



# SGM9122

## Dual Video Driver with 6dB Gain

### GENERAL DESCRIPTION

The SGM9122 is a dual video 6dB amplifier. Operating from single power supply ranging from 3.0V to 5.5V and sinking a low 5.8mA quiescent current, the SGM9122 is ideally suited for low power, battery-operated applications.

Each channel has clamp function that fixes DC level of video signal. Further more SGM9122 has SAG correction feature that significantly reduces the size of the output coupling capacitor.

SGM9122 can be DC-coupled or AC-coupled with input video signal, such as the output stage of DAC to eliminate out-of-band noise. The output in SGM9122 can be configured as DC- or AC-coupled output.

The SGM9122 has Green TSSOP-8 and WSOP-8 packages. It operates over an ambient temperature range of -40°C to +85°C.

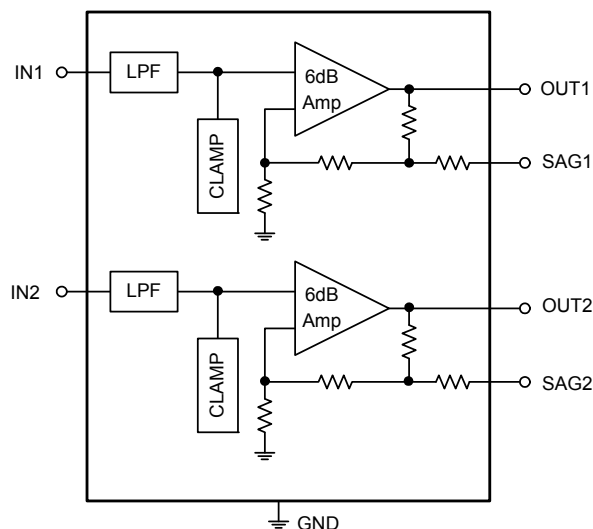
### APPLICATIONS

- Video Amplifiers
- Cable and Satellite Set-Top Boxes
- Communication Devices
- Video on Demand
- Portable and Handheld Products
- Personal Video Recorders
- DVD Players
- SDTVs
- VCRs

### FEATURES

- Dual-Channel Video Drivers
- 6dB Output Driver Gain
- Operating Voltage Range: 3.0V to 5.5V
- 15MHz Wide Frequency
- Internal Clamp Function
- SAG Correction Function
- Rail-to-Rail Output
- AC- or DC-Coupled Inputs
- AC- or DC-Coupled Outputs
- Low Operating Current: 5.8mA Typical (Dual)
- Available in Green TSSOP-8 and WSOP-8 Packages
- -40°C to +85°C Operating Temperature Range

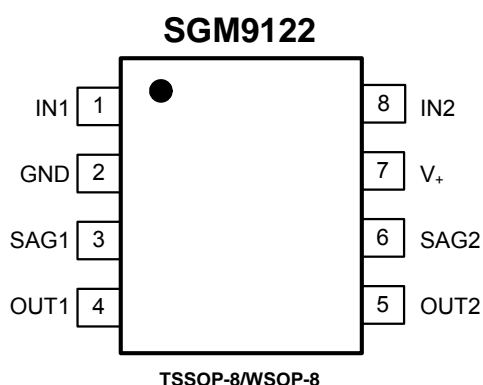
### BLOCK DIAGRAM



**PACKAGE/ORDERING INFORMATION**

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDER NUMBER	PACKAGE MARKING	PACKAGE OPTION
SGM9122	TSSOP-8	-40°C to +85°C	SGM9122YTS8/TR	SGM9122YTS8	Tape and Reel, 4000
	WSOP-8	-40°C to +85°C	SGM9122YWS8/TR	SGM9122YWS8	Tape and Reel, 2000

**PIN CONFIGURATIONS (TOP VIEW)**



**PIN DESCRIPTION**

PIN	NAME	FUNCTION
1	IN1	Channel 1 Video Input.
2	GND	Ground.
3	SAG1	Channel 1 SAG Correction Output.
4	OUT1	Channel 1 Output.
5	OUT2	Channel 2 Output.
6	SAG2	Channel 2 SAG Correction Output.
7	V+	Power Supply.
8	IN2	Channel 2 Video Input.

**ABSOLUTE MAXIMUM RATINGS**

Supply Voltage.....	6V
Input Voltage.....	-0.3V to (V+) + 0.3V
Storage Temperature Range .....	-65°C to +150°C
Junction Temperature .....	160°C
Operating Temperature Range.....	-40°C to +85°C
Lead Temperature (Soldering 10sec) .....	260°C
ESD Susceptibility	
HBM.....	4000V
MM.....	400V

**NOTE:**

Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**CAUTION**

This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. 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 very small parametric changes could cause the device not to meet its published specifications.

SGMICRO reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact SGMICRO sales office to get the latest datasheet.

**ELECTRICAL CHARACTERISTICS:  $V_+ = +5.0V$** (At  $R_L = 150\Omega$  connected to GND,  $V_{IN} = 1V_{P-P}$ ,  $T_A = 25^\circ C$  and  $C_{IN} = 0.1\mu F$ , all outputs AC-coupled with  $100\mu F$ , unless otherwise noted.)

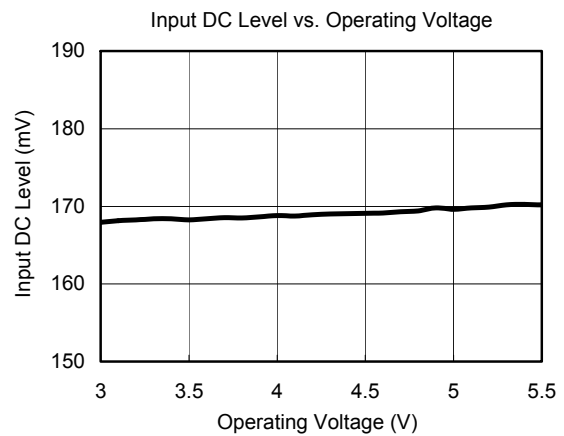
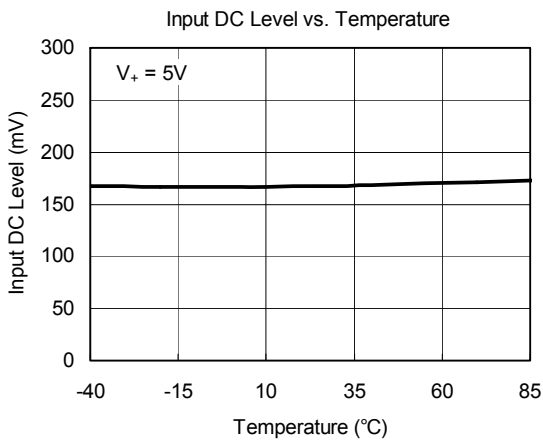
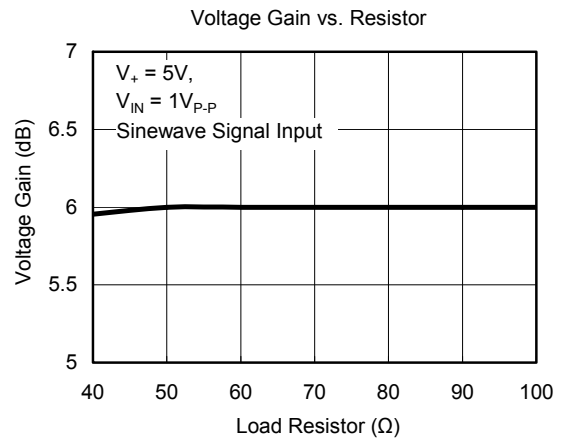
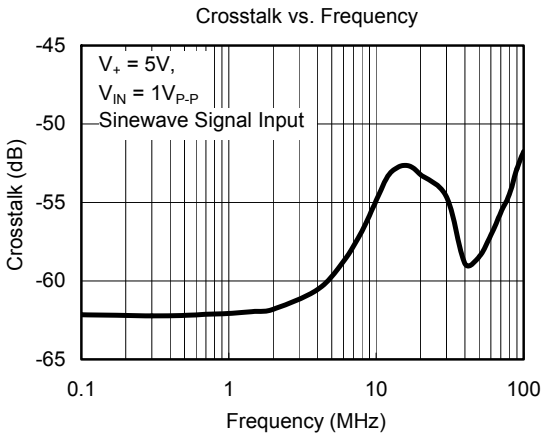
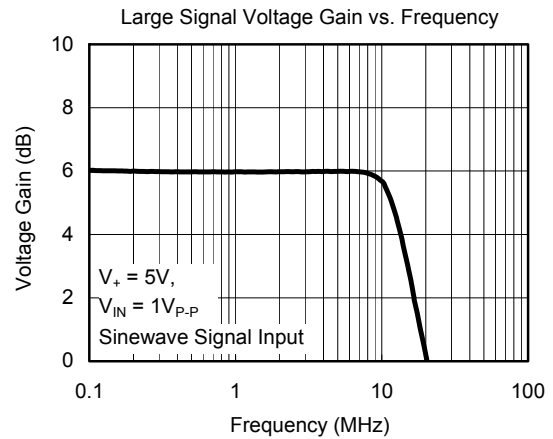
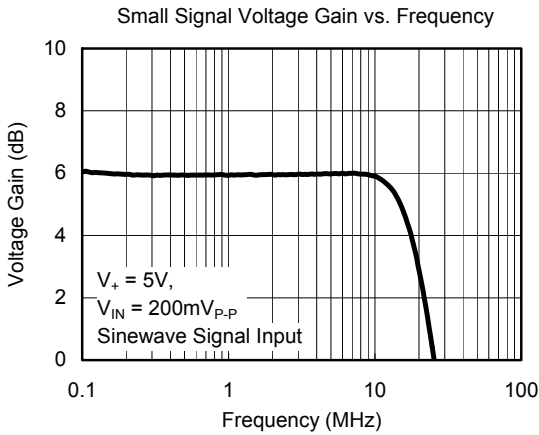
PARAMETER	CONDITIONS	SGM9122					
		TYP	MIN/MAX OVER TEMPERATURE			UNITS	MIN/MAX
		+25°C	+25°C	-40°C to +85°C			
<b>INPUT CHARACTERISTICS</b>							
Input Voltage Clamp ( $V_{CLAMP}$ )		170	210	220	mV	MAX	
Clamp Charge Current	$V_{IN} = V_{CLAMP} - 100mV$	-5.6	-7.4	-9.2	mA	MIN	
<b>OUTPUT CHARACTERISTICS</b>							
Output Voltage High Swing	$R_L = 150\Omega$	4.83	4.4	4.3	V	MIN	
Output Voltage Low Swing	$R_L = 150\Omega$	0.26	0.31	0.39	V	MAX	
<b>POWER SUPPLY</b>							
Operating Voltage Range			3.0		V	MIN	
			5.5		V	MAX	
Power Supply Rejection Ratio (PSRR)	$V_+ = 3.0V$ to $5.5V$	63	52	46	dB	MIN	
Quiescent Current ( $I_Q$ )	$V_{IN} = 500mV$ , No load	5.8	7.9	8.9	mA	MAX	
<b>DYNAMIC PERFORMANCE</b>							
Voltage Gain ( $G_V$ )	$V_{IN} = 1MHz$ , $1V_{P-P}$ Sinewave	6.0			dB	TYP	
-0.1dB Bandwidth		8.9			MHz	TYP	
-3dB Bandwidth		15			MHz	TYP	
Gain Offset ( $G_{CH}$ )	$V_{IN} = 1MHz$ , $1V_{P-P}$ , $G_{CH} = G_{V1} - G_{V2}$	$\pm 0.1$			dB	TYP	
Differential Gain (DG)	NTSC & PAL AC-coupled	0.2			%	TYP	
	NTSC & PAL DC-coupled	0.2			%	TYP	
Differential Phase (DP)	NTSC & PAL AC-coupled	0.4			°	TYP	
	NTSC & PAL DC-coupled	0.6			°	TYP	
Crosstalk	$V_{IN} = 4.43MHz$ , $1V_{P-P}$ Sinewave	-60			dB	TYP	
Fall Time	$1V_{STEP}$ , 80% to 20%	20			ns	TYP	
Rise Time	$1V_{STEP}$ , 80% to 20%	24			ns	TYP	

## NOTE:

1. SGM9122 can be DC-coupled input when the signal voltage (DC) is higher than the clamp voltage.

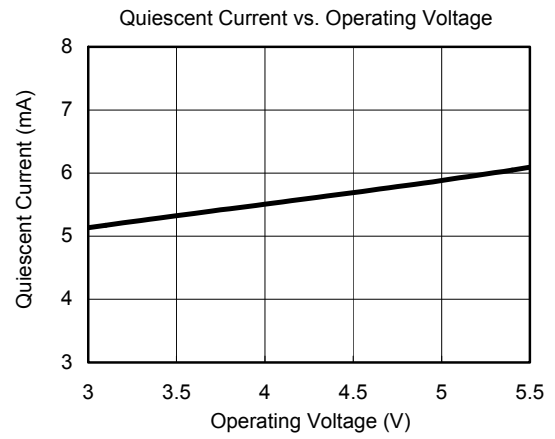
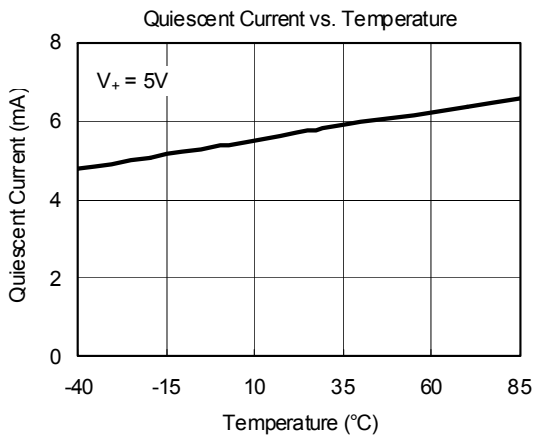
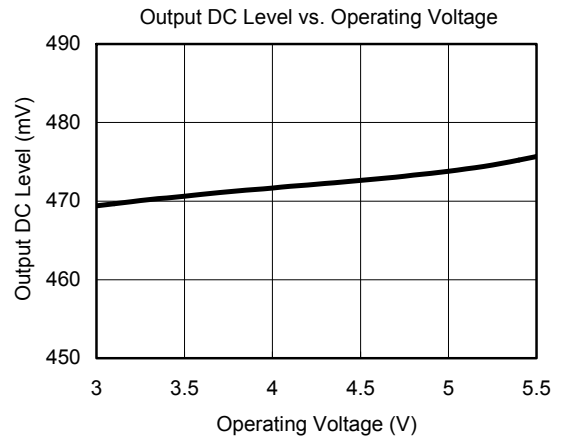
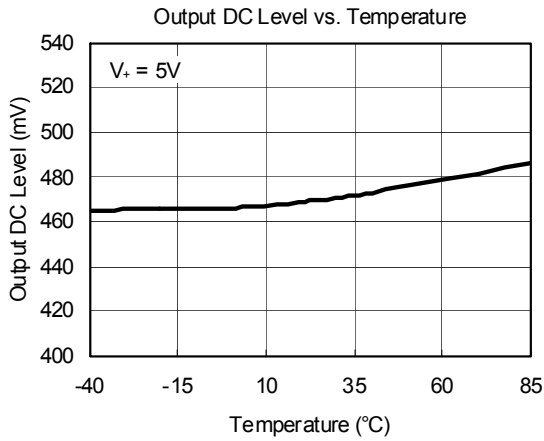
TYPICAL PERFORMANCE CHARACTERISTICS

At  $V_+ = +5.0V$ ,  $T_A = +25^\circ C$ ,  $R_L = 150\Omega$ , all outputs AC-coupled with  $100\mu F$ , unless otherwise noted.

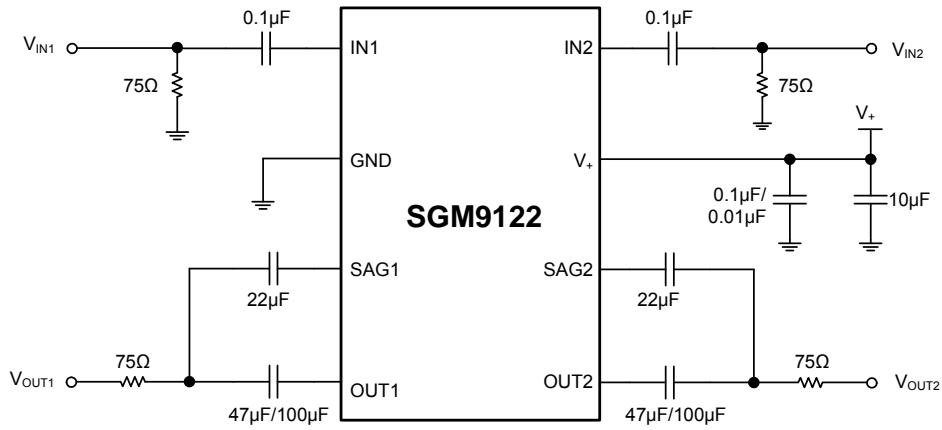


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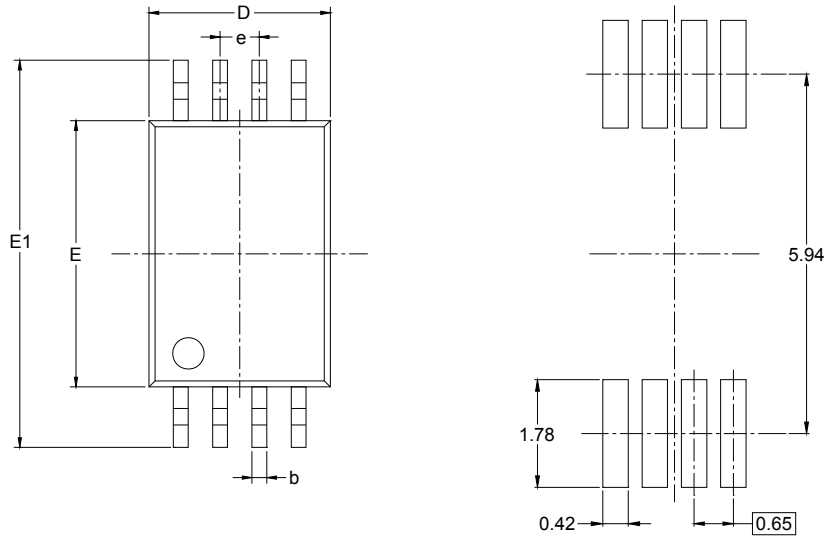
TYPICAL APPLICATION CIRCUIT



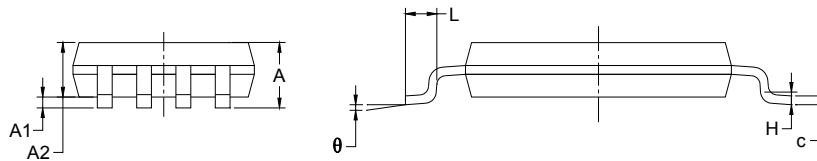
NOTE:  
 2. Power supply V<sub>+</sub> must be sequenced on first before input video signals.

PACKAGE OUTLINE DIMENSIONS

TSSOP-8



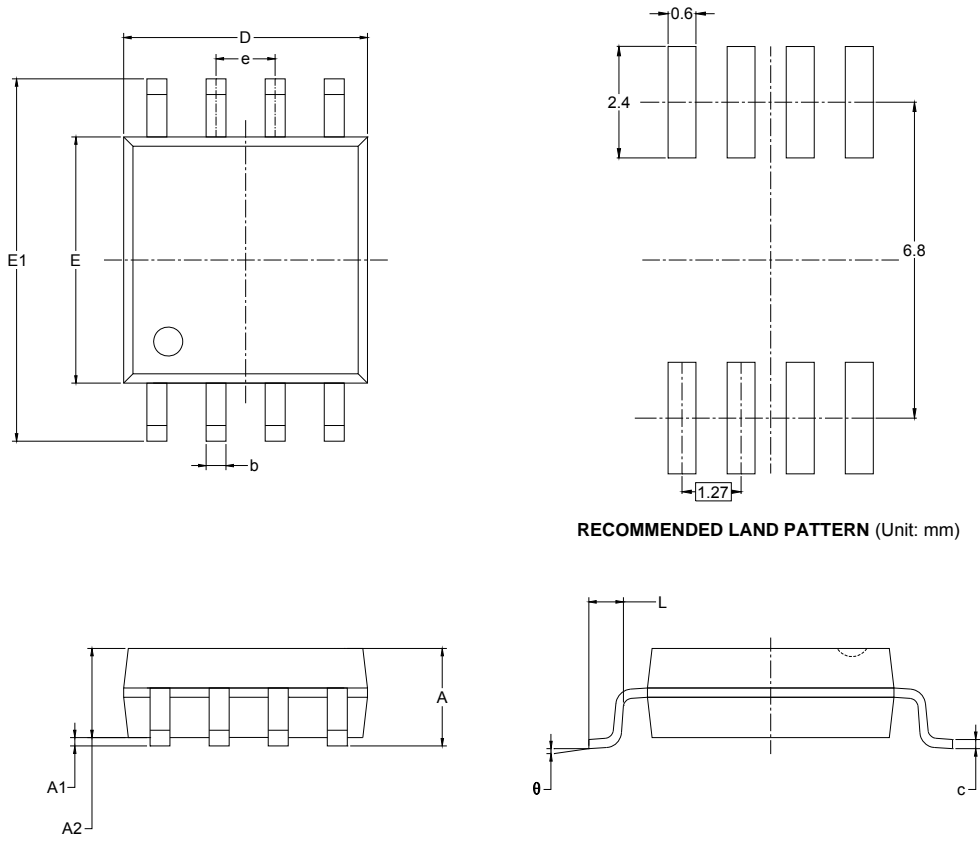
RECOMMENDED LAND PATTERN (Unit: mm)



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	2.900	3.100	0.114	0.122
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°

PACKAGE OUTLINE DIMENSIONS

WSOP-8



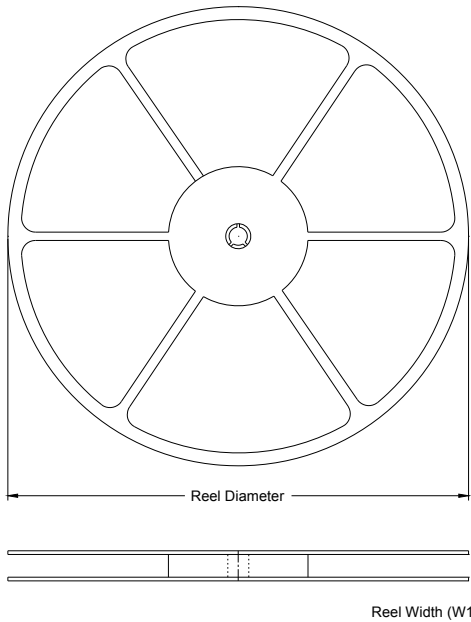
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	TYP	MAX
A	1.70	1.90	2.10
A1	0.05	0.10	0.25
b	0.38	0.43	0.48
c	0.15	0.20	0.25
D	5.14	5.24	5.34
E	5.20	5.30	5.40
E1	7.70	7.80	8.25
e	1.27 TYP		
L	0.55	0.75	0.85
$\theta$	0° ~ 8°		

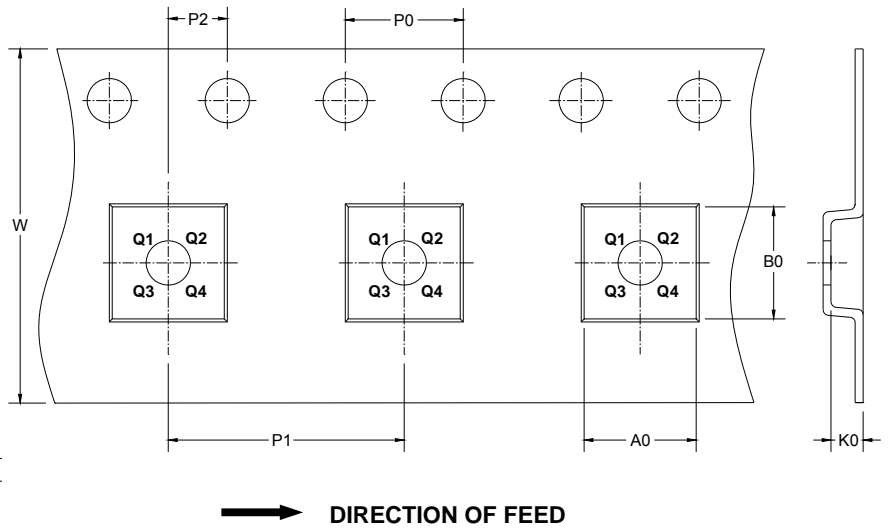


**TAPE AND REEL INFORMATION**

**REEL DIMENSIONS**



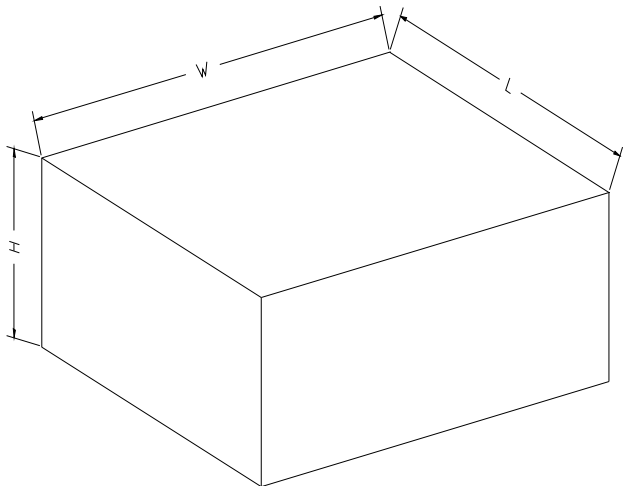
**TAPE DIMENSIONS**



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-8	13"	12.4	6.76	3.3	1.8	4.0	8.0	2.0	12.0	Q1
WSOP-8	13"	16.4	8.45	5.70	2.35	4.0	12.0	2.0	16.0	Q1

**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