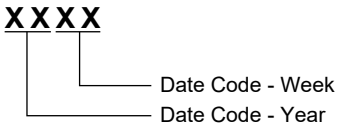
PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM3132	TQFN-3×3-16L	-40°C to +85°C	SGM3132YTQ16G/TR	3132TQ XXXXX	Tape and Reel, 3000
	TDFN-2×2-8L	-40°C to +85°C	SGM3132YDE8G/TR	3132 XXXX	Tape and Reel, 3000
	MSOP-8	-40°C to +85°C	SGM3132YMS8G/TR	SGM3132 YMS8 XXXXX	Tape and Reel, 3000

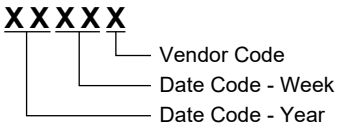
MARKING INFORMATION

NOTE: XXXX = Date Code. XXXXX = Date Code and Vendor Code.

TDFN-2×2-8L



TQFN-3×3-16L/ MSOP-8



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

V_{IN} to GND ..... -0.3V to 6V
The Other Pins to GND ..... -0.3V to 6V
Power Dissipation (1), P_D @ T_A = 25℃
TQFN-3×3-16L 1.47W
TDFN-2×2-8L 0.61W
MSOP-8 ..... 0.57W
Operating Temperature Range ..... -40℃ to +85℃
Junction Temperature ..... +125℃
Storage Temperature Range ..... -40℃ to +150℃
Lead Temperature (Soldering 10s) ..... +260℃
ESD Susceptibility
HBM 4000V
MM 400V

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

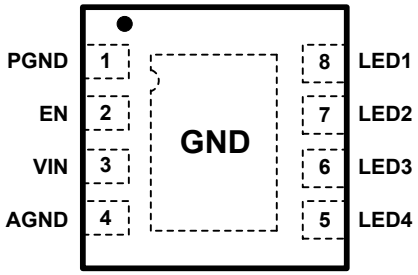
This integrated circuit can be damaged if ESD protections are not considered carefully. SGMICRO recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance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

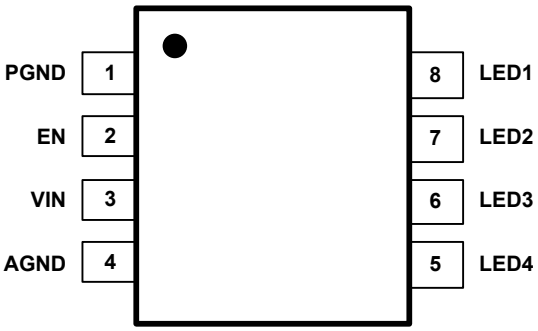
PIN CONFIGURATIONS

(TOP VIEW)



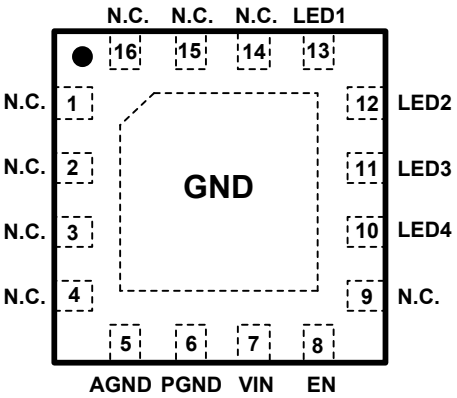
TDFN-2×2-8L

(TOP VIEW)



MSOP-8

(TOP VIEW)



TQFN-3×3-16L

PIN DESCRIPTION

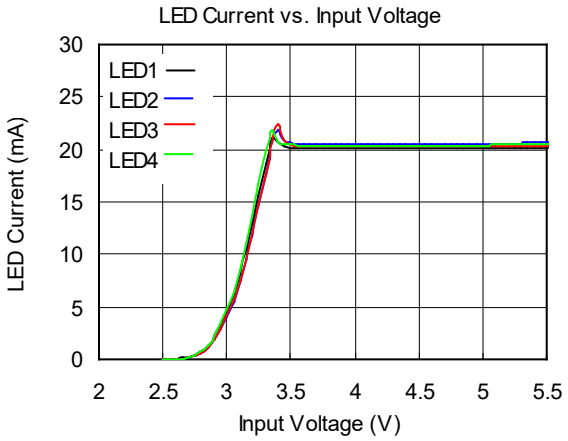
PIN NUMBER			PIN NAME	PIN FUNCTION
TQFN-3×3-16L	TDFN-2×2-8L	MSOP-8		
5	4	4	AGND	Analog Ground.
6	1	1	PGND	Power Ground.
7	3	3	VIN	Power Input Voltage.
8	2	2	EN	Enable Input. (Active High), and connects to GPIO pin of MCU.
10	5	5	LED4	Current Sink for LED4, connected to cathode of external White LED.
11	6	6	LED3	Current Sink for LED3, connected to cathode of external White LED.
12	7	7	LED2	Current Sink for LED2, connected to cathode of external White LED.
13	8	8	LED1	Current Sink for LED1, connected to cathode of external White LED.
1,2,3,4, 9,14,15,16	—	—	N.C.	No Internal Connection.
Exposed Pad	Exposed Pad	—	GND	Exposed pad should be soldered to PCB board and connected to GND.

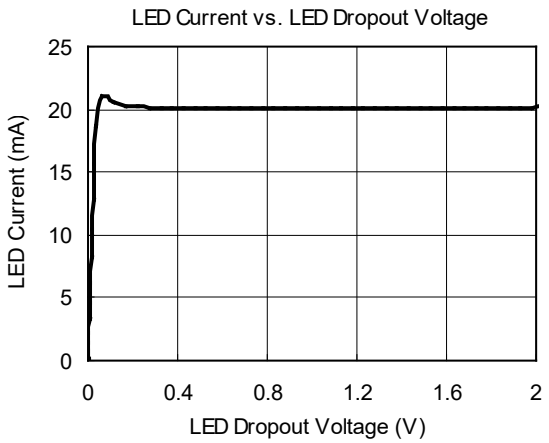
ELECTRICAL CHARACTERISTICS

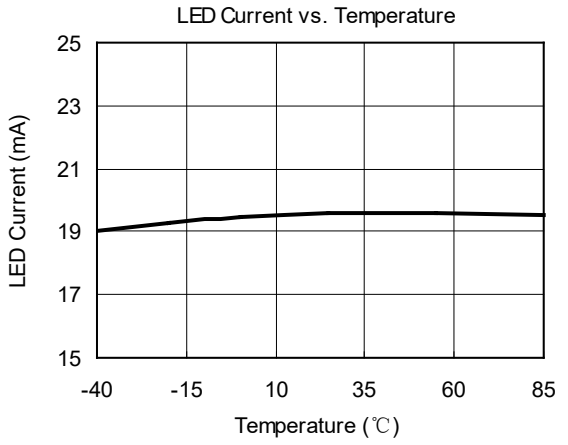
(V_{IN} = 3.6V, C_{IN} = 1μF, T_A = +25℃, unless otherwise noted.)

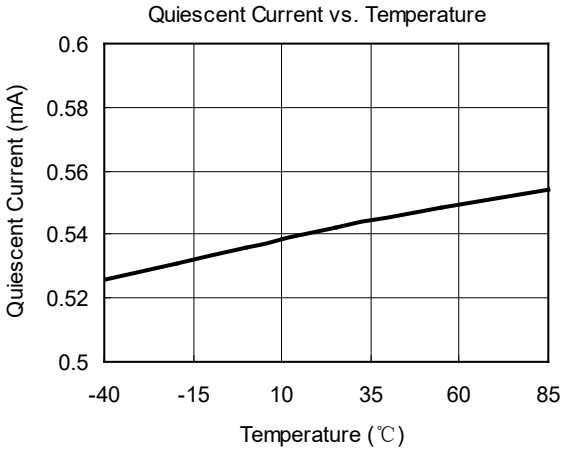
PARAMETER		SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Operation Voltage Range		V_{IN}		2.5		5.0	V
EN Pull Low Current			V_{EN} = 1.8V		0.01		μA
Quiescent Power Supply Current		I_Q	V_{IN} = 5.0V, LED OFF		0.55		mA
Shutdown Current		I_{SHDN}	V_{EN} = 0V, V_{IN} = 5.0V		0.1	5	μA
I_{LEDx} Accuracy		$I_{LED-ERR}$		-10		+10	%
LED Current Deviation Matching		D_{LED}		-3		+3	%
LED Dropout Voltage		V_{LED}	I_{LEDx} = 20mA, V_{LED} @ I_{LEDx} = 90% × I_{LED}		35		mV
EN Low Time for Shutdown		T_{SHDN}			1.6		ms
EN Low Time for Dimming		T_{LO}		0.5		500	μs
EN High Time for Dimming		T_{HI}		0.5			μs
EN Threshold	Logic-High Voltage	V_{IH}	V_{EN} > V_{IH} for Enable IH	1.2			V
	Logic-Low Voltage	V_{IL}	V_{EN} < V_{IL} for Disable IL			0.5	V
Thermal Shutdown Temperature					150		℃
Hysteresis Temperature					10		℃

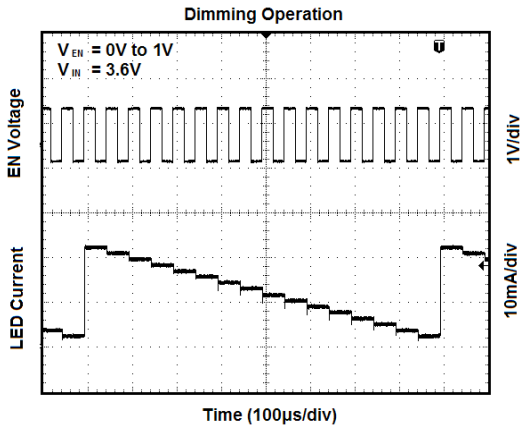
TYPICAL PERFORMANCE CHARACTERISTICS

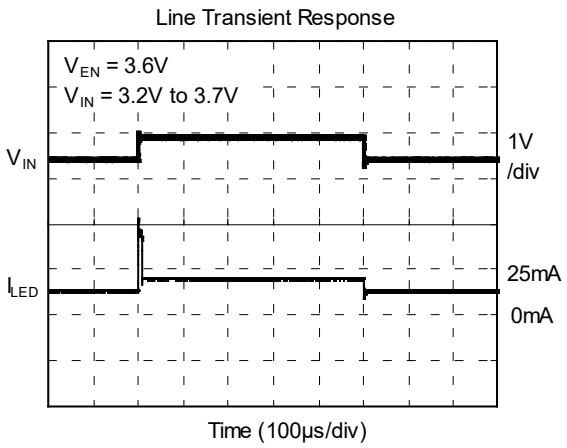




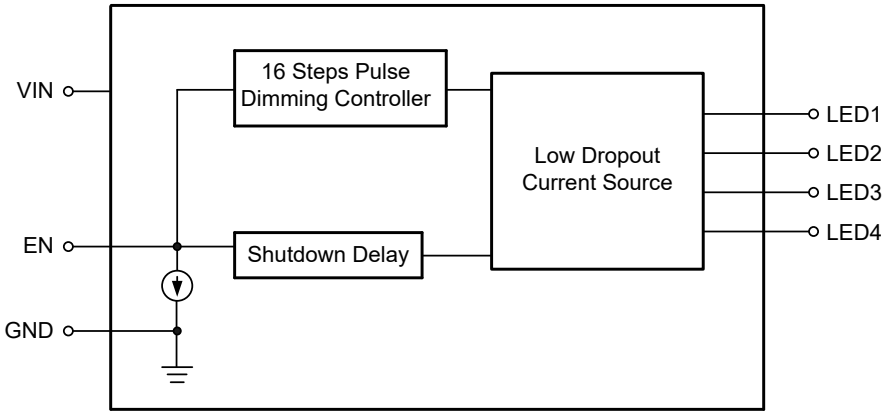








FUNCTIONAL BLOCK DIAGRAM



APPLICATION INFORMATION

LED Connection

The SGM3132 supports up to 4 white LEDs. The four LEDs are connected from VIN to TQFN-3×3-16L package's pin 10, 11, 12 and 13 respectively. For TDFN-2×2-8L and MSOP-8 packages, Cathode of white LEDs are connected to pin 5, 6, 7 and 8 respectively.

Brightness Control

The SGM3132 implements a pulse dimming method to control the brightness of white LEDs. Users can easily configure the LED current from 1.25mA to 20mA by a serial pulse. The dimming of white LEDs' current can be achieved by applying a pulse signal to the EN pin. There are totally 16 steps of current that could be set by users. The detail operation of brightness dimming is showed in the Figure 1.

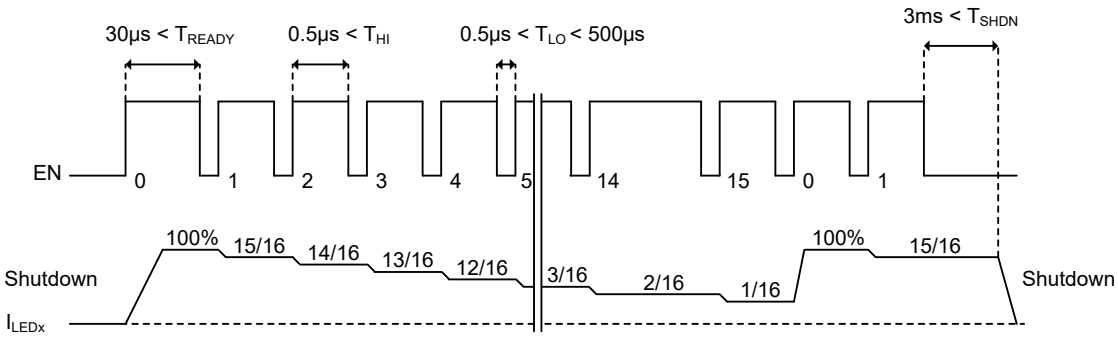


Figure 1. Brightness Control by Pulse Dimming

REVISION HISTORY

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

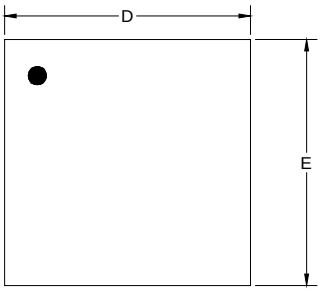
JANUARY 2013 – REV.A.1 to REV.A.2	Page
Added Recommended Land Pattern section	8, 9, 10
Added Tape and Reel Information section	11, 12

MAY 2011 – REV.A to REV.A.1	Page
Changed Package Description	All

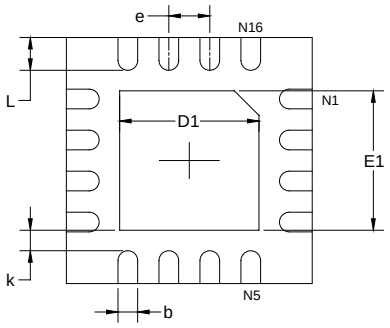
Changes from Original (MARCH 2010) to REV.A	Page
Changed from product preview to production data	All

PACKAGE OUTLINE DIMENSIONS

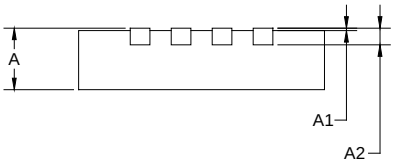
TQFN-3×3-16L



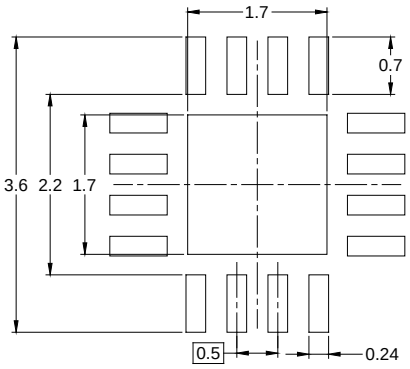
TOP VIEW



BOTTOM VIEW



SIDE VIEW

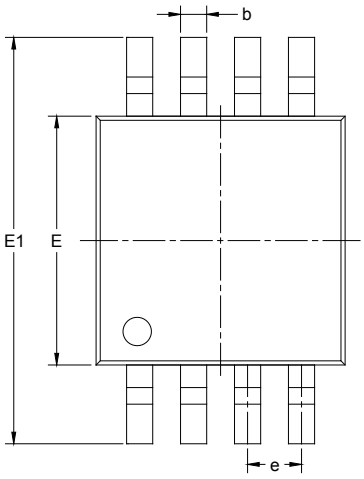


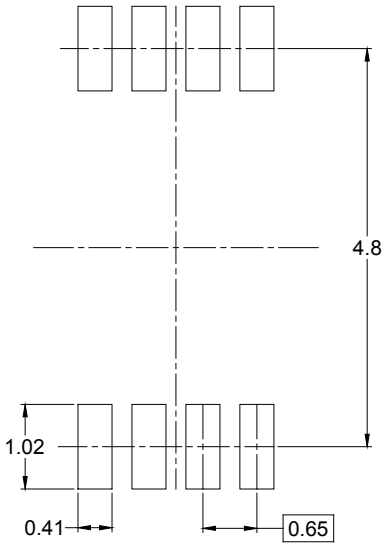
RECOMMENDED LAND PATTERN (Unit: mm)

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	2.900	3.100	0.114	0.122
D1	1.600	1.800	0.063	0.071
E	2.900	3.100	0.114	0.122
E1	1.600	1.800	0.063	0.071
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.300	0.500	0.012	0.020

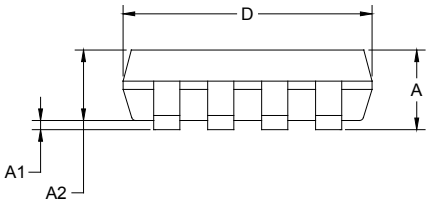
PACKAGE OUTLINE DIMENSIONS

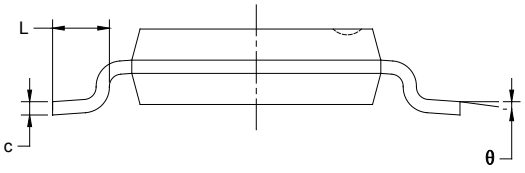
MSOP-8





RECOMMENDED LAND PATTERN (Unit: mm)

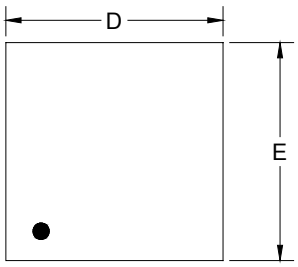




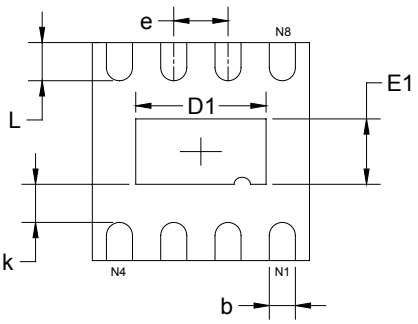
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026 BSC	
L	0.400	0.800	0.016	0.031
θ	0°	6°	0°	6°

PACKAGE OUTLINE DIMENSIONS

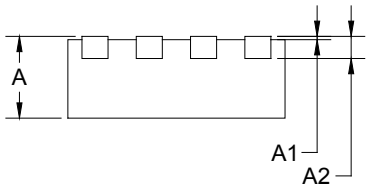
TDFN-2×2-8L



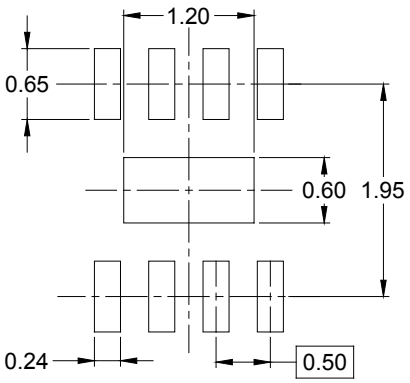
TOP VIEW



BOTTOM VIEW



SIDE VIEW

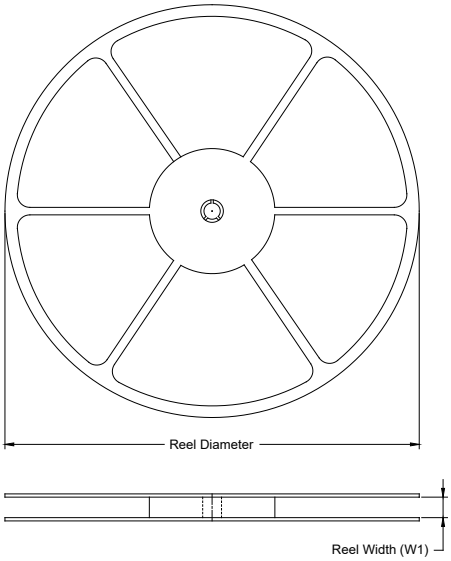


RECOMMENDED LAND PATTERN (Unit: mm)

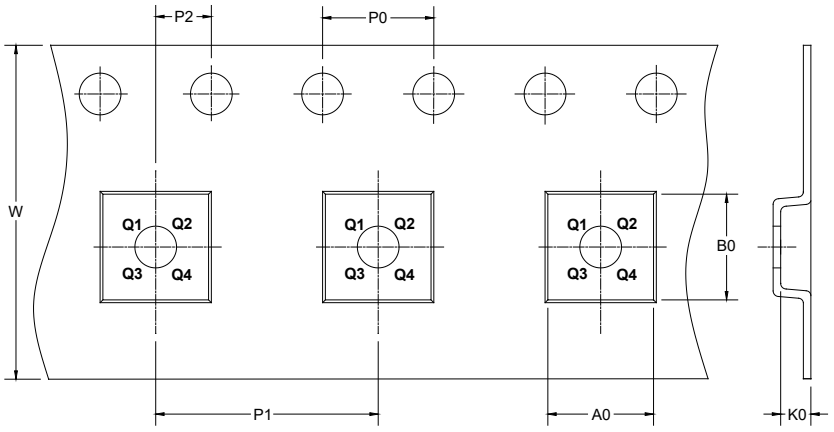
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
D1	1.100	1.300	0.043	0.051
E	1.900	2.100	0.075	0.083
E1	0.500	0.700	0.020	0.028
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007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

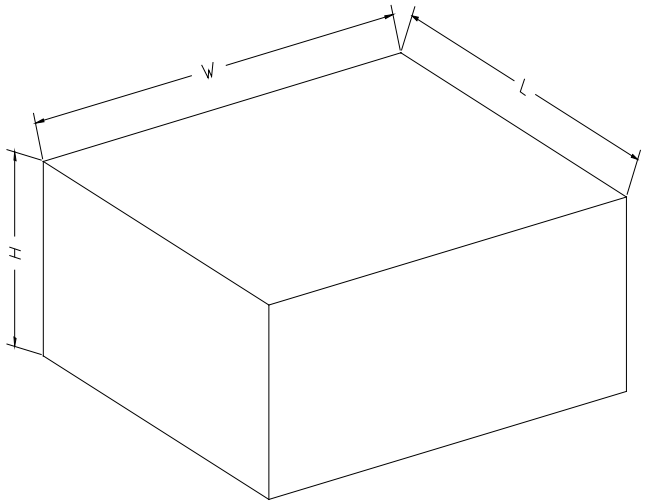
NOTE: The picture is only for reference. Please make the object as the standard.

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
TQFN-3×3-16L	13″	12.4	3.35	3.35	1.13	4.0	8.0	2.0	12.0	Q1
MSOP-8	13″	12.4	5.20	3.30	1.50	4.0	8.0	2.0	12.0	Q1
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
13″	386	280	370	5

DD0002