SGM4865
2.6W Stereo Audio Power Amplifier

GENERAL DESCRIPTION

The SGM4865 is a stereo audio power amplifier that is designed for demanding applications in mobile phones and other portable communication device applications. It is capable of delivering 2.6W of continuous average power per channel into a 4Ω load with typically 10% distortion (THD+N) from a 5V power supply.

The SGM4865 features an externally controlled, low power consumption shutdown mode and thermal shutdown protection. It also utilizes circuitry to reduce “pop/click” during device turn-on.

The SGM4865 is unity-gain stable and can be configured by external gain-setting resistors.

The SGM4865 is available in Green TQFN-4×4-16L package. It operates over an ambient temperature range of -40℃ to +85℃.

FEATURES

- **2.6W into 4Ω Load from 5V Supply at THD+N = 10% (Typical, per Channel)**
- **Excellent PSRR: Direct Connection to Battery**
- **Unity Gain Stable**
- **2.6V to 5.5V Operation**
- **Shutdown Current: 0.03μA (TYP)**
- **Improved Pop/Click Circuitry**
- **No Output Coupling Capacitors**
- **External Gain Configuration Capability**
- **Thermal Shutdown Protection Circuitry**
- **-40℃ to +85℃ Operating Temperature Range**
- **Available in Green TQFN-4×4-16L Package**

APPLICATIONS

Cell Phones, PDA, MP4, PMP
Portable and Desktop Computers
Desktops Audio System
Multimedia Monitors

PACKAGE/ORDERING INFORMATION

MODEL	ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION	MARKING INFORMATION
SGM4865	SGM4865YTQE16G/TR	TQFN-4×4-16L	Tape and Reel, 3000	SGM4865YTQE16

ABSOLUTE MAXIMUM RATINGS

Supply Voltage……6V
Input Voltage……-0.3V to (V_{CC}) + 0.3V
Storage Temperature Range……-65℃ to +150℃
Junction Temperature……..150℃
Operating Temperature Range……-40℃ to +85℃
Lead Temperature Range (Soldering 10sec)
…….260℃
ESD Susceptibility
HBM……...4000V
MM……400V

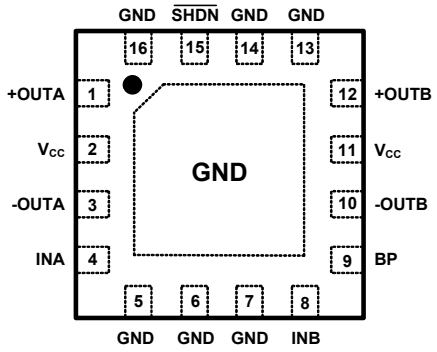
NOTE:
Stresses beyond those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied.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

PIN CONFIGURATION (TOP VIEW)



TQFN-4×4-16L

ELECTRICAL CHARACTERISTICS

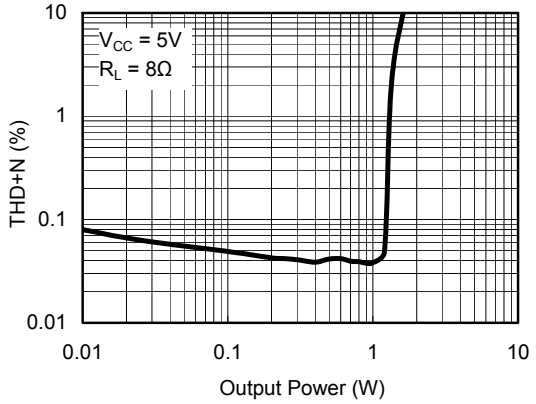
(T_A = +25℃, unless otherwise specified.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Supply Voltage	V_{CC}			2.6		5.5	V
Quiescent Power Supply Current	I_Q	V_{IN} = 0V, I_O = 0A, V_{SHDN} = V_{CC}	V_{CC} = 5V, No Load		6.40		mA
			V_{CC} = 5V, 8Ω Load		7.00	10.5	
			V_{CC} = 3.0V, No Load		5.60		
			V_{CC} = 3.0V, 8Ω Load		5.90		
			V_{CC} = 2.6V, No Load		5.30		
			V_{CC} = 2.6V, 8Ω Load		5.60		
Shutdown Current	I_{SD}	V_{IN} = 0V, V_{SHDN} = GND, V_{CC} = 5.0V			0.03	4	μA
		V_{IN} = 0V, V_{SHDN} = GND, V_{CC} = 3.0V			0.03		
		V_{IN} = 0V, V_{SHDN} = GND, V_{CC} = 2.6V			0.03		
Shutdown Voltage Input High	V_{SDIH}			1.2			V
Shutdown Voltage Input Low	V_{SDIL}					0.4	
Output Offset Voltage	V_{OS}	V_{IN} = 0V, V_{SHDN} = V_{CC} = 5.0V		-25	8.00	25	mV
		V_{IN} = 0V, V_{SHDN} = V_{CC} = 3.0V			5.50		
		V_{IN} = 0V, V_{SHDN} = V_{CC} = 2.6V			5.00		
Output Power per Channel (8Ω)	P_O	f = 1kHz, THD+N = 1%	V_{CC} = 5V		1.30		W
			V_{CC} = 3.6V		0.70		
			V_{CC} = 3.0V		0.45		
		f = 1kHz, THD+N = 10%	V_{CC} = 5V		1.60		
			V_{CC} = 3.6V		0.85		
			V_{CC} = 3.0V		0.55		
Output Power per Channel (4Ω)		f = 1kHz, THD+N = 1%	V_{CC} = 5V		2.10		W
			V_{CC} = 3.6V		1.00		
			V_{CC} = 3.0V		0.70		
		f = 1kHz, THD+N = 10%	V_{CC} = 5V		2.60		
			V_{CC} = 3.6V		1.30		
			V_{CC} = 3.0V		0.90		
Total Harmonic Distortion + Noise	THD+N	V_{CC} = 5V, R_L = 8Ω, P_O = 0.6W, f = 1kHz			0.04		%
Power Supply Rejection Ratio	PSRR	f = 217Hz, C_B = 1μF, Input grounded with 10Ω	V_{CC} = 5V		-70		dB
			V_{CC} = 3.6V		-70		
			V_{CC} = 3.0V		-70		
		f = 1kHz, C_B = 1μF, Input grounded with 10Ω	V_{CC} = 5V		-71		
			V_{CC} = 3.6V		-71		
			V_{CC} = 3.0V		-71		
Crosstalk	X_{TALK}	V_{CC} = 5V, P_O = 1W, C_B = 1μF			-90		dB
Turn-On Time	T_{ON}	C_B = 1μF	V_{CC} = 5V		180		ms
			V_{CC} = 3.6V		160		
			V_{CC} = 3.0V		120		

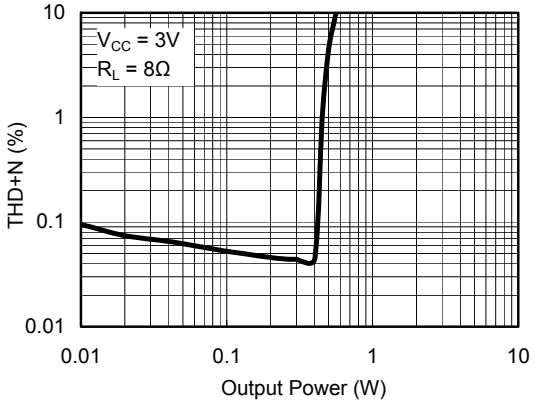
TYPICAL PERFORMANCE CHARACTERISTICS

At T_A = +25℃, A_V = 2, f = 1kHz, C_B = 1μF, unless otherwise noted.

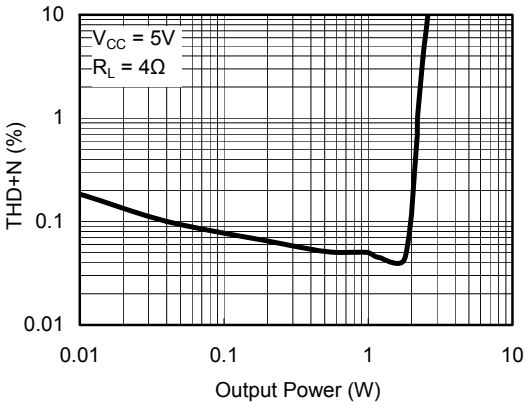
THD+N vs. Output Power



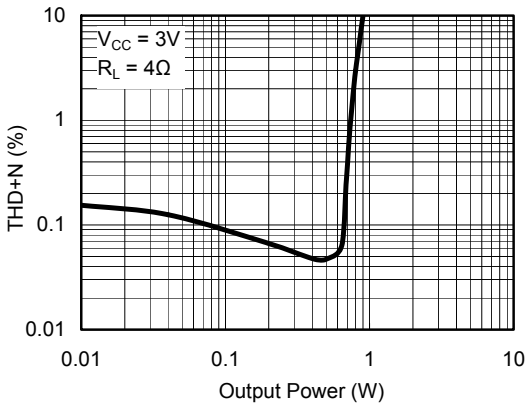
THD+N vs. Output Power



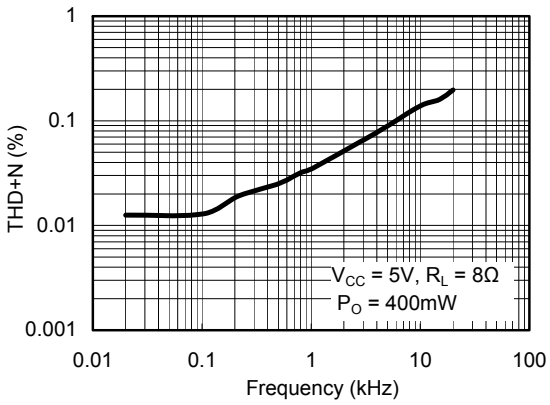
THD+N vs. Output Power



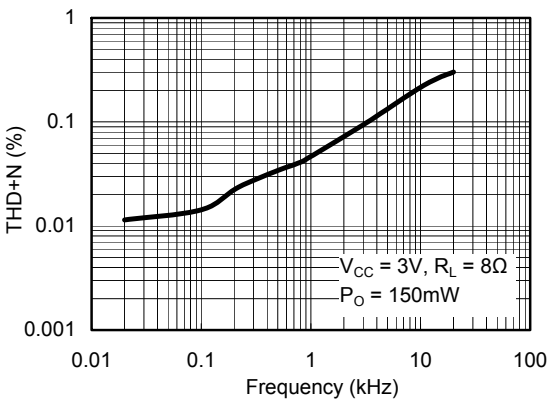
THD+N vs. Output Power



THD+N vs. Frequency



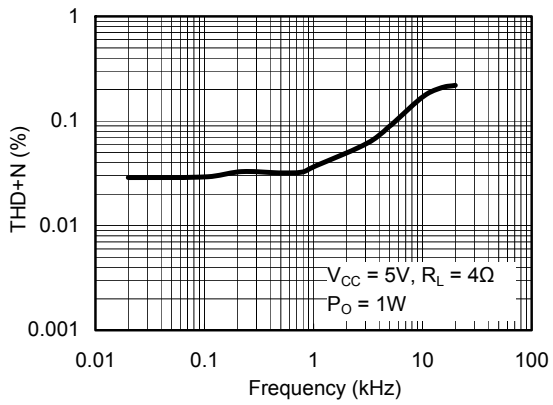
THD+N vs. Frequency



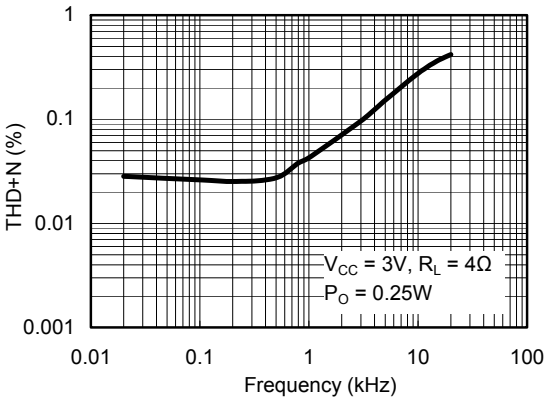
TYPICAL PERFORMANCE CHARACTERISTICS

At T_A = +25℃, A_V = 2, f = 1kHz, C_B = 1μF, unless otherwise noted.

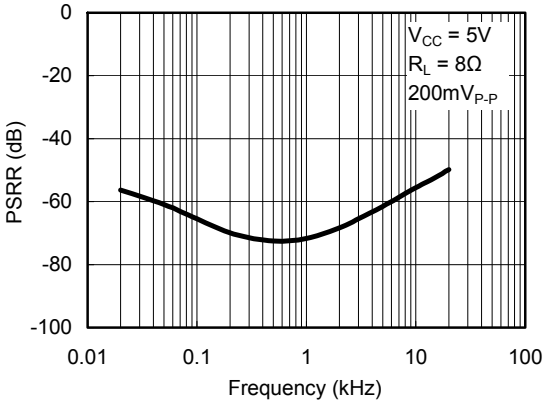
THD+N vs. Frequency



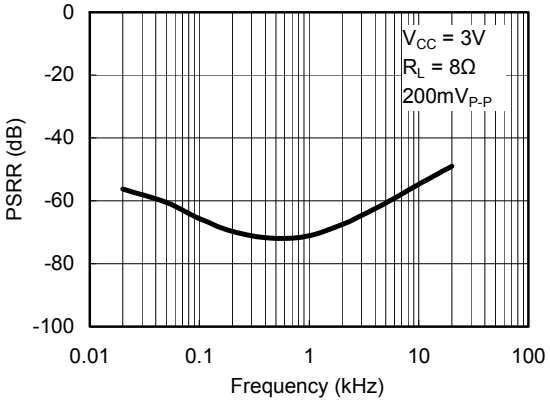
THD+N vs. Frequency



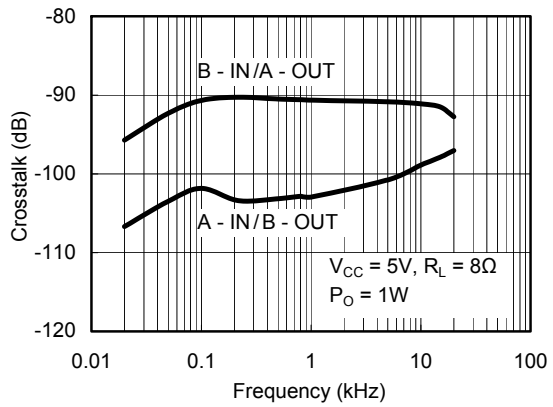
Power Supply Rejection Ratio vs. Frequency



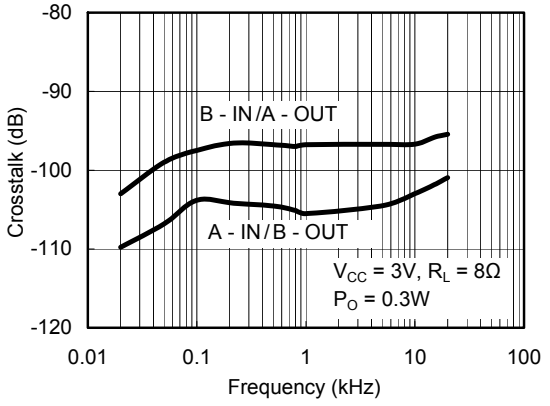
Power Supply Rejection Ratio vs. Frequency



Crosstalk vs. Frequency

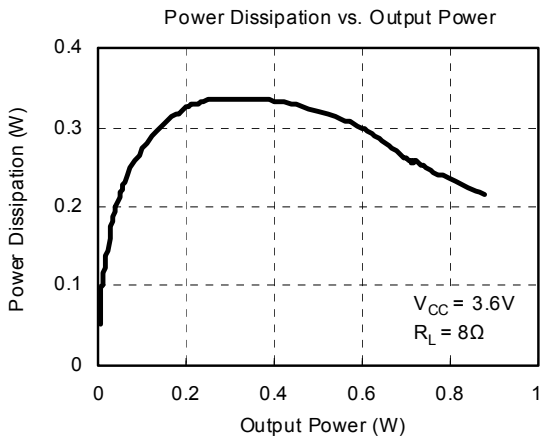


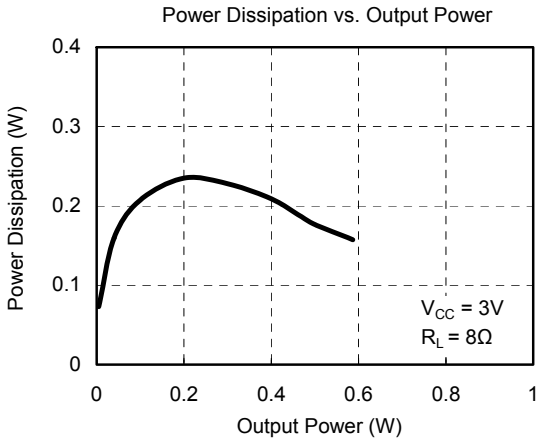
Crosstalk vs. Frequency

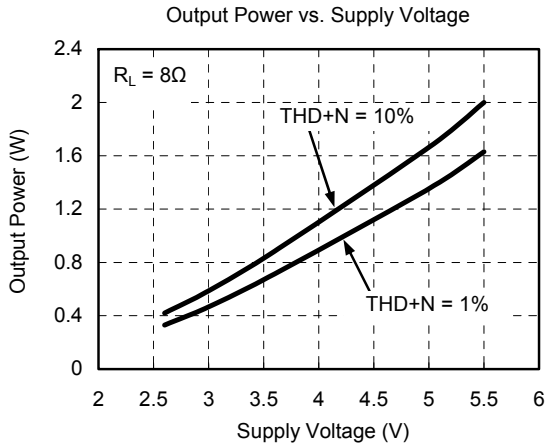


TYPICAL PERFORMANCE CHARACTERISTICS

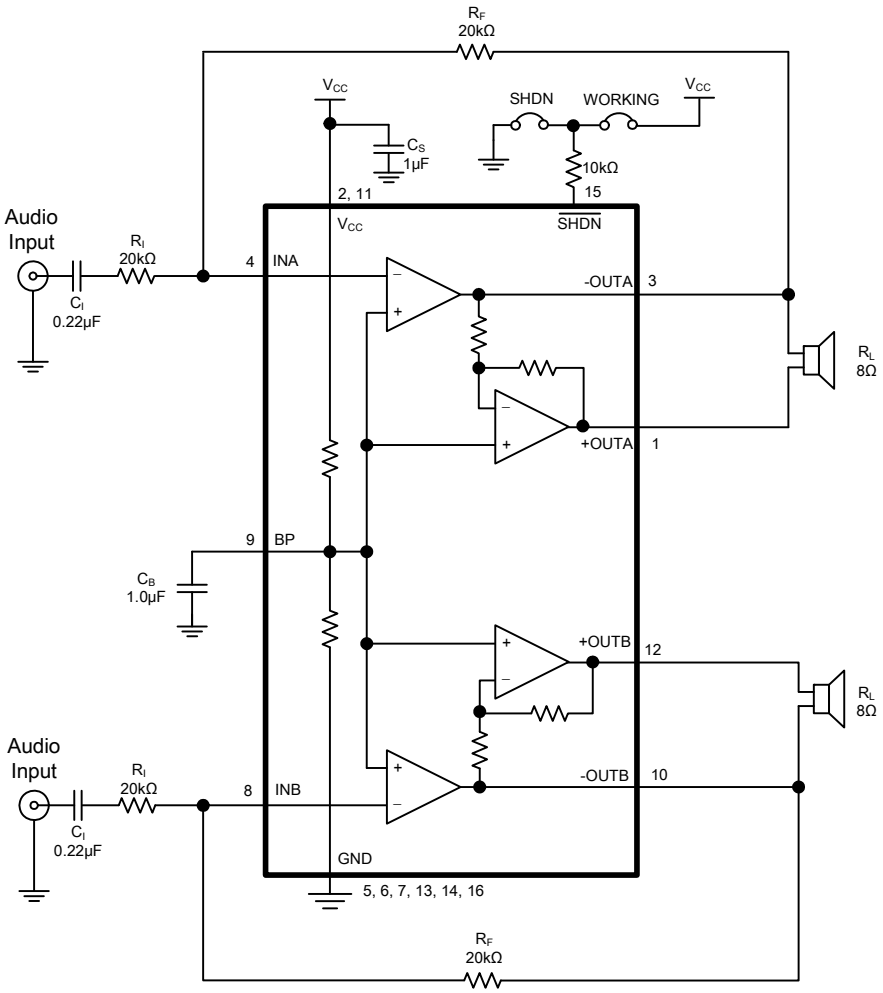
At T_A = +25℃, A_V = 2, f = 1kHz, C_B = 1μF, unless otherwise noted.







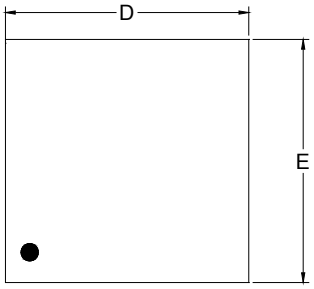
TYPICAL APPLICATION



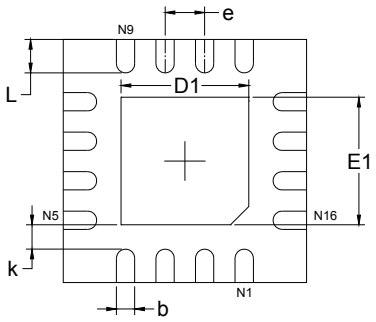
NOTE:
1. A 10kΩ resistor must be serially connected to $\overline{SHDN}$ pin.

PACKAGE OUTLINE DIMENSIONS

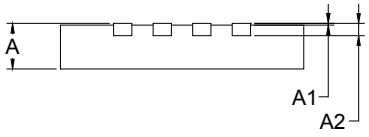
TQFN-4×4-16L



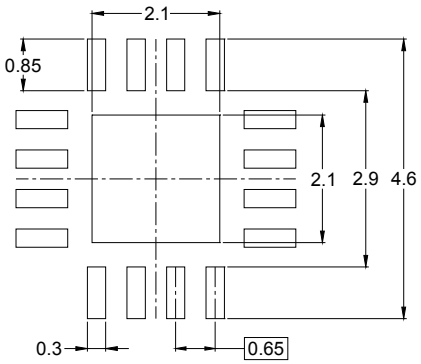
TOP VIEW



BOTTOM VIEW



SIDE VIEW

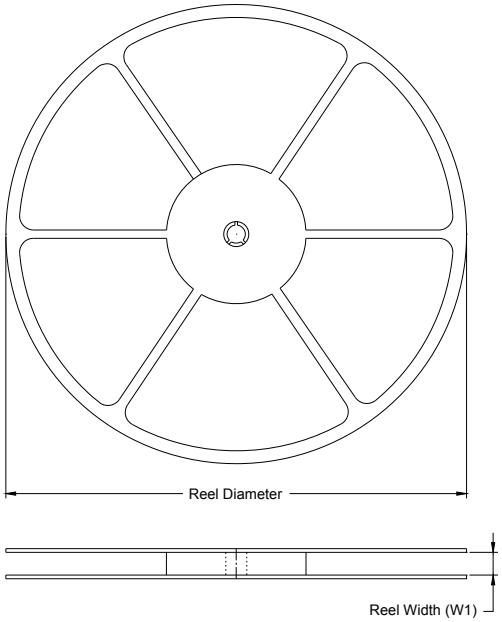


RECOMMENDED LAND PATTERN (Unit: mm)

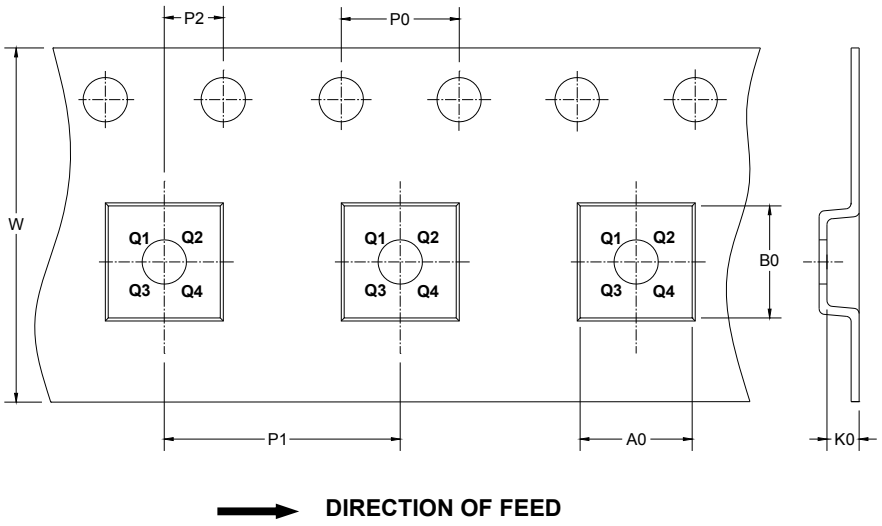
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	3.900	4.100	0.154	0.161
D1	2.000	2.200	0.079	0.087
E	3.900	4.100	0.154	0.161
E1	2.000	2.200	0.079	0.087
k	0.200 MIN		0.008 MIN	
b	0.250	0.350	0.010	0.014
e	0.650 TYP		0.026 TYP	
L	0.450	0.650	0.018	0.026

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS

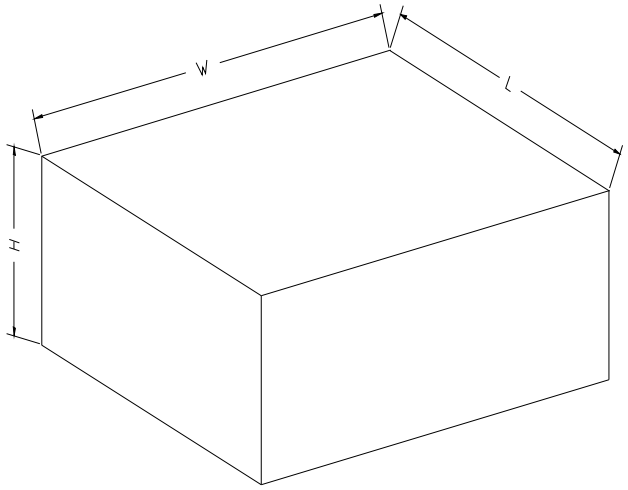


NOTE: The picture is only for reference. Please make the object as the standard.

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
TQFN-4×4-16L	13″	12.4	4.3	4.3	1.1	4.0	8.0	2.0	12.0	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