



SGM3132 4-Channel One-Wire Dimming LED Driver with Ultra-Low Dropout Current Source

GENERAL DESCRIPTION

The SGM3132 is a 4-channel white LED driver with ultra-low dropout current sources. Low 35mV dropout voltage makes the SGM3132 ideal for battery-powered applications.

The SGM3132 integrates an internal resistor to set the LED bias current and a deglitch circuit for filtering the noise on the EN pin. 16-step LED current levels can be set by a serial pulse input signal into the EN pin.

The SGM3132 is available in Green TQFN-3×3-16L, TDFN-2×2-8L and MSOP-8 packages. It operates over an ambient temperature range of -40°C to +85°C.

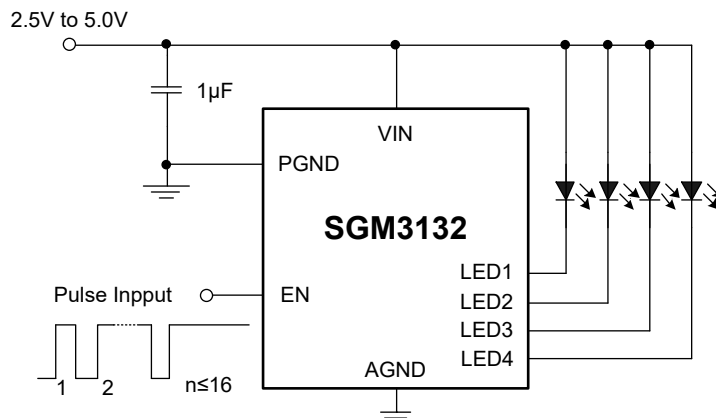
FEATURES

- Support up to 4 LEDs
- Ultra-Low 35mV Dropout Voltage at a 20mA Load
- 16-Step Brightness Control through One-Wire Interface
- LED Sink Current: 20mA
- ±3% Regulated LED Current Matching
- Internal Deglitch Circuit
- Thermal Shutdown
- No EMI and Switch Noise
- Operating Temperature Range: -40°C to +85°C
- Available in Green TQFN-3×3-16L, TDFN-2×2-8L and MSOP-8 Packages

APPLICATIONS

Wireless Handsets
Mobile Phones, Digital Cameras, Camcorders
Portable Equipment
PDAs, Palmtops, and Handy Terminals
Battery-Powered Equipment

TYPICAL APPLICATION



PACKAGE/ORDERING INFORMATION

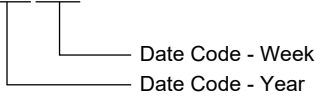
MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGM3132	TQFN-3×3-16L	-40°C to +85°C	SGM3132YTQ16G/TR	3132TQ XXXXX	Tape and Reel, 3000
	TDFN-2×2-8L	-40°C to +85°C	SGM3132YDE8G/TR	3132 XXXX	Tape and Reel, 3000
	MSOP-8	-40°C to +85°C	SGM3132YMS8G/TR	SGM3132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

MARKING INFORMATION

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

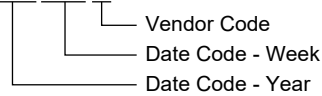
TDFN-2×2-8L

XXXX



TQFN-3×3-16L/ MSOP-8

XXXXX



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°C	
TQFN-3×3-16L.....	1.47W
TDFN-2×2-8L.....	0.61W
MSOP-8.....	0.57W
Operating Temperature Range.....	-40°C to +85°C
Junction Temperature.....	+125°C
Storage Temperature Range.....	-40°C to +150°C
Lead Temperature (Soldering, 10s).....	+260°C
ESD Susceptibility	
HBM.....	4000V
MM.....	400V

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.

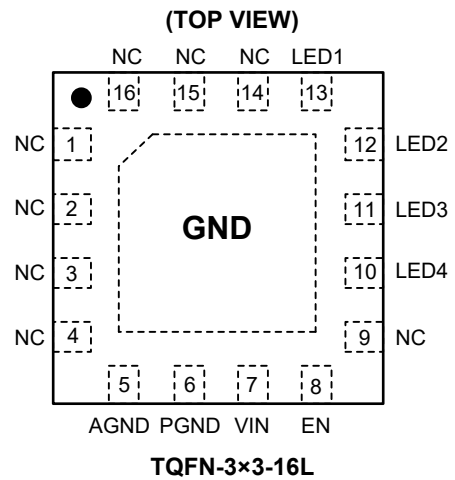
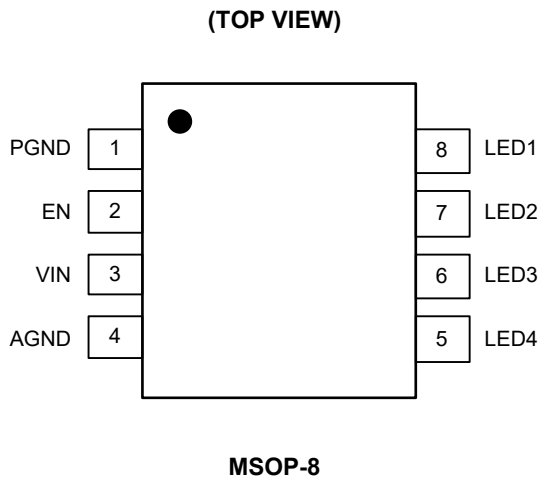
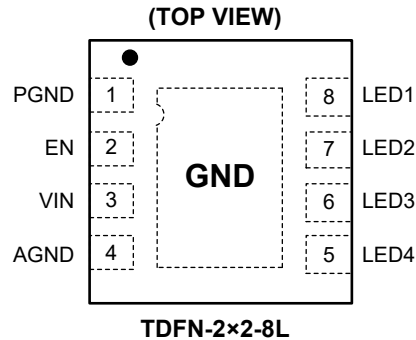
DISCLAIMER

SG Micro Corp reserves the right to make any change in circuit design, or specifications without prior notice.

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.

PIN CONFIGURATIONS



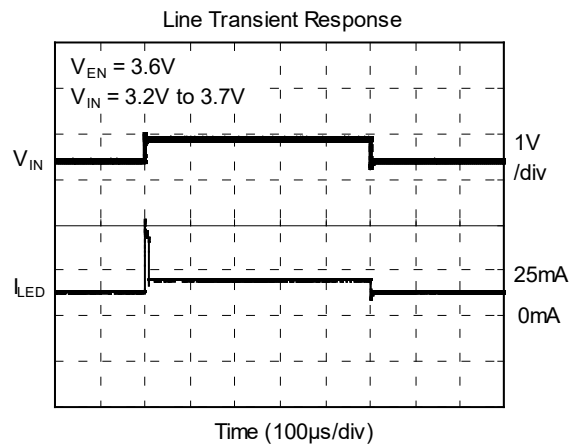
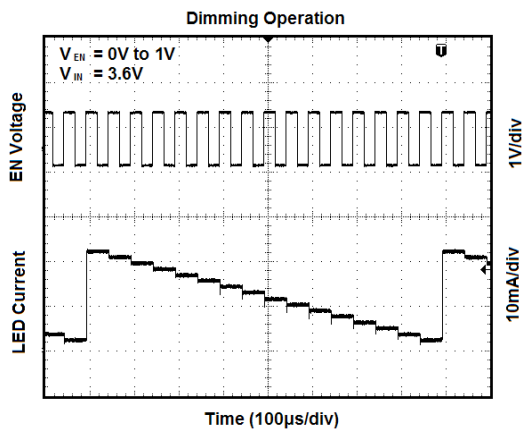
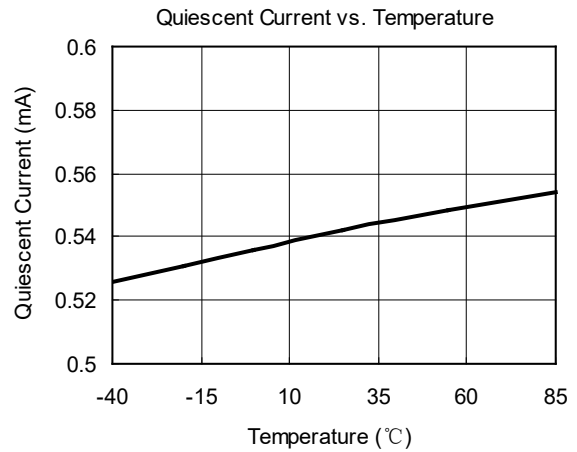
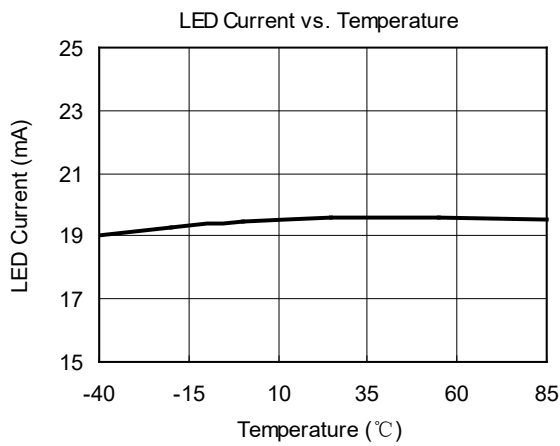
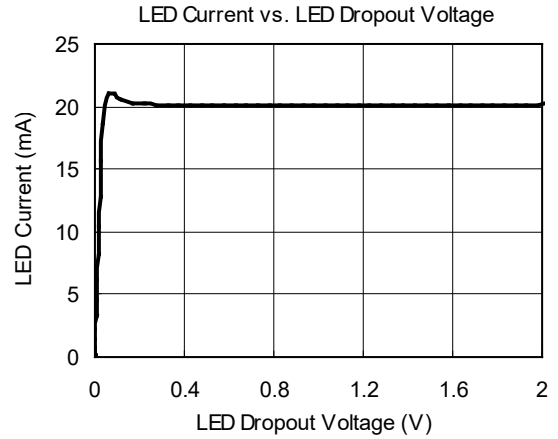
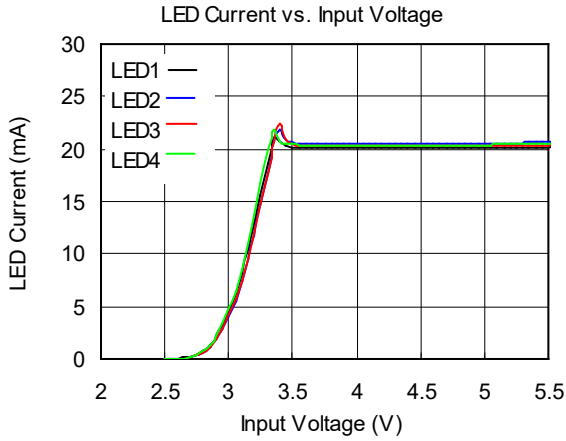
PIN DESCRIPTION

PIN			NAME	FUNCTION
TQFN-3×3-16L	TDFN-2×2-8L	MSOP-8		
5	4	4	AGND	Analog Ground Pin.
6	1	1	PGND	Power Ground Pin.
7	3	3	VIN	Input Supply Pin.
8	2	2	EN	Active-High Enable Pin. Connect it to the GPIO pin of MCU.
10	5	5	LED4	Current Sink 4. Connect to the cathode of the LED.
11	6	6	LED3	Current Sink 3. Connect to the cathode of the LED.
12	7	7	LED2	Current Sink 2. Connect to the cathode of the LED.
13	8	8	LED1	Current Sink 1. Connect to the cathode of the LED.
1,2,3,4, 9,14,15,16	—	—	NC	No Connection.
Exposed Pad	Exposed Pad	—	GND	Exposed pad. It should be soldered to PCB board and connected to GND.

ELECTRICAL CHARACTERISTICS(V_{IN} = 3.6V, C_{IN} = 1μF, T_A = +25°C, 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		°C
Hysteresis Temperature					10		°C

TYPICAL PERFORMANCE CHARACTERISTICS



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

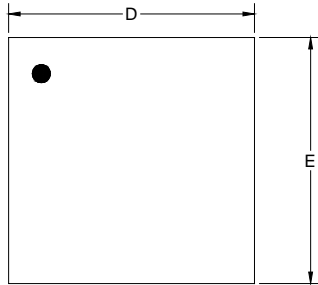
MAY 2011 – REV.A to REV.A.1	Page
Changed Package Description	All

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

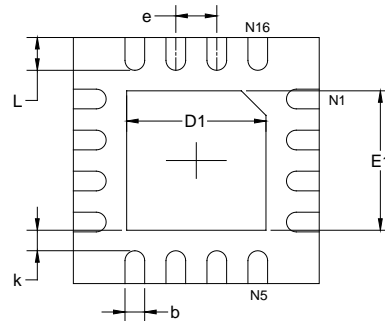
PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

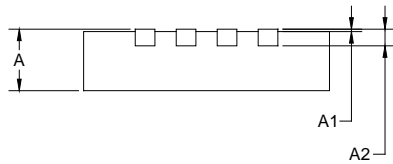
TQFN-3x3-16L



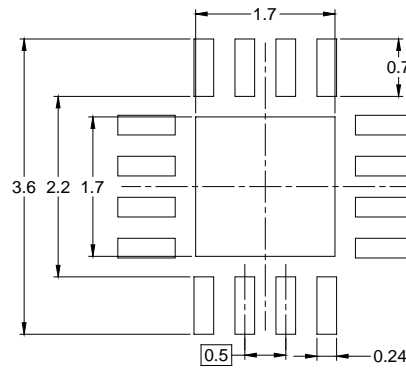
TOP VIEW



BOTTOM VIEW



SIDE VIEW

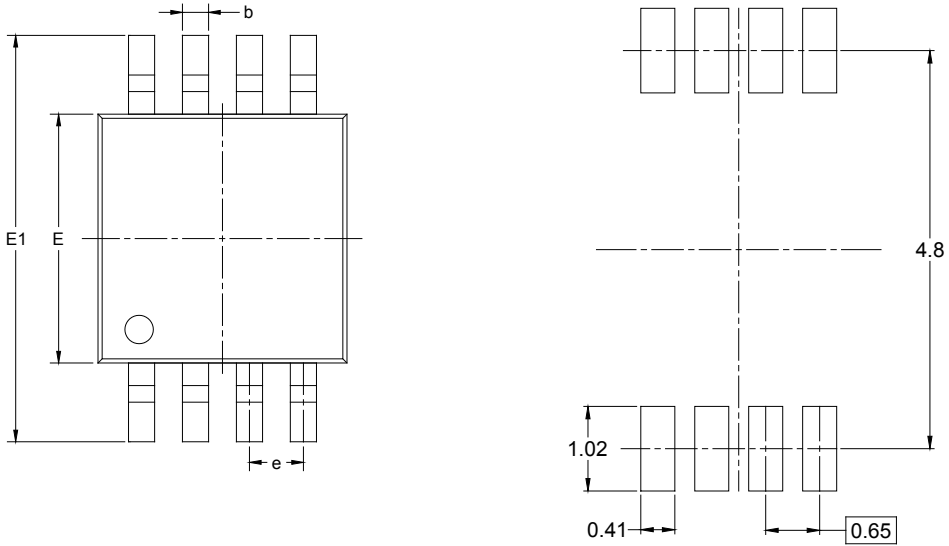


RECOMMENDED LAND PATTERN (Unit: mm)

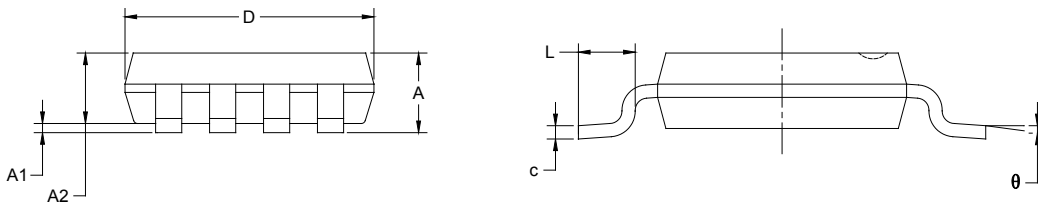
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	2.900	3.100	0.114	0.122
D1	1.600	1.800	0.063	0.071
E	2.900	3.100	0.114	0.122
E1	1.600	1.800	0.063	0.071
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.500 TYP		0.020 TYP	
L	0.300	0.500	0.012	0.020

PACKAGE OUTLINE DIMENSIONS

MSOP-8



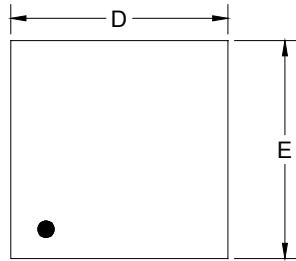
RECOMMENDED LAND PATTERN (Unit: mm)



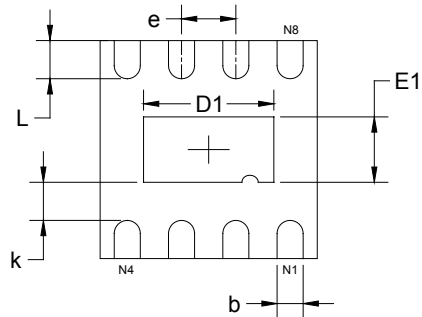
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.820	1.100	0.032	0.043
A1	0.020	0.150	0.001	0.006
A2	0.750	0.950	0.030	0.037
b	0.250	0.380	0.010	0.015
c	0.090	0.230	0.004	0.009
D	2.900	3.100	0.114	0.122
E	2.900	3.100	0.114	0.122
E1	4.750	5.050	0.187	0.199
e	0.650 BSC		0.026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

PACKAGE OUTLINE DIMENSIONS

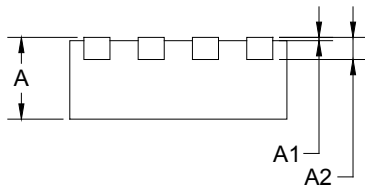
TDFN-2x2-8L



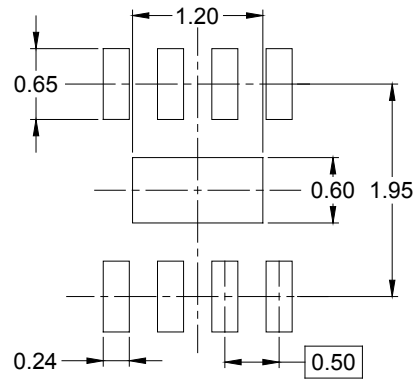
TOP VIEW



BOTTOM VIEW



SIDE VIEW



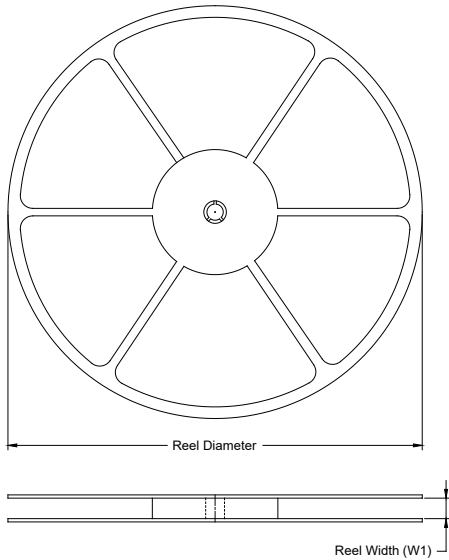
RECOMMENDED LAND PATTERN (Unit: mm)

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

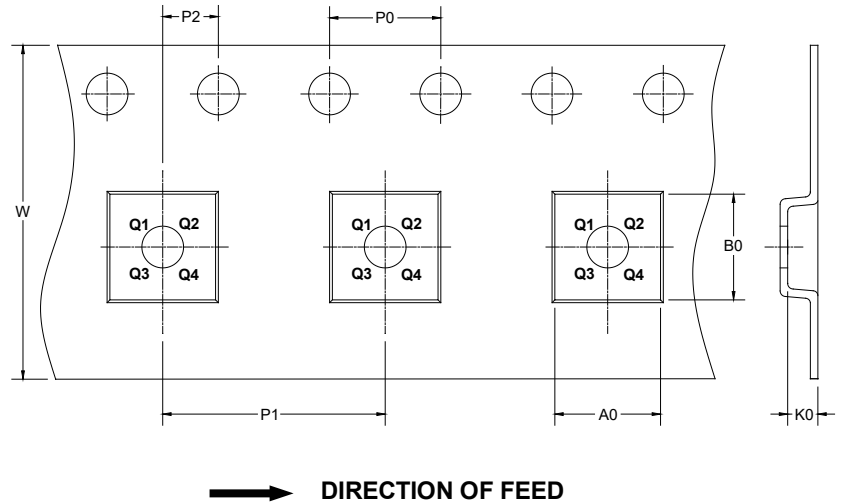
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

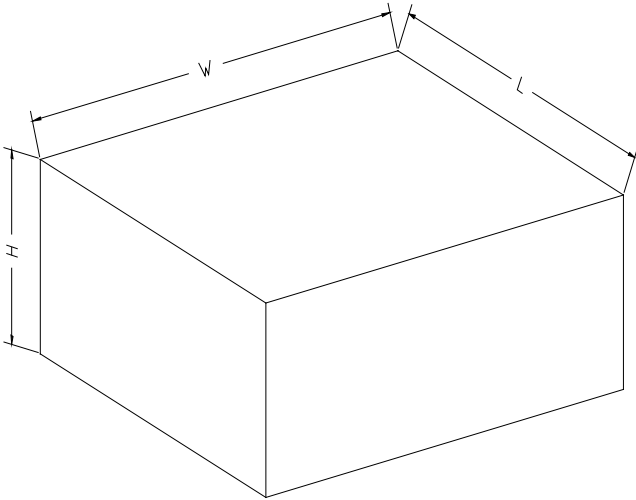
KEY PARAMETER LIST OF TAPE AND REEL

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-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

PACKAGE INFORMATION

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