

PERFORMANCE PLASTIC PACKAGE ULTRA MINIATURE PURE SILICON™ CLOCK OSCILLATOR

ASFLMP

Life Size 
5.0 x 3.2 x 0.85 mm

ASFLMP

 **RoHS**
Compliant

FEATURES:

- Ultra Miniature Pure Silicon™ Clock Oscillator
- High Performance MEMS Technology by Discera
- Low Power Consumption for high speed communication
- Exceptional Stability Over Temp. at -40 to +85°C, ±15ppm
- Extended Automotive Grade Temp. stability at -55 to +125°C, ±25ppm
- Available in 50kG Shock Resistance Configuration upon request
- MIL-STD-883 shock and vibration compliant
- Durable QFN Plastic Compact Packaging
- Standby or Disable Tri-state function
- Low jitter (Period jitter RMS and Phase jitter RMS)
- High power supply noise reduction, -50dBc

APPLICATIONS:

- Storage Area Networks (SATA, SAS, Fiber Channel)
- Passive Optical Networks (EPON, 10G-EPON, GPON, 10G-PON)
- Ethernet (1G, 10GBASE-T, KR/LR/SR, FCoE)
- HD/SD/SDI Video & Surveillance
- PCI Express
- Display port

Low Jitter
High Performance
3G MEMS Technology!

STANDARD SPECIFICATIONS:

Common Key Electrical Specifications – CMOS, LVPECL, LVDS, and HCSL

| Parameters | | Minimum | Typical | Maximum | Units | Notes |
|--------------------------------------|--------|--|---------|---------|-------|-----------------------------------|
| Frequency Range | CMOS | 10.000 | ----- | 170.000 | MHz | Commercial, Industrial Temp range |
| | CMOS | 10.000 | ----- | 100.000 | | Automotive -55 ~ +125°C |
| | LVPECL | 10.000 | ----- | 425.000 | | Commercial, Industrial Temp range |
| | LVDS | 10.000 | ----- | 425.000 | | Commercial, Industrial Temp range |
| | HCSL | 10.000 | ----- | 425.000 | | Commercial, Industrial Temp range |
| Operating Temperature | | -20 | ----- | +70 | °C | See options |
| Storage Temperature | | -55 | ----- | +150 | °C | |
| Overall Frequency Stability* | | -50 | ----- | +50 | ppm | See options |
| Supply Voltage (Vdd) | | +2.25 | ----- | +3.6 | V | |
| Startup Time | | ----- | ----- | 10 | ms | |
| Enable Time | | ----- | ----- | 0.005 | ms | STD (Tri-state) |
| | | ----- | ----- | 10.0 | | PD option (Power Down) |
| Disable Time | | ----- | ----- | 100 | ns | |
| Stand-by Current | | ----- | 20 | 26 | mA | STD (Tri-state) |
| Disable Current | | ----- | ----- | 0.1 | | PD option (Power Down) |
| Tri-state Function (Standby/Disable) | | "1" (VIH ≥ 0.75*Vdd) or Open: Oscillation "0" (VIL < 0.25*Vdd) : Hi Z | | | V | 33kΩ pull-up resistor embedded |
| Aging | | -5.0 | ----- | +5.0 | ppm | First year |

Key Electrical Specifications – CMOS

| Parameters | | Minimum | Typical | Maximum | Units | Notes |
|--|-----------------|---------------------|---------|---------------------|-------|------------------------|
| Supply Current (I _{dd}) | | ----- | 31 | 35 | mA | CL=15p, 125MHz |
| Output Logic Level | V _{OH} | 0.9*V _{dd} | ----- | ----- | V | I=±6mA |
| | V _{OL} | ----- | ----- | 0.1*V _{dd} | V | |
| Rise Time | T _r | ----- | 1.1 | 2.0 | ns | CL=15pF |
| Fall Time | T _f | ----- | 1.3 | 2.0 | ns | 20%/80%*VDD |
| Duty Cycle | | 45 | ----- | 55 | % | |
| Spurious Level | | | | -50 | dBc | Reference to carrier |
| Integrated Phase Jitter (J _{PH}) | | ----- | 0.35 | 3 | ps | 200kHz ~ 20MHz, 125MHz |
| | | ----- | 0.5 | 3 | | 100kHz ~ 20MHz, 125MHz |
| | | ----- | 1.8 | 3 | | 12kHz ~ 20MHz, 125MHz |
| Period Jitter RMS (J _{PER}) | | ----- | 4.3 | ----- | ps | CL=2pF, 125MHz |
| | | ----- | 6 | ----- | | CL=15pF, 125MHz |

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Key Electrical Specifications – LVPECL

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|--|----------|---------------|---------------|-------|-------------------------------|
| Supply Current (I_{dd}) | ----- | 51 | 60 | mA | RL=50Ω, 156.25MHz |
| Output Logic Level | V_{OH} | $V_{dd}-1.08$ | ----- | V | RL=50Ω, 156.25MHz |
| | V_{OL} | ----- | $V_{dd}-1.55$ | V | |
| Peak to Peak Output Swing (V_{pp}) | | 830 | | mV | Single ended |
| Rise Time | T_r | ----- | 250 | ps | RL=50Ω, CL=2pF 20%/80%*VDD |
| Fall Time | T_f | ----- | 250 | | |
| Duty Cycle | | 48 | 52 | % | Differential |
| Spurious Level | | | -50 | dBc | Reference to carrier |
| Integrated Phase Jitter (J_{PH}) | | 0.35 | 3 | ps | 200kHz ~ 20MHz, 156.25MHz |
| | | 0.5 | 3 | | 100kHz ~ 20MHz, 156.25MHz |
| | | 1.8 | 3 | | 12kHz ~ 20MHz, 156.25MHz |
| Period Jitter RMS (J_{PER}) | ----- | 3.3 | ----- | ps | RL=50Ω, 156.25MHz |

Key Electrical Specifications – LVDS

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|--|----------|---------------|---------------|-------|-------------------------------|
| Supply Current (I_{dd}) | ----- | 29 | 40 | mA | RL=50Ω, 156.25MHz |
| Output Offset Voltage (V_{OS}) | 1.125 | ----- | 1.4 | V | RL=100Ω differential |
| Delta Offset Voltage (ΔV_{OS}) | | | | | |
| Output Logic Level | V_{OH} | $V_{dd}-1.08$ | ----- | V | RL=50Ω, 156.25MHz |
| | V_{OL} | ----- | $V_{dd}-1.55$ | V | |
| Peak to Peak Output Swing (V_{pp}) | | 350 | | mV | Single ended |
| Rise Time | T_r | ----- | 300 | ps | RL=50Ω, CL=2pF 20%/80%*VDD |
| Fall Time | T_f | ----- | 300 | | |
| Duty Cycle | | 45 | 55 | % | Differential |
| Spurious Level | | | -50 | dBc | Reference to carrier |
| Integrated Phase Jitter (J_{PH}) | | 0.43 | 3 | ps | 200kHz ~ 20MHz, 156.25MHz |
| | | 0.55 | 3 | | 100kHz ~ 20MHz, 156.25MHz |
| | | 1.8 | 3 | | 12kHz ~ 20MHz, 156.25MHz |
| Period Jitter RMS (J_{PER}) | ----- | 3.3 | ----- | ps | RL=50Ω, 156.25MHz |

Key Electrical Specifications – HCSL

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|--|----------|---------|---------|-------|-------------------------------|
| Supply Current (I_{dd}) | ----- | 40 | 60 | mA | RL=50Ω, 156.25MHz |
| Output Logic Level | V_{OH} | 0.725 | ----- | V | RL=50Ω, 156.25MHz |
| | V_{OL} | ----- | 0.1 | V | |
| Peak to Peak Output Swing (V_{pp}) | | 675 | | mV | Single ended |
| Rise Time | T_r | ----- | 250 | ps | RL=50Ω, CL=2pF 20%/80%*VDD |
| Fall Time | T_f | ----- | 250 | | |
| Duty Cycle | | 45 | 55 | % | Differential |
| Spurious Level | | | -50 | dBc | Reference to carrier |
| Integrated Phase Jitter (J_{PH}) | | 0.3 | 3 | ps | 200kHz ~ 20MHz, 156.25MHz |
| | | 0.45 | 3 | | 100kHz ~ 20MHz, 156.25MHz |
| | | 1.9 | 3 | | 12kHz ~ 20MHz, 156.25MHz |
| Period Jitter RMS (J_{PER}) | ----- | 2.8 | ----- | ps | RL=50Ω, 156.25MHz |

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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 | | | V | |
| HBM | | 4,000 | | |
| MM | | 200 | | |
| CDM | | 1,500 | | |

OPTIONS AND PART IDENTIFICATION: (Left Blank if Standard)

Programmed Orders (Quantity > 1,000pcs)

ASFLMP - MHz - - -

| Output Type | Frequency in MHz | Operating Temp. | Overall Freq. Stability | Tri-state (Pin 1) | Packaging |
|-------------|---|----------------------|-------------------------|-------------------|-------------------------------|
| C: CMOS | e.g. 156.2500 MHz (Maximum 4 digits after decimal) | Blank: -20°C ~ +70°C | Blank: ±50ppm | Blank: Tri-state | Blank: Tube (72pcs / Tube) |
| LP: LVPECL | | L: -40°C ~ +85°C | Y: ±10ppm* | PD: Power Down | T: Tape & Reel (1kpcs / reel) |
| LV: LVDS | | X: -40°C ~ +105°C | R: ±25 ppm | | |
| HC: HCSL | | Z: -55°C ~ +125°C | | | |

*-20°C ~ +70°C, option L, or X only.

Un-Programmed Orders

Blank un-programmed oscillators and our low cost portable programmer are available for quick turn engineering requirements. Please call ABRACON or visit MEMSpeed Pro II site <http://www.abracon.com/memspeedpro/MEMSpeedProFlyerII.pdf> for more information.

ASFLMP - BLANK - -

| Output Type | Operating Temp. | Overall Freq. Stability | Packaging |
|-------------|----------------------|-------------------------|-------------------------------|
| C: CMOS | Blank: -20°C ~ +70°C | Blank: ±50ppm | Blank: Tube (72pcs / Tube) |
| LP: LVPECL | L: -40°C ~ +85°C | Y: ±10ppm* | T: Tape & Reel (1kpcs / reel) |
| LV: LVDS | X: -40°C ~ +105°C | R: ±25 ppm | |
| HC: HCSL | Z: -55°C ~ +125°C | | |

*-20°C ~ +70°C, option L, or X only.

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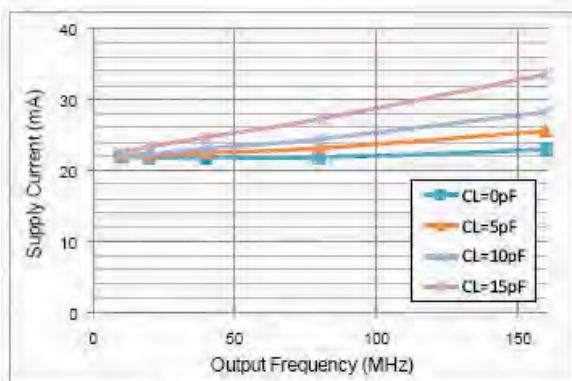


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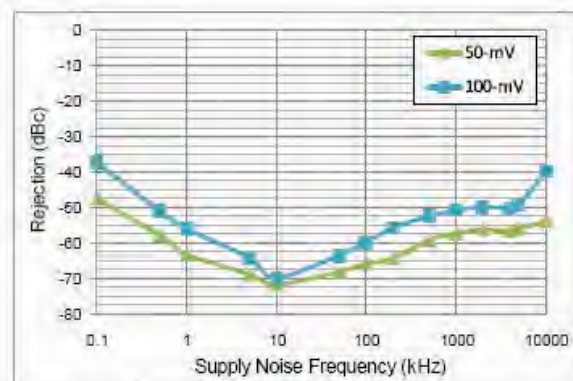
NOMINAL PERFORMANCE PARAMETERS

(Unless specified otherwise: T=25° C, VDD=3.3 V)

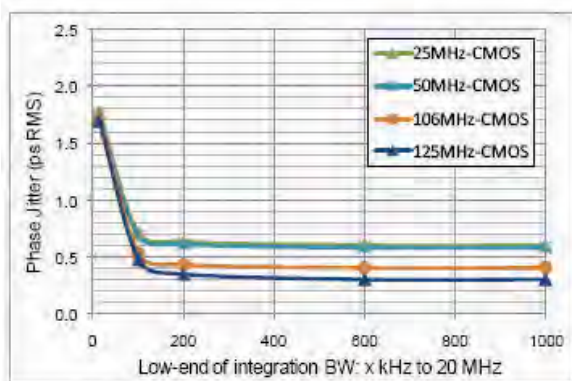
CMOS OUTPUT



Supply current over freq

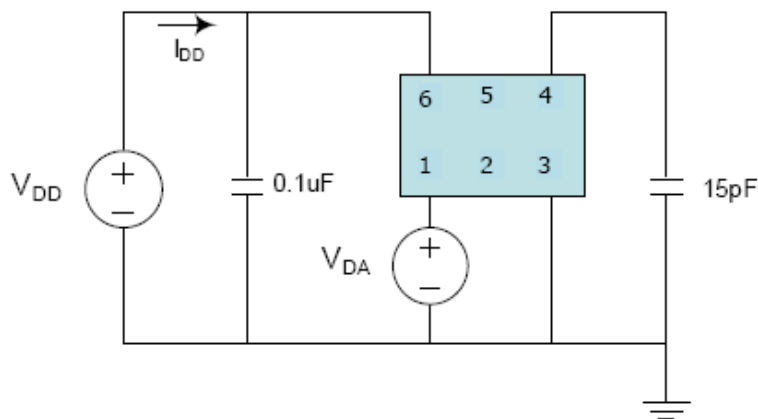


Power supply rejection ratio



Phase jitter (integrated phase noise)

Test Circuit



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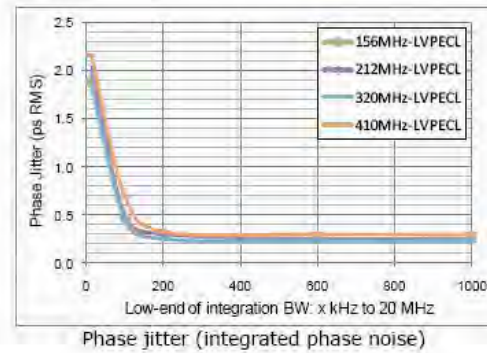
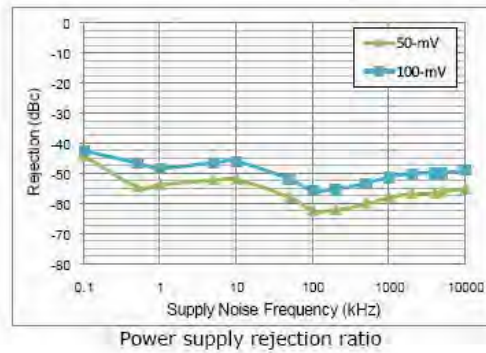


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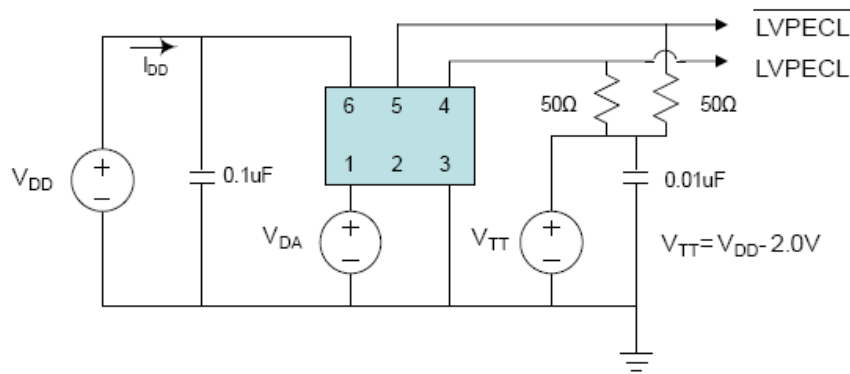
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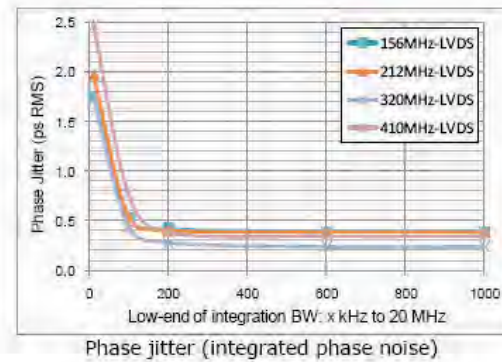
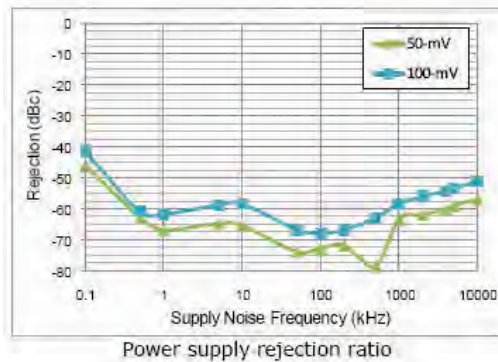
LVPECL OUTPUT



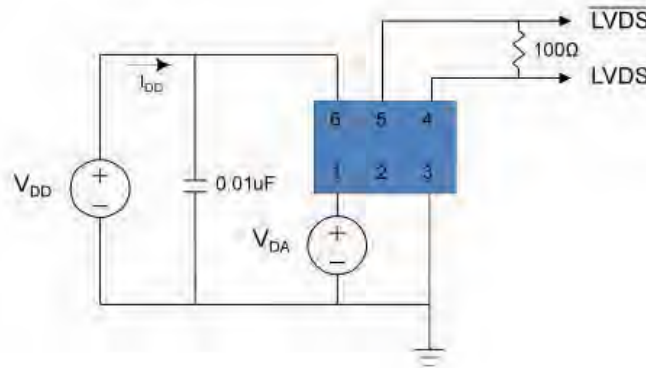
Test Circuit



LVDS OUTPUT



Test Circuit



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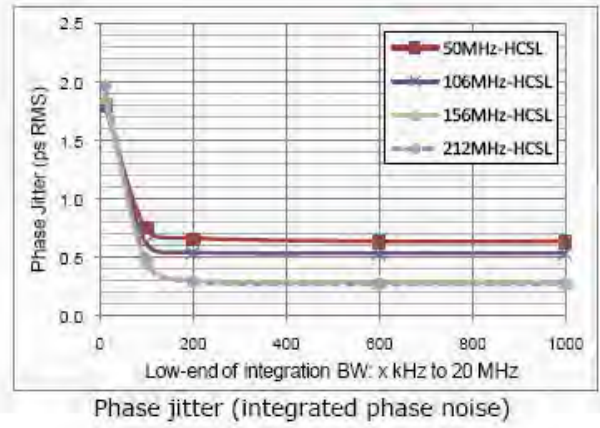
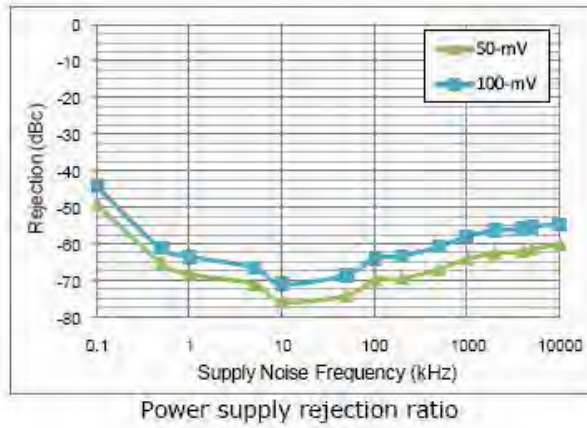


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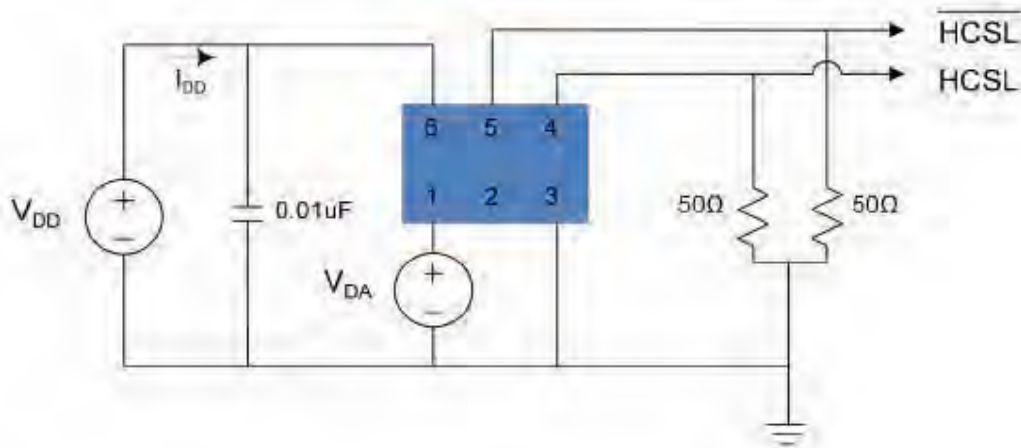
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HCSSL OUTPUT



Test Circuit



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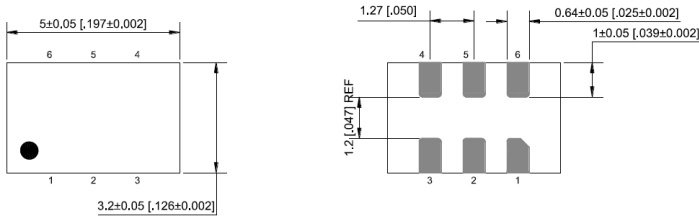


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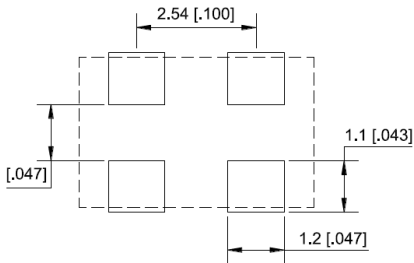
OUTLINE DIMENSIONS:



| No. | Pin terminal |
|-----|--------------|
| 1 | Enable |
| 2 | nc |
| 3 | GND |
| 4 | Output |
| 5 | nc |
| 6 | VDD |

Recommended Solder Pad Layout

units: mm [Inch]

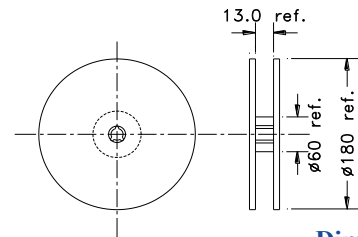
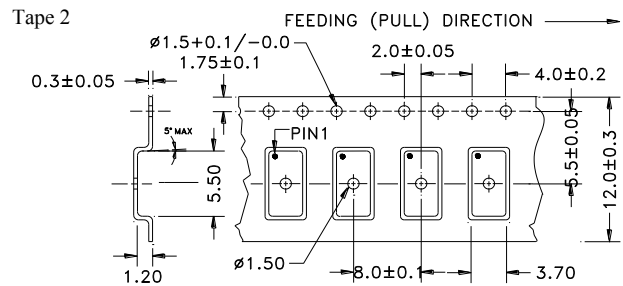
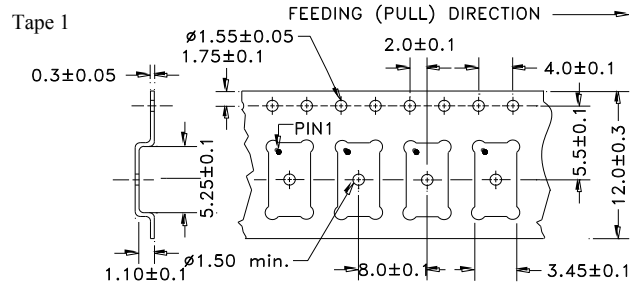


Note: Recommend using an approximately 0.01µF bypass capacitor between PIN 6 and 3.

Dimensions: mm (inches)

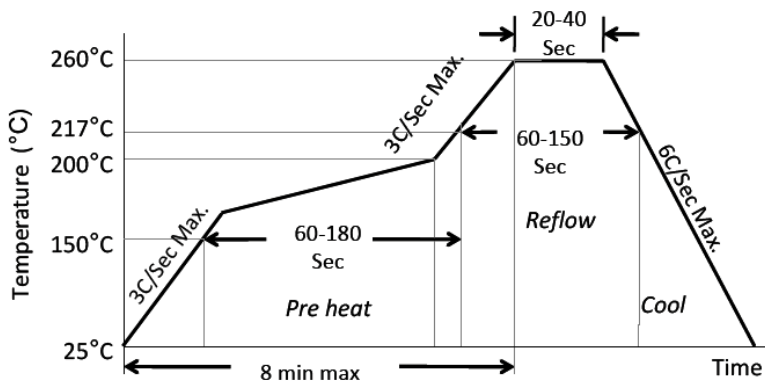
TAPE AND REEL:

T= Tape and reel (1,000pcs/reel)



Dimensions: mm

REFLOW PROFILE:



| | |
|-----------------------------------|--------------|
| Ramp-Up Rate (200°C to Peak Temp) | 3°C/Sec Max. |
| Preheat Time 150°C to 200°C | 60-180 Sec |
| Time maintained above 217°C | 60-150 Sec |
| Peak Temperature | 255-260°C |
| Time within 5°C of actual Peak | 20-40 Sec |
| Ramp-Down Rate | 6°C/Sec Max. |
| Time 25°C to Peak Temperature | 8 min Max. |

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Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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Факс: 8 (812) 320-02-42

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