

GENERAL DESCRIPTION

The SGM9150 is a 4-channel, 6th-order output reconstruction filter which can operate from 3.1V to 5.5V single power supply. It is designed to replace passive LC filters and drivers with an integrated device. One channel is Standard Definition (SD) filter while the rest three channels are Definition (HDp) filters.

The device allows DC- or AC-coupled output. SGM9150 can be DC-coupled or AC-coupled with input video signal to eliminate out-of-band noise, such as the output stage of DAC. Internal clamp and bias circuitry may be used if AC-coupled inputs are required.

The SGM9150 is available in a Green TSSOP-14 package. It operates over an ambient temperature range of -40°C to +85°C.

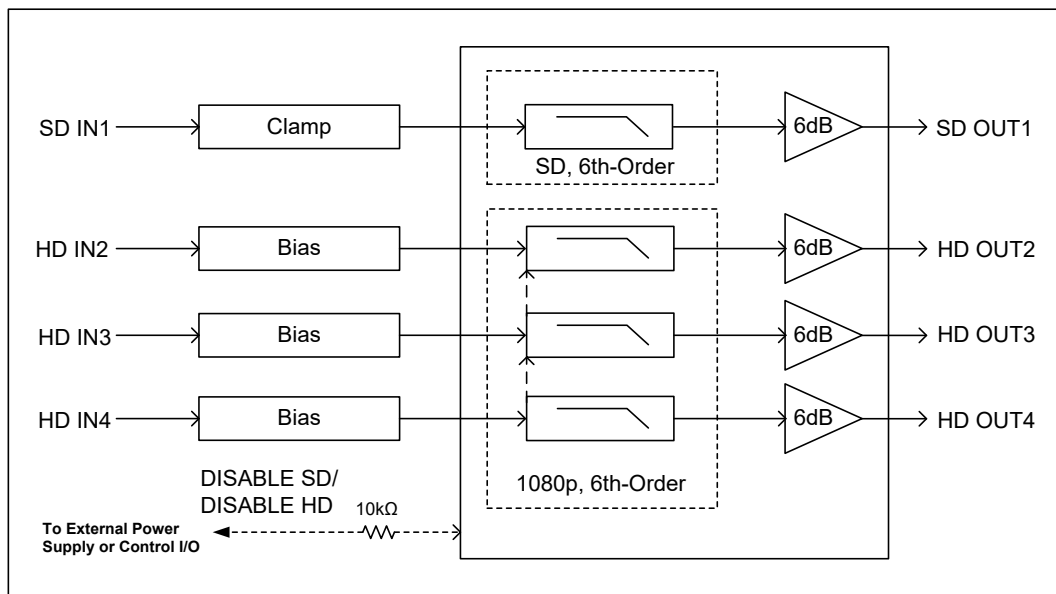
FEATURES

- **Supply Voltage Range: 3.1V to 5.5V**
- **Three Fixed 6th-Order 1080p High Definition Filters**
- **One 6th-Order Standard Definition Filter**
- **Bias Mode Active with AC-Coupled Inputs**
- **Bias Mode Inactive with DC-Coupled Inputs**
- **Clamp Mode on SD Channel Input**
- **Bias Mode on HD Channel Input**
- **AC- or DC-Coupled Outputs**
- **DC-Coupled Outputs Eliminate AC-Coupled Capacitors**
- **-40°C to +85°C Operating Temperature Range**
- **Available in a Green TSSOP-14 Package**

APPLICATIONS

- Video Recorders
- Video on Demand (VOD)
- Cable and Satellite Set-Top Boxes
- Portable and Handheld Products
- Communication Devices
- TVs

BLOCK DIAGRAM



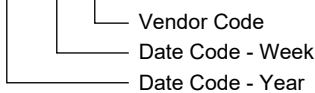
PACKAGE/ORDERING INFORMATION

| MODEL | PACKAGE DESCRIPTION | SPECIFIED TEMPERATURE RANGE | ORDERING NUMBER | PACKAGE MARKING | PACKING OPTION |
|---------|---------------------|-----------------------------|------------------|---------------------------|---------------------|
| SGM9150 | TSSOP-14 | -40°C to +85°C | SGM9150YTS14G/TR | SGM9150 YTS14 XXXXX | Tape and Reel, 3000 |

MARKING INFORMATION

NOTE: XXXXX = Date Code and Vendor Code.

XXXXX



Green (RoHS & HSF): SG Micro Corp defines "Green" to mean Pb-Free (RoHS compatible) and free of halogen substances. If you have additional comments or questions, please contact your SGMICRO representative directly.

Input Voltage..... GND - 0.3V to V_{CC} + 0.3V
 Supply Voltage, V_{CC}..... 6.0V
 Junction Temperature +150°C
 Storage Temperature Range..... -65°C to +150°C
 Lead Temperature (Soldering, 10s) +260°C
 ESD Susceptibility
 HBM..... 8000V
 MM..... 400V

RECOMMENDED OPERATING CONDITIONS

Operating Voltage Range..... 3.1V to 5.5V
 Operating Temperature Range -40°C to +85°C

OVERSTRESS CAUTION

Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability. Functional operation of the device at any conditions beyond those indicated in the Recommended Operating Conditions section is not implied.

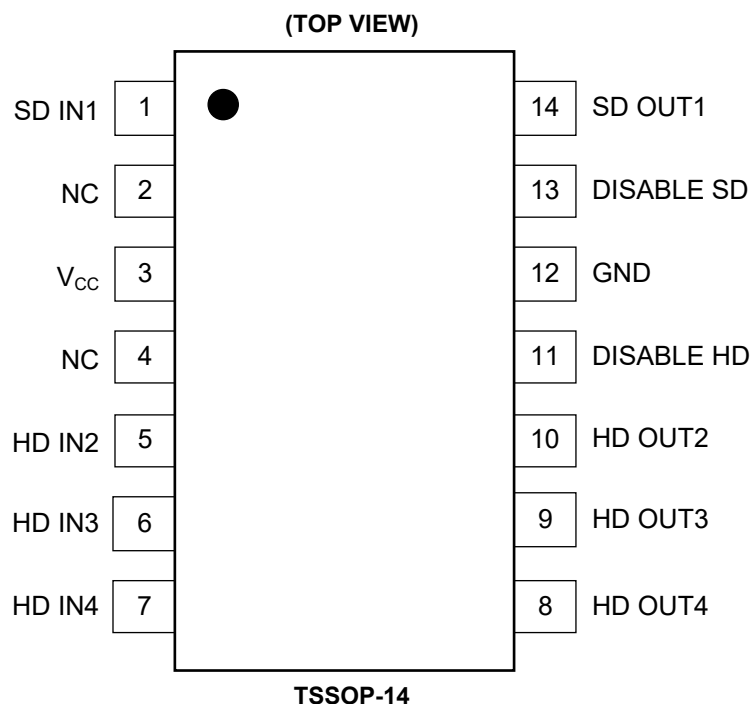
ESD SENSITIVITY CAUTION

This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because even small parametric changes could cause the device not to meet the published specifications.

DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

PIN CONFIGURATION



PIN DESCRIPTION

| PIN | NAME | FUNCTION |
|------|-----------------|--|
| 1 | SD IN1 | SD Video Input. |
| 2, 4 | NC | No Connect. |
| 3 | V _{CC} | Power Supply. |
| 5 | HD IN2 | HD Video Input. |
| 6 | HD IN3 | HD Video Input. |
| 7 | HD IN4 | HD Video Input. |
| 8 | HD OUT4 | Filtered HD Video Output. |
| 9 | HD OUT3 | Filtered HD Video Output. |
| 10 | HD OUT2 | Filtered HD Video Output. |
| 11 | DISABLE HD | Disable Standard Full High-Definition Channel. Logic "high" disables the HD channel and logic "low" enables the HD channel. This pin defaults to logic low if left open. |
| 12 | GND | Ground. |
| 13 | DISABLE SD | Disable Standard Definition Channel. Logic "high" disables the SD channel and logic "low" enables the SD channel. This pin defaults to logic low if left open. |
| 14 | SD OUT1 | Filtered SD Video Output. |

ELECTRICAL CHARACTERISTICS

($T_A = +25^\circ\text{C}$, $V_{IN} = 1V_{PP}$, $V_{CC} = 5V$, $R_{SOURCE} = 37.5\Omega$; all inputs are AC-coupled with $0.1\mu\text{F}$; all outputs are AC-coupled with $220\mu\text{F}$ into 150Ω , referenced to 400kHz , unless otherwise noted.)

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|--|--|-------------|-----|------|-----------------|
| DC Electrical Characteristics | | | | | |
| Operating Voltage Range (V_{CC}) | | 3.1 | 5 | 5.5 | V |
| Quiescent Current (I_Q) | $V_{CC} = 5.0V$, no load | SD channel | 9.5 | 12.8 | mA |
| | | All | 77 | 98 | |
| Output Level Shift Voltage (V_{OLS}) | $V_{IN} = 0V$, no load | SD channel | 410 | 600 | mV |
| | | HD channels | 550 | 700 | |
| Voltage Gain (A_V) | $R_L = 150\Omega$ | 5.8 | 6.1 | 6.35 | dB |
| Output Voltage High Swing | $V_{IN} = 3V$, $R_L = 150\Omega$ to GND | | 4.8 | | V |
| Shutdown Current | | | 2 | 15 | μA |
| Video Input Voltage Range | Referenced to GND if DC-coupled | | 1.4 | | V_{PP} |
| Power Supply Rejection Ratio (PSRR) | DC (All channels) | | 50 | | dB |
| V_{IH} | Disable | 2.4 | | | V |
| V_{IL} | Enable | | | 0.8 | V |
| Standard Definition Mode Electrical Characteristics | | | | | |
| -0.1dB Bandwidth | SD channel | | 6.4 | | MHz |
| -1dB Bandwidth | SD channel | | 7.6 | | MHz |
| -3dB Bandwidth | SD channel | | 8.5 | | MHz |
| Filter Response (Normalized Gain) | SD channel, $f_{IN} = 400\text{kHz}$ to 27MHz | | 50 | | dB |
| Slew Rate | 2V output step, 80% to 20% | | 34 | | $V/\mu\text{s}$ |
| Differential Gain (DG) | AC-AC coupled, PAL | | 0.5 | | % |
| | AC-DC coupled, PAL | | 0.4 | | |
| Differential Phase (DP) | AC-AC coupled, PAL | | 1.0 | | deg |
| | AC-DC coupled, PAL | | 1.0 | | |
| Group Delay Variation (D/DT) | Difference between 400kHz and 6.5MHz | | 35 | | ns |
| Crosstalk (channel-to-channel) | $V_{OUT} = 1.4V_{PP}$, $f = 1\text{MHz}$ | | -63 | | dB |
| Signal-to-Noise Ratio (SNR) | 100kHz to 5MHz | | -66 | | dB |
| Fall Time | 2V output step, 80% to 20% | | 34 | | ns |
| Rise Time | 2V output step, 80% to 20% | | 34 | | ns |
| Chroma Luma Gain (CLG_{SD}) | $f = 3.58\text{MHz}$ (Referenced to SD_{IN} at 400kHz) | | 102 | | % |
| Chroma Luma Delay (CLD_{SD}) | $f = 3.58\text{MHz}$ (Referenced to SD_{IN} at 400kHz) | | 9 | | ns |
| Enable Time (t_{ON}) | | | 1.4 | | μs |
| Disable Time (t_{OFF}) | | | 28 | | ns |

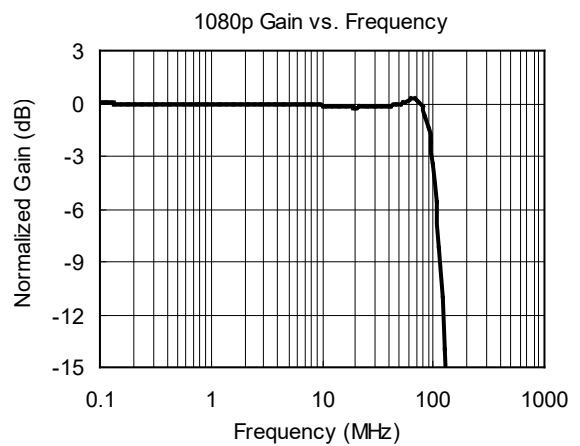
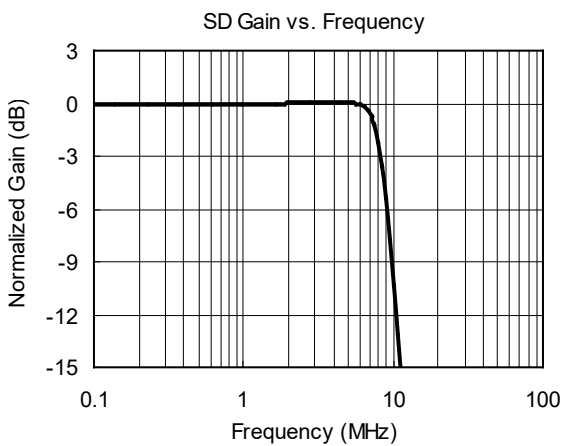
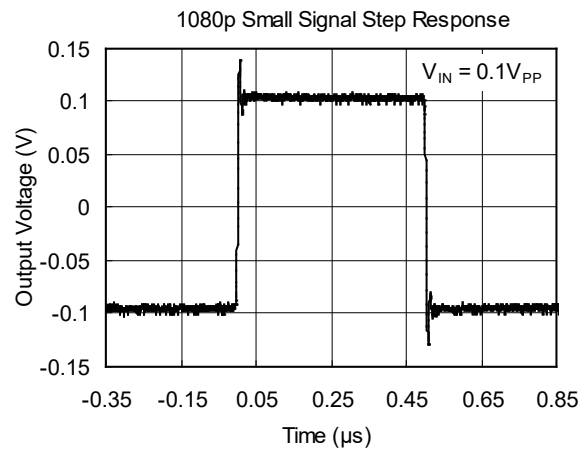
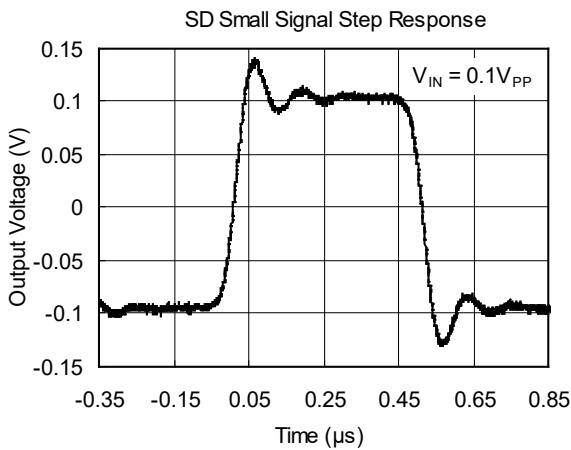
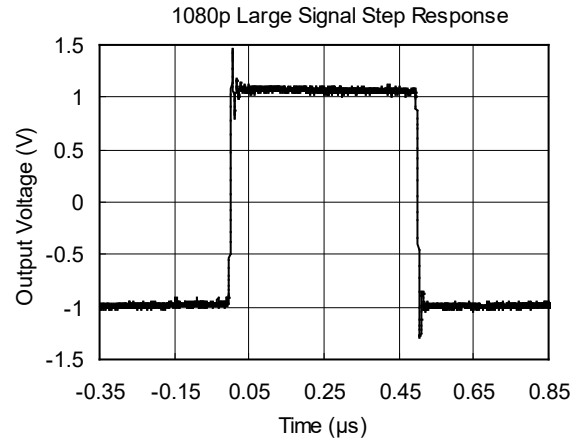
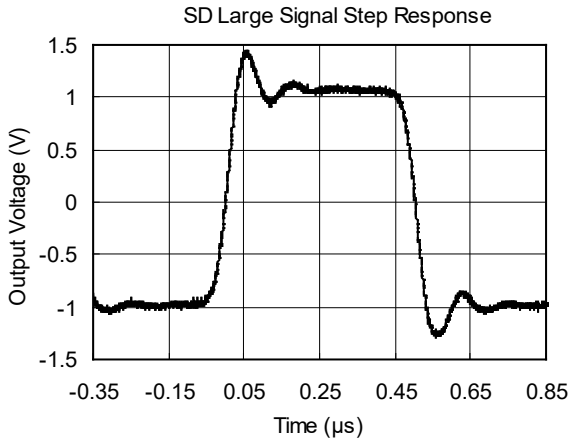
ELECTRICAL CHARACTERISTICS (continued)

($T_A = +25^\circ\text{C}$, $V_{IN} = 1V_{PP}$, $V_{CC} = 5V$, $R_{SOURCE} = 37.5\Omega$; all inputs are AC-coupled with $0.1\mu\text{F}$; all outputs are AC-coupled with $220\mu\text{F}$ into 150Ω , referenced to 400kHz , unless otherwise noted.)

| PARAMETER | CONDITIONS | MIN | TYP | MAX | UNITS |
|--|--|-----|-----|-----|------------------|
| 1080p High Definition Mode Electrical Characteristics | | | | | |
| -0.1dB Bandwidth | $R_L = 150\Omega$ | | 78 | | MHz |
| -1dB Bandwidth | $R_L = 150\Omega$ | | 86 | | MHz |
| -3dB Bandwidth | $R_L = 150\Omega$ | | 98 | | MHz |
| Filter Response (Normalized Gain) | $f_{IN} = 400\text{kHz to } 148\text{MHz}$ | | 21 | | dB |
| Slew Rate | 2V output step, 80% to 20% | | 340 | | V/ μs |
| Group Delay Variation (D/DT) | Difference between 400kHz and 70MHz | | 5.3 | | ns |
| Crosstalk (channel-to-channel) | $V_{OUT} = 1.4V_{PP}$, $f = 1\text{MHz}$ | | -64 | | dB |
| Fall Time | 2V output step, 80% to 20% | | 3.3 | | ns |
| Rise Time | 2V output step, 80% to 20% | | 3.6 | | ns |
| Enable Time (t_{ON}) | | | 1.7 | | μs |
| Disable Time (t_{OFF}) | | | 29 | | ns |

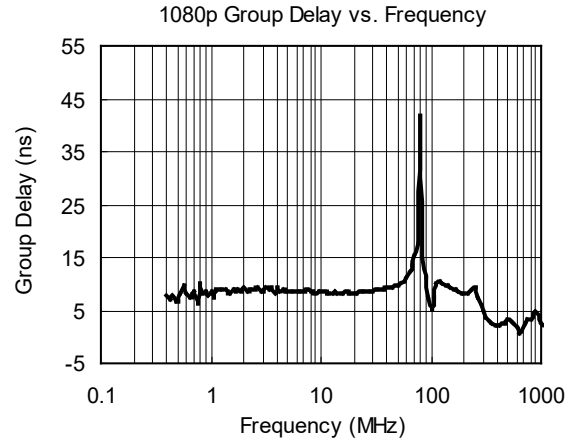
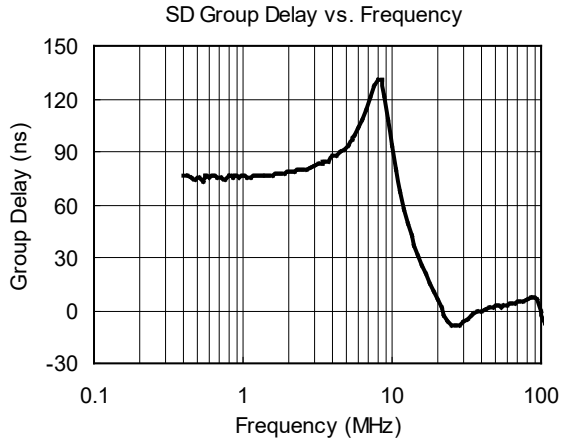
TYPICAL PERFORMANCE CHARACTERISTICS

$T_A = +25^\circ\text{C}$, $V_{IN} = 1V_{PP}$, $V_{CC} = 5.0V$, $R_{SOURCE} = 37.5\Omega$; all inputs are AC-coupled with $0.1\mu\text{F}$; all outputs are AC-coupled with $220\mu\text{F}$ into 150Ω , referenced to 400kHz , unless otherwise noted.



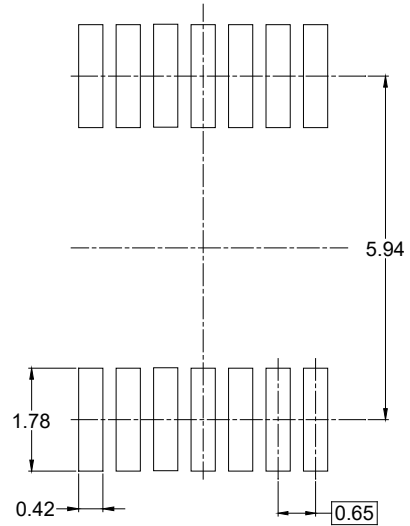
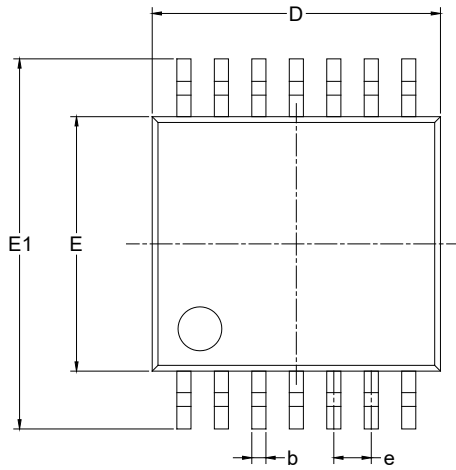
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

$T_A = +25^{\circ}\text{C}$, $V_{IN} = 1\text{V}_{PP}$, $V_{CC} = 5.0\text{V}$, $R_{SOURCE} = 37.5\Omega$; all inputs are AC-coupled with $0.1\mu\text{F}$; all outputs are AC-coupled with $220\mu\text{F}$ into 150Ω , referenced to 400kHz , unless otherwise noted.

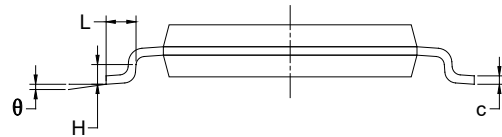
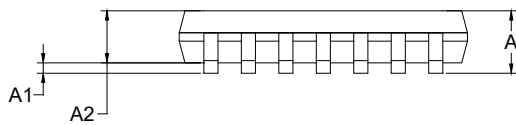


PACKAGE OUTLINE DIMENSIONS

TSSOP-14



RECOMMENDED LAND PATTERN (Unit: mm)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|------------------------------|-------|-------------------------|-------|
| | MIN | MAX | MIN | MAX |
| A | | 1.100 | | 0.043 |
| A1 | 0.050 | 0.150 | 0.002 | 0.006 |
| A2 | 0.800 | 1.000 | 0.031 | 0.039 |
| b | 0.190 | 0.300 | 0.007 | 0.012 |
| c | 0.090 | 0.200 | 0.004 | 0.008 |
| D | 4.900 | 5.100 | 0.193 | 0.201 |
| E | 4.300 | 4.500 | 0.169 | 0.177 |
| E1 | 6.250 | 6.550 | 0.246 | 0.258 |
| e | 0.650 BSC | | 0.026 BSC | |
| L | 0.500 | 0.700 | 0.02 | 0.028 |
| H | 0.25 TYP | | 0.01 TYP | |
| θ | 1° | 7° | 1° | 7° |

NOTES:

1. Body dimensions do not include mode flash or protrusion.
2. This drawing is subject to change without notice.

PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

| Package Type | Reel Diameter | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | P1 (mm) | P2 (mm) | W (mm) | Pin1 Quadrant |
|--------------|---------------|--------------------|---------|---------|---------|---------|---------|---------|--------|---------------|
| TSSOP-14 | 13" | 12.4 | 6.95 | 5.60 | 1.20 | 4.0 | 8.0 | 2.0 | 12.0 | Q1 |

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PACKAGE INFORMATION

CARTON BOX DIMENSIONS



NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF CARTON BOX

| Reel Type | Length (mm) | Width (mm) | Height (mm) | Pizza/Carton |
|-----------|-------------|------------|-------------|--------------|
| 13" | 386 | 280 | 370 | 5 |

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单击下面可查看定价，库存，交付和生命周期等信息

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