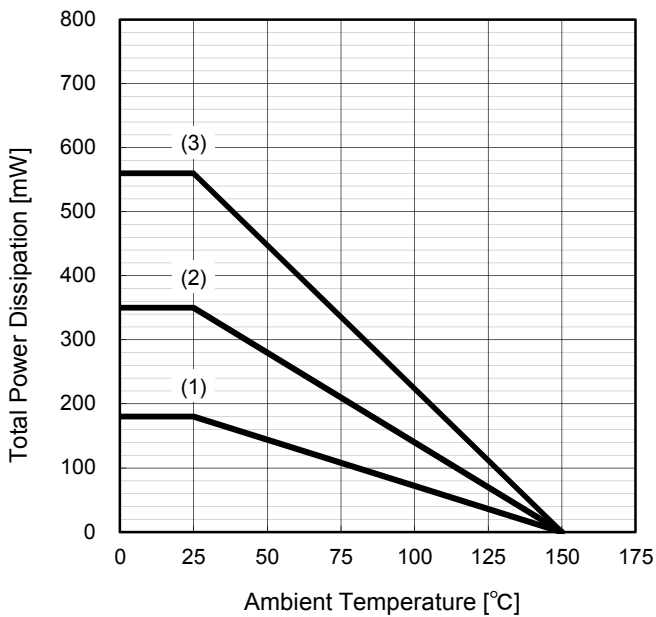
Note) *1: Input : 8/20 μs pulse waveform

TLP Characteristic^{*2}



Note) *2: Input Pulse : Tp = 100ns , tr = 0.2ns , average window t1 = 54.4ns , t2 = 94.4ns
Extraction of Rd using least squares fit of TLP characteristic between Ipp = 10 A and Ipp = 25 A .
Rd : Dynamic resistance

Total Power Dissipation

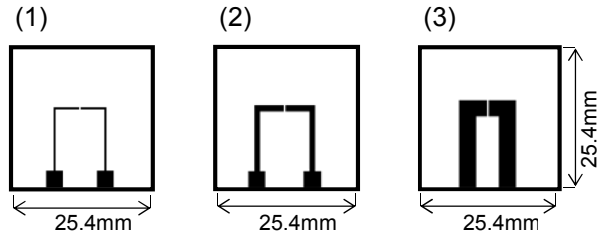


(Evaluation Board Condition³⁾)

| | PCB Size PCB Thickness | Copper Wiring | |
|-----|--------------------------------|---------------|-----------------------|
| | | Thickness | Area |
| (1) | 25.4 mm ×25.4 mm 1 mm thick | 36 μm thick | 27.6 mm ² |
| (2) | | | 50.7 mm ² |
| (3) | | | 108.0 mm ² |

Note) *3: FR4 PCB

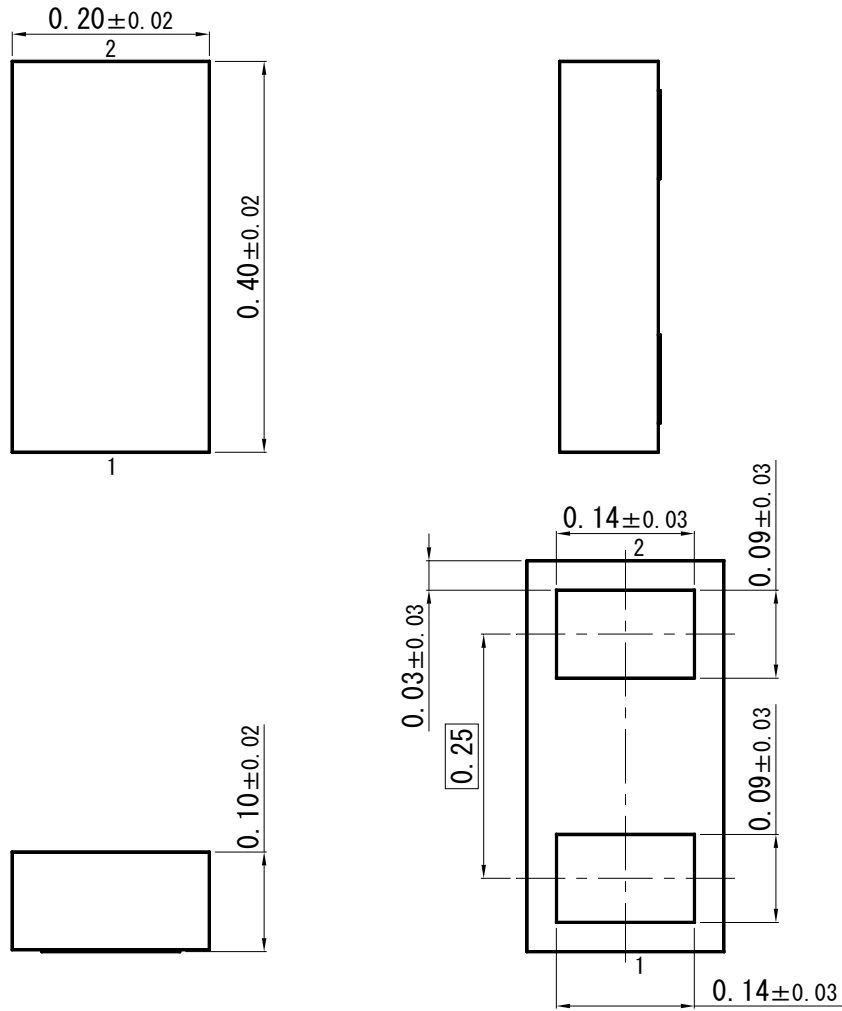
(Evaluation Board Outline)



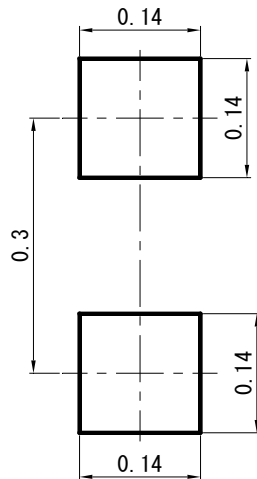


DCSP0402010-N2

Unit: mm



■ Land Pattern (Reference) (Unit: mm)



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