



# SGNM73430

## 30V, Power, Single N-Channel, PDFN Package, MOSFET

### FEATURES

- High Power and Current Handling Capability
- Low On-State Resistance
- Low Total Gate Charge and Capacitance Losses
- RoHS Compliant and Halogen Free

### ABSOLUTE MAXIMUM RATINGS

| PARAMETER                            | SYMBOL    | VALUE       | UNITS |
|--------------------------------------|-----------|-------------|-------|
| Drain-to-Source Voltage              | $V_{DS}$  | 30          | V     |
| Gate-to-Source Voltage               | $V_{GS}$  | $\pm 20$    | V     |
| Drain Current (DC) <sup>(1)</sup>    | $I_D$     | 45          | A     |
| Drain Current (Pulse) <sup>(2)</sup> | $I_{DM}$  | 90          | A     |
| Total Dissipation                    | $P_D$     | 25          | W     |
| Avalanche Current <sup>(3)</sup>     | $I_{AS}$  | 36.4        | A     |
| Avalanche Energy <sup>(3)</sup>      | $E_{AS}$  | 66.25       | mJ    |
| Junction Temperature                 | $T_J$     | +150        | °C    |
| Storage Temperature Range            | $T_{STG}$ | -55 to +150 | °C    |
| Lead Temperature (Soldering, 10s)    |           | +260        | °C    |

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.

#### NOTES:

1.  $t_{PULSE} < 10\mu s$ .
2. Parts are 100% tested at  $V_{GS} = 10V$ ,  $I_L = 26A$ , and  $E_{AS} = 33.8mJ$ .

### APPLICATIONS

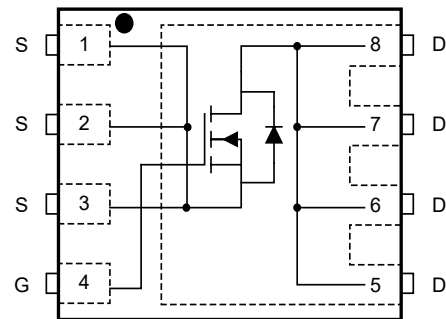
PWM Applications  
Power Load Switch  
Battery Management  
Wireless Chargers

### PRODUCT SUMMARY

| $R_{DS(on)}$ (TYP)<br>$V_{GS} = 10V$ | $R_{DS(on)}$ (MAX)<br>$V_{GS} = 10V$ | $I_D$ (MAX)<br>$T_c = +25^\circ C$ |
|--------------------------------------|--------------------------------------|------------------------------------|
| 4.9m $\Omega$                        | 7m $\Omega$                          | 45A                                |

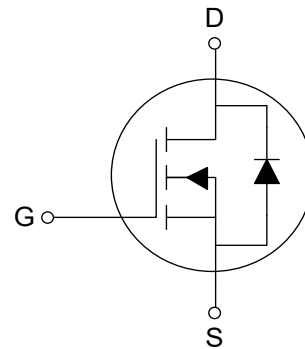
### PIN CONFIGURATION

(TOP VIEW)



PDFN-5x6-8BL

### EQUIVALENT CIRCUIT

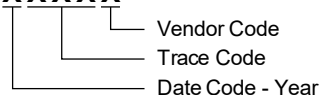


**PACKAGE/ORDERING INFORMATION**

| MODEL      | PACKAGE DESCRIPTION | SPECIFIED TEMPERATURE RANGE | ORDERING NUMBER     | PACKAGE MARKING          | PACKING OPTION      |
|------------|---------------------|-----------------------------|---------------------|--------------------------|---------------------|
| SGMNM73430 | PDFN-5×6-8BL        | -55°C to +150°C             | SGMNM73430TPDA8G/TR | SGM085<br>TPDA8<br>XXXXX | Tape and Reel, 4000 |

**MARKING INFORMATION**

NOTE: XXXXX = Date Code, Trace Code and Vendor Code.

**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.

**DISCLAIMER**

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

**THERMAL RESISTANCE MAXIMUM RATINGS**

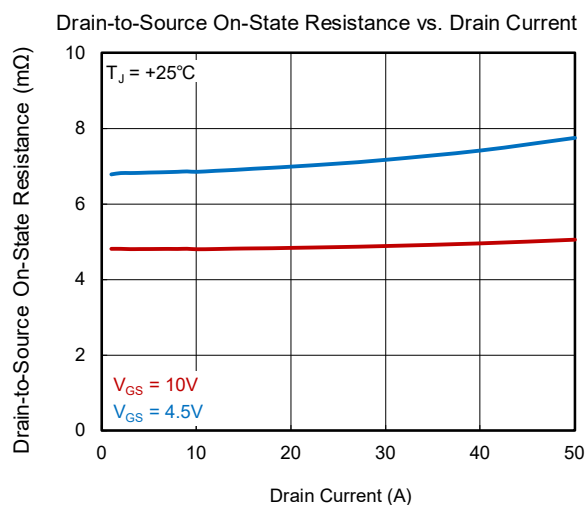
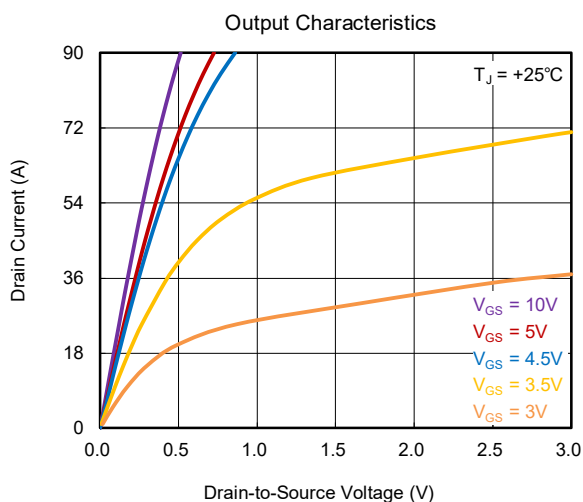
| PARAMETER                              | SYMBOL          | VALUE | UNITS |
|----------------------------------------|-----------------|-------|-------|
| Junction-to-Case Thermal Resistance    | $R_{\theta JC}$ | 5     | °C/W  |
| Junction-to-Ambient Thermal Resistance | $R_{\theta JA}$ | 45    | °C/W  |

## ELECTRICAL CHARACTERISTICS

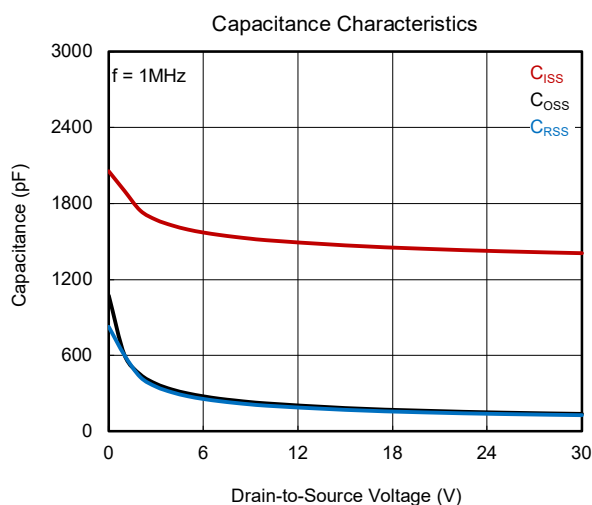
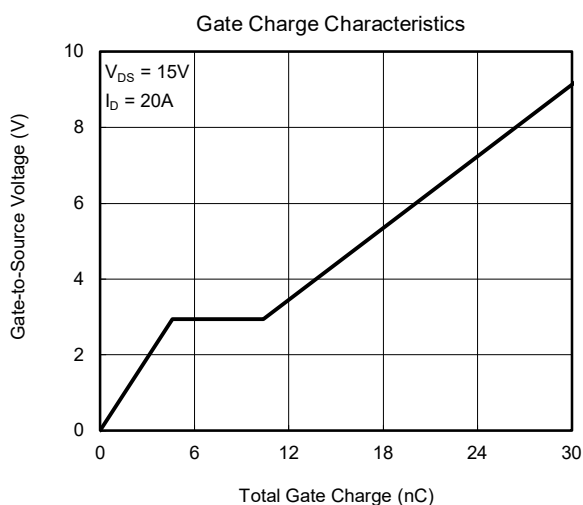
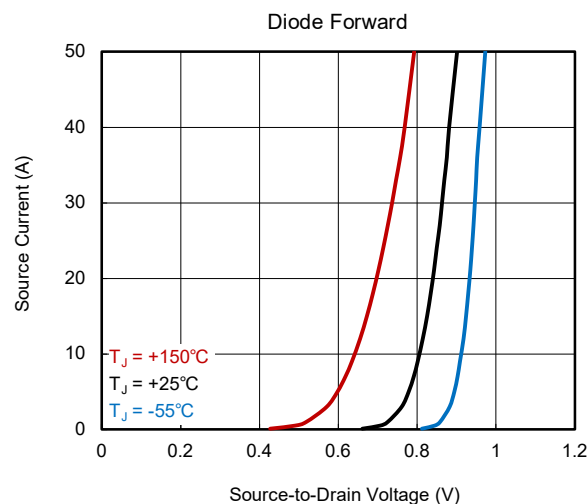
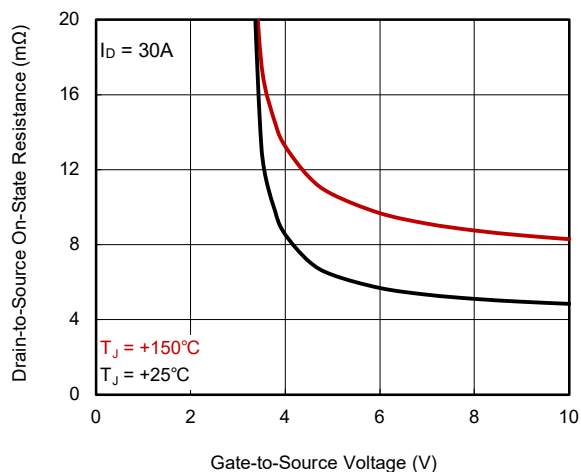
(T<sub>A</sub> = +25°C, unless otherwise noted.)

| PARAMETER                           | SYMBOL              | CONDITIONS                                                                              |                        | MIN | TYP  | MAX  | UNITS |
|-------------------------------------|---------------------|-----------------------------------------------------------------------------------------|------------------------|-----|------|------|-------|
| Static OFF Characteristics          |                     |                                                                                         |                        |     |      |      |       |
| Drain-to-Source Breakdown Voltage   | V <sub>BR_DSS</sub> | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA                                            |                        | 30  |      |      | V     |
| Zero Gate Voltage Drain Current     | I <sub>DSS</sub>    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 24V                                             |                        |     |      | 1    | μA    |
| Gate-to-Source Leakage Current      | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V                                            |                        |     |      | ±100 | nA    |
| Static ON Characteristics           |                     |                                                                                         |                        |     |      |      |       |
| Gate-to-Source Threshold Voltage    | V <sub>GS_TH</sub>  | V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250μA                              |                        | 1   | 1.5  | 2    | V     |
| Drain-to-Source On-State Resistance | R <sub>DSON</sub>   | V <sub>GS</sub> = 10V, I <sub>D</sub> = 30A                                             |                        |     | 4.9  | 7    | mΩ    |
|                                     |                     | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 20A                                            |                        |     | 6.8  | 10   |       |
| Forward Transconductance            | g <sub>FS</sub>     | V <sub>DS</sub> = 5V, I <sub>D</sub> = 20A                                              |                        |     | 25   |      | S     |
| Gate Resistance                     | R <sub>G</sub>      | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz                                    |                        |     | 1.2  |      | Ω     |
| Diode Characteristics               |                     |                                                                                         |                        |     |      |      |       |
| Diode Forward Voltage               | V <sub>F_SD</sub>   | V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A                                               |                        |     | 0.7  | 1.2  | V     |
| Reverse Recovery Time               | t <sub>RR</sub>     | V <sub>GS</sub> = 0V, I <sub>S</sub> = 20A, di/dt = 100A/μs                             |                        |     | 10   |      | ns    |
| Reverse Recovery Charge             | Q <sub>RR</sub>     |                                                                                         |                        |     | 3.4  |      | nC    |
| Dynamic Characteristics             |                     |                                                                                         |                        |     |      |      |       |
| Input Capacitance                   | C <sub>ISS</sub>    | V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz                                   |                        |     | 1477 |      | pF    |
| Output Capacitance                  | C <sub>OSS</sub>    |                                                                                         |                        |     | 185  |      |       |
| Reverse Transfer Capacitance        | C <sub>RSS</sub>    |                                                                                         |                        |     | 165  |      |       |
| Total Gate Charge                   | Q <sub>G</sub>      | V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A                                             | V <sub>GS</sub> = 10V  |     | 32.8 |      | nC    |
|                                     |                     |                                                                                         | V <sub>GS</sub> = 4.5V |     | 15.8 |      |       |
| Gate-to-Source Charge               | Q <sub>GS</sub>     | V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A                     |                        |     | 4.6  |      |       |
| Gate-to-Drain Charge                | Q <sub>GD</sub>     |                                                                                         |                        |     | 5.8  |      |       |
| Switch Characteristics              |                     |                                                                                         |                        |     |      |      |       |
| Turn-On Delay Time                  | t <sub>D_ON</sub>   | V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 20A, R <sub>G</sub> = 3Ω |                        |     | 18   |      | ns    |
| Rise Time                           | t <sub>R</sub>      |                                                                                         |                        |     | 49   |      |       |
| Turn-Off Delay Time                 | t <sub>D_OFF</sub>  |                                                                                         |                        |     | 33   |      |       |
| Fall Time                           | t <sub>F</sub>      |                                                                                         |                        |     | 25   |      |       |

## TYPICAL PERFORMANCE CHARACTERISTICS

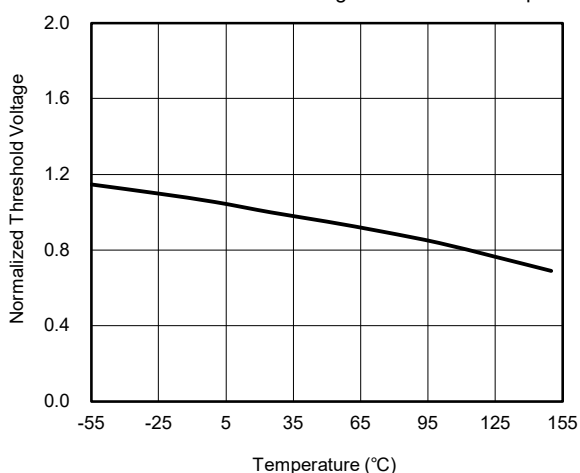


Drain-to-Source On-State Resistance vs. Gate-to-Source Voltage

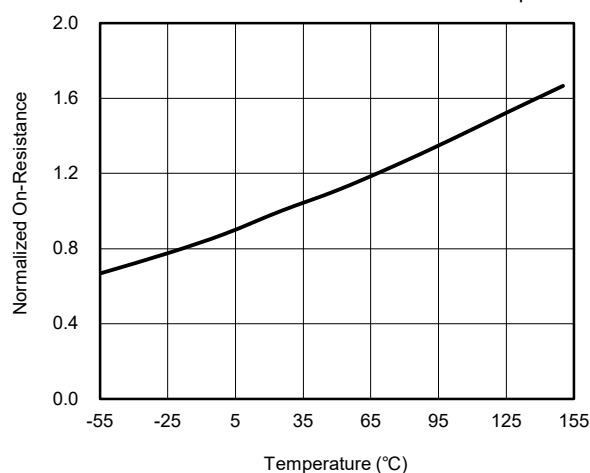


## TYPICAL PERFORMANCE CHARACTERISTICS (continued)

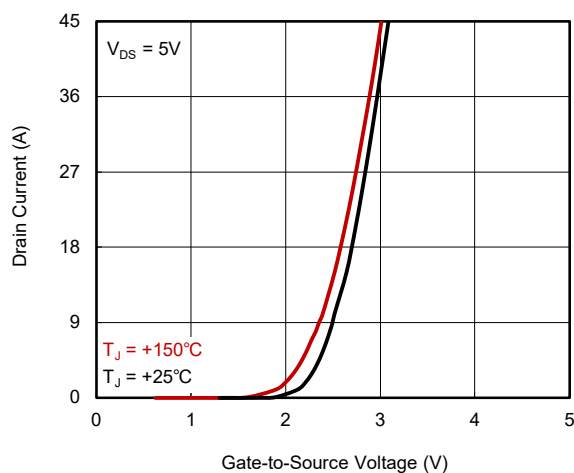
Normalized Threshold Voltage vs. Junction Temperature



Normalized On-Resistance vs. Junction Temperature



Transfer Characteristics



## REVISION HISTORY

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

## JANUARY 2024 – REV.A to REV.A.1

Page

Updated product summary and diode forward curve ..... 1

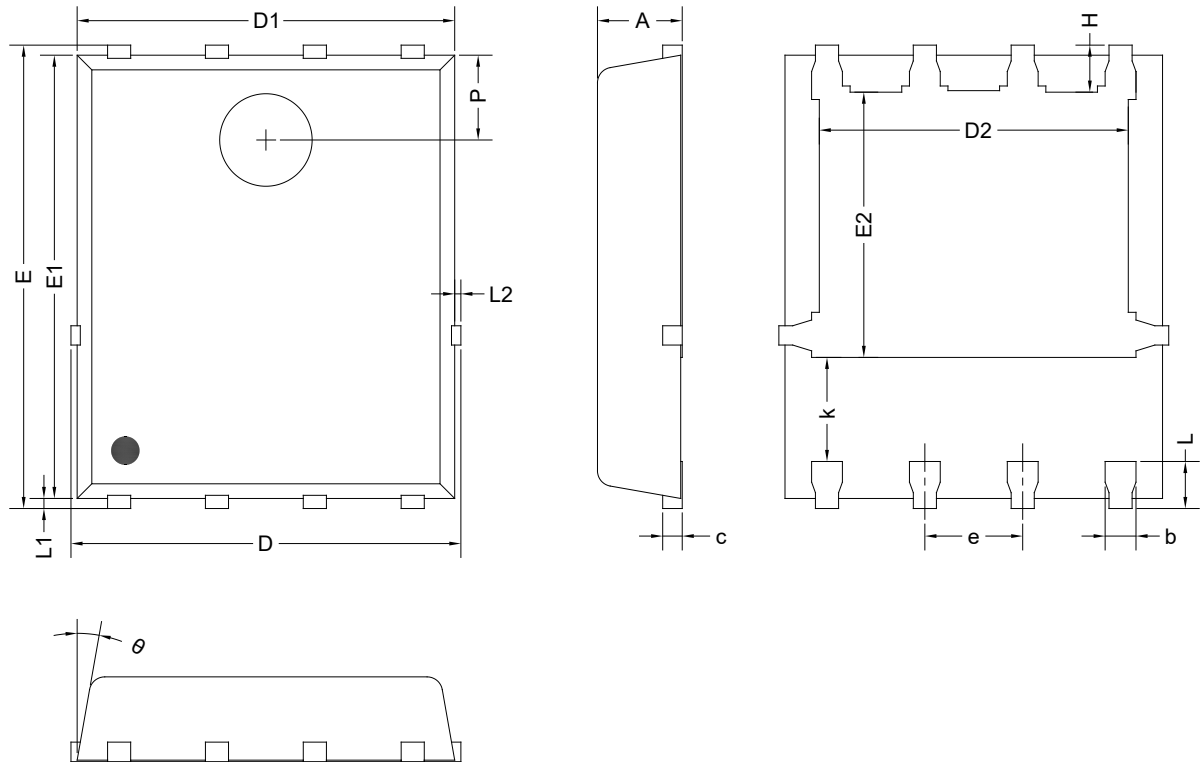
## Changes from Original (DECEMBER 2023) to REV.A

Page

Changed from Product Preview to Production Data ..... All

## PACKAGE OUTLINE DIMENSIONS

### PDFN-5×6-8BL



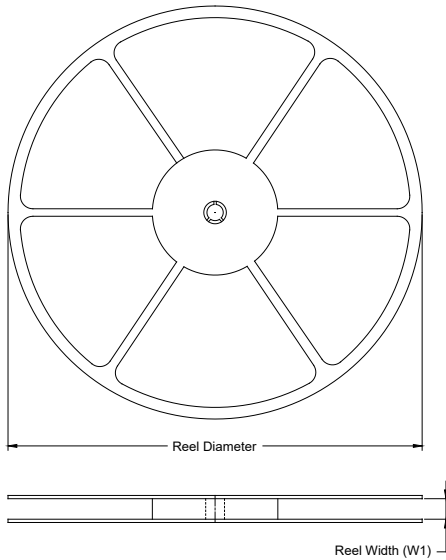
| Symbol | Dimensions In Millimeters |       |       |
|--------|---------------------------|-------|-------|
|        | MIN                       | NOM   | MAX   |
| A      | 1.000                     | 1.100 | 1.200 |
| b      | 0.350                     | 0.400 | 0.450 |
| c      | 0.210                     | 0.250 | 0.340 |
| D      | 4.800                     | -     | 5.100 |
| D1     | 4.800                     | 4.900 | 5.000 |
| D2     | 3.910                     | 4.010 | 4.110 |
| E      | 5.900                     | 6.000 | 6.100 |
| E1     | 5.700                     | 5.750 | 5.800 |
| E2     | 3.340                     | 3.440 | 3.540 |
| e      | 1.270 BSC                 |       |       |
| H      | 0.510                     | 0.610 | 0.710 |
| k      | 1.100                     | -     | -     |
| L      | 0.510                     | 0.610 | 0.710 |
| L1     | 0.060                     | 0.130 | 0.200 |
| L2     | -                         | -     | 0.100 |
| P      | 1.000                     | 1.100 | 1.200 |
| θ      | 8°                        | 10°   | 12°   |

NOTE: This drawing is subject to change without notice.

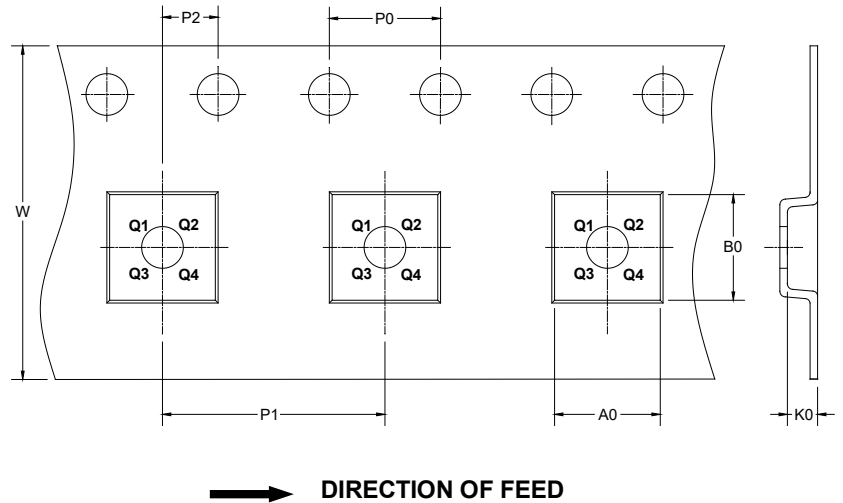
# PACKAGE INFORMATION

## TAPE AND REEL INFORMATION

### REEL DIMENSIONS



### TAPE DIMENSIONS



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

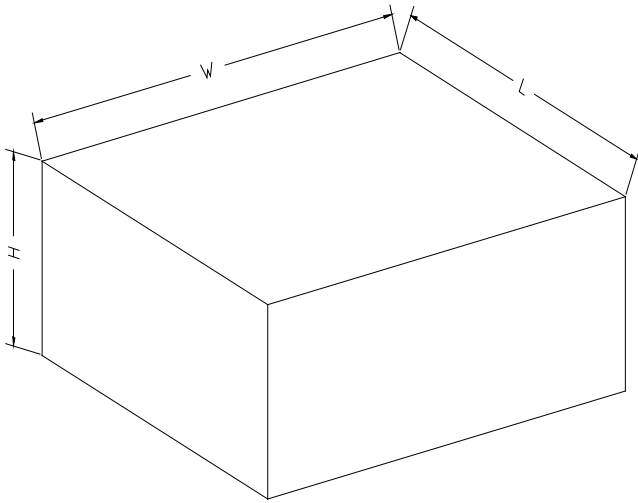
### KEY PARAMETER LIST OF TAPE AND REEL

| Package Type | Reel Diameter | Reel Width W1 (mm) | A0 (mm) | B0 (mm) | K0 (mm) | P0 (mm) | P1 (mm) | P2 (mm) | W (mm) | Pin1 Quadrant |
|--------------|---------------|--------------------|---------|---------|---------|---------|---------|---------|--------|---------------|
| PDFN-5×6-8BL | 13"           | 12.4               | 6.45    | 5.30    | 1.40    | 4.0     | 8.0     | 2.0     | 12.0   | 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<br>(mm) | Width<br>(mm) | Height<br>(mm) | Pizza/Carton |
|-----------|----------------|---------------|----------------|--------------|
| 13"       | 386            | 280           | 370            | 5            |

DP0002