

## PACKAGE/ORDERING INFORMATION

ORDER NUMBER	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	PACKAGE OPTION	MARKING INFORMATION
SGM4891YDE8G/TR	TDFN-2×2-8L	-40°C to +85°C	Tape and Reel, 3000	4891

## ABSOLUTE MAXIMUM RATINGS

Supply Voltage.....	6V
Input Voltage.....	-0.3V to (V <sub>+</sub> ) + 0.3V
Storage Temperature Range.....	-65°C to +150°C
Junction Temperature.....	150°C
Operating Temperature Range.....	-40°C to +85°C
Lead Temperature Range (Soldering 10 sec)	
.....	260°C
ESD Susceptibility	
HBM.....	2000V
MM.....	200V

## NOTE:

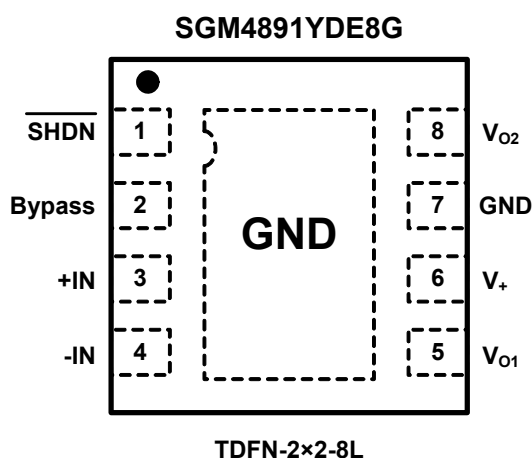
Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

## PIN CONFIGURATION (TOP VIEW)

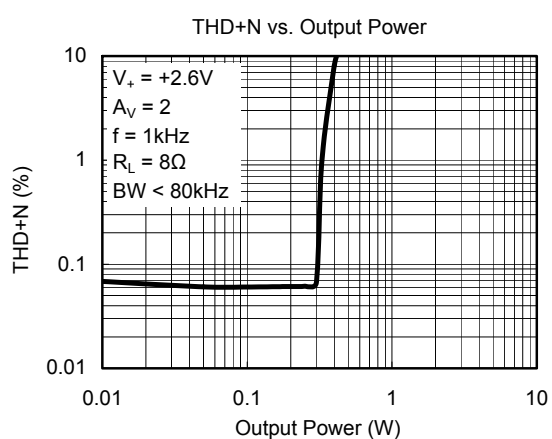
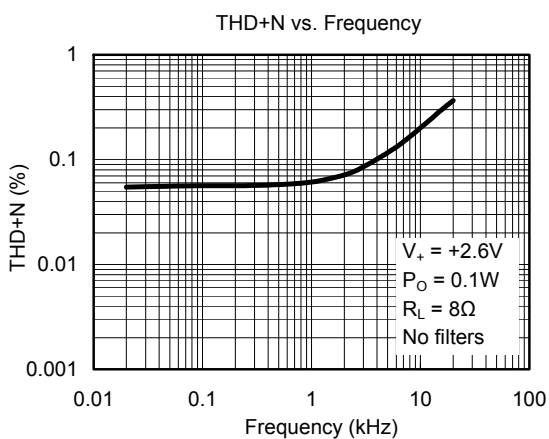
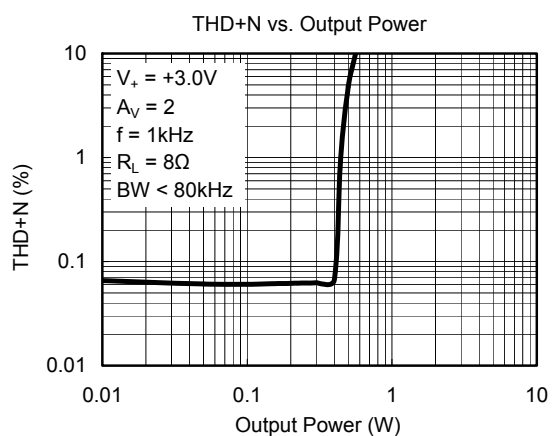
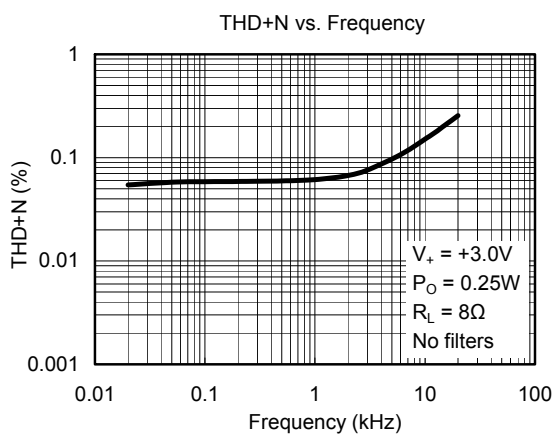
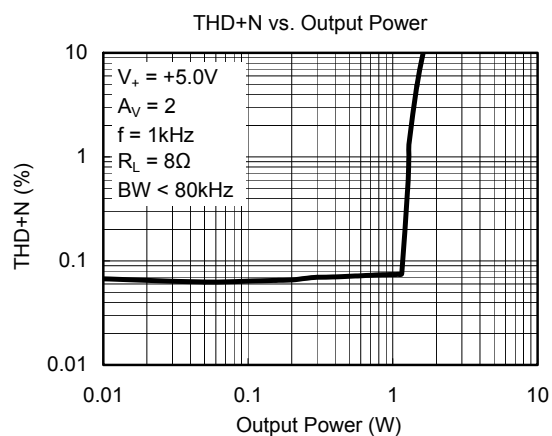
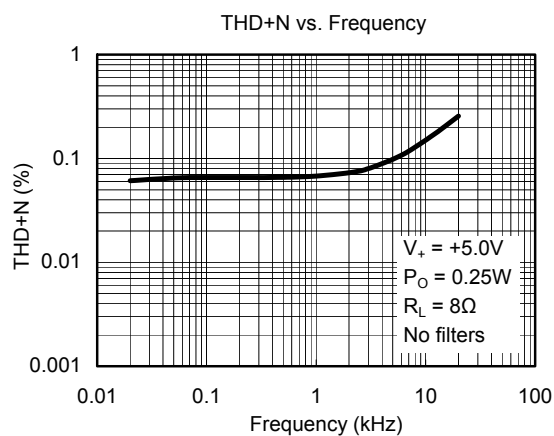


## ELECTRICAL CHARACTERISTICS

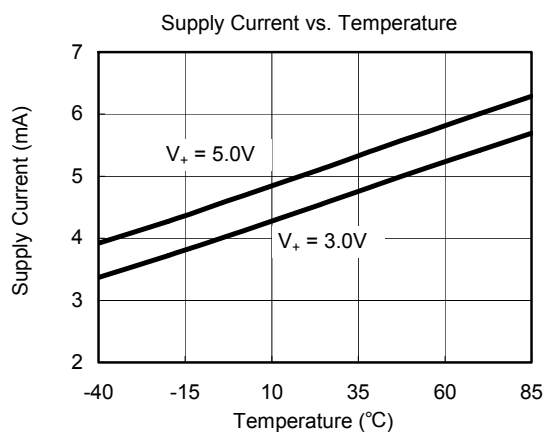
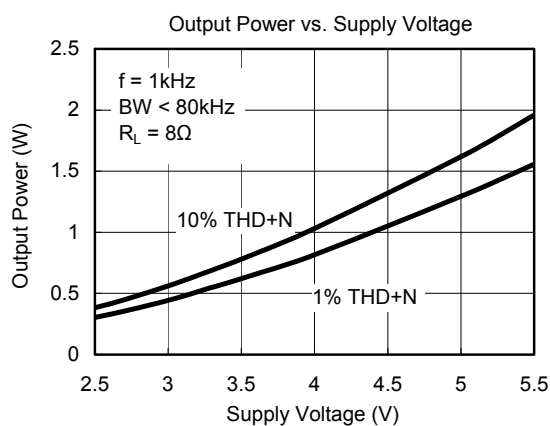
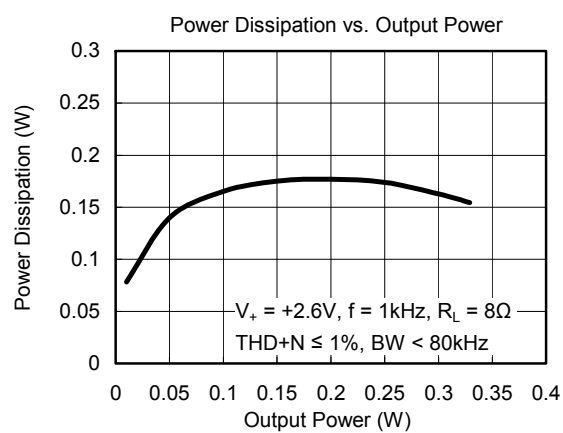
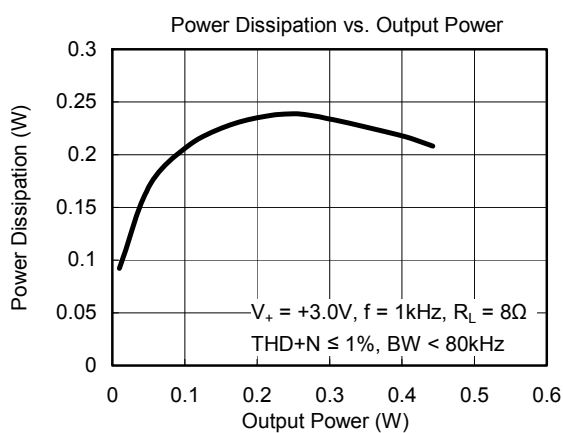
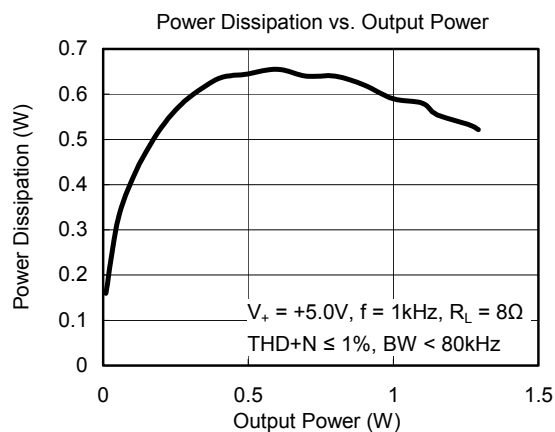
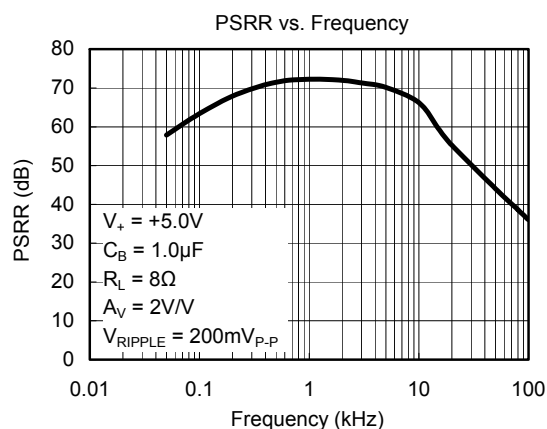
(T<sub>A</sub> = +25°C, unless otherwise specified.)

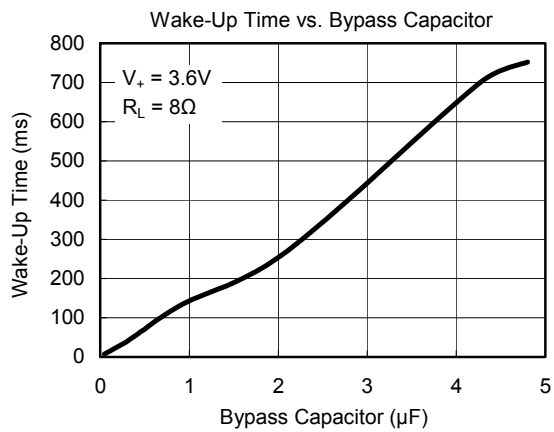
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Quiescent Power Supply Current	I <sub>Q</sub>	V <sub>IN</sub> = 0V, I <sub>O</sub> = 0A	V <sub>+</sub> = +5.0V, No Load		5.45	10	mA
			V <sub>+</sub> = +5.0V, 8Ω Load		5.50	12	
			V <sub>+</sub> = +3.6V, No Load		5.10		
			V <sub>+</sub> = +3.6V, 8Ω Load		5.20		
			V <sub>+</sub> = +3.0V, No Load		5.00	8	
			V <sub>+</sub> = +3.0V, 8Ω Load		5.10	10.5	
			V <sub>+</sub> = +2.6V, No Load		4.70		
			V <sub>+</sub> = +2.6V, 8Ω Load		4.75		
Shutdown Current	I <sub>SD</sub>	V <sub>SHUTDOWN</sub> = 0V			0.02	2	μA
Shutdown Voltage Input High	V <sub>SDIH</sub>			1.2			V
Shutdown Voltage Input Low	V <sub>SDIL</sub>					0.4	V
Output Offset Voltage	V <sub>OS</sub>			-65	1	65	mV
Output Power (8Ω)	P <sub>O</sub>	f = 1kHz, THD+N = 1%	V <sub>+</sub> = +5.0V		1.2		W
			V <sub>+</sub> = +3.6V		0.6		
			V <sub>+</sub> = +3.0V		0.4		
			V <sub>+</sub> = +2.6V		0.3		
		f = 1kHz, THD+N = 10%	V <sub>+</sub> = +5.0V		1.5		
			V <sub>+</sub> = +3.6V		0.8		
			V <sub>+</sub> = +3.0V		0.5		
			V <sub>+</sub> = +2.6V		0.4		
Total Harmonic Distortion + Noise	THD+N	P <sub>O</sub> = 0.4W <sub>rms</sub> , f = 1kHz			0.07		%
Power Supply Rejection Ratio	PSRR	f = 217Hz	V <sub>+</sub> = +5.0V		68		dB
			V <sub>+</sub> = +3.6V		68		
			V <sub>+</sub> = +3.0V		68		
			V <sub>+</sub> = +2.6V		67		
		f = 1kHz	V <sub>+</sub> = +5.0V		72		
			V <sub>+</sub> = +3.6V		72		
			V <sub>+</sub> = +3.0V		71		
			V <sub>+</sub> = +2.6V		70		
Wake-Up Time	T <sub>WU</sub>	C <sub>BYPASS</sub> = 1μF	V <sub>+</sub> = +5.0V		145		ms

## TYPICAL PERFORMANCE CHARACTERISTICS

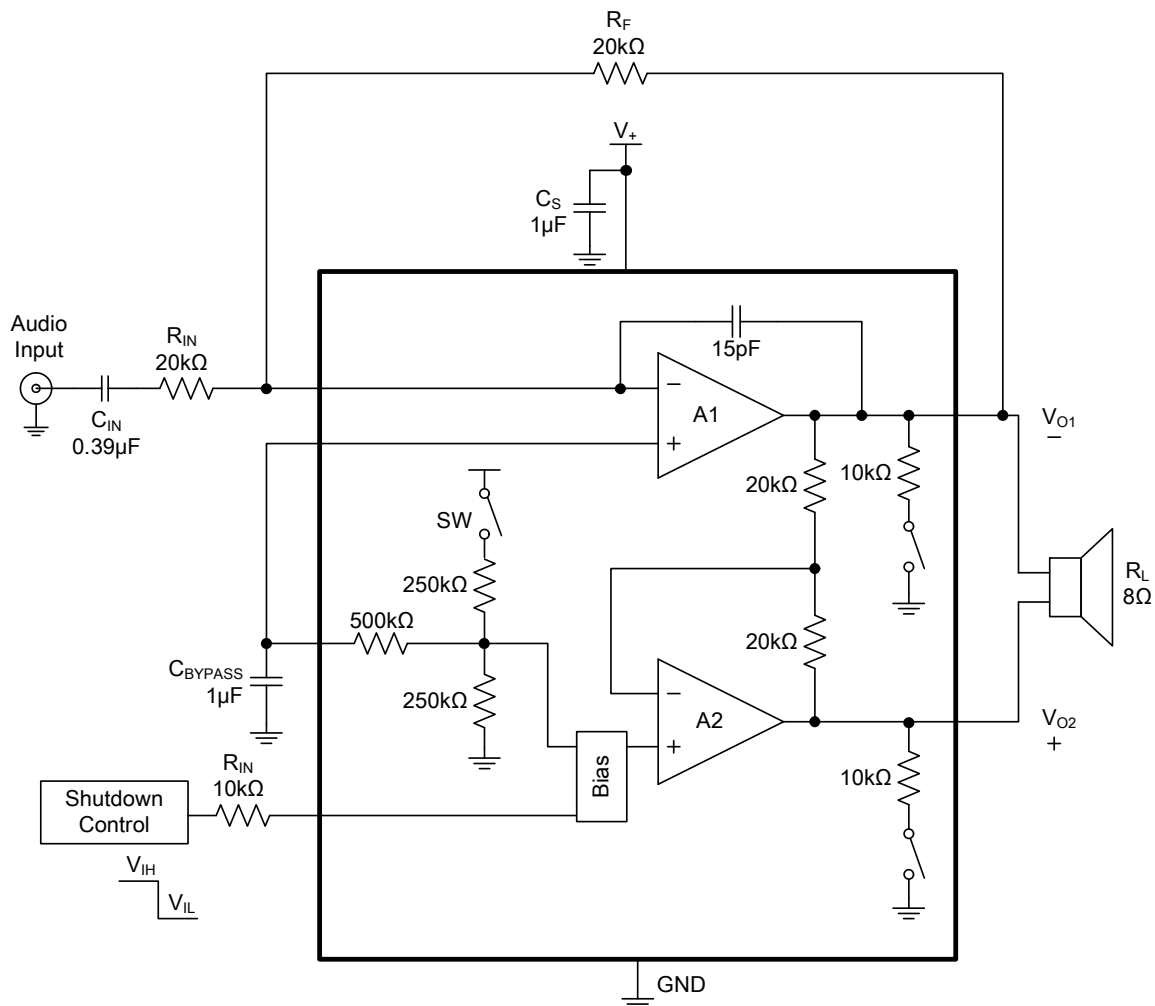


## TYPICAL PERFORMANCE CHARACTERISTICS



**TYPICAL PERFORMANCE CHARACTERISTICS**

## TYPICAL APPLICATION



## NOTE:

1. A 10kΩ resistor must be serially connected to  $\overline{\text{SHDN}}$  pin.

## APPLICATION NOTES

### PCB Design Recommendations (Thermal Design Considerations)

#### Thermal Land

The TDFN-2×2-8L thermal land is a metal (normally copper) region centrally located under the package and on top of the PCB. It has a rectangular or square shape and should match the dimensions of the exposed pad on the bottom of the package (1:1 ratio).

For certain high power applications, the PCB land may be modified to a "dog bone" shape that enhances thermal performance. The packages used with the "dog bone" lands will be a dual inline configuration (see Figure 1).

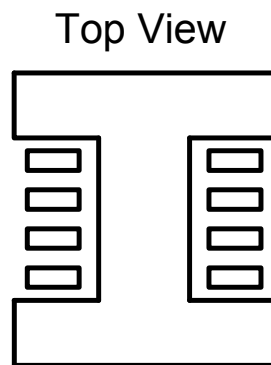


Figure 1. Dog Bone

#### Thermal Vias

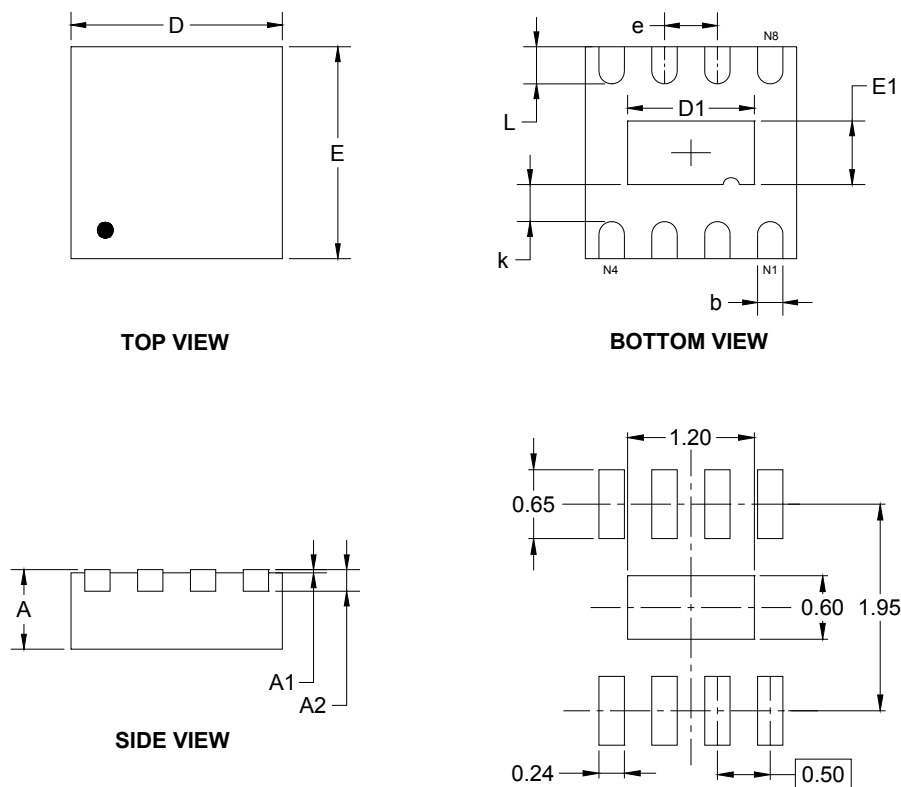
Thermal vias are necessary. They conduct heat from the exposed pad of the package to the ground plane. The number of vias is application specific and is dependent upon electrical requirements and power dissipation.

The via diameter should be 0.2mm to 0.33mm with 1oz. copper via barrel plating. It is important to plug the via to avoid any solder wicking inside the via during the soldering process. The thermal vias can be tented with solder mask on the top surface of the PCB. The solder mask diameter should be at least 75microns (or 3mils) larger than the via diameter. The solder mask thickness should be the same across the entire PCB.

A package thermal performance may be improved by increasing the number of vias.

## PACKAGE OUTLINE DIMENSIONS

## TDFN-2×2-8L

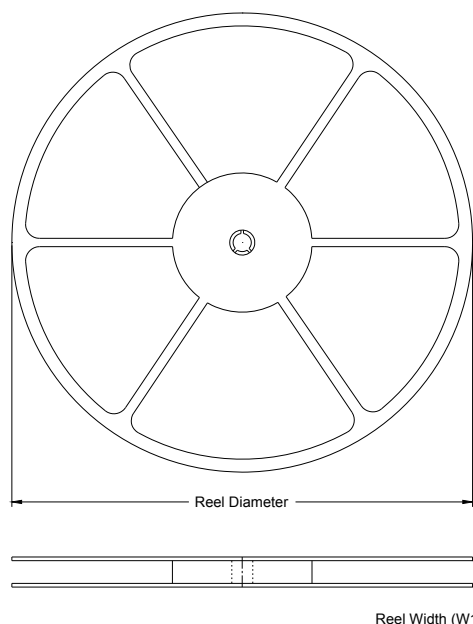


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
D1	1.100	1.300	0.043	0.051
E	1.900	2.100	0.075	0.083
E1	0.500	0.700	0.020	0.028
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.250	0.450	0.010	0.018

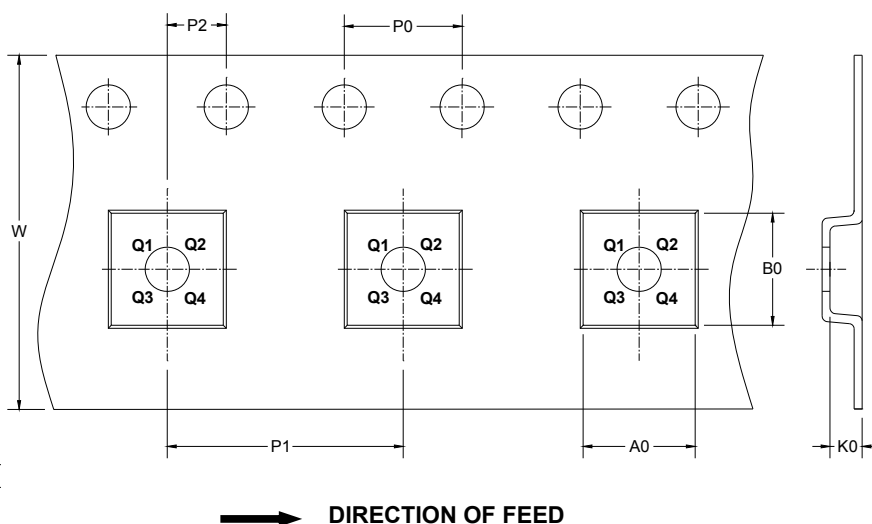


## TAPE AND REEL INFORMATION

## REEL DIMENSIONS



## TAPE DIMENSIONS

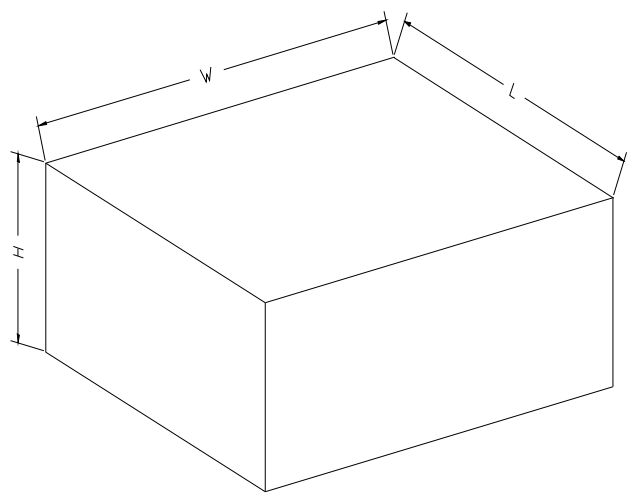


NOTE: The picture is only for reference. Please make the object as the standard.

## 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
TDFN-2×2-8L	7"	9.5	2.30	2.30	1.10	4.00	4.00	2.00	8.00	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
7" (Option)	368	227	224	8
7"	442	410	224	18