

FEATURES

- Low Gate Threshold Voltage
- 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}	± 12	V
Drain Current ⁽¹⁾ PDFN-5×6-8BL	I_D	$T_C = +25^\circ\text{C}$	45
		$T_C = +100^\circ\text{C}$	29
		$T_A = +25^\circ\text{C}$	13
		$T_A = +70^\circ\text{C}$	10
Drain Current ⁽¹⁾ PDFN-3.3×3.3-8AL	I_D	$T_C = +25^\circ\text{C}$	43
		$T_C = +100^\circ\text{C}$	27
		$T_A = +25^\circ\text{C}$	12
		$T_A = +70^\circ\text{C}$	9.8
Drain Current (Pulse) ⁽²⁾ PDFN-5×6-8BL	I_{DM}	100	A
Drain Current (Pulse) ⁽²⁾ PDFN-3.3×3.3-8AL	I_{DM}	95	A
Total Dissipation PDFN-5×6-8BL	P_D	$T_C = +25^\circ\text{C}$	31.2
		$T_C = +100^\circ\text{C}$	12.5
		$T_A = +25^\circ\text{C}$	2.7
		$T_A = +70^\circ\text{C}$	1.7
Total Dissipation PDFN-3.3×3.3-8AL	P_D	$T_C = +25^\circ\text{C}$	27.7
		$T_C = +100^\circ\text{C}$	11
		$T_A = +25^\circ\text{C}$	2.2
		$T_A = +70^\circ\text{C}$	1.4
Avalanche Current ⁽³⁾	I_{AS}	26	A
Avalanche Energy ⁽³⁾	E_{AS}	33.8	mJ
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$
Lead Temperature (Soldering, 10s)		+260	$^\circ\text{C}$

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.

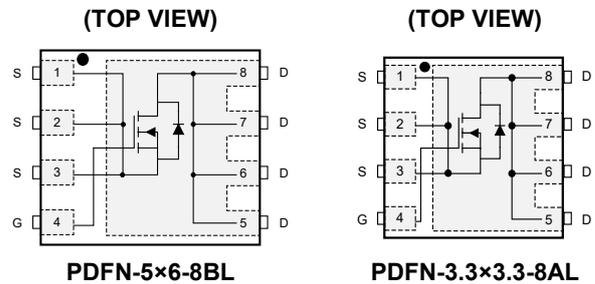
NOTES:

1. The current will be limited by package, PCB, thermal design and operating temperature.
2. $t_{PULSE} < 10\mu\text{s}$.
3. Parts are 100% tested at $V_{GS} = 10\text{V}$, $I_L = 18.4\text{A}$, and $E_{AS} = 16.9\text{mJ}$.

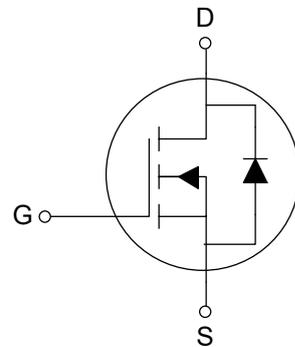
PRODUCT SUMMARY

PACKAGE	$R_{DS(on)}$ (TYP) $V_{GS} = 4.5\text{V}$	$R_{DS(on)}$ (MAX) $V_{GS} = 4.5\text{V}$	I_D (MAX) $T_C = +25^\circ\text{C}$
PDFN-5×6-8BL	5.6m Ω	7m Ω	45A
PDFN-3.3×3.3-8AL	5.6m Ω	7m Ω	43A

PIN CONFIGURATIONS



EQUIVALENT CIRCUIT



APPLICATIONS

- VBUS OVP Switch
- Battery Charging and Discharging Switch
- AMOLED Controller Application
- On-Board DC/DC Solutions for Server and Telecommunications

PACKAGE/ORDERING INFORMATION

MODEL	PACKAGE DESCRIPTION	SPECIFIED TEMPERATURE RANGE	ORDERING NUMBER	PACKAGE MARKING	PACKING OPTION
SGMQL56430	PDFN-5×6-8BL	-55°C to +150°C	SGMQL56430TPDA8G/TR	SGM21B TPDA8 XXXXX	Tape and Reel, 4000
	PDFN-3.3×3.3-8AL	-55°C to +150°C	SGMQL56430TPDB8G/TR	SGM21C 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

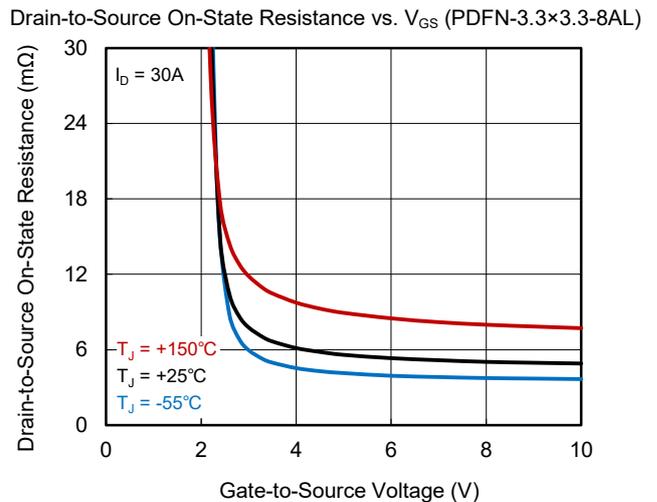
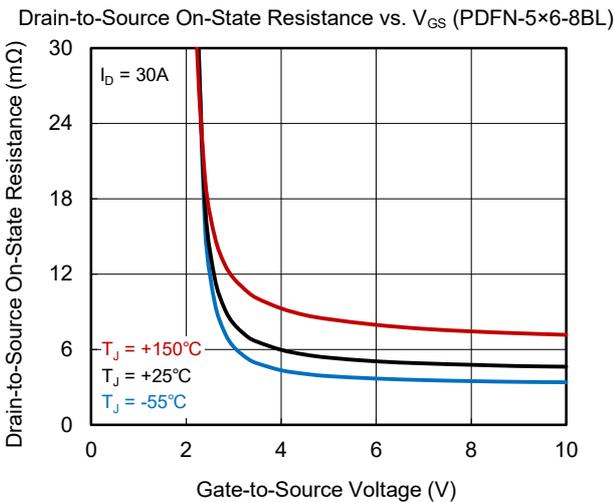
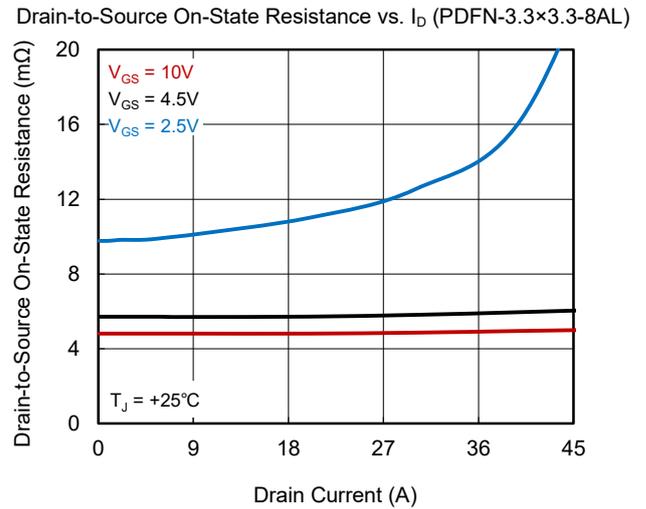
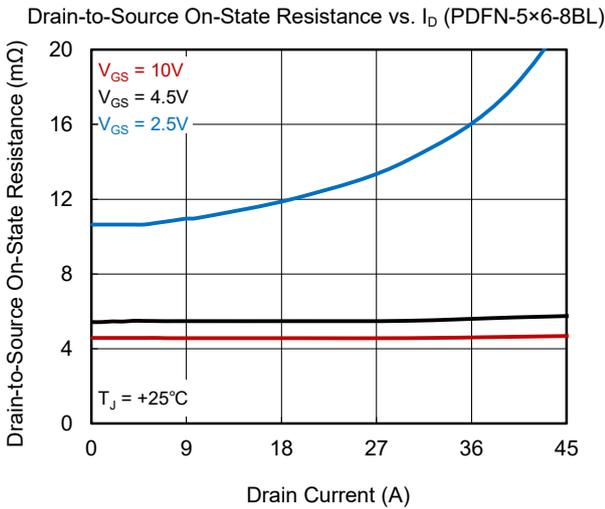
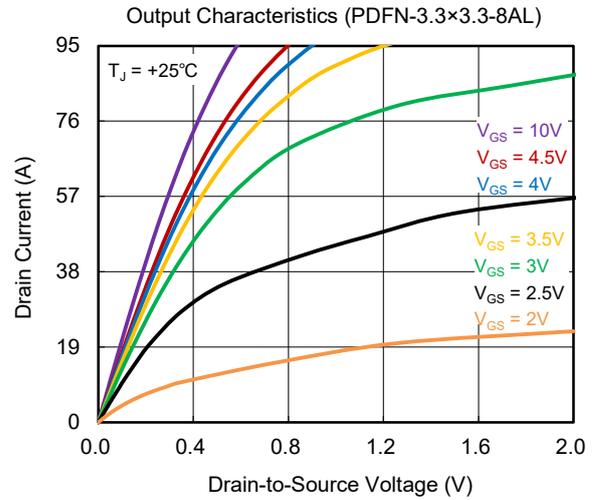
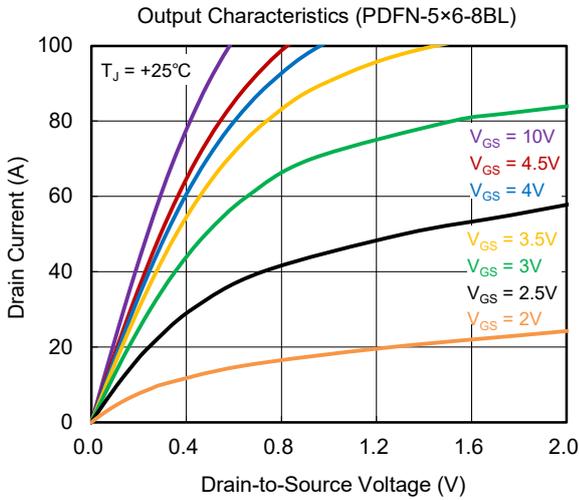
PARAMETER	SYMBOL	TYP	UNITS
Junction-to-Case Thermal Resistance	R _{θJC}	4	°C/W
		PDFN-3.3×3.3-8AL	
Junction-to-Ambient Thermal Resistance ⁽¹⁾	R _{θJA}	46	°C/W
		PDFN-3.3×3.3-8AL	

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

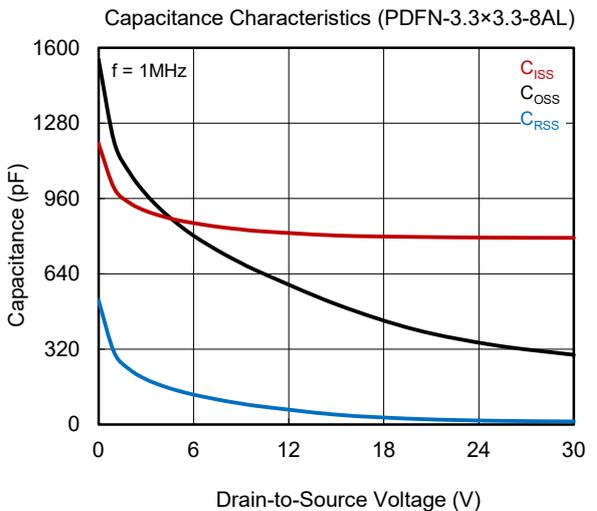
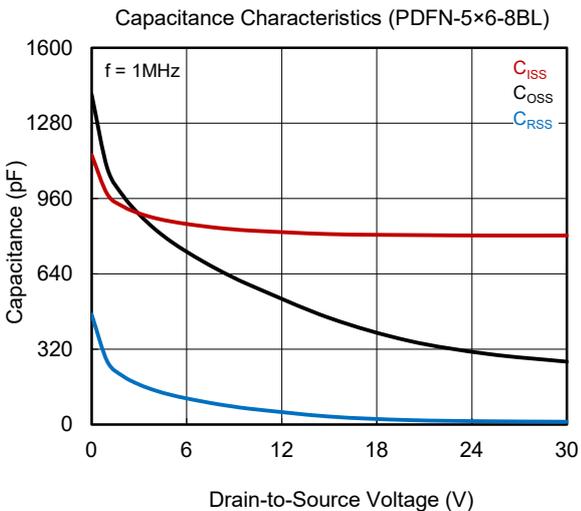
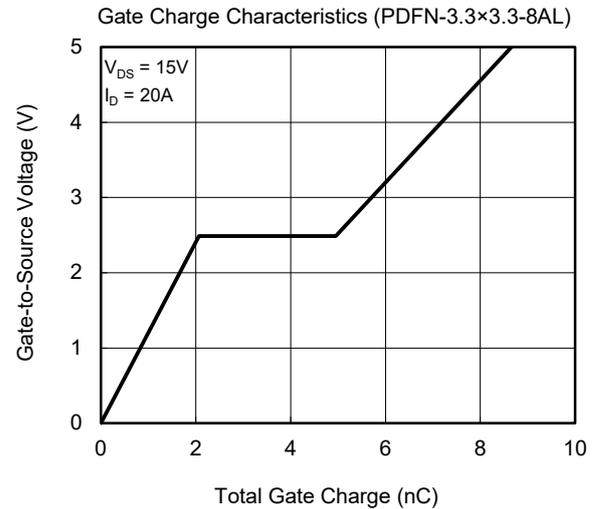
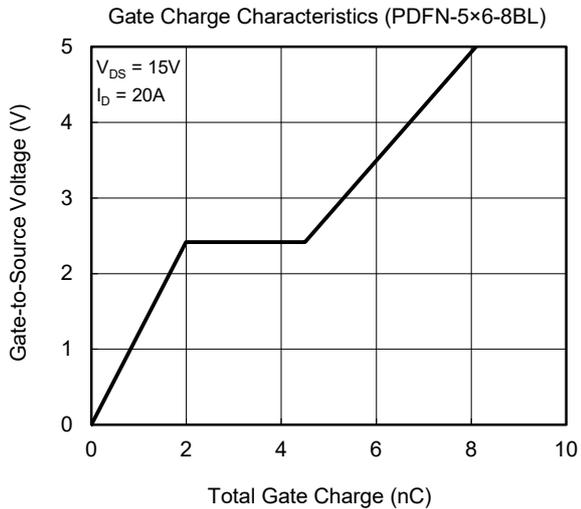
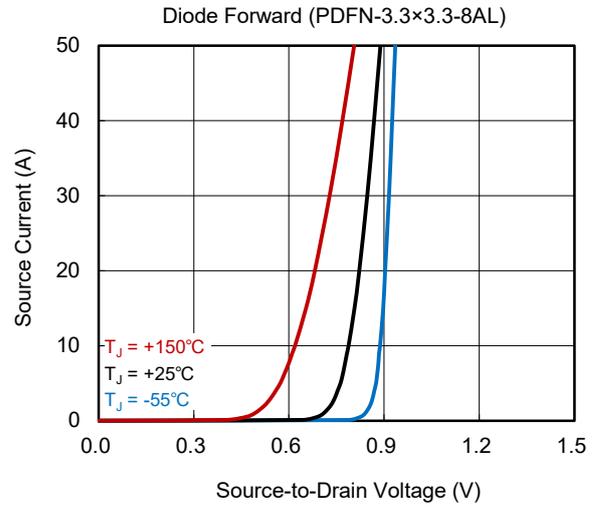
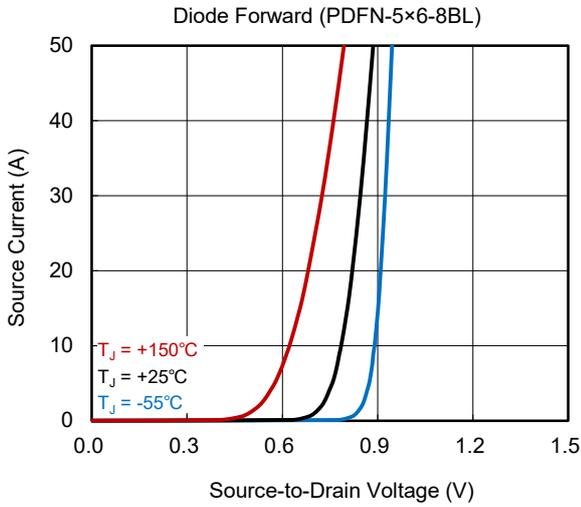
ELECTRICAL CHARACTERISTICS(T_A = +25°C, unless otherwise noted.)

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} = ±12V, V _{DS} = 0V			±100	nA
Static ON Characteristics						
Gate-to-Source Threshold Voltage	V _{GS_TH}	V _{GS} = V _{DS} , I _D = 250μA	0.6	1	1.5	V
Drain-to-Source On-State Resistance	R _{DSON}	V _{GS} = 10V, I _D = 30A		4.6	5.9	mΩ
		V _{GS} = 4.5V, I _D = 20A		5.6	7	
		V _{GS} = 2.5V, I _D = 10A		13.5	25	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 15A		19		S
Gate Resistance	R _G	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.2		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		24		ns
Reverse Recovery Charge	Q _{RR}			17		nC
Dynamic Characteristics						
Input Capacitance	C _{ISS}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		803		pF
Output Capacitance	C _{OSS}			474		
Reverse Transfer Capacitance	C _{RSS}			35		
Total Gate Charge	Q _G	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 20A		7.5		nC
Gate-to-Source Charge	Q _{GS}			2		
Gate-to-Drain Charge	Q _{GD}			2.7		
Switch Characteristics						
Turn-On Delay Time	t _{D_ON}	V _{GS} = 4.5V, V _{DS} = 15V, I _D = 20A, R _G = 3Ω		6		ns
Rise Time	t _R			69		
Turn-Off Delay Time	t _{D_OFF}			11		
Fall Time	t _F			5		

TYPICAL PERFORMANCE CHARACTERISTICS

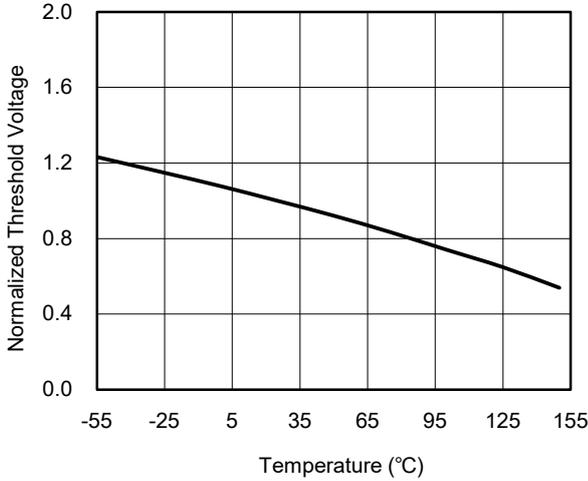


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

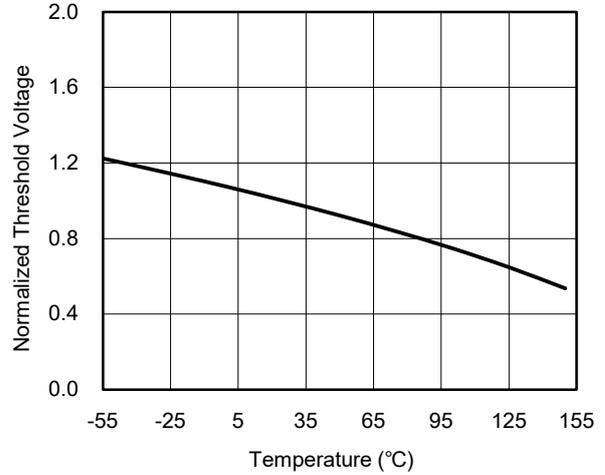


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

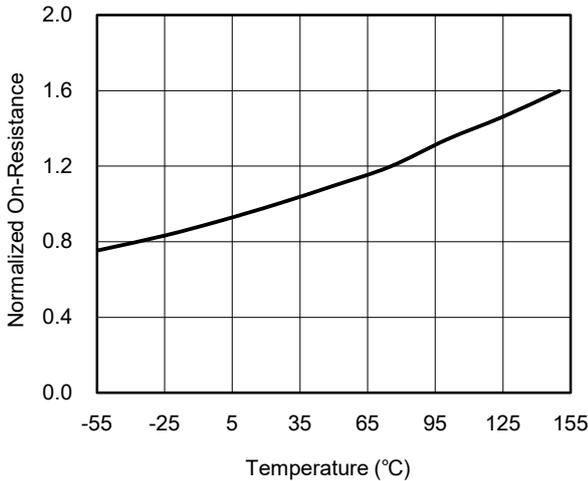
Normalized Threshold Voltage vs. Temperature (PDFN-5x6-8BL)



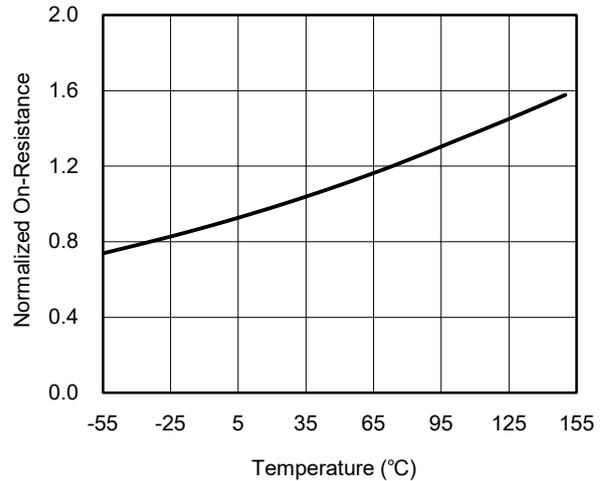
Normalized Threshold Voltage vs. Temperature (PDFN-3.3x3.3-8AL)



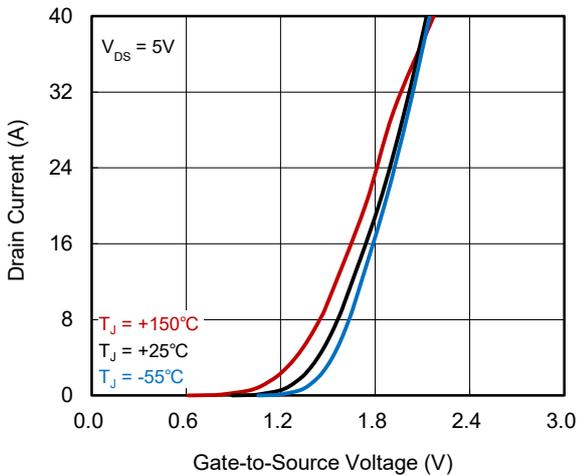
Normalized On-Resistance vs. Temperature (PDFN-5x6-8BL)



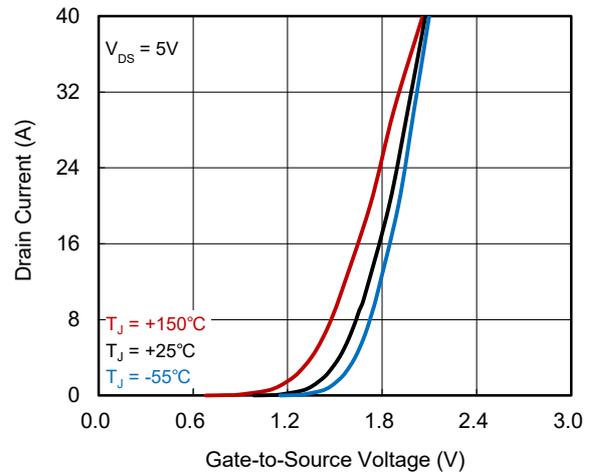
Normalized On-Resistance vs. Temperature (PDFN-3.3x3.3-8AL)



Transfer Characteristics (PDFN-5x6-8BL)

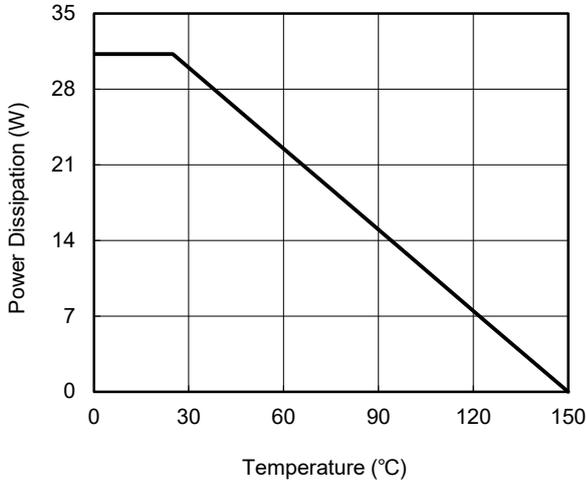


Transfer Characteristics (PDFN-3.3x3.3-8AL)

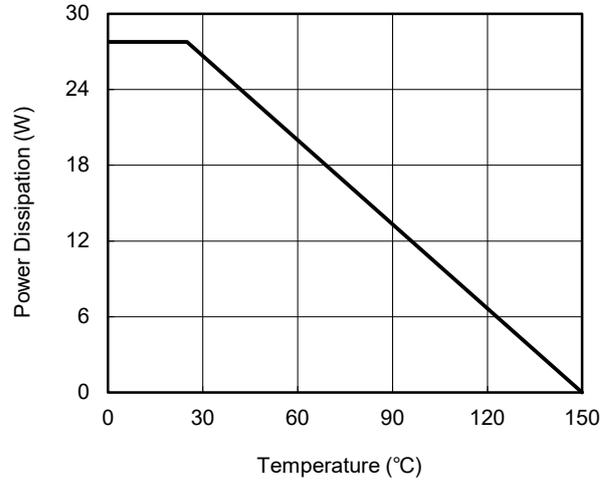


TYPICAL PERFORMANCE CHARACTERISTICS (continued)

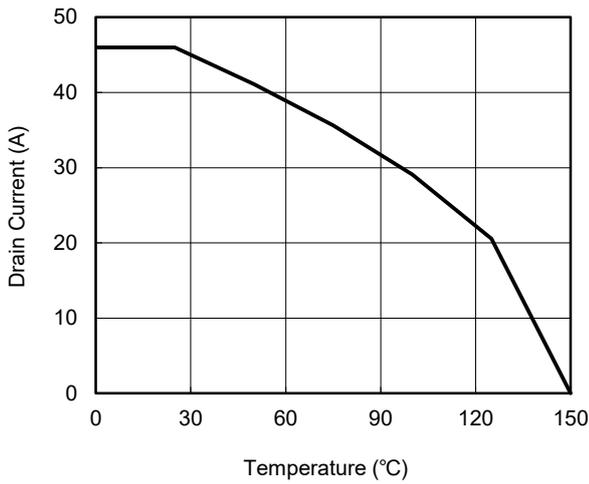
Power Dissipation vs. T_J (PDFN-5x6-8BL)



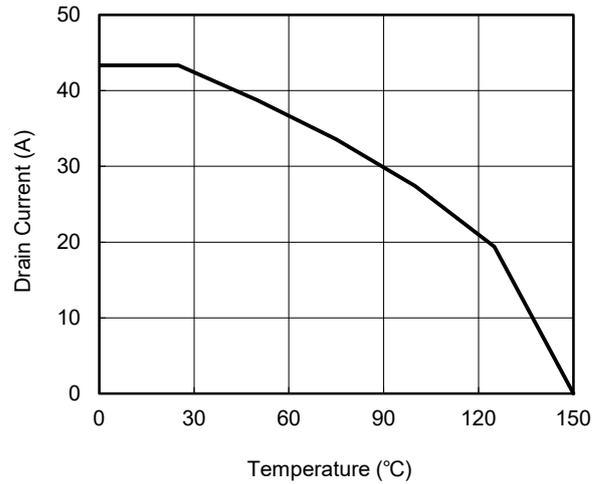
Power Dissipation vs. T_J (PDFN-3.3x3.3-8AL)



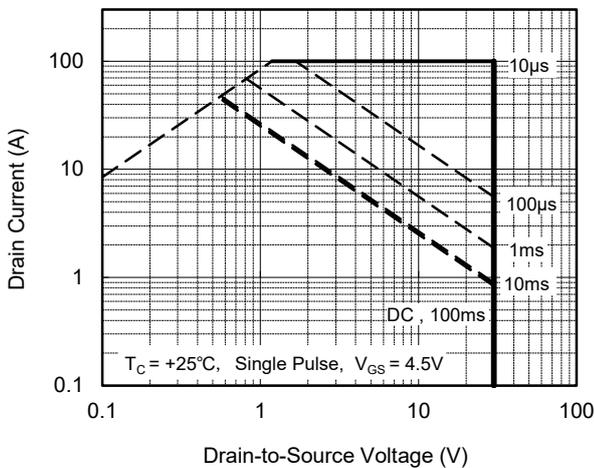
Drain Current vs. T_J (PDFN-5x6-8BL)



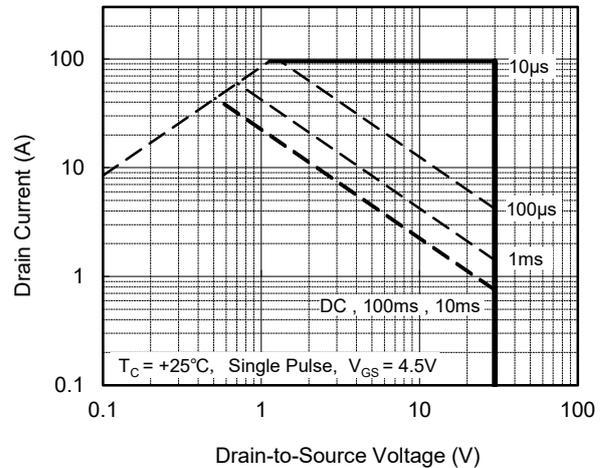
Drain Current vs. T_J (PDFN-3.3x3.3-8AL)



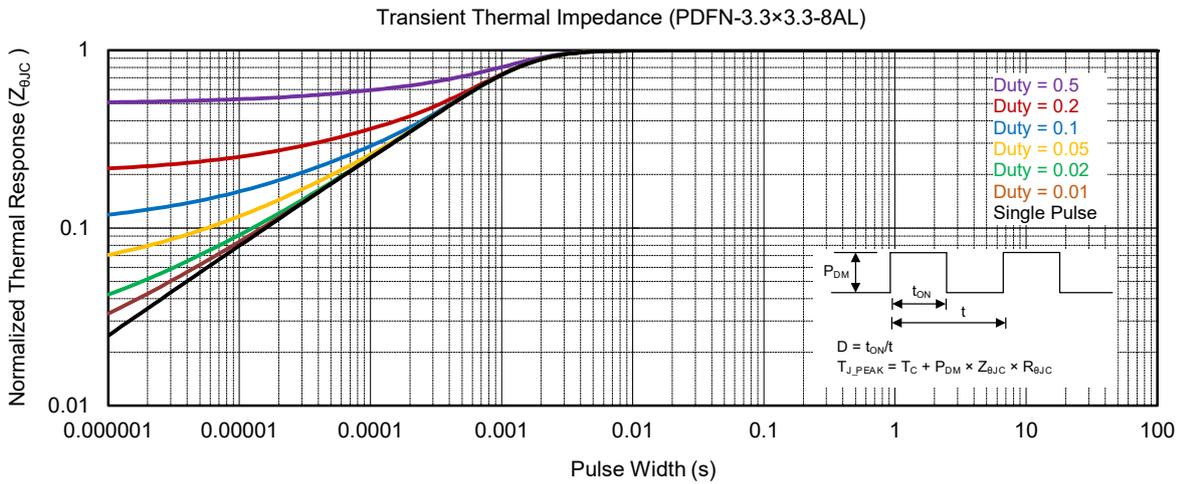
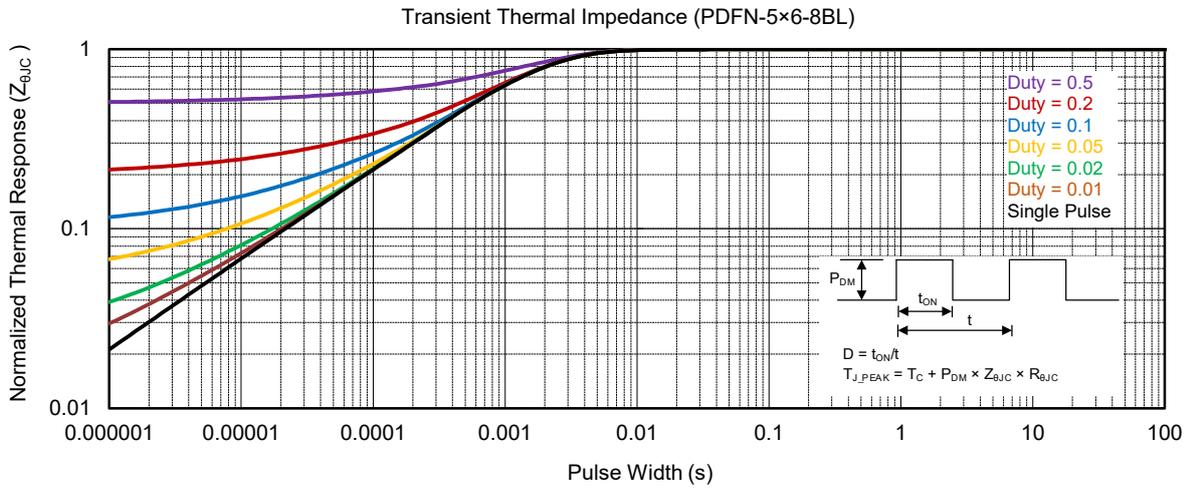
Safe Operating Area (PDFN-5x6-8BL)



Safe Operating Area (PDFN-3.3x3.3-8AL)



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 (MARCH 2026)

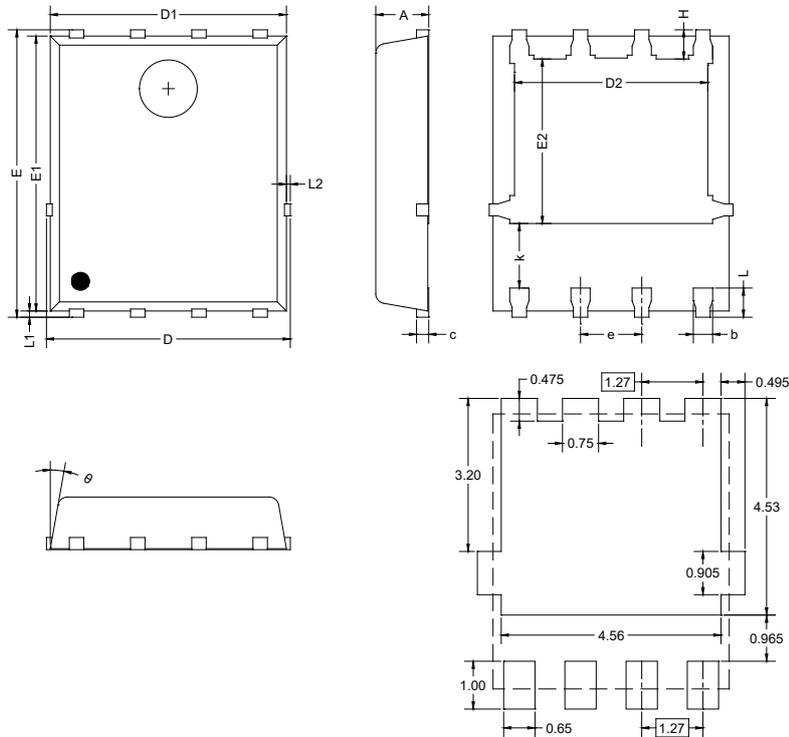
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PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

PDFN-5×6-8BL



RECOMMENDED LAND PATTERN (Unit: mm)

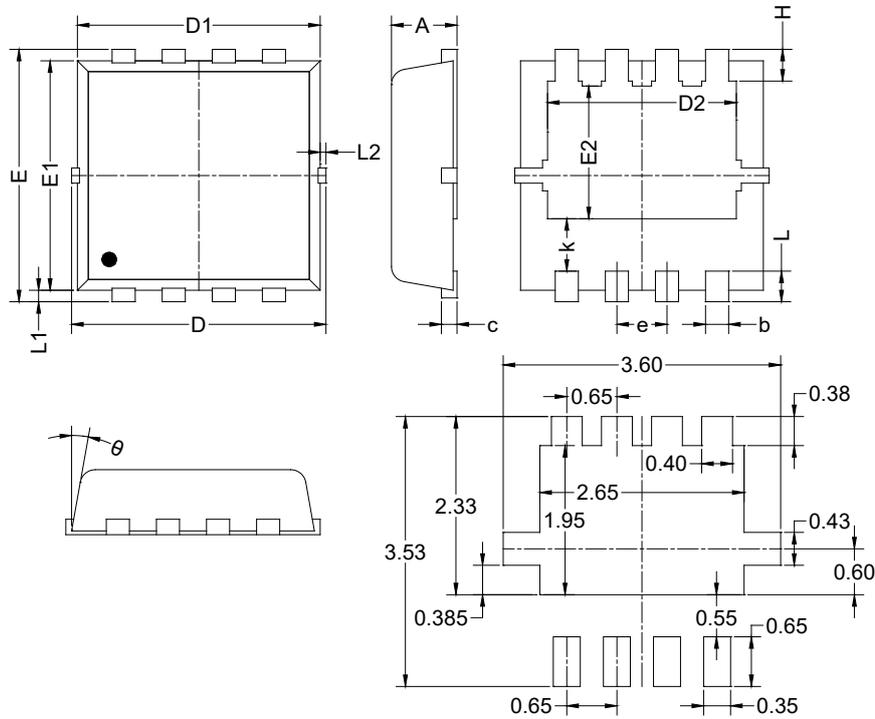
Symbol	Dimensions In Millimeters		
	MIN	NOM	MAX
A	1.000	1.100	1.200
b	0.300	0.400	0.500
c	0.150	0.250	0.350
D	4.800	-	5.400
D1	4.800	4.900	5.000
D2	3.910	4.010	4.310
E	5.900	6.000	6.250
E1	5.650	5.750	5.850
E2	3.300	3.440	3.540
e	1.270 BSC		
H	0.350	0.610	0.710
k	1.100	-	-
L	0.380	0.610	0.710
L1	0.050	0.130	0.250
L2	-	-	0.220
θ	8°	10°	12°

NOTE: This drawing is subject to change without notice.

PACKAGE INFORMATION

PACKAGE OUTLINE DIMENSIONS

PDFN-3.3×3.3-8AL



RECOMMENDED LAND PATTERN (Unit: mm)

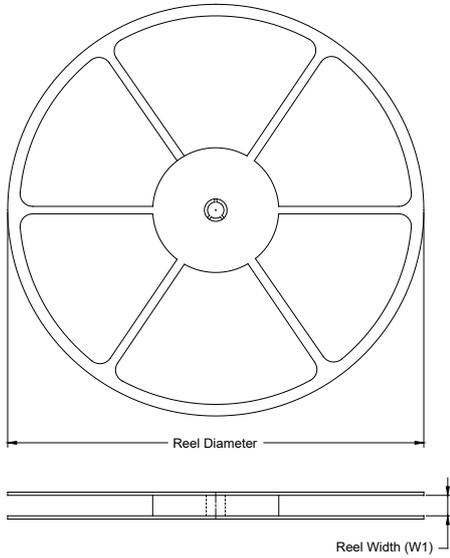
Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX
A	0.700	0.800	0.900
b	0.250	0.300	0.350
c	0.140	0.150	0.200
D	3.100	3.300	3.500
D1	3.050	3.150	3.250
D2	2.350	2.450	2.550
E	3.100	3.300	3.500
E1	2.900	3.000	3.100
E2	1.640	1.740	1.840
e	0.650 BSC		
H	0.320	0.420	0.520
k	0.590	0.690	0.790
L	0.250	0.400	0.550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

NOTE: This drawing is subject to change without notice.

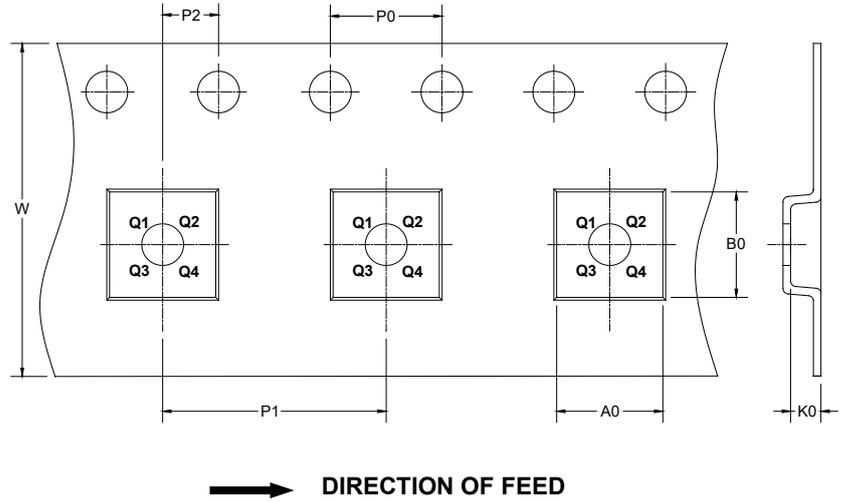
PACKAGE INFORMATION

TAPE AND REEL INFORMATION

REEL DIMENSIONS



TAPE DIMENSIONS



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

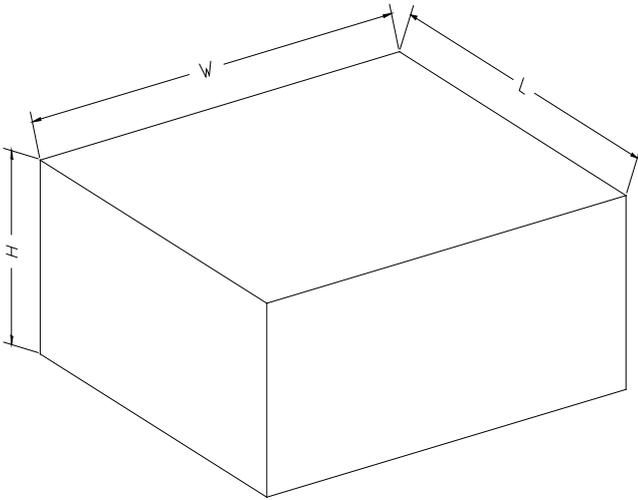
KEY PARAMETER LIST OF TAPE AND REEL

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-5×6-8BL	13"	12.4	6.45	5.30	1.40	4.0	8.0	2.0	12.0	Q1
PDFN-3.3×3.3-8AL	13"	12.4	3.60	3.60	1.10	4.0	8.0	2.0	12.0	Q1

D20001

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

DD0002