

FEATURES

- High Power and Current Handling Capability
- Low On-State Resistance
- Low Q_G 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}	±20	V
Drain Current ⁽¹⁾	T _C = +25°C	I _D	18.5	A
	T _C = +100°C		11	
	T _A = +25°C		10	
	T _A = +70°C		8	
Drain Current (Pulse) ⁽²⁾		I _{DM}	90	A
Total Dissipation	T _C = +25°C	P _D	27	W
	T _C = +100°C		10	
	T _A = +25°C		2.2	
	T _A = +70°C		1.4	
Avalanche Current ⁽³⁾		I _{AS}	34	A
Avalanche Energy ⁽³⁾		E _{AS}	57.8	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.

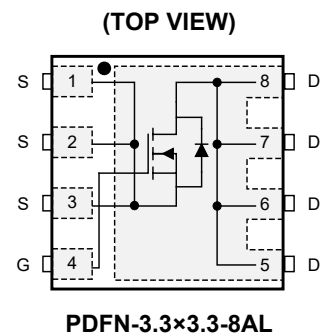
NOTES

1. The current will be limited by package, PCB, thermal design and operating temperature.
2. $t_{PLUSE} < 10\mu\text{s}$.
3. Parts are 100% tested at $V_{GS} = 10\text{V}$, $I_L = 24\text{A}$, $E_{AS} = 28.8\text{mJ}$.

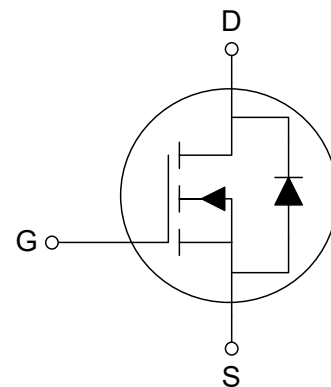
PRODUCT SUMMARY

$R_{DS(on)}$ (TYP) $V_{GS} = 10\text{V}$	$R_{DS(on)}$ (MAX) $V_{GS} = 10\text{V}$	I_D (MAX) $T_C = +25^\circ\text{C}$
8m Ω	10m Ω	18.5A

PIN CONFIGURATION



EQUIVALENT CIRCUIT



APPLICATIONS

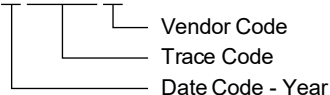
DC/DC Converters
Relay Driver Applications
Power Load Switch
Notebook Battery Management

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNM10330	PDFN-3.3×3.3-8AL	-55°C to +150°C	SGMNM10330TPDB8G/TR	SGM05U TPDB8 XXXXX	Tape and Reel, 5000

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

PARAMETER	SYMBOL	TYP	UNITS
Junction to Case Thermal Resistance	$R_{\theta JC}$	4.6	°C/W
Junction to Ambient Thermal Resistance ⁽¹⁾	$R_{\theta JA}$	56	°C/W

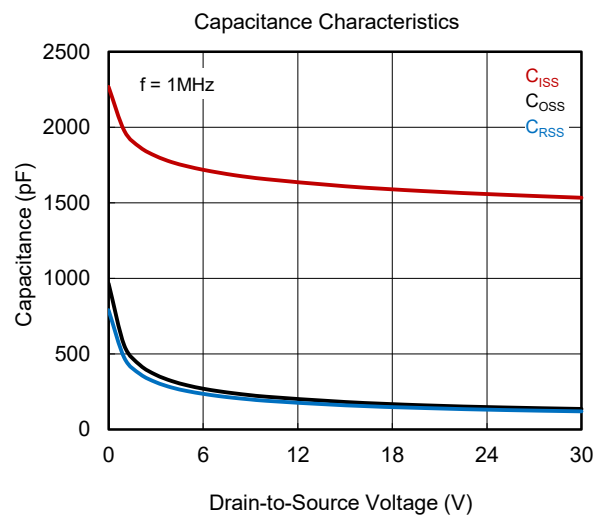
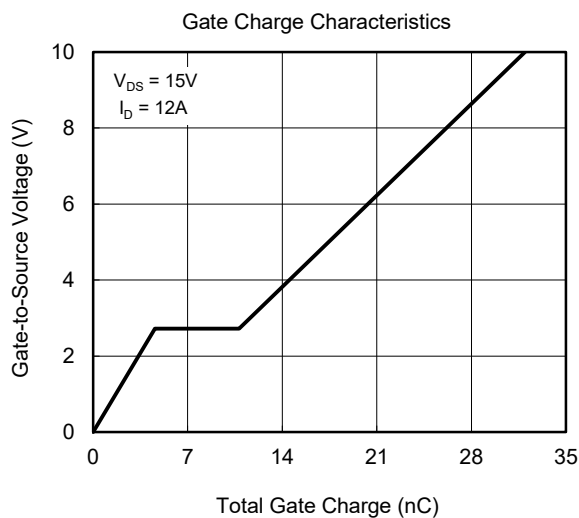
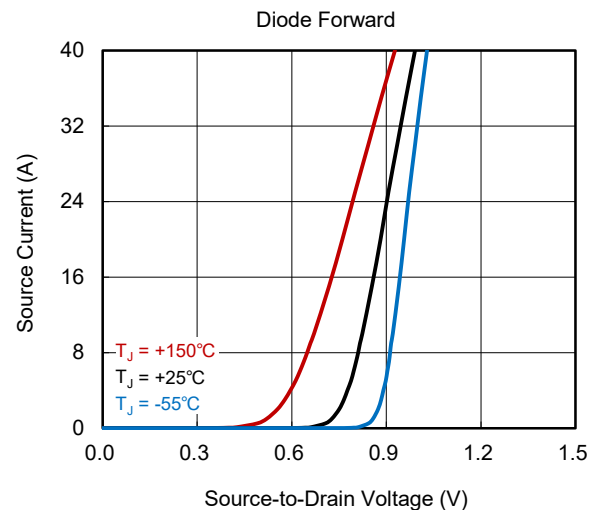
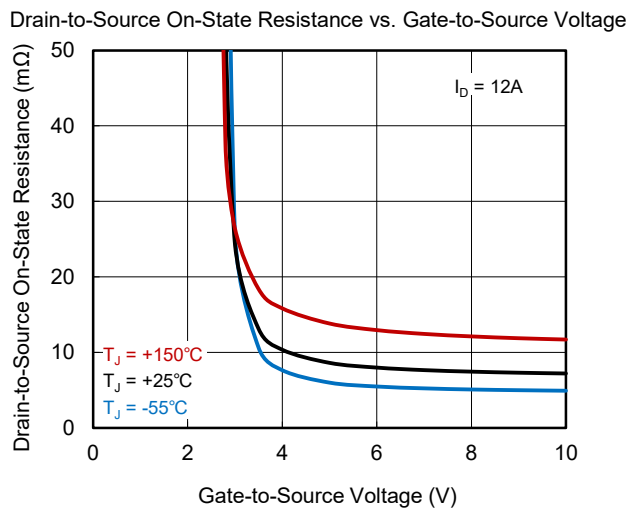
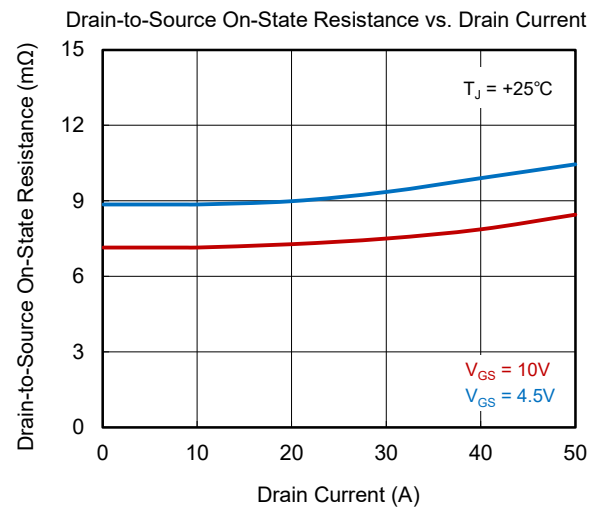
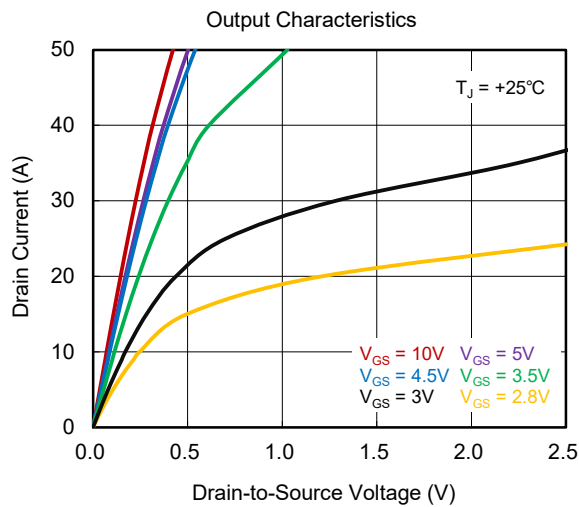
NOTE: 1. $R_{\theta JA}$ is determined with the device mounted on one square inch of copper pad, 2oz copper on FR4 board.

ELECTRICAL CHARACTERISTICS

(T_A = +25°C, unless otherwise noted.)

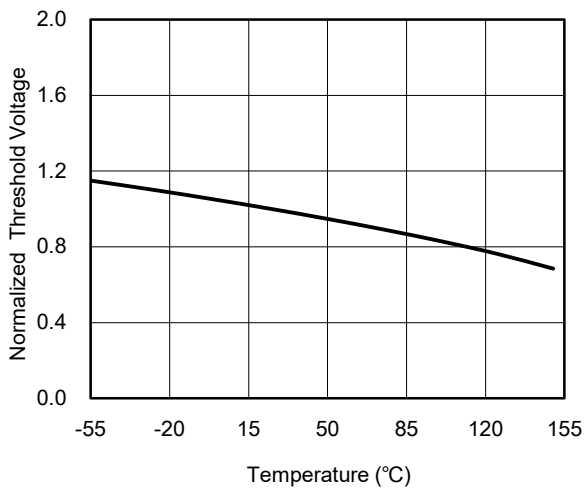
PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Static OFF Characteristics							
Drain-to-Source Breakdown Voltage	V _{BRDSS}	V _{GS} = 0V, I _D = 250μA		30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} = 0V, V _{DS} = 24V				1	μA
Gate-to-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V				±100	nA
Static ON Characteristics							
Gate-to-Source Threshold Voltage	V _{GS_TH}	V _{GS} = V _{DS} , I _D = 250μA		1	1.5	2	V
Drain-to-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 12A			8	10	mΩ
		V _{GS} = 4.5V, I _D = 10A			10	13	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 12A			16		S
Gate Resistance	R _G	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz			1		Ω
Diode Characteristics							
Diode Forward Voltage	V _{F_SD}	V _{GS} = 0V, I _S = 1A			0.7	1.2	V
Reverse Recovery Time	t _{RR}	V _{GS} = 0V, I _S = 12A, di/dt = 100A/μs			9		ns
Reverse Recovery Charge	Q _{RR}				2		nC
Dynamic Characteristics							
Input Capacitance	C _{ISS}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz			1529		pF
Output Capacitance	C _{OSS}				185		
Reverse Transfer Capacitance	C _{RSS}				165		
Total Gate Charge	Q _G	V _{DS} = 15V, I _D = 12A	V _{GS} = 10V		33		nC
			V _{GS} = 4.5V		16		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 12A			5		
Gate-to-Drain Charge	Q _{GD}				6.5		
Switch Characteristics							
Turn-On Delay Time	t _{D_ON}	V _{GS} = 10V, V _{DS} = 15V, I _D = 12A, R _G = 3Ω			5		ns
Rise Time	t _R				29		
Turn-Off Delay Time	t _{D_OFF}				24		
Fall Time	t _F				10		

TYPICAL PERFORMANCE CHARACTERISTICS

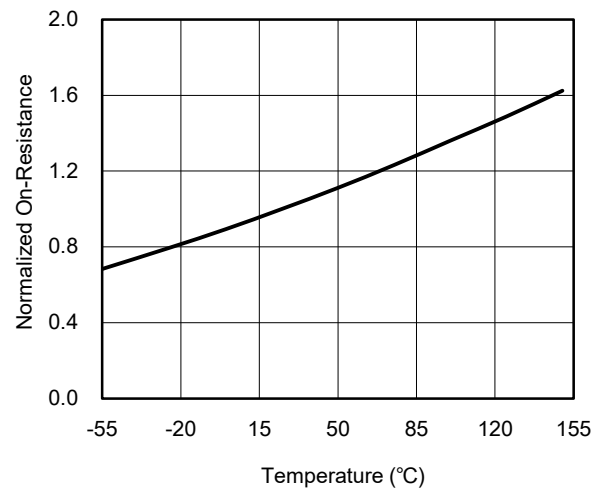


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

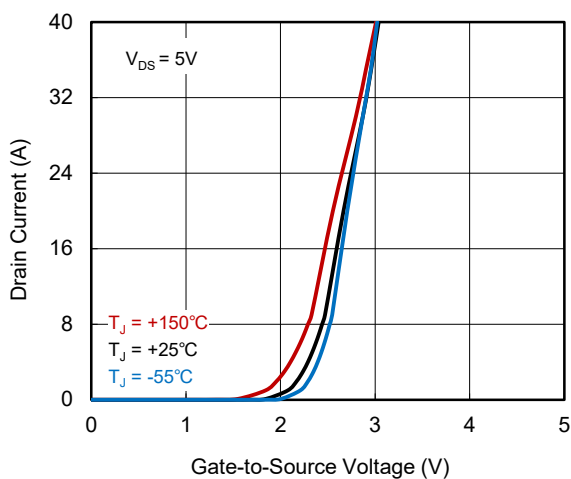
Normalized Threshold Voltage vs. Junction Temperature



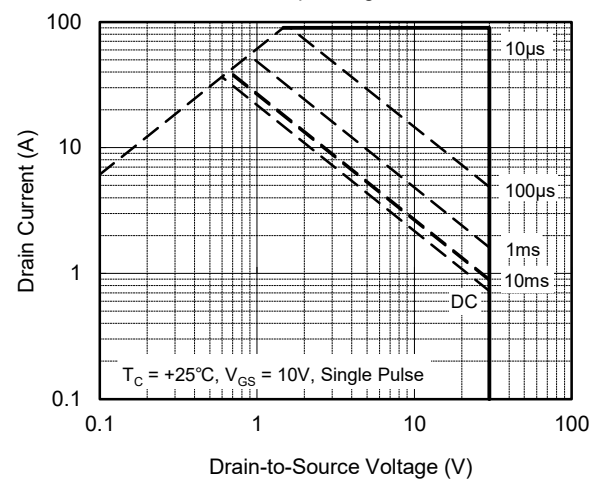
Normalized On-Resistance vs. Junction Temperature



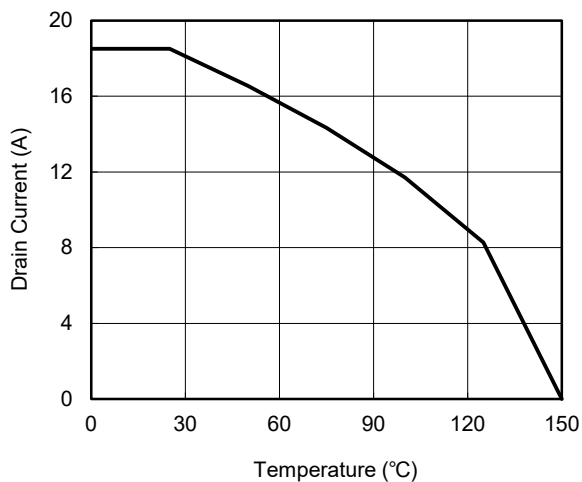
Transfer Characteristics



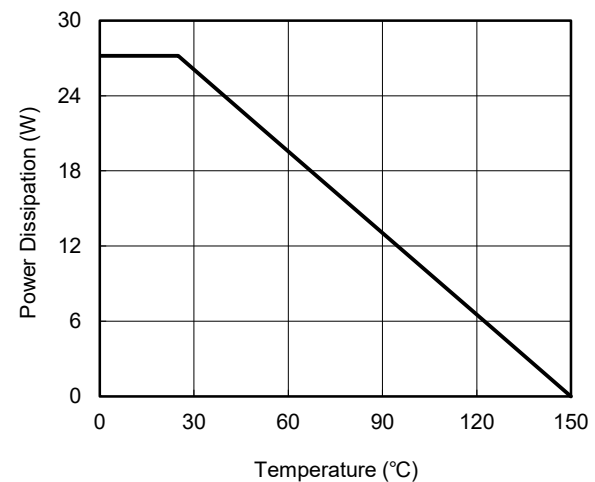
Safe Operating Area



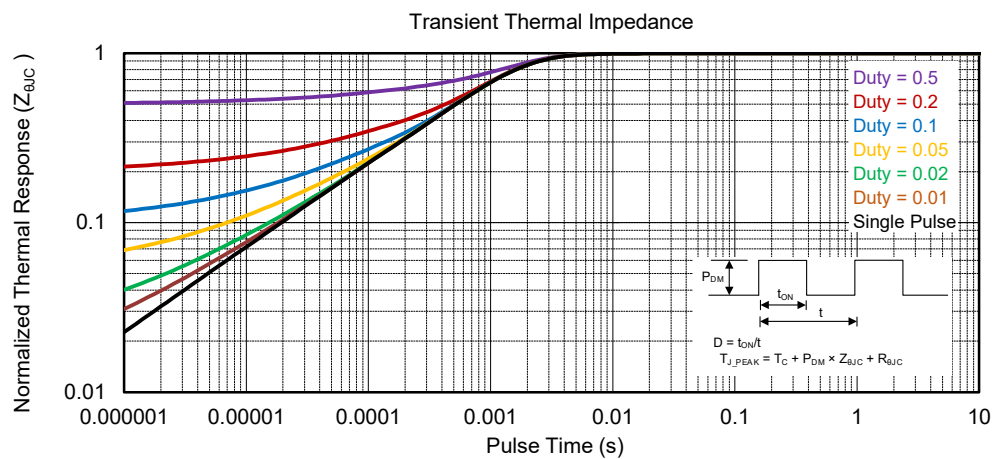
Drain Current vs. Junction Temperature



Power Dissipation vs. Junction Temperature



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



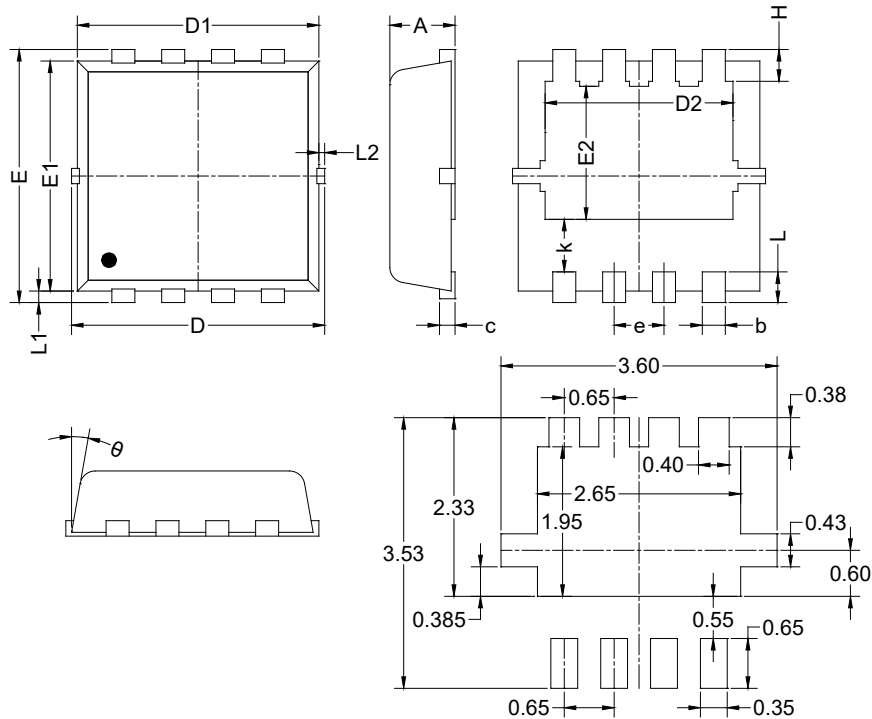
REVISION HISTORY

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

Changes from Original to REV.A (NOVEMBER 2025)	Page
Changed from product preview to production data.....	All

PACKAGE OUTLINE DIMENSIONS

PDFN-3.3×3.3-8AL



RECOMMENDED LAND PATTERN (Unit: mm)

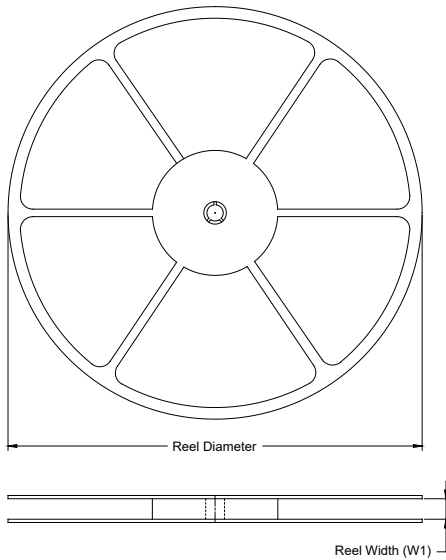
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	0.800	0.900
b	0.250	0.300	0.350
c	0.140	0.150	0.200
D	3.100	3.300	3.500
D1	3.050	3.150	3.250
D2	2.350	2.450	2.550
E	3.100	3.300	3.500
E1	2.900	3.000	3.100
E2	1.640	1.740	1.840
e	0.650 BSC		
H	0.320	0.420	0.520
k	0.590	0.690	0.790
L	0.250	0.400	0.550
L1	0.100	0.150	0.200
L2	-	-	0.150
θ	8°	10°	12°

NOTE: This drawing is subject to change without notice.

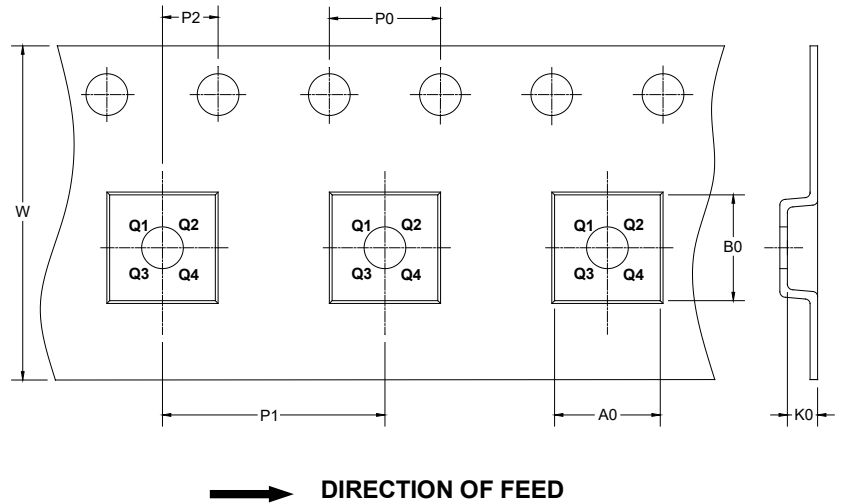
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

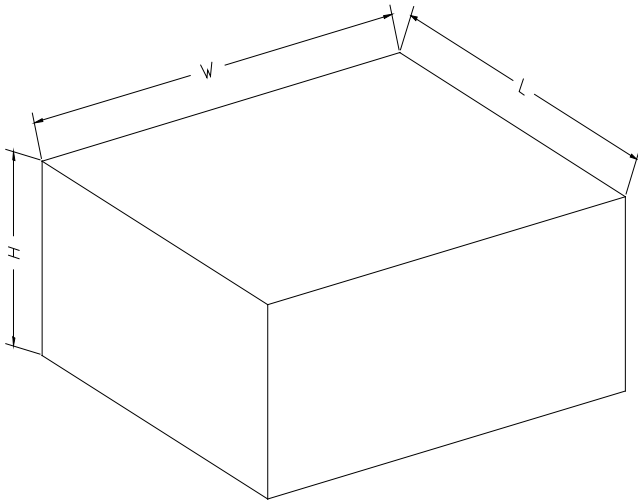
KEY PARAMETER LIST OF TAPE AND REEL

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-3.3×3.3-8AL	13"	12.4	3.60	3.60	1.10	4.0	8.0	2.0	12.0	Q1

DD00001

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
13"	386	280	370	5

DP0002