SGM4995
1.3W Mono Fully Differential Audio Power Amplifier

GENERAL DESCRIPTION

The SGM4995 is a fully differential audio power amplifier which operates from 2.5V to 5.5V power supply. It can deliver 1.3W into a 8Ω load from 5V supply at THD+N = 1%. It is designed for portable applications.

The SGM4895 has pop/click suppression circuitry, low power consumption shutdown mode and thermal shutdown protection.

Bootstrap capacitors or output coupling capacitors are not needed.

The SGM4995 is available in a Green TDFN-2×2-8L package. It operates over an ambient temperature range of -40℃ to +85℃.

FEATURES

- **Supply Voltage Range: 2.5V to 5.5V**
- **1.3W into 8Ω Load from 5V Supply at THD+N = 1% (TYP)**
- **High PSRR**
- **Low Shutdown Current**
- **Pop/Click Suppression Circuitry**
- **Support Single-Ended or Differential Input**
- **Thermal Overload Protection Circuitry**
- **External Gain Configuration Capability**
- **-40℃ to +85℃ Operating Temperature Range**
- **Available in a Green TDFN-2×2-8L Package**

APPLICATIONS

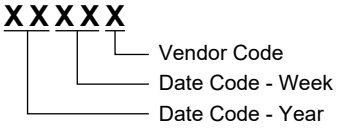
PDAs
GPS
Mobile Phones
Wireless Handsets
Handheld Computers
Portable Systems

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM4995	TDFN-2×2-8L	-40℃ to +85℃	SGM4995YDE8G/TR	4995 XXXX	Tape and Reel, 3000

MARKING INFORMATION

NOTE: XXXXX = Date Code and Vendor Code.



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.

ABSOLUTE MAXIMUM RATINGS

Supply Voltage 6V
Input Voltage Range ..... -0.3V to (V_{CC}) + 0.3V
Typical Thermal Resistance
TDFN-3×3-8L, θ_{JA} ..... 72℃/W
Junction Temperature ..... +150℃
Storage Temperature Range ..... -65℃ to +150℃
Lead Temperature (Soldering, 10s) ..... +260℃
ESD Susceptibility
HBM 2000V
MM 400V

RECOMMENDED OPERATING CONDITIONS

Supply Voltage Range ..... 2.5V to 5.5V
Operating Temperature Range ..... -40℃ to +85℃

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

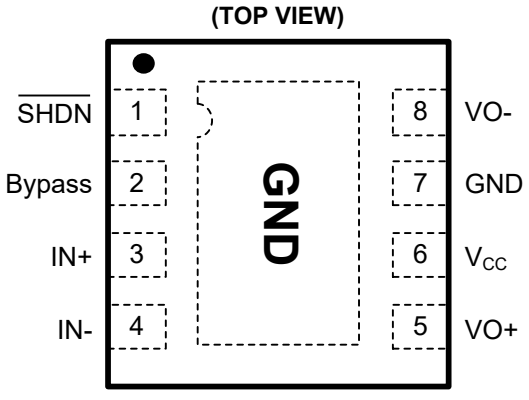
This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance 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

(TOP VIEW)



TDFN-2×2-8L

ELECTRICAL CHARACTERISTICS

(The following AC specifications apply for 8Ω load, A_V = 1V/V, T_A = +25℃, unless otherwise specified.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Supply Voltage	V_{CC}			2.5		5.5	V
Shutdown Current	I_{SD}	V_{IN} = 0V, V_{SHDN} = GND			0.02	2	μA
Output Offset Voltage	V_{OS}	V_{IN} = 0V, V_{SHDN} = V_{CC} = 5.0V		-10	2.5	10	mV
		V_{IN} = 0V, V_{SHDN} = V_{CC} = 3.3V		-10	2.0	10	
		V_{IN} = 0V, V_{SHDN} = V_{CC} = 2.6V			2.0		
Quiescent Power Supply Current	I_Q	V_{IN} = 0V, I_O = 0A, V_{SHDN} = V_{CC}	V_{CC} = 5.0V, No Load		4.72	8	mA
			V_{CC} = 5.0V, 8Ω Load		4.75	8.2	
			V_{CC} = 3.3V, No Load		3.70	6	
			V_{CC} = 3.3V, 8Ω Load		3.72		
			V_{CC} = 2.6V, No Load		2.90		
			V_{CC} = 2.6V, 8Ω Load		3.00		
Shutdown Voltage Input High	V_{SDIH}			1.2			V
Shutdown Voltage Input Low	V_{SDIL}					0.4	
Output Power (8Ω)	P_O	f = 1kHz, THD+N = 1%	V_{CC} = 5.0V		1.30		W
			V_{CC} = 3.6V		0.65		
			V_{CC} = 3.0V		0.47		
			V_{CC} = 2.6V		0.34		
		f = 1kHz, THD+N = 10%	V_{CC} = 5.0V		1.60		
			V_{CC} = 3.6V		0.84		
			V_{CC} = 3.0V		0.58		
			V_{CC} = 2.6V		0.42		
Total Harmonic Distortion + Noise	THD+N	P_O = 0.6Wrms, f = 1kHz, V_{CC} = 5.0V			0.042		%
Power Supply Rejection Ratio (1) (2)	PSRR	f = 217Hz	V_{CC} = 5.0V		-62		dB
			V_{CC} = 3.6V		-60		
			V_{CC} = 3.0V		-58		
			V_{CC} = 2.6V		-57		
		f = 1kHz	V_{CC} = 5.0V		-73		
			V_{CC} = 3.6V		-71		
			V_{CC} = 3.0V		-70		
			V_{CC} = 2.6V		-63		
Common Mode Rejection Ratio (2)	CMRR	f = 217Hz, V_{CM} = 200mV_{P-P}, V_{CC} = 5.0V			-74		dB
Wake-Up Time	T_{WU}	C_B = 1μF	V_{CC} = 5.0V		50		ms
			V_{CC} = 3.6V		42		
			V_{CC} = 3.0V		37		
			V_{CC} = 2.6V		32		

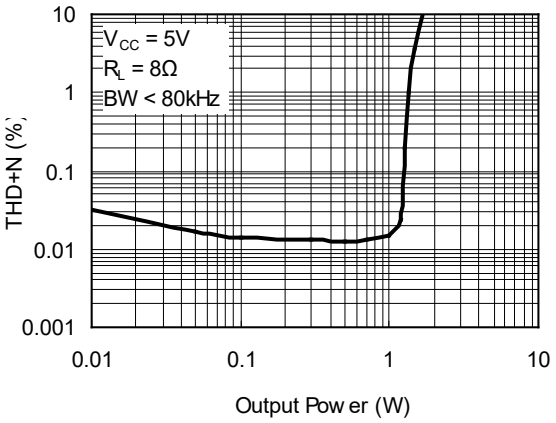
NOTES:

1. 10Ω terminated input.
2. PSRR and CMRR are affected by the matching between gain-setting resistor ratios.

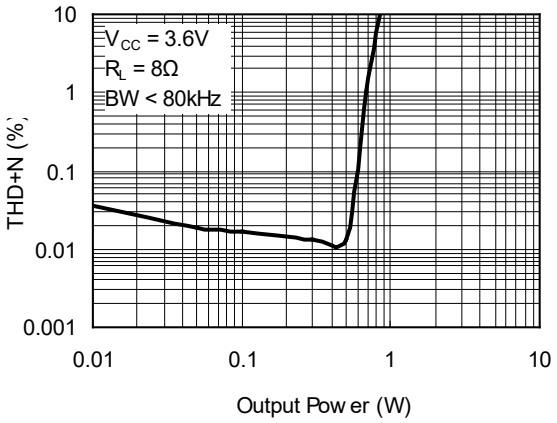
TYPICAL PERFORMANCE CHARACTERISTICS

At T_A = +25℃, A_V = 1, f = 1kHz, C_B = 1μF, unless otherwise noted.

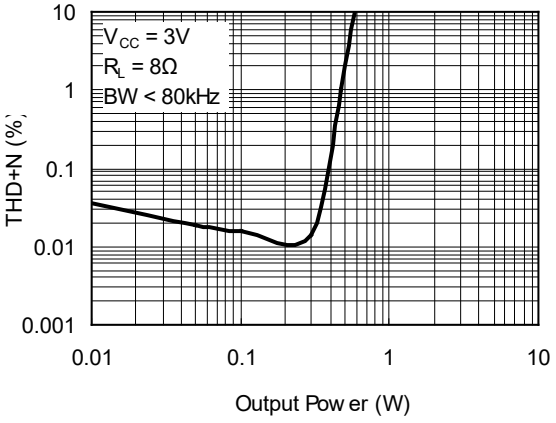
THD+N vs. Output Power



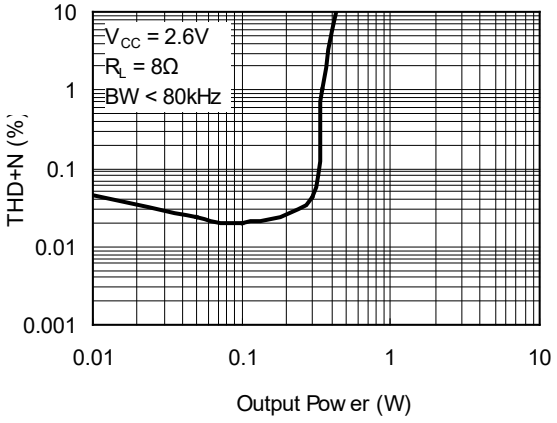
THD+N vs. Output Power



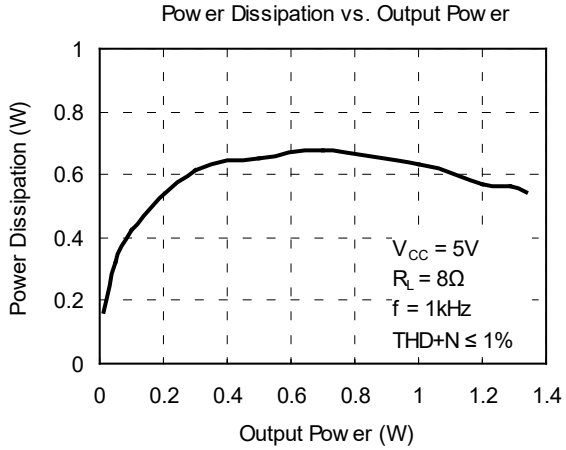
THD+N vs. Output Power



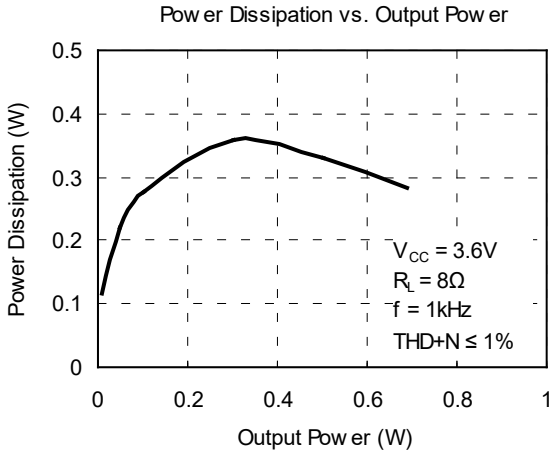
THD+N vs. Output Power



Power Dissipation vs. Output Power



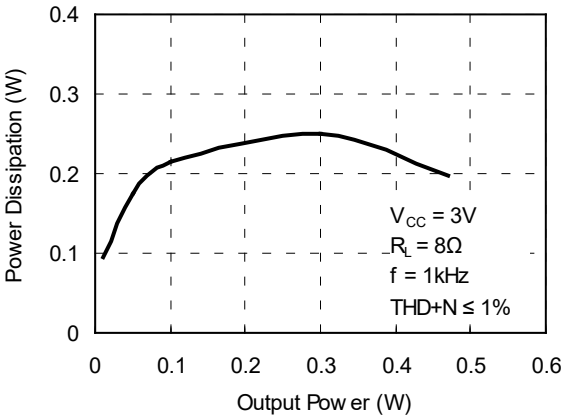
Power Dissipation vs. Output Power



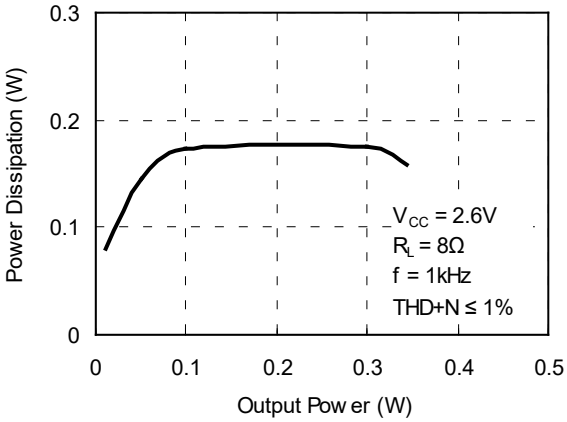
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

At T_A = +25℃, A_V = 1, f = 1kHz, C_B = 1μF, unless otherwise noted.

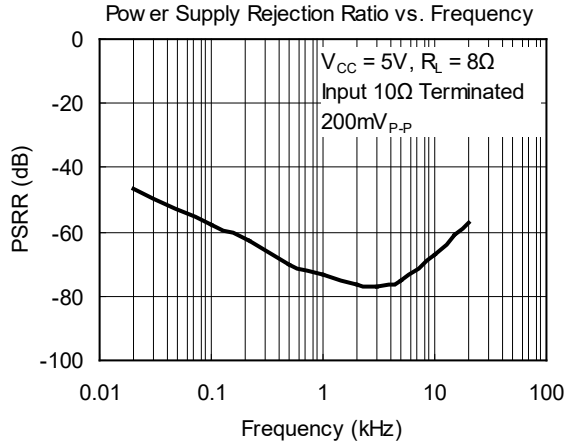
Power Dissipation vs. Output Power



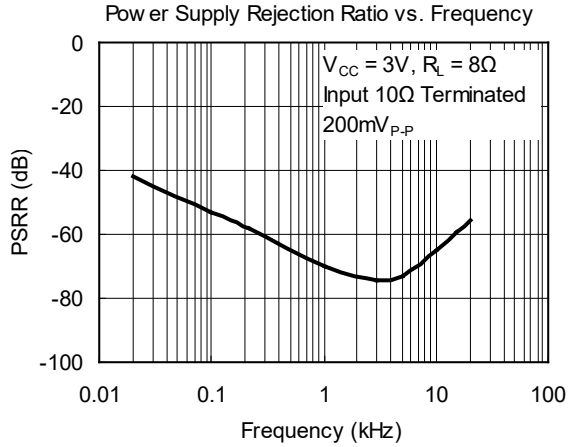
Power Dissipation vs. Output Power



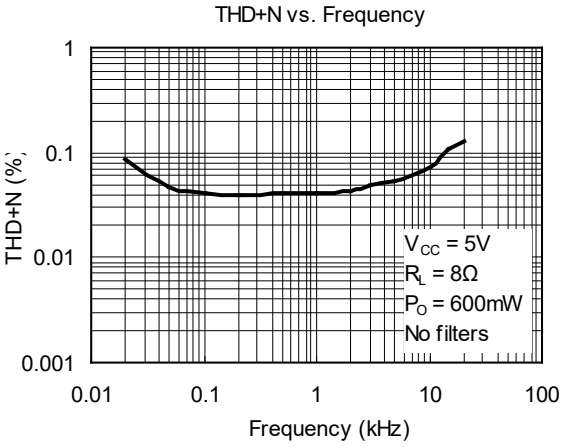
Power Supply Rejection Ratio vs. Frequency



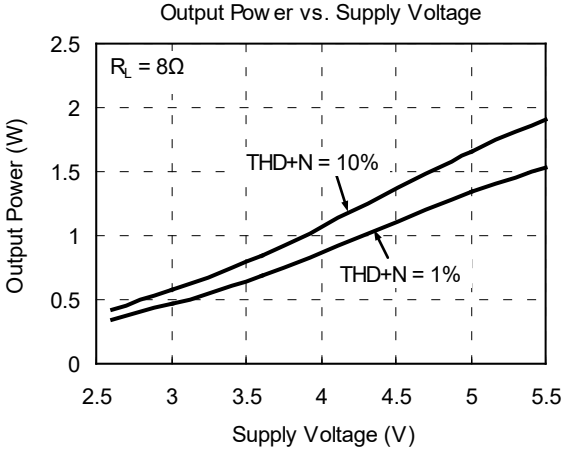
Power Supply Rejection Ratio vs. Frequency



THD+N vs. Frequency

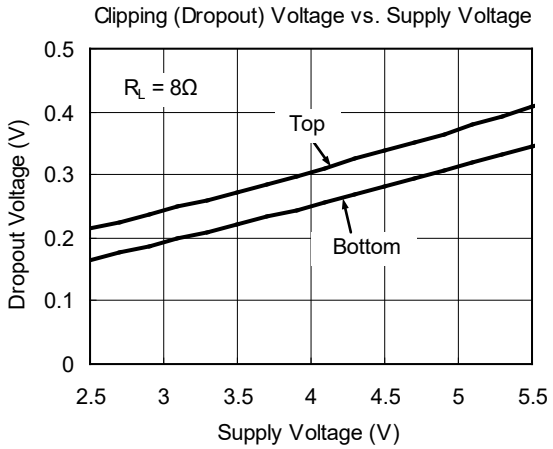


Output Power vs. Supply Voltage



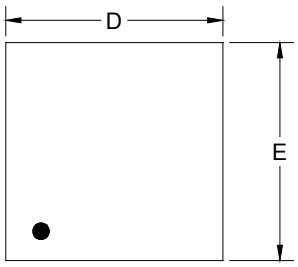
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

At T_A = +25℃, A_V = 1, f = 1kHz, C_B = 1μF, unless otherwise noted.

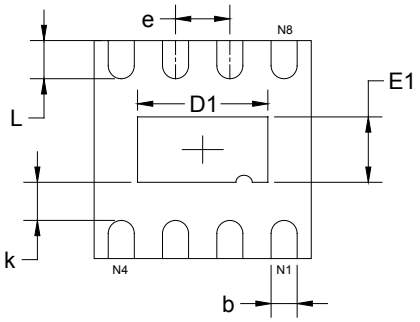


PACKAGE OUTLINE DIMENSIONS

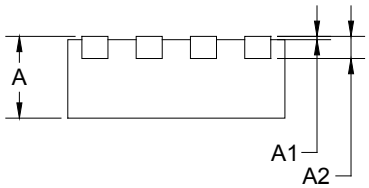
TDFN-2×2-8L



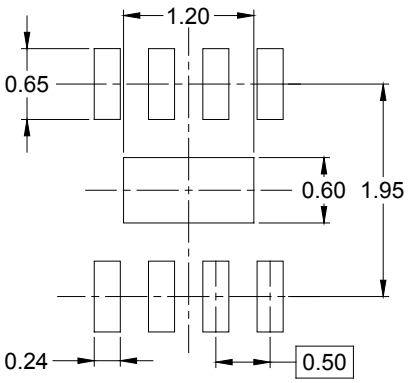
TOP VIEW



BOTTOM VIEW



SIDE VIEW

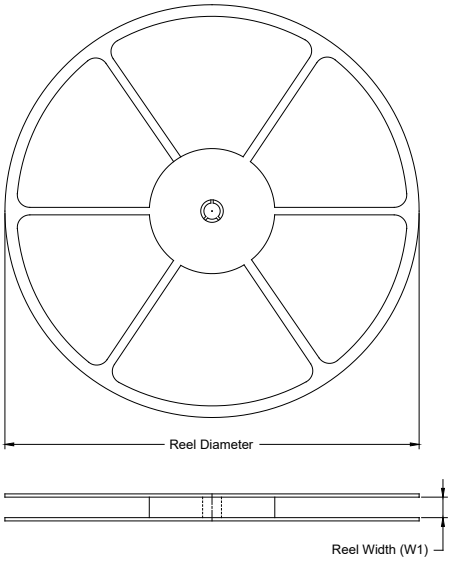


RECOMMENDED LAND PATTERN (Unit: mm)

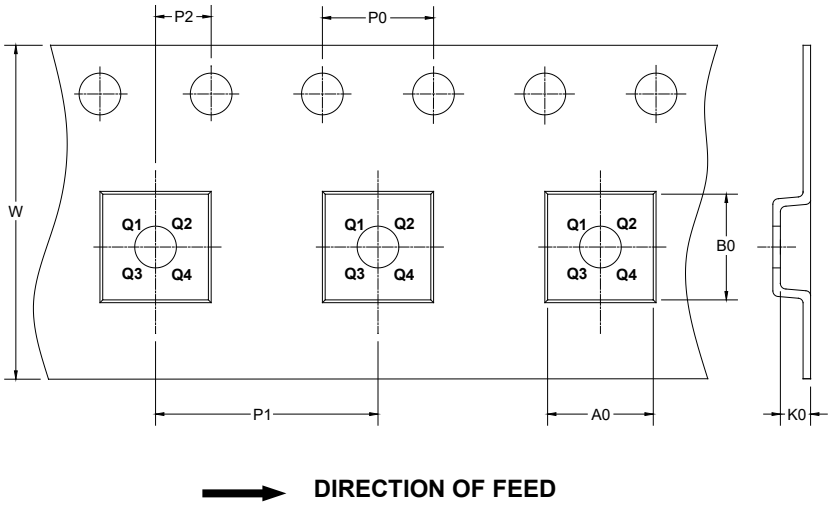
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
D1	1.100	1.300	0.043	0.051
E	1.900	2.100	0.075	0.083
E1	0.500	0.700	0.020	0.028
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007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



DIRECTION OF FEED

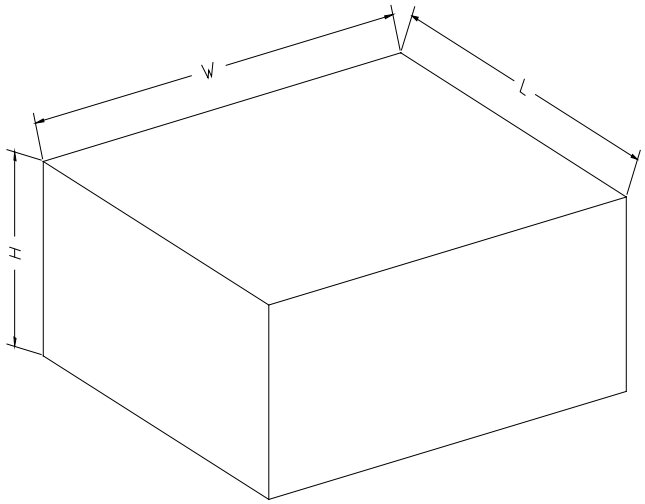
NOTE: The picture is only for reference. Please make the object as the standard.

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	4.0	4.0	2.0	8.0	Q1

DD0001

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

DD0002