

TN15C30DL

N and P-Channel Complementary Power MOSFET

Product Summary

N-Channel

- $V_{DS} = 30V, I_D = 18A$
- $R_{DS(on)} < 13m\Omega @ V_{GS} = 10V$
- $R_{DS(on)} < 17m\Omega @ V_{GS} = 4.5V$

P-Channel

- $V_{DS} = -30V, I_D = -13A$
- $R_{DS(on)} < 28m\Omega @ V_{GS} = -10V$
- $R_{DS(on)} < 46m\Omega @ V_{GS} = -4.5V$

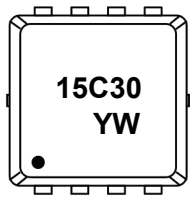
Features

- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

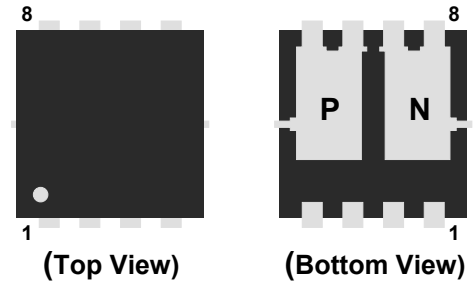
Application

- Boost driver
- Wireless charging
- Brushless motor

Marking Code

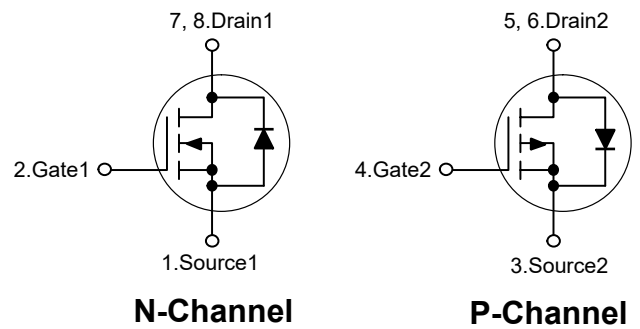


PDFN3x3A-8L



Pin	Description	Pin	Description
1	Source1	4	Gate2
2	Gate1	5,6	Drain2
3	Source2	7,8	Drain1

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C case temperature unless otherwise specified.

Parameter	Symbol	N-Channel	P-Channel	Unit
Drain-Source Voltage	V_{DS}	30	-30	V
Gate-Source Voltage	V_{GS}	± 20		V
Drain Current-Continuous	I_D	18	-13	A
Drain Current-Pulsed ^{Note1}	I_{DM}	35	-30	A
Maximum Power Dissipation	P_D	18	15.6	W
Single Pulse Avalanche Energy ^{Note2}	E_{AS}	20	24	mJ
Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-55 to +150		°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	33	29	°C/W
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N-Channel**Electrical Characteristics**(T_a=25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =10V, I _D =15A	--	9	13	mΩ
		V _{GS} =4.5V, I _D =10A	--	13	17	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =5V, I _D =3A	--	8.2	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	1025	--	pF
Output Capacitance	C _{oss}		--	128	--	pF
Reverse Transfer Capacitance	C _{rss}		--	100	--	pF
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	--	1.42	--	Ω
Total Gate Charge	Q _g	V _{DS} =15V, I _D =20A, V _{GS} =10V	--	20	--	nC
Gate-Source Charge	Q _{gs}		--	4	--	nC
Gate-Drain Charge	Q _{gd}		--	5	--	nC
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =15V, I _D =20A, V _{GS} =10V, R _{GEN} =3Ω	--	6	--	nS
Turn-on Rise Time	t _r		--	19	--	nS
Turn-off Delay Time	t _{d(off)}		--	22	--	nS
Turn-off Fall Time	t _f		--	5	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	V _{SD}	V _{GS} =0V, I _S =15A	--	--	1.2	V
Diode Forward Current	I _S		--	--	16	A

Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. EAS Condition: T_J=25°C, V_{DD}=25V, V_G=10V, R_G=25Ω, L=0.1mH, I_{AS}=20A.

3. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.

P-Channel**Electrical Characteristics**(T_a=25°C unless otherwise specified)

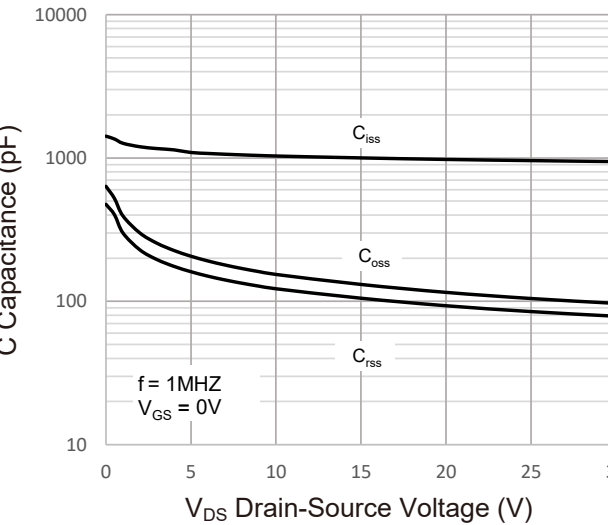
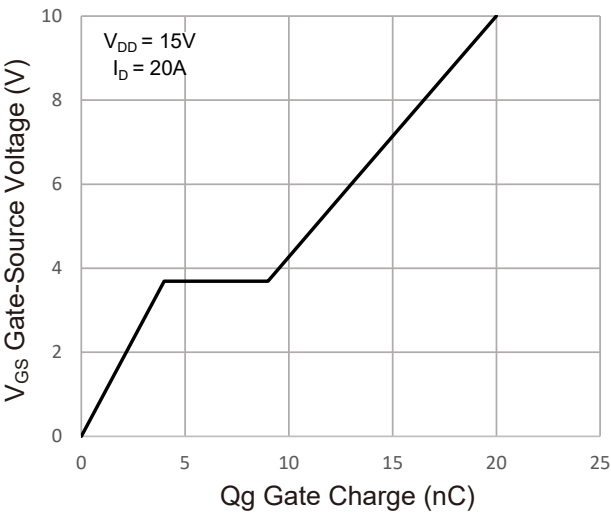
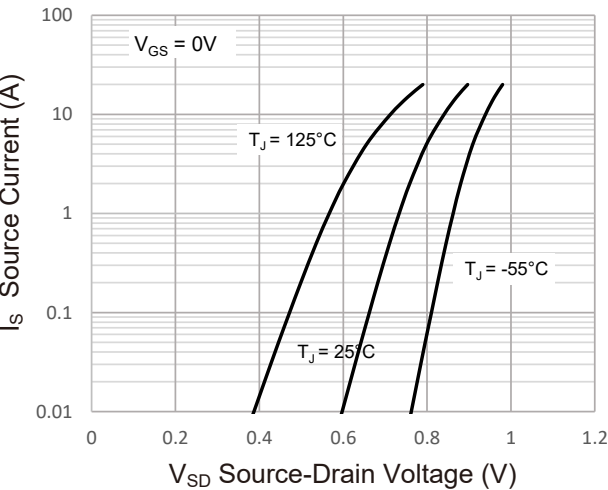
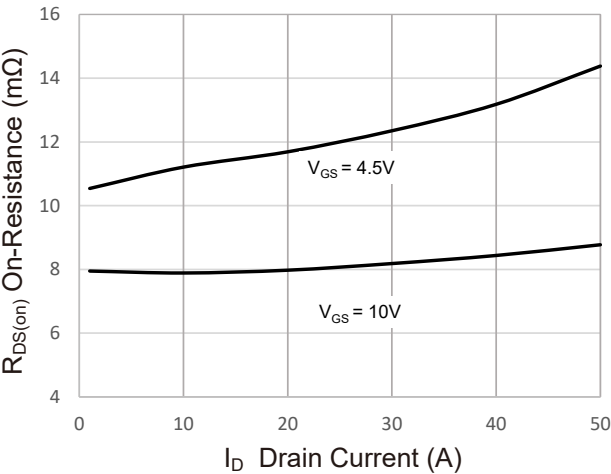
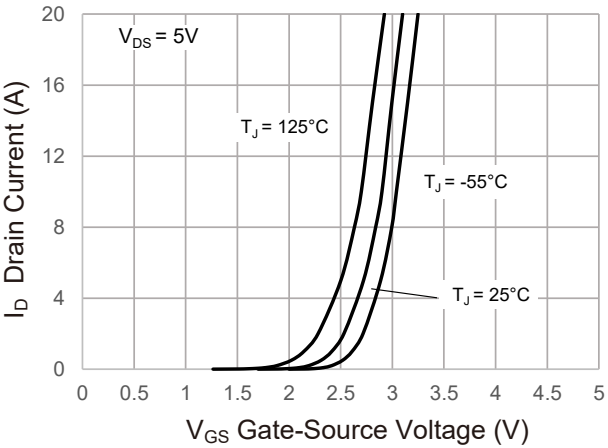
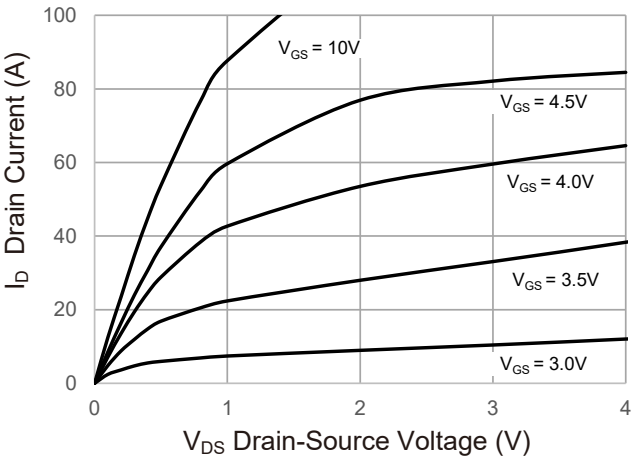
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	--	--	± 100	nA
Gate Threshold Voltage ^{Note3}	$-V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	1	1.5	2.5	V
Drain-Source On-Resistance ^{Note3}	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-15A$	--	21	28	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	--	35.5	46	m Ω
Forward Transconductance ^{Note3}	g_{FS}	$V_{DS}=-5V, I_D=-3A$	--	6.8	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	--	686	--	pF
Output Capacitance	C_{oss}		--	119	--	pF
Reverse Transfer Capacitance	C_{rss}		--	98	--	pF
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	--	15.2	--	Ω
Total Gate Charge	Q_g	$V_{DS}=-15V, I_D=-8A,$ $V_{GS}=-10V$	--	51	--	nC
Gate-Source Charge	Q_{gs}		--	9.8	--	nC
Gate-Drain Charge	Q_{gd}		--	8.2	--	nC
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-1A,$ $V_{GS}=-10V, R_{GEN}=6\Omega$	--	13	--	nS
Turn-on Rise Time	t_r		--	15	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	198	--	nS
Turn-off Fall Time	t_f		--	98	--	nS
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	$-V_{SD}$	$V_{GS}=0V, I_S=-10A$	--	--	1.2	V
Diode Forward Current	$-I_S$		--	--	13	A

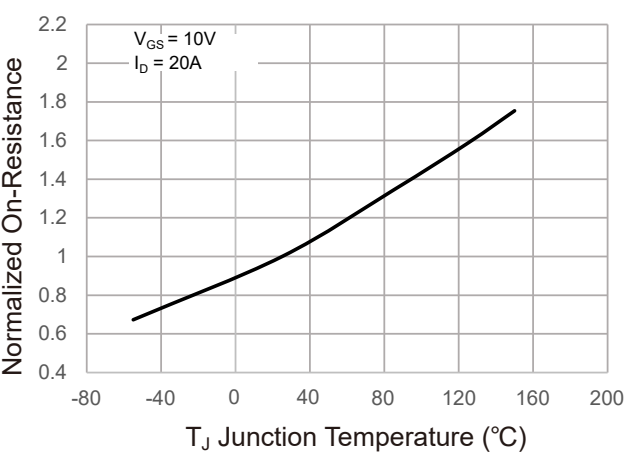
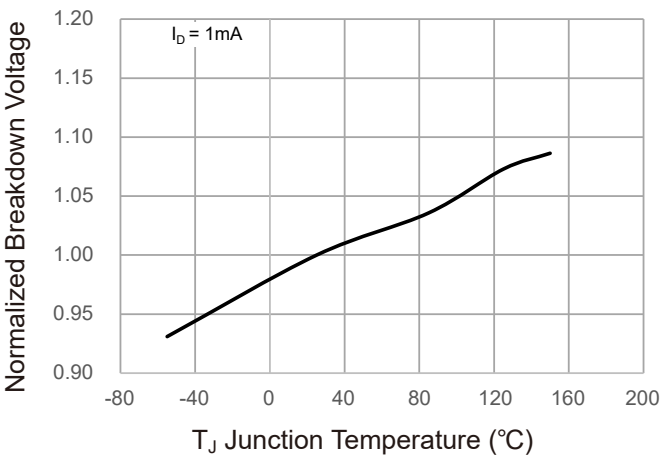
Note :

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS Condition: T_J=25°C, V_{DD}=-25V, V_G=-10V, R_G=25 Ω , L=0.5mH, I_{AS}=-9.8A.
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

N-Channel

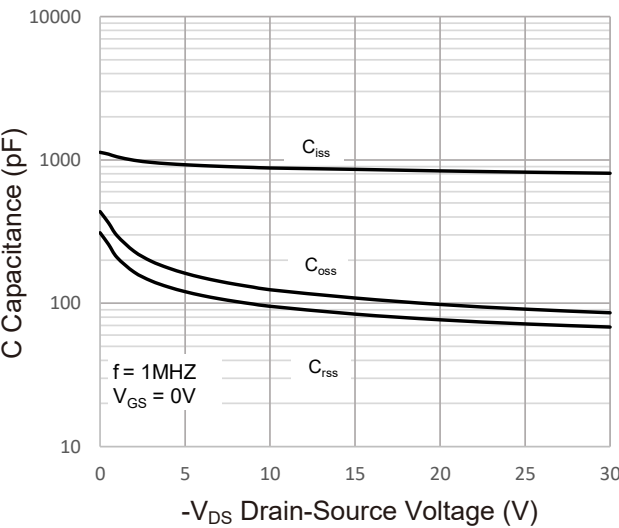
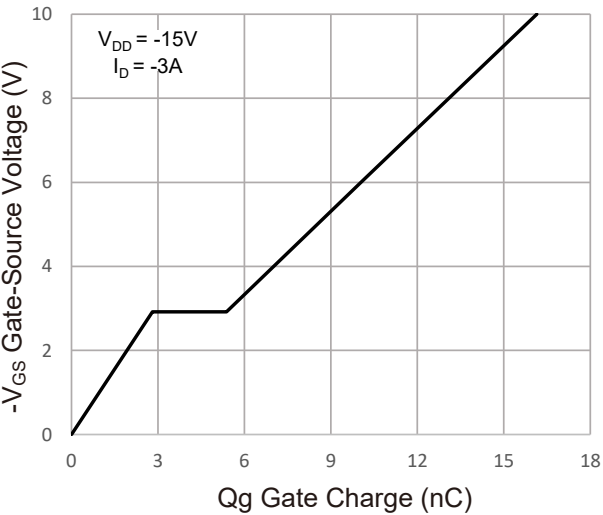
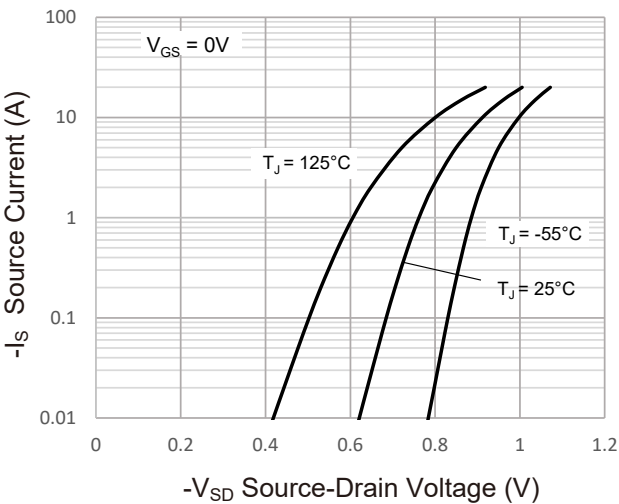
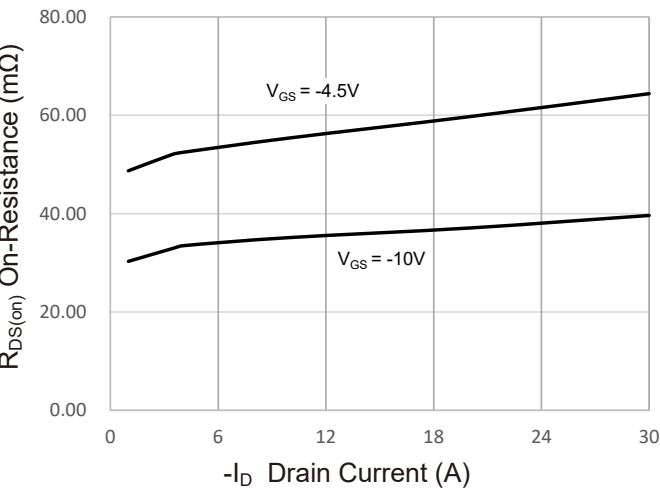
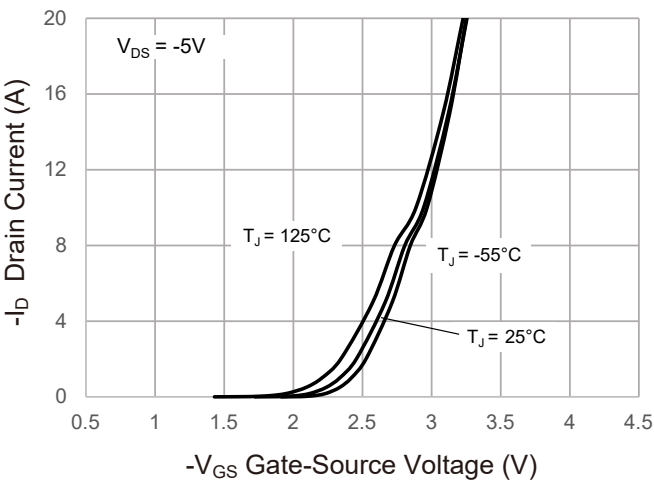
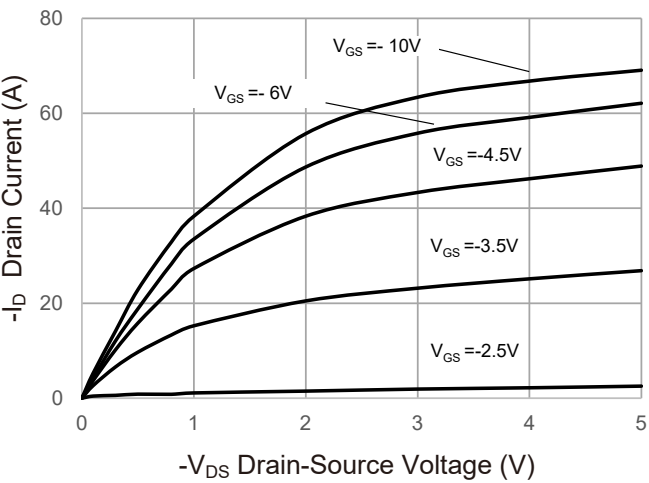
Typical Characteristics Curves

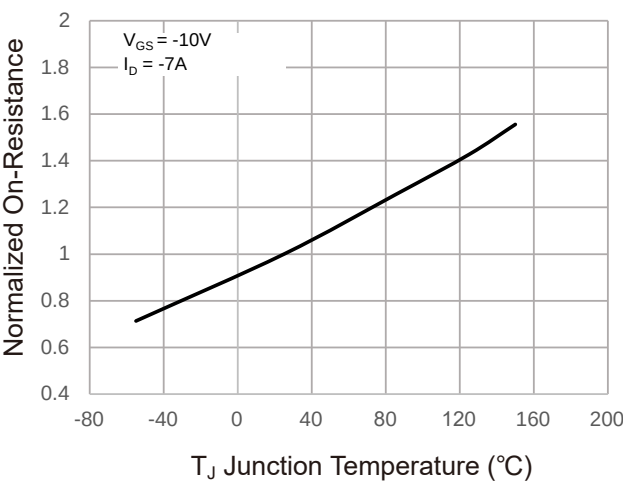
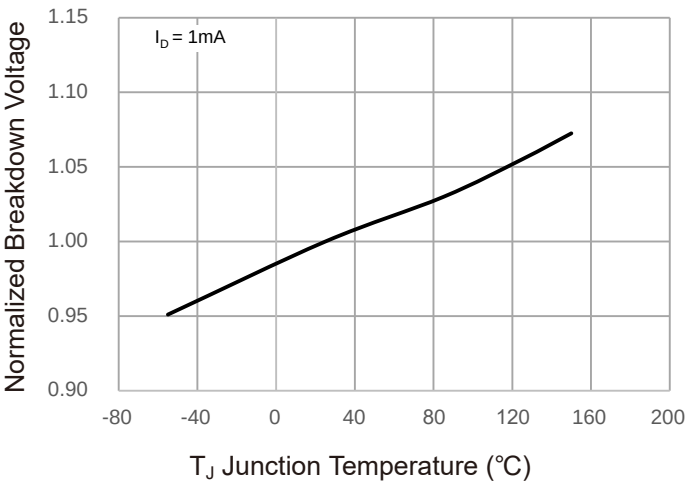




P-Channel

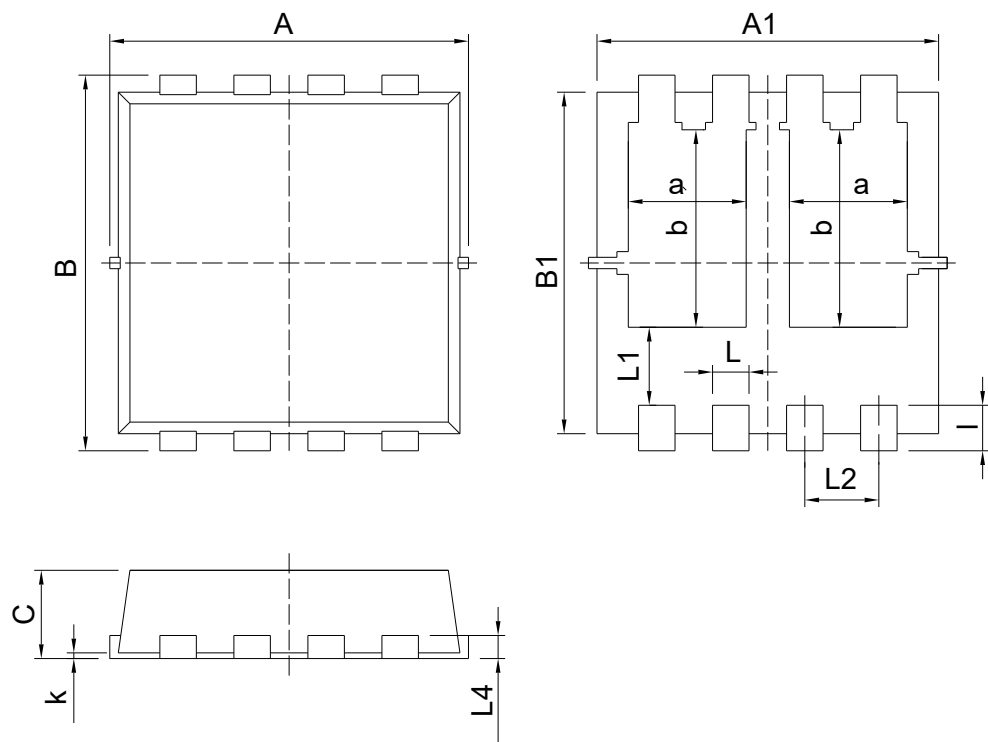
Typical Characteristics Curves





Package Outline

PDFN3x3A-8L
Dimensions in mm



Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	3.2	3.4	L2	0.55	0.75
A1	3.1	3.2	L4	0.14	0.20
B	3.2	3.4	a	0.935	1.135
B1	2.95	3.05	b	1.635	1.835
C	0.75	0.85	k	0.0	0.05
L	0.25	0.35	l	0.3	0.5
L1	-	0.75			

Contact Information

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For additional information, please contact your local Sales Representative.



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