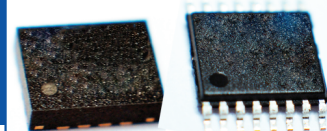


CRYSTAL-LESS PCI EXPRESS DUAL OUTPUT ULTRA MINIATURE PURE SILICON™ SMD CLOCK GENERATOR



3.2 x 2.5 x 0.85 mm (14 Pin QFN)
5.1 x 4.5 x 1.1 mm (16 Pin TSSOP)

AB-557-03 Series

Moisture Sensitivity Level
MSL 1 – 14 QFN
MSL 3 – 16 TSSOP



RoHS/RoHS II compliant

FEATURES:

- Meets PCIe Gen1, Gen2, & Gen3 specs.
- High Performance MEMS Technology by Discera
- Available Mixed Output Formats: HCSL, LVPECL, LVDS or LVCMOS
- Wide Temperature Range: -40° to 105° C
- Wide Supply Range: 2.25V to 3.6 V
- Low Power Consumption
- Excellent Shock & Vibration Immunity

APPLICATIONS:

- Solid State Storage
- Storage Area Networks
- Passive Optical Networks
- Ethernet: 1G, 10GBASE-T/KR/LR/SR, and FCoE
- TV and other Consumer Electronics
- Industrial and Medical
- Scanner, Printer

STANDARD SPECIFICATIONS:

| Parameters | | Minimum | Typical | Maximum | Units | Notes |
|---|------------|---|---------|---------|-------|--|
| Frequency | f_0 | 2.3 | 100 | 460*1 | MHz | |
| Operating Temperature | | -20 | | +70 | °C | See options |
| Storage Temperature | | -55 | | +150 | °C | |
| Overall Freq. Stability*2 | Δf | -100 | | +100 | ppm | See options |
| Supply Voltage | V_{DD} | +2.25 | | +3.6 | V | |
| Supply Current- Enabled | I_{DD} | | 60 | | mA | $R_L=50\Omega$, $F_{01}=F_{02}=100.00\text{MHz}$ |
| Supply Current- Disabled | I_{DD} | | 21 | 23 | mA | |
| Startup Time | t_{su} | | | 5 | ms | |
| Enable Time | t_{EN} | | | 20 | ns | |
| Disable Time | t_{DA} | | | 5 | ns | |
| Tri-state Function (Standby/Disable) | | "1" ($V_{IH} \geq 0.75 * V_{DD}$) or Open: Oscillation "0" ($V_{IL} < 0.25 * V_{DD}$) : Hi Z | | | V | 40k Ω pull-up resistor embedded |
| Aging | | -5.0 | | +5.0 | ppm | First year |
| Output Offset Voltage | | V_{OH} | 0.725 | | V | $R_L=50 \Omega$ |
| | | V_{OL} | | 0.10 | | |
| Peak to Peak Output Swing | | | 750 | | mV | Single-Ended |
| Rise Time | t_r | 200 | | 400 | ps | $R_L=50 \Omega$, $C_L=2\text{pF}$ |
| Fall Time | t_f | 200 | | 400 | ps | 20% to 80% |
| Duty Cycle | SYM | 48 | | 52 | % | Differential |
| Period Jitter | J_{PER} | | 2.5 | | pSRMS | $F_{01}=F_{02}=100.00\text{MHz}$ |
| Integrated Phase Noise (Common Clock Architecture) | | R_J | 0.540 | | pSRMS | PCIe Gen 1.1 $T_J = D_J + 14.069 \times R_J$ (BER 10-12) |
| | | D_J | 0.832 | 41.9 | pSP-P | |
| | | T_J | 8.536 | 86.0 | | |
| | | $J_{RMS-CCHF}$ | 0.458 | 3.1 | pSRMS | PCIe Gen 2.1 1.5 MHz to Nyquist |
| | | $J_{RMS-CCLF}$ | 0.030 | 3.0 | | PCIe Gen 2.1 10kHz to 1.5 MHz |
| | | J_{RMS-CC} | 0.165 | 1.0 | | PCIe Gen 3.0 |
| Integrated Phase Noise (Data Clock Architecture) | | $J_{RMS-DCHF}$ | 0.561 | 4.0 | pSRMS | PCIe Gen 2.1 1.5 MHz to Nyquist |
| | | $J_{RMS-DCLF}$ | 1.778 | 7.5 | | PCIe Gen 2.1 10kHz to 1.5 MHz |
| | | J_{RMS-DC} | 0.147 | 1.0 | | PCIe Gen 3.0 |

*1. For frequency other than 100MHz, please contact ABRACON or consider using ASEMDxx series

2. Frequency stability includes frequency variations due to initial tolerance, temp. and power supply voltage

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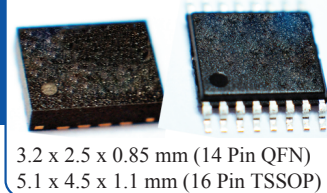


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AB-557-03 Series

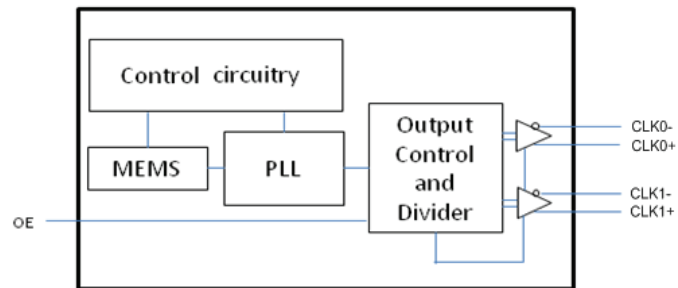


RoHS/RoHS II compliant

Absolute Maximum Ratings

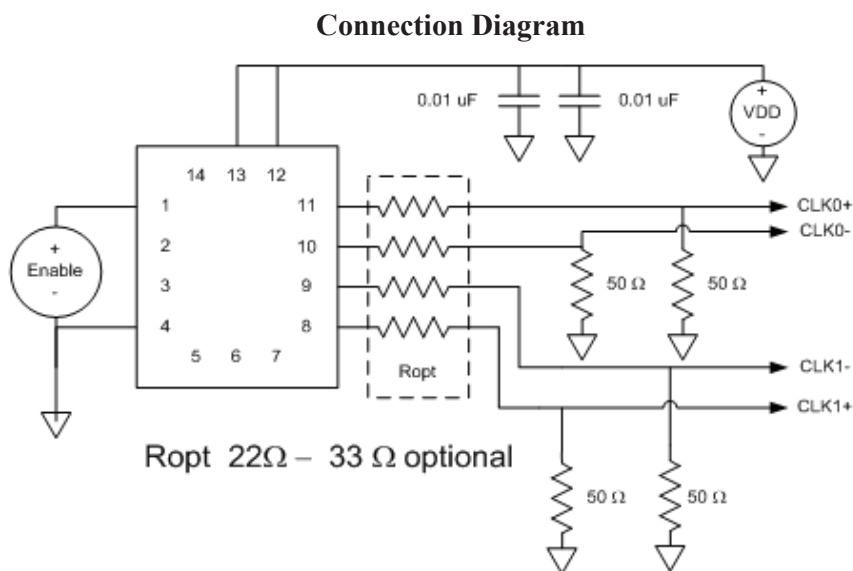
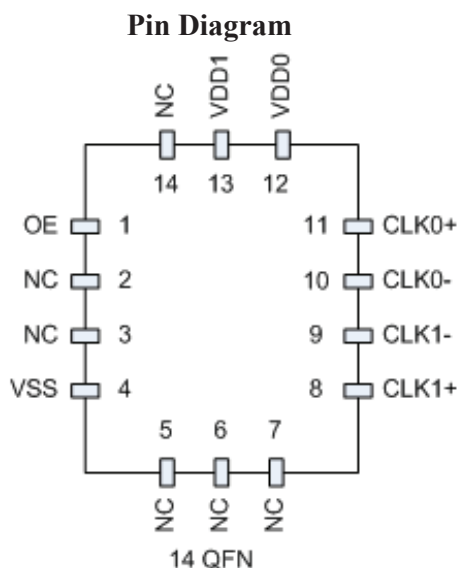
| Item | Minimum | Maximum | Unit | Condition |
|-----------------|---------|----------------------|------|-----------|
| Supply Voltage | -0.3 | +4.0 | V | |
| Input Voltage | -0.3 | V _{dd} +0.3 | V | |
| Junction Temp. | | +150 | °C | |
| Storage Temp. | -55 | +150 | °C | |
| Soldering Temp. | | +260 | °C | 40sec max |
| ESD | | | | |
| HBM | | 4,000 | V | |
| MM | | 400 | | |
| CDM | | 1,500 | | |

Block Diagram:



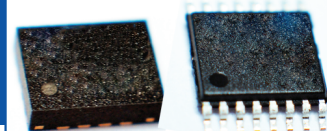
PIN LAYOUT:

14 Pin QFN:



| Pin No. | Pin Name | Pin Type | Description |
|---------|----------|----------|--|
| 1 | OE | I | Output Enable; active high |
| 2 | NC | NA | Ground Connected or Leave Unconnected |
| 3 | NC | NA | Ground Connected or Leave Unconnected |
| 4 | VSS | Power | Ground |
| 5 | NC | NA | Ground Connected or Leave Unconnected |
| 6 | NC | NA | Ground Connected or Leave Unconnected |
| 7 | NC | NA | Ground Connected or Leave Unconnected |
| 8 | CLK1+ | O | True output of differential pair |
| 9 | CLK1- | O | Complement output of differential pair |
| 10 | CLK0- | O | Complement output of differential pair |
| 11 | CLK0+ | O | True output of differential pair |
| 12 | VDD0 | Power | Power Supply for Output 0 (CLK+/- 0) |
| 13 | VDD1 | Power | Power Supply for Core and Output 1 (CLK +/- 1) |
| 14 | NC | NA | Ground Connected or Leave Unconnected |

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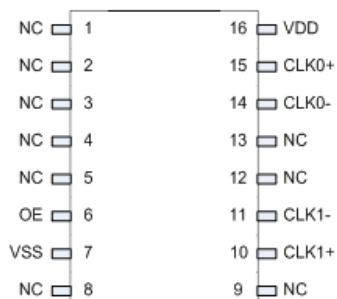
AB-557-03 Series



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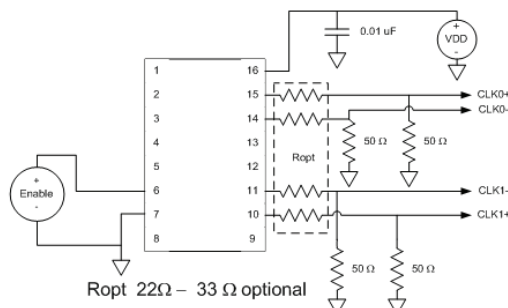
16 Pin TSSOP:

Pin Diagram



16-pin TSSOP

Connection Diagram



| Pin No. | Pin Name | Pin Type | Description |
|---------|----------|----------|--|
| 1 | NC | NA | Leave Unconnected |
| 2 | NC | NA | Leave Unconnected |
| 3 | NC | NA | Leave Unconnected |
| 4 | NC | NA | Leave Unconnected |
| 5 | NC | NA | Leave Unconnected |
| 6 | OE | I | Output Enable; active high |
| 7 | VSS | Power | Ground |
| 8 | NC | NA | Leave Unconnected |
| 9 | NC | NA | Leave Unconnected |
| 10 | CLK1+ | O | True output of differential pair |
| 11 | CLK1- | O | Complement output of differential pair |
| 12 | NC | NA | Leave Unconnected |
| 13 | NC | NA | Leave Unconnected |
| 14 | CLK0- | O | Complement output of differential pair |
| 15 | CLK0+ | O | True output of differential pair |
| 16 | VDD | Power | Power Supply |

PART IDENTIFICATION:

AB-557-03-□□ - □ - □ - □ - □

| Output Format, Clk1 |
|---------------------|
| C: LVCMOS |
| LP: LVPECL |
| LV: LVDS |
| HC: HCSL |

| Output Format, Clk0 |
|---------------------|
| C: LVCMOS |
| LP: LVPECL |
| LV: LVDS |
| HC: HCSL |

| Package Type |
|--------------|
| F: 14-QFN |
| S: 16-TSSOP |

| Operating Temp. |
|-------------------|
| E: -20°C ~ +70°C |
| L: -40°C ~ +85°C |
| X: -40°C ~ +105°C |

| Overall Freq. Stability |
|-------------------------|
| Blank: ±100ppm |
| C: ±50ppm |

| Packaging |
|------------------------------|
| Blank: Bulk |
| T: Tape & Reel(1kpcs / reel) |
| T3: Tape & Reel(3kpcs/reel) |

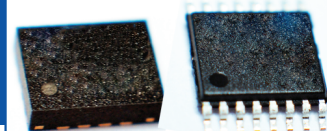
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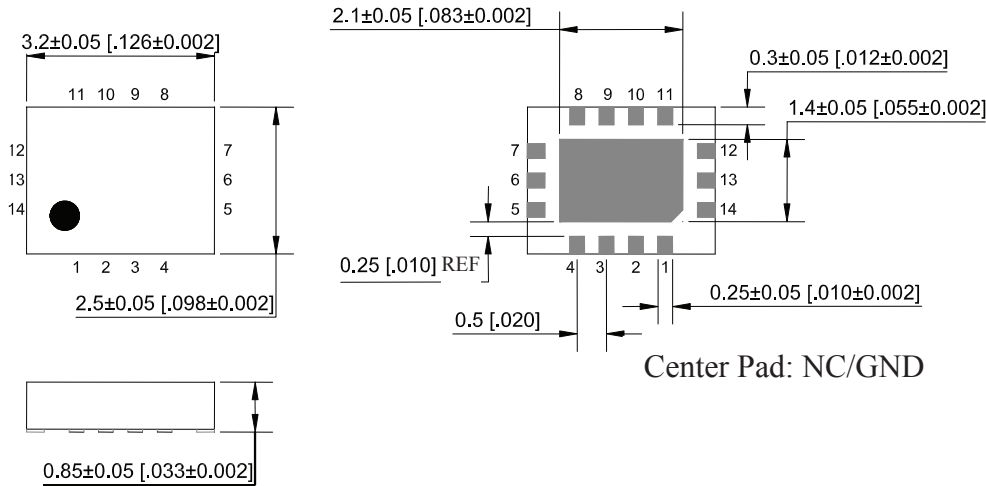
AB-557-03 Series



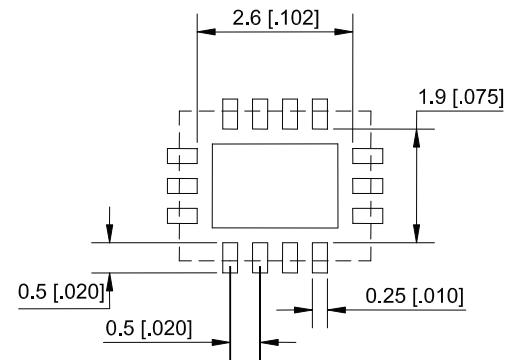
RoHS/RoHS II compliant

OUTLINE DRAWING:

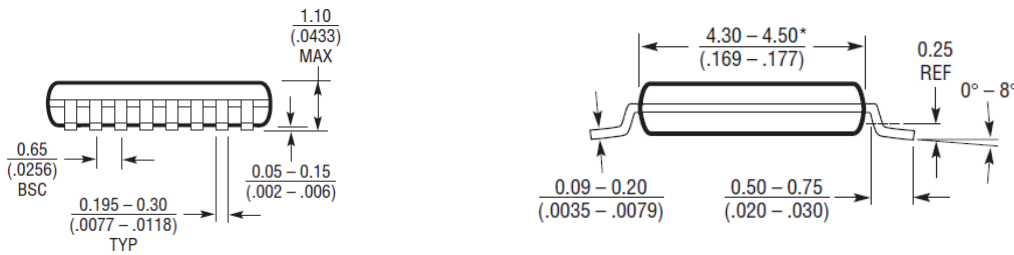
14 Pin QFN:



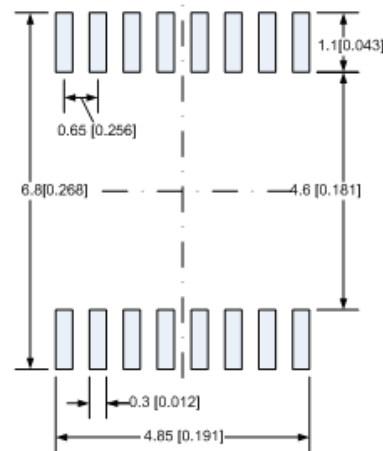
Recommended Solder Pad Layout



16 Pin TSSOP:



Recommended Solder Pad Layout



* Dimensions do not include mold flash. Mold flash shall not exceed 0.150mm (.006 inches) per side.

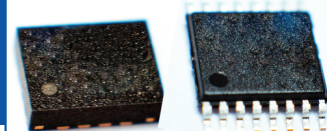
Dimensions: mm (inches)

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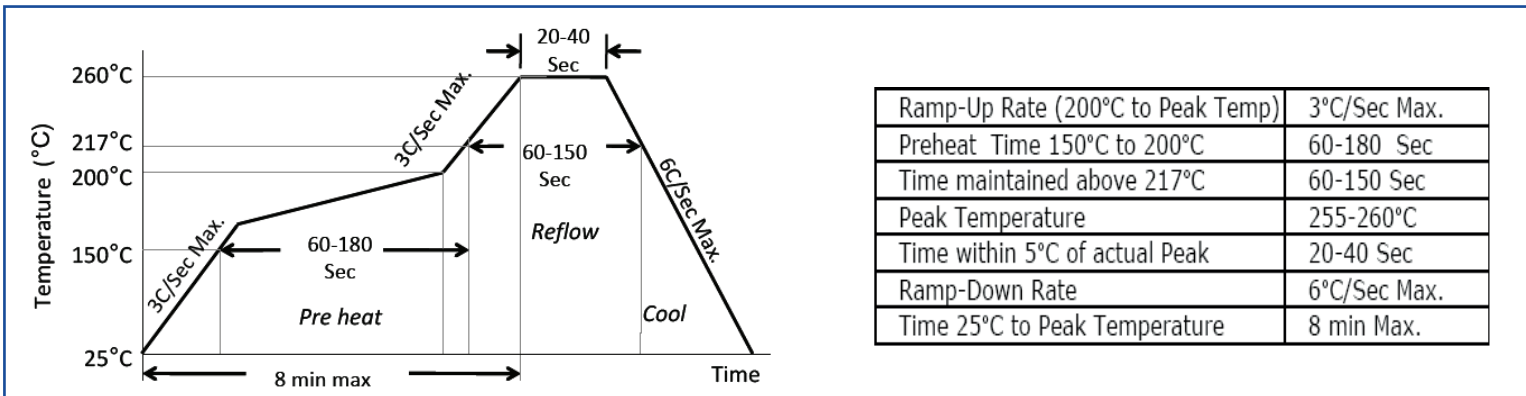
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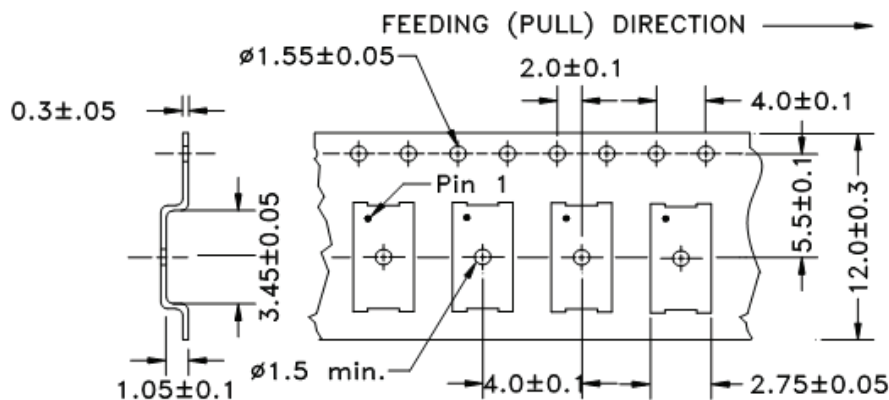
REFLOW PROFILE:



TAPE & REEL:

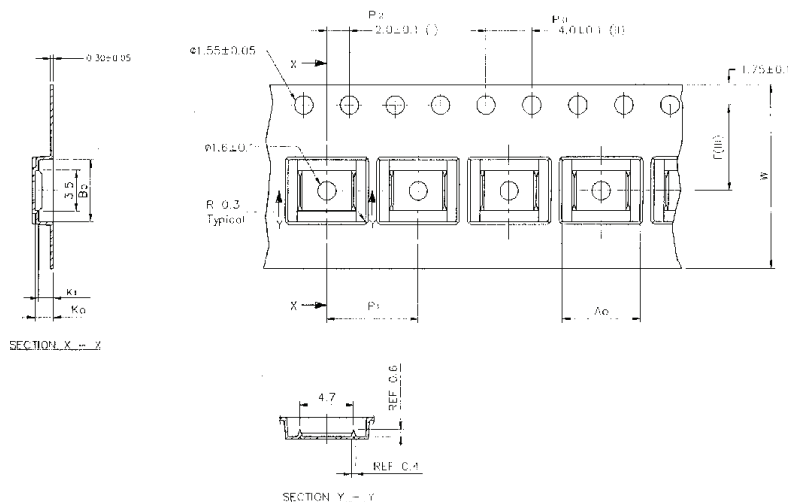
14 Pin QFN Tape Drawing:

T= 1,000pcs/reel
T3= 3,000pcs/reel



16 Pin TSSOP Tape Drawing

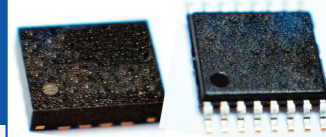
T= 1,000pcs/reel
T3= 3,000pcs/reel



| A0 | B0 | K0 | K1 | F | P1 | W |
|----------|----------|----------|----------|----------|----------|-----------|
| 6.80±0.1 | 5.40±0.1 | 1.60±0.1 | 1.30±0.1 | 5.50±0.1 | 8.00±0.1 | 12.00±0.3 |

Dimensions: mm

CRYSTAL-LESS PCI EXPRESS DUAL OUTPUT ULTRA MINIATURE PURE SILICON™ SMD CLOCK GENERATOR

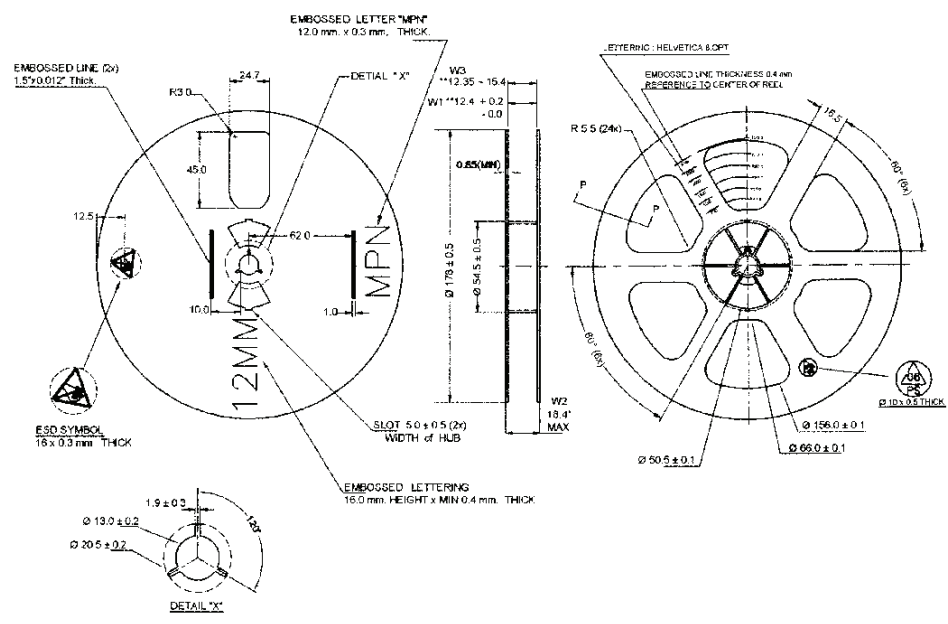


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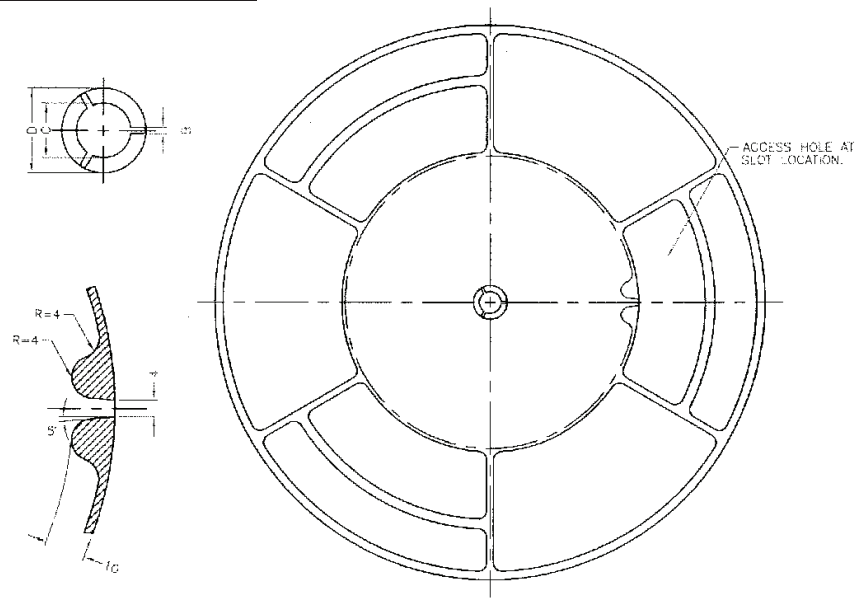
Pb RoHS/RoHS II compliant

7" Reel Drawing (1000pcs/reel)



Dimensions: mm

13" Reel Drawing (3000pcs/reel)



| A | N | W1 | W2 | W3 | D | B | C | Tape Width |
|-----------|---------------|-----------|-----------|--------------------------|-----------|---------|---------------|------------|
| 330 (13") | 178 (7") max. | 12.4+2/-0 | 18.4 max. | 12.35 min. 15.40 max. | 20.2 min. | 1.5 min | 13.0+0.5/-0.2 | 12 |

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- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
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- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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