

FEATURES

- Low On-State Resistance
- Low Total Gate Charge and Capacitance Losses
- Small Footprint for Compact Design
- RoHS Compliant and Halogen Free

PRODUCT SUMMARY

PACKAGE	R _{DS(on)} (TYP) V _{GS} = 10V	R _{DS(on)} (MAX) V _{GS} = 10V	I _D (MAX) T _C = +25°C
TDFN-2×2-6BL	3.1mΩ	3.9mΩ	91A
PDFN-3.3×3.3-8L	3.1mΩ	3.9mΩ	101A

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⁾ TDFN-2×2-6BL	I _D	T _C = +25°C	91
		T _C = +100°C	58
		T _A = +25°C	19
		T _A = +100°C	12
Drain Current ⁽¹⁾ PDFN-3.3×3.3-8L	I _D	T _C = +25°C	101
		T _C = +100°C	63
		T _A = +25°C	21
		T _A = +100°C	13
Drain Current (Pulse) ⁽²⁾ TDFN-2×2-6BL	I _{DM}	160	A
Drain Current (Pulse) ⁽²⁾ PDFN-3.3×3.3-8L	I _{DM}	200	A
Total Dissipation TDFN-2×2-6BL	P _D	T _C = +25°C	54
		T _C = +100°C	21
		T _A = +25°C	1.9
		T _A = +100°C	0.76
Total Dissipation PDFN-3.3×3.3-8L	P _D	T _C = +25°C	65
		T _C = +100°C	26
		T _A = +25°C	2.2
		T _A = +100°C	0.89
Avalanche Current ⁽³⁾	I _{AS}	31.9	A
Avalanche Energy ⁽³⁾	E _{AS}	50.9	mJ
Junction Temperature	T _J	+150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C
Lead Temperature(Soldering, 10s)		+260	°C

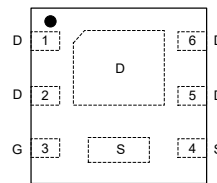
Stresses beyond those listed in Absolute Maximum Ratings may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect reliability.

NOTES:

1. The current will be limited by PCB, thermal design and operating temperature.
2. t_{PLUSE} < 10μs.
3. Parts are 100% tested at V_{GS} = 10V, I_L = 22.6A, and E_{AS} = 25.5mJ.

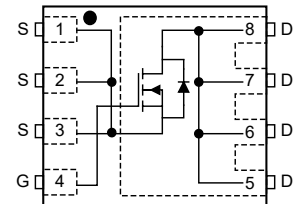
PIN CONFIGURATIONS

(TOP VIEW)



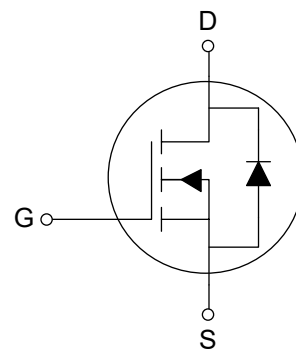
TDFN-2×2-6BL

(TOP VIEW)



PDFN-3.3×3.3-8L

EQUIVALENT CIRCUIT



APPLICATIONS

VBUS OVP Switch
Battery Charging and Discharging Switch
DC/DC Converters

PACKAGE/ORDERING INFORMATION

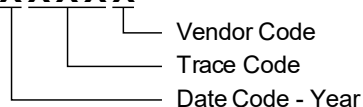
MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMNQ32430	TDFN-2×2-6BL	-55°C to +150°C	SGMNQ32430TTEN6G/TR	0GZ XXXX	Tape and Reel, 3000
	PDFN-3.3×3.3-8L	-55°C to +150°C	SGMNQ32430TPDB8G/TR	SGM0FZ TPDB8 XXXXX	Tape and Reel, 5000

MARKING INFORMATION

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

PDFN-3.3×3.3-8L

XXXXX

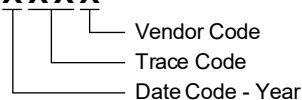


NOTE: XXXX = Date Code, Trace Code and Vendor Code.

TDFN-2×2-6BL

YYY— Serial Number

XXXX



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	TDFN-2×2-6BL	$R_{\theta JC}$	2.3	°C/W
	PDFN-3.3×3.3-8L		1.9	
Junction-to-Ambient Thermal Resistance ⁽¹⁾	TDFN-2×2-6BL	$R_{\theta JA}$	65	°C/W
	PDFN-3.3×3.3-8L		56	

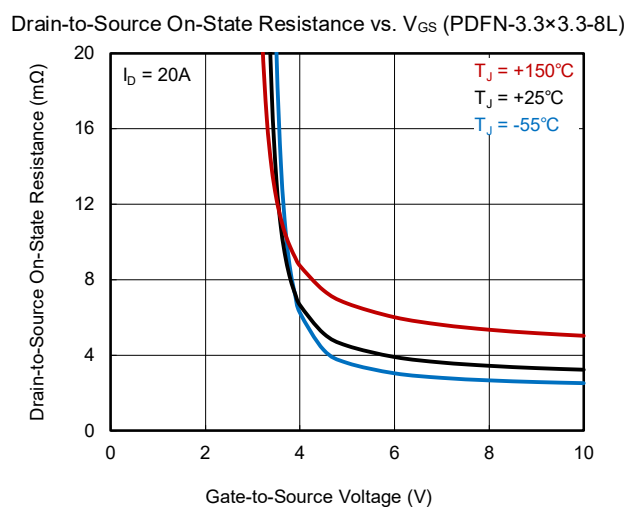
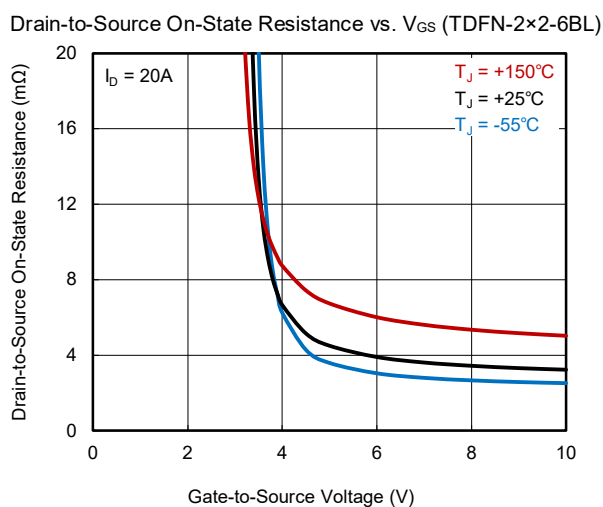
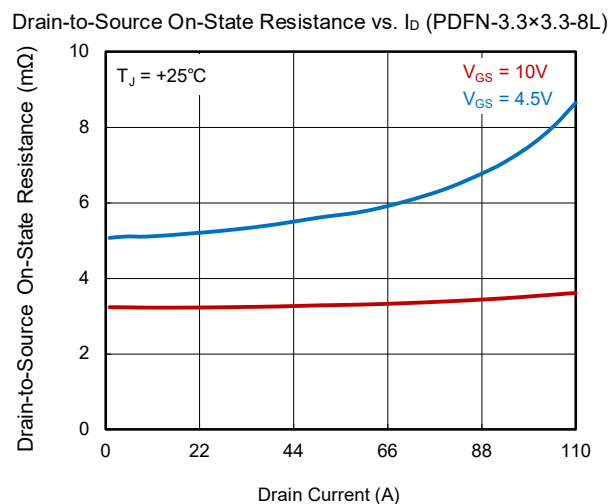
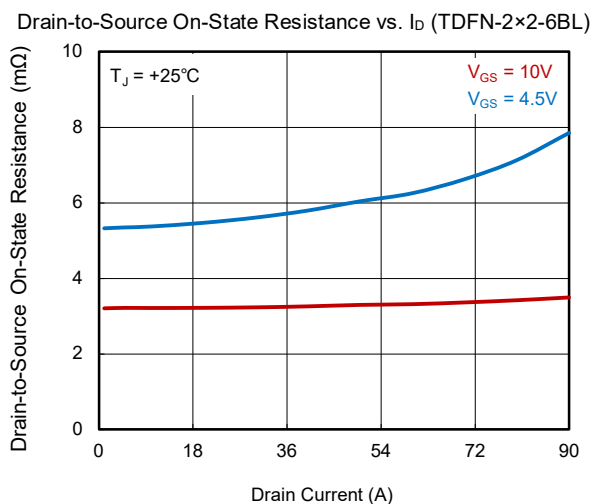
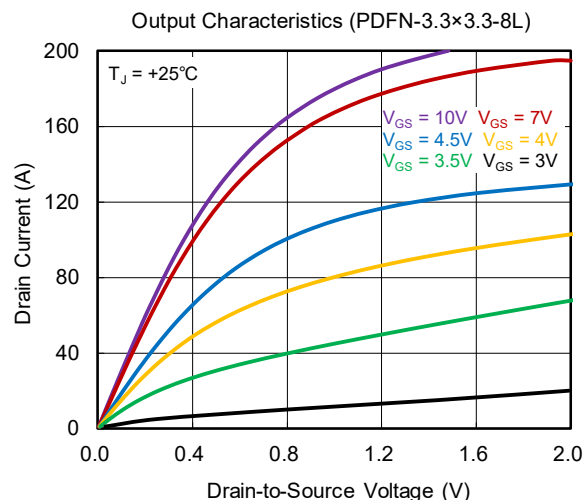
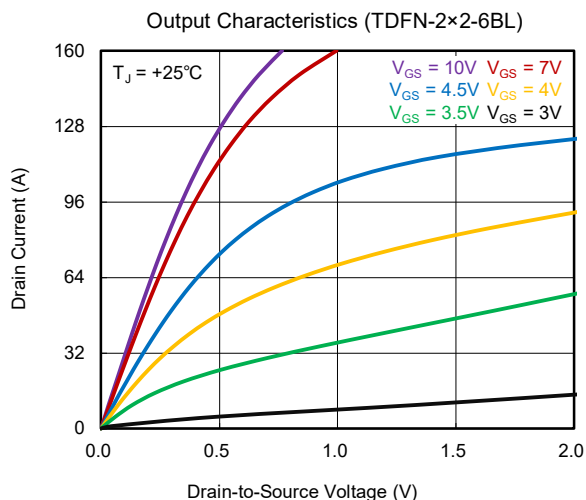
NOTE: 1. $R_{\theta JA}$ is determined with the device mounted on one square inch of copper pad, 2oz copper on FR4 board.

ELECTRICAL CHARACTERISTICS

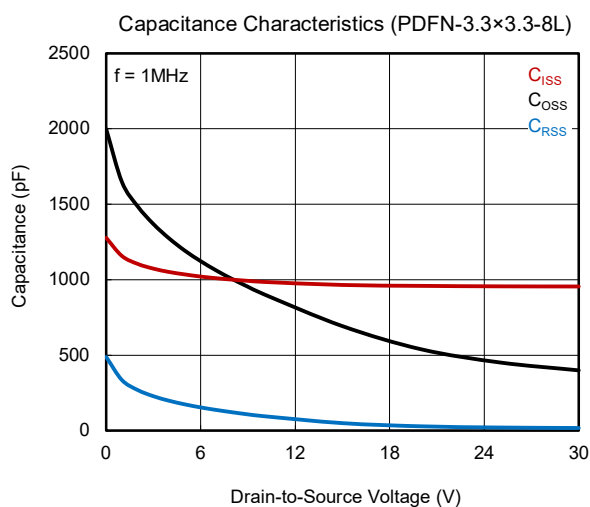
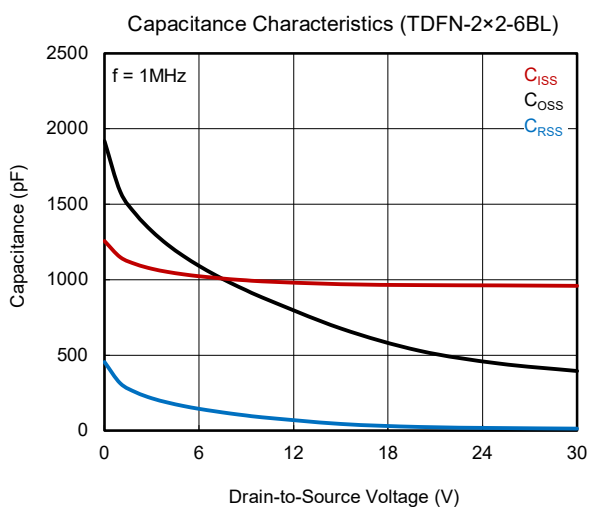
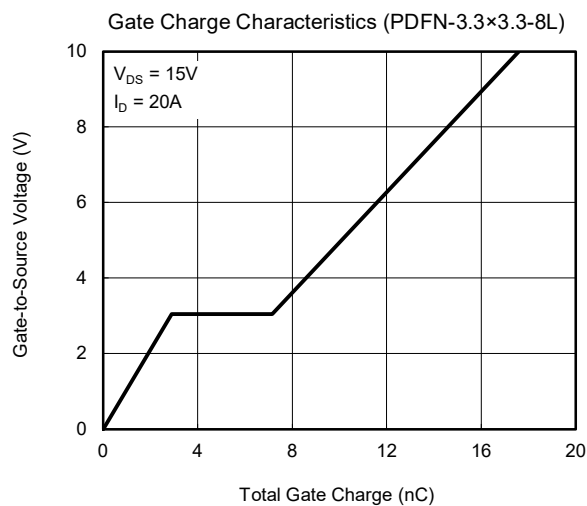
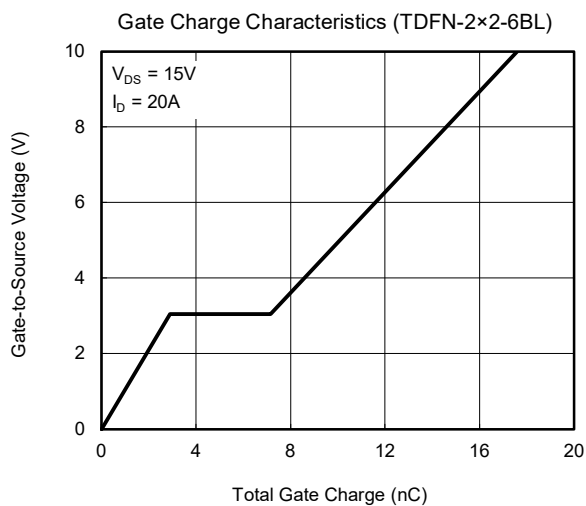
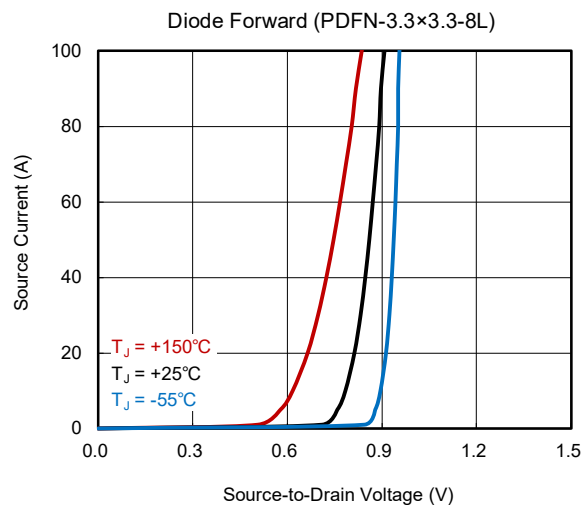
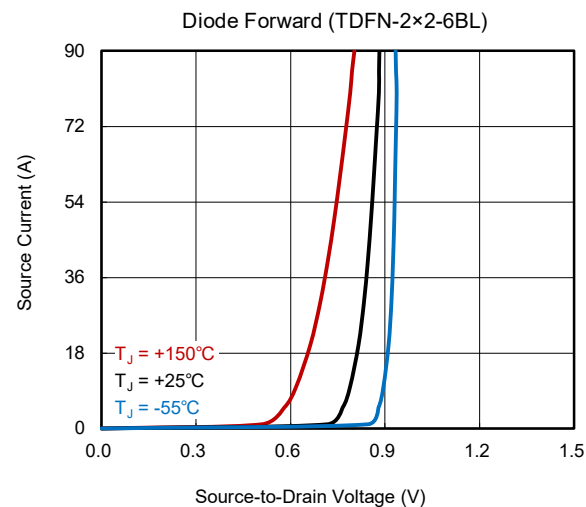
(T_A = +25°C, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Static OFF Characteristics							
Drain-to-Source Breakdown Voltage	V _{BR_DSS}	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		1.2	1.6	2.2	V
Drain-to-Source On-State Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 20A			3.1	3.9	mΩ
		V _{GS} = 4.5V, I _D = 15A			5.3	6.9	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 15A			18		S
Gate Resistance	R _G	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz			1.5		Ω
Diode Characteristics							
Diode Forward Voltage	V _{F_SD}	V _{GS} = 0V, I _S = 20A			0.8	1.2	V
Reverse Recovery Time	t _{RR}	V _{GS} = 0V, I _S = 20A, di/dt = 100A/μs			30.6		ns
Reverse Recovery Charge	Q _{RR}				18.8		nC
Dynamic Characteristics							
Input Capacitance	C _{ISS}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz			960		pF
Output Capacitance	C _{OSS}				668		
Reverse Transfer Capacitance	C _{RSS}				42		
Total Gate Charge	Q _G	V _{DS} = 15V, I _D =20A	V _{GS} = 10V		17.6		nC
			V _{GS} = 4.5V		9.1		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 20A			3.1		
Gate-to-Drain Charge	Q _{GD}				4.1		
Switch Characteristics							
Turn-On Delay Time	t _{D_ON}	V _{GS} = 10V, V _{DS} = 15V, I _D = 20A, R _G = 3Ω			6.3		ns
Rise Time	t _R				27.5		
Turn-Off Delay Time	t _{D_OFF}				14.1		
Fall Time	t _F				3.9		

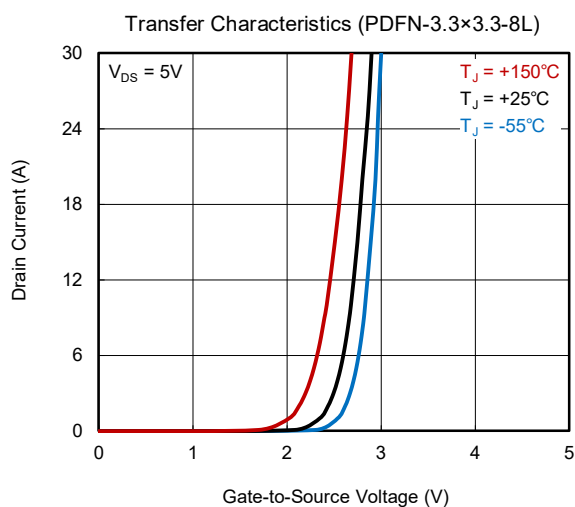
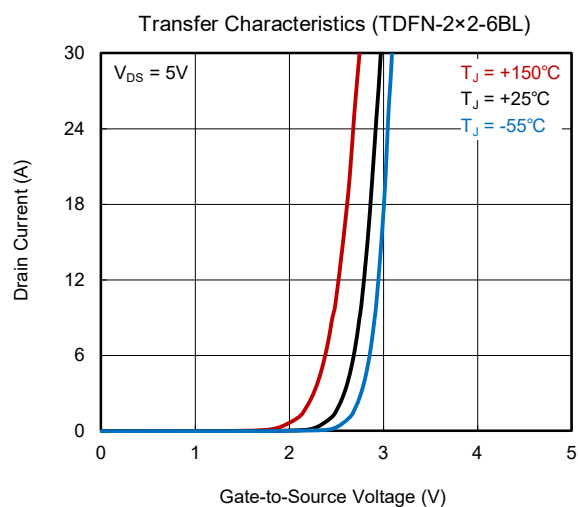
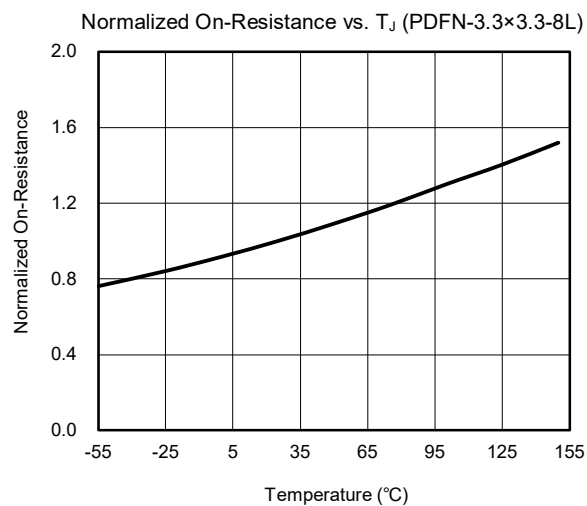
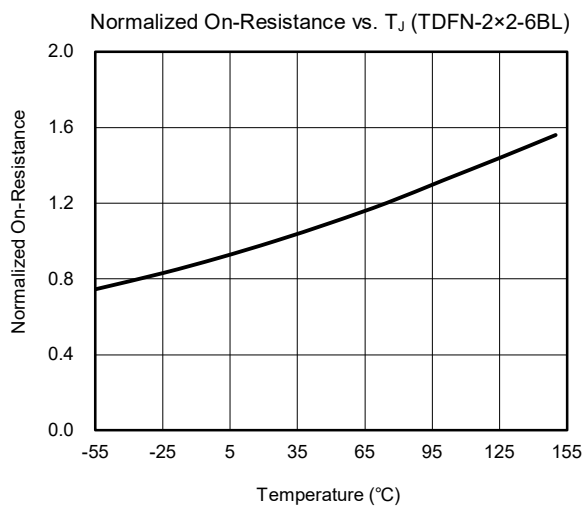
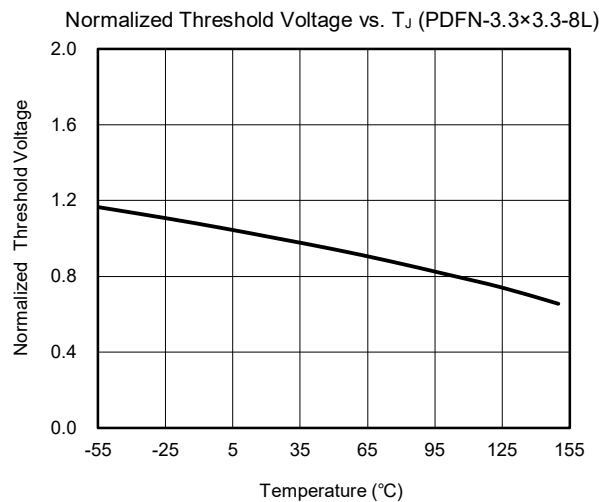
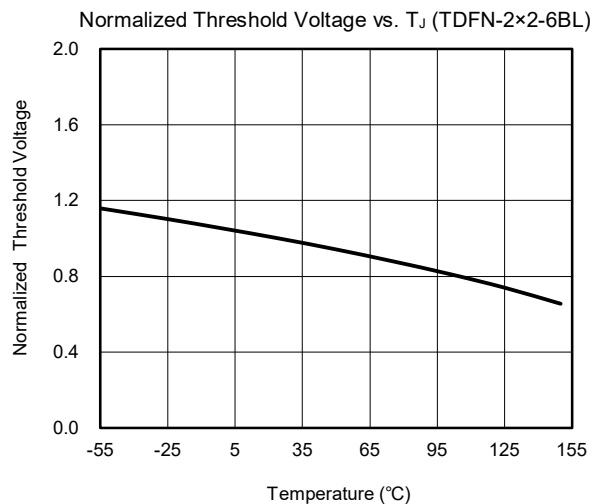
TYPICAL PERFORMANCE CHARACTERISTICS



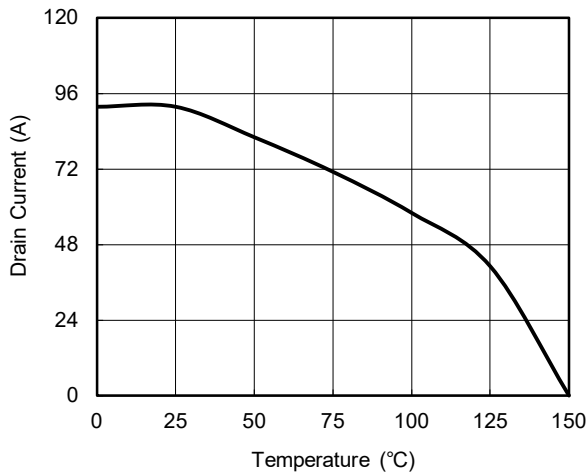
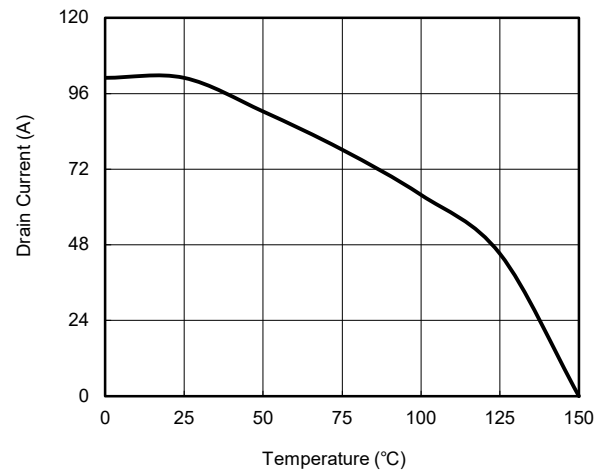
TYPICAL PERFORMANCE CHARACTERISTICS (continued)



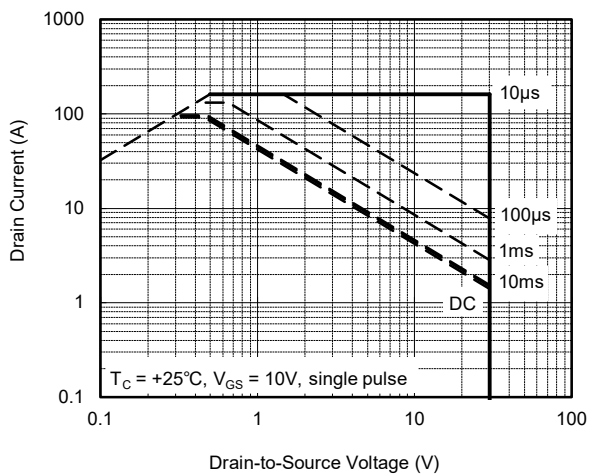
TYPICAL PERFORMANCE CHARACTERISTICS (continued)



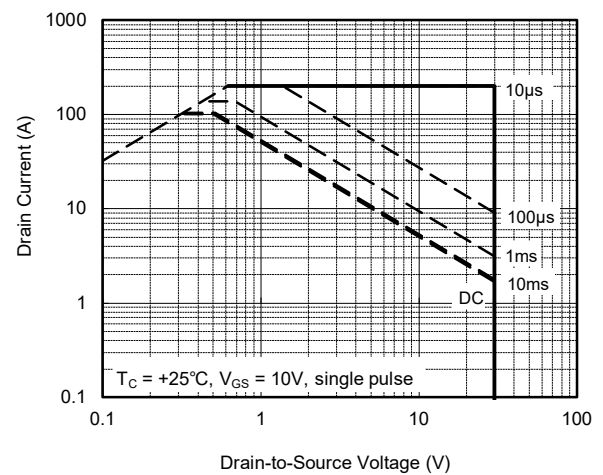
TYPICAL PERFORMANCE CHARACTERISTICS (continued)

Drain Current vs. T_J (TDFN-2×2-6BL)Drain Current vs. T_J (PDFN-3.3×3.3-8L)

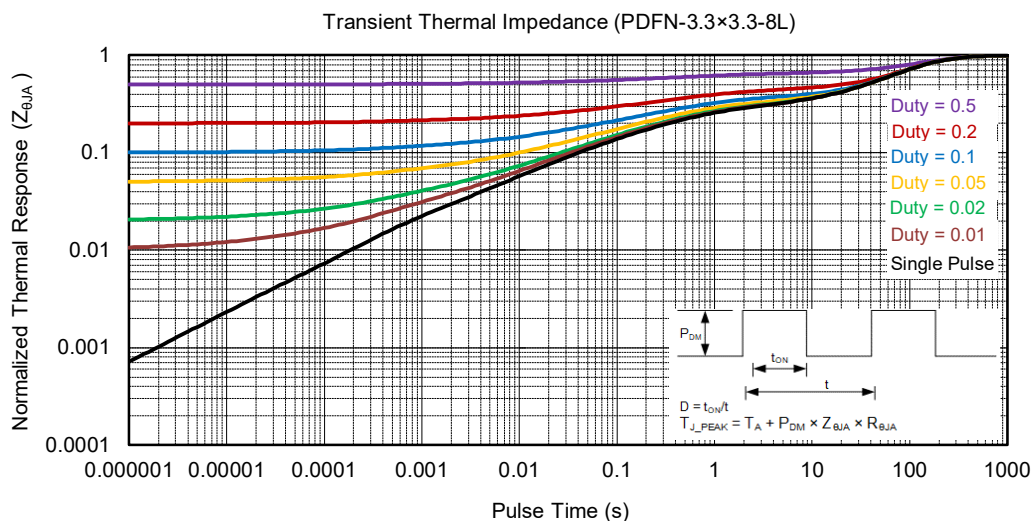
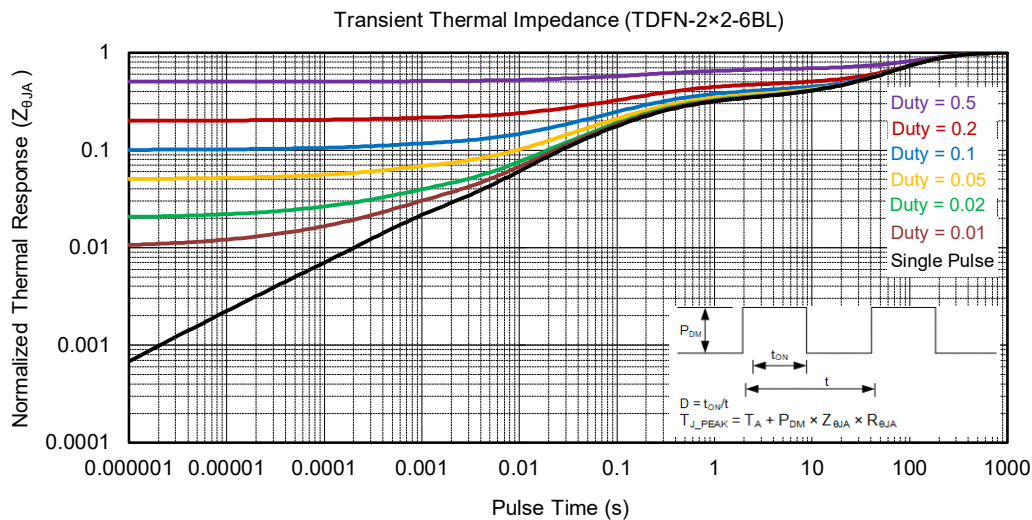
Safe Operating Area (TDFN-2×2-6BL)



Safe Operating Area (PDFN-3.3×3.3-8L)



TYPICAL PERFORMANCE CHARACTERISTICS (continued)



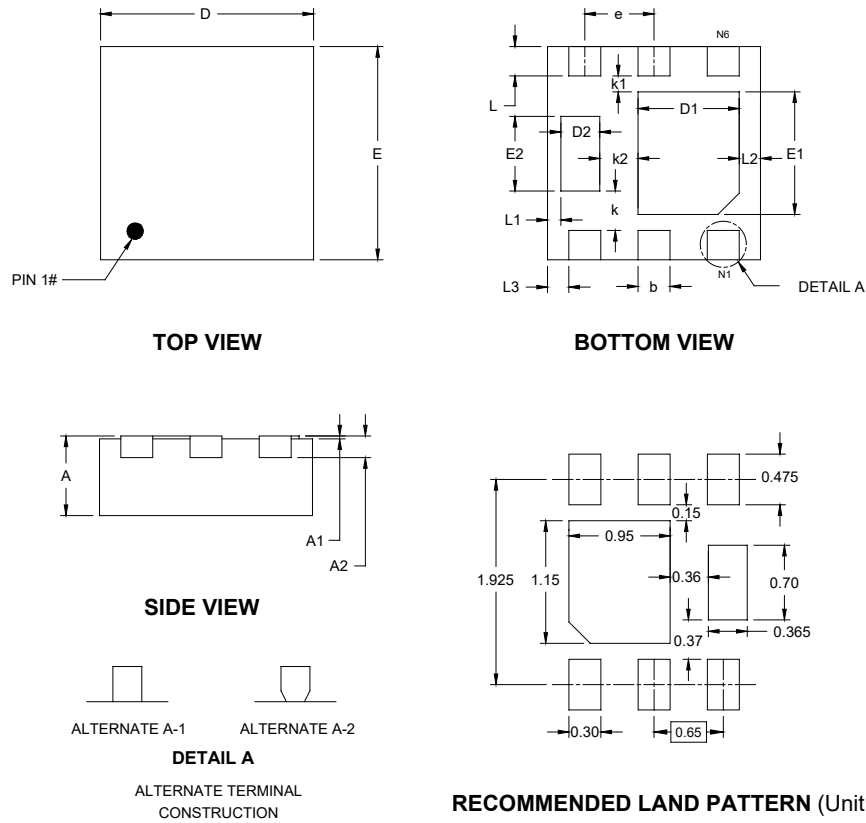
REVISION HISTORY

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

SEPTEMBER 2024 – REV.A.1 to REV.A.2		Page
Added Transient Thermal Impedance figures.....		8
SEPTEMBER 2024 – REV.A to REV.A.1		Page
Added PDFN-3.3×3.3-8L package.....		All
Changes from Original (JULY 2024) to REV.A		Page
Changed from product preview to production data.....		All

PACKAGE OUTLINE DIMENSIONS

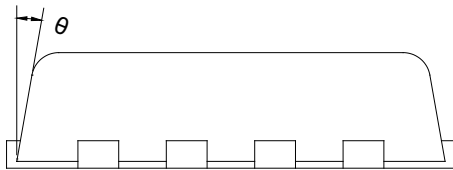
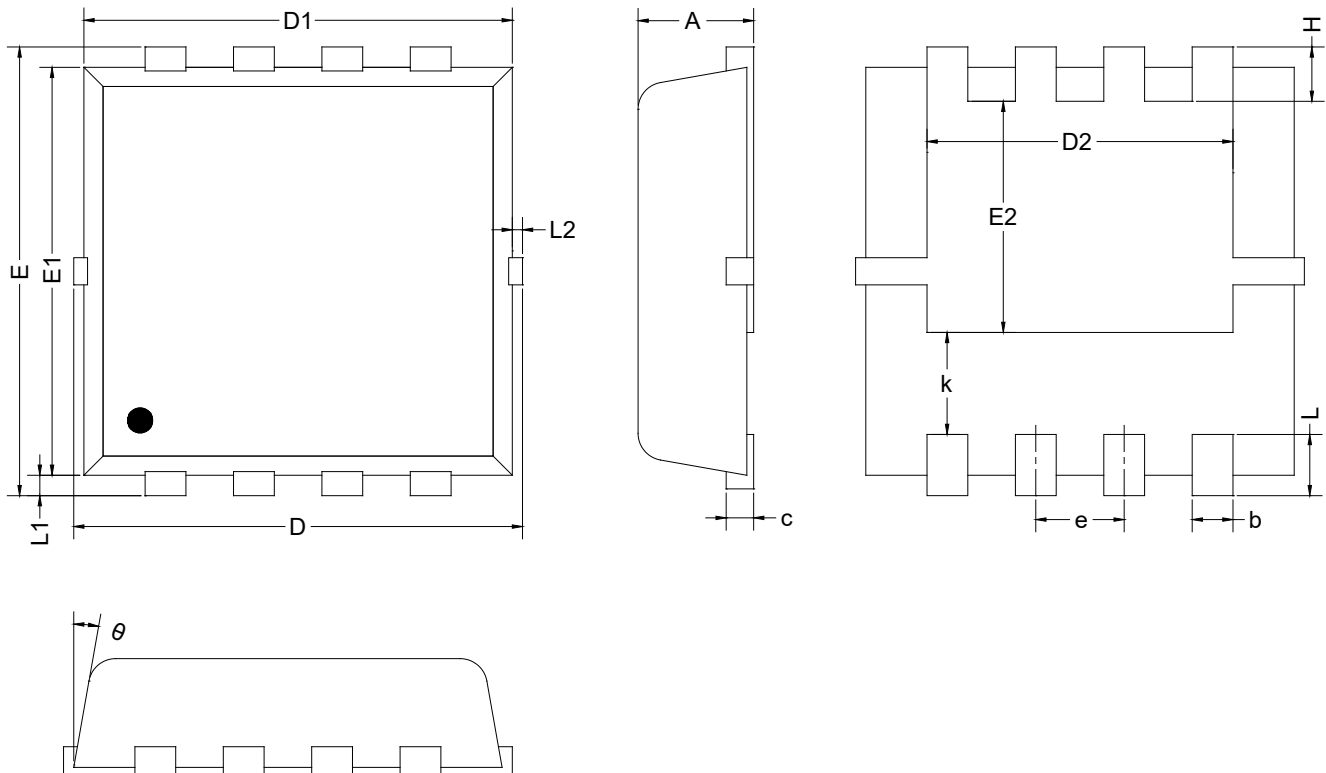
TDFN-2×2-6BL



NOTE: This drawing is subject to change without notice.

PACKAGE OUTLINE DIMENSIONS

PDFN-3.3×3.3-8L



Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	0.700	-	0.900
b	0.250	-	0.390
c	0.140	-	0.200
D	3.100	-	3.500
D1	3.050	-	3.250
D2	2.150	-	2.350
E	3.100	-	3.500
E1	2.900	-	3.100
E2	1.600	-	1.800
e	0.650 BSC		
H	0.250	-	0.550
k	0.650	-	0.850
L	0.300	-	0.600
L1	0.050	-	0.250
L2	-	-	0.150
θ	8°	-	12°

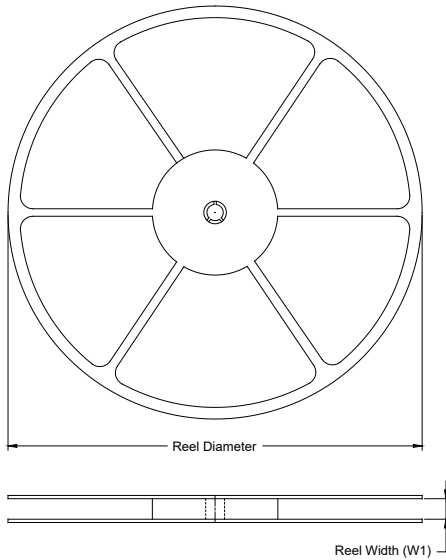
NOTES:

1. This drawing is subject to change without notice.
2. The dimensions do not include mold flashes, protrusions or gate burrs.

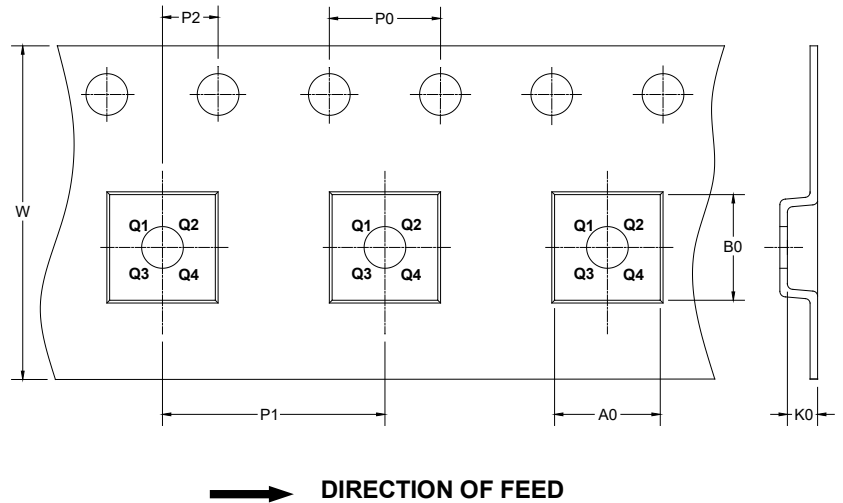
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

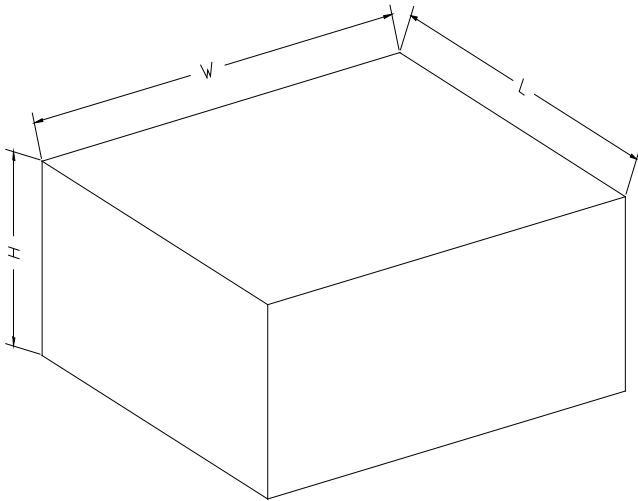
KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
TDFN-2×2-6BL	7"	9.5	2.30	2.30	1.00	4.0	4.0	2.0	8.0	Q1
PDFN-3.3×3.3-8L	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
7" (Option)	368	227	224	8
7"	442	410	224	18
13"	386	280	370	5

DP0002