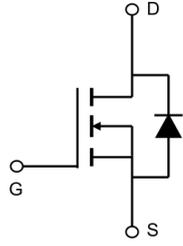
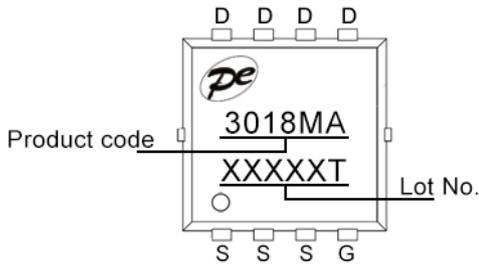
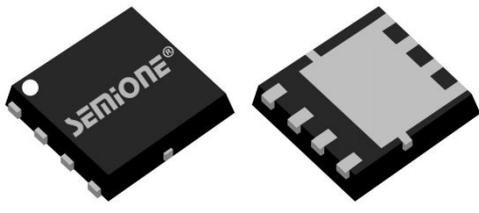


N-Channel Enhancement Mode Power MOSFET

<p>Description</p> <p>The PED3018MAT uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.</p> <p>General Features</p> <ul style="list-style-type: none"> • $V_{DS} = 30V, I_D = 80A$ $R_{DS(ON)} < 3.8m\Omega @ V_{GS}=10V$ $R_{DS(ON)} < 6.5m\Omega @ V_{GS}=4.5V$ • High Power and current handing capability • Lead free product is acquired • Surface Mount Package <p>Application</p> <ul style="list-style-type: none"> • Battery management • Motor controller and driver • PWM applications • Load switch 	<div style="text-align: center;">  <p>Schematic diagram</p> </div> <div style="text-align: center;">  <p>Marking and pin assignment</p> </div> <div style="text-align: center;">  <p>PDFN3.3x3.3-8L</p> </div>
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Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	80	A
Drain Current-Continuous (TC=100°C)	I_D	51	A
Pulsed Drain Current (Note 1)	I_{DM}	320	A
Maximum Power Dissipation	P_D	66	W
Single Pulsed Avalanche Energy (L=0.1mH)	E_{AS}	135	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.9	°C/W
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Electrical Characteristics (TC=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	0.5	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.6	2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$	-	3.2	3.8	m Ω
		$V_{GS}=4.5V, I_D=5A$	-	4.5	6.5	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=15A$	-	85	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $F=1.0MHz$	-	2220	-	pF
Output Capacitance	C_{oss}		-	219	-	pF
Reverse Transfer Capacitance (Note 4)	C_{rss}		-	196	-	pF
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, F=1.0MHz$	-	1.8	-	Ω
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}15V, I_D=20A$ $V_{GS}=10V, R_G=3\Omega$	-	12.8	-	nS
Turn-on Rise Time	t_r		-	9.2	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	54	-	nS
Turn-Off Fall Time	t_f		-	10.8	-	nS
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=15A, V_{GS}=10V$	-	48	-	nC
Gate-Source Charge	Q_{gs}		-	9.3	-	nC
Gate-Drain Charge	Q_{gd}		-	11	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=1A$	-	-	1.2	V
Diode Forward Current (Note 2)	I_S		-	-	80	A
Body Diode Reverse Recovery Time	t_{rr}	$I_F=15A, di/dt=100A/\mu s$	-	32	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	30	-	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to product.

Typical Electrical and Thermal Characteristics

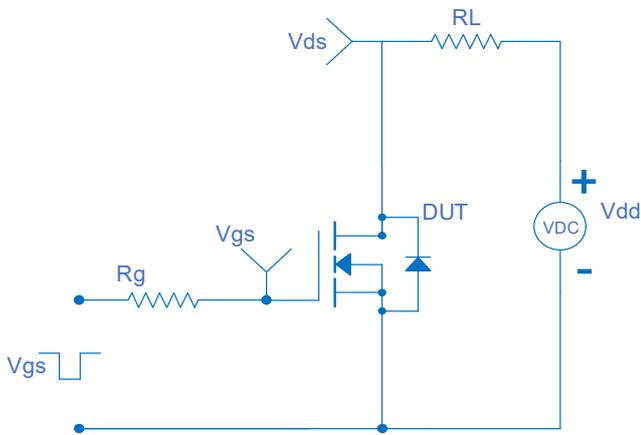


Figure 1 Switching Test Circuit

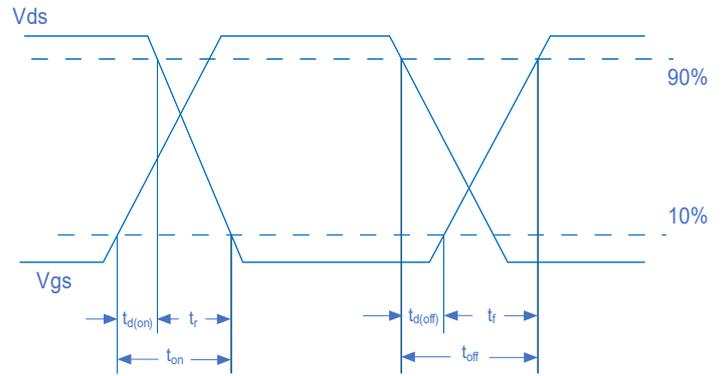


Figure 2 Switching Waveform

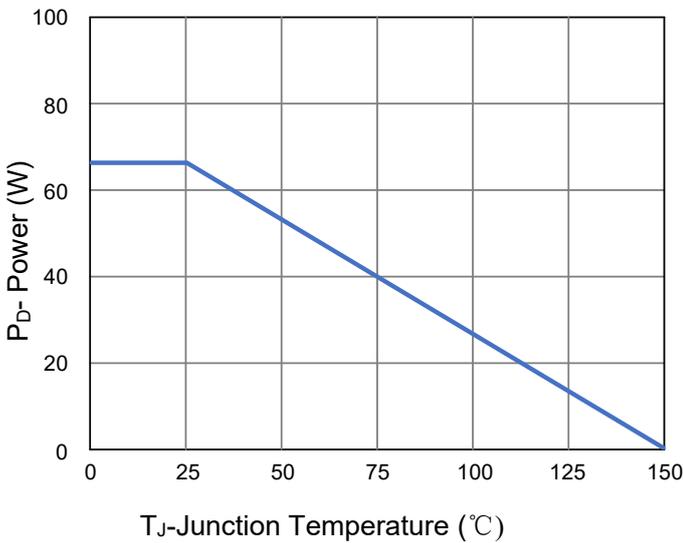


Figure 3 Power De-rating

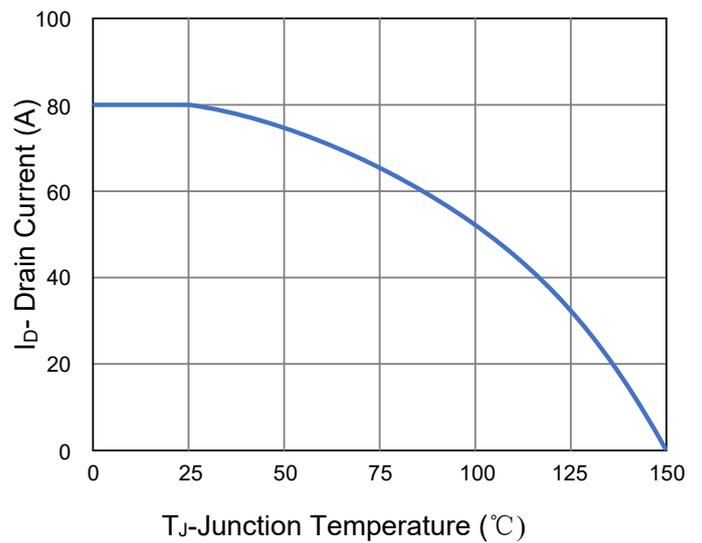


Figure 4 Drain Current

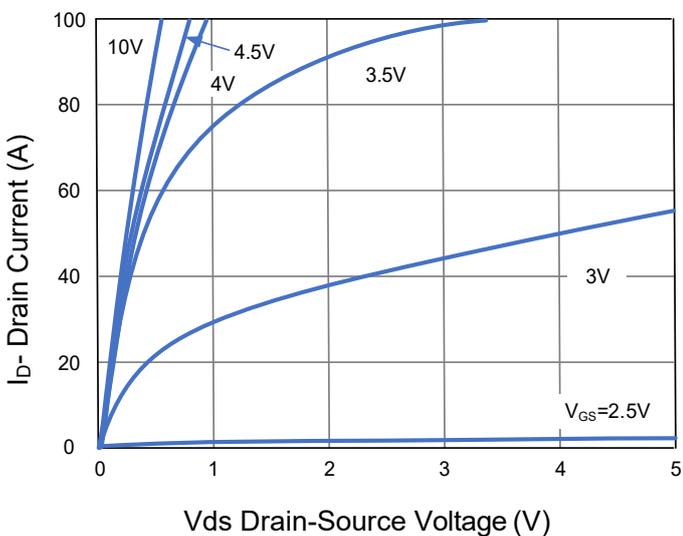


Figure 5 Output Characteristics

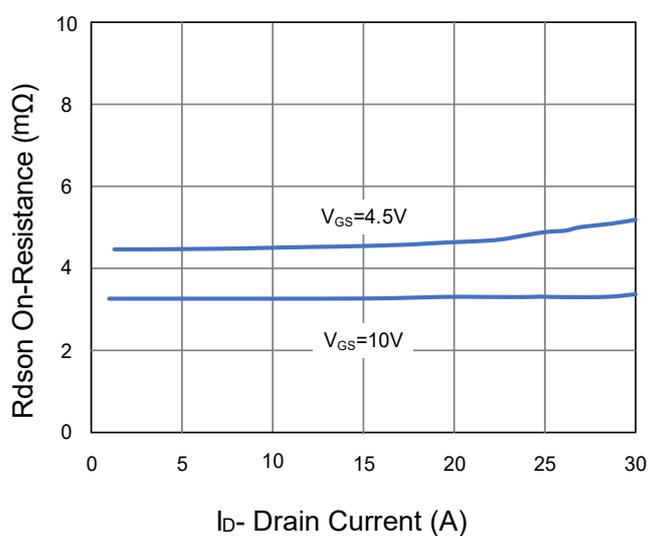


Figure 6 Rdson vs Drain Current

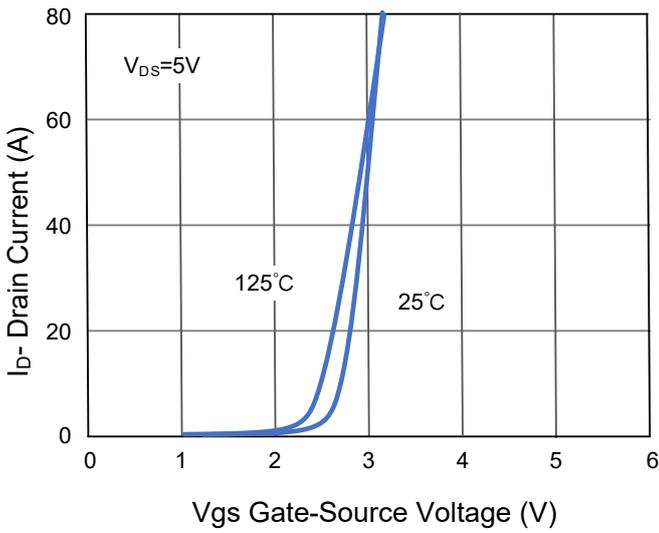


Figure 7 Transfer Characteristics

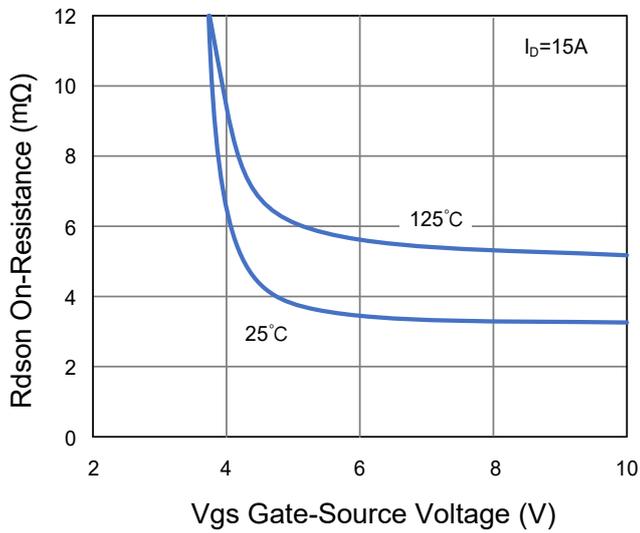


Figure 9 Rdson vs Vgs

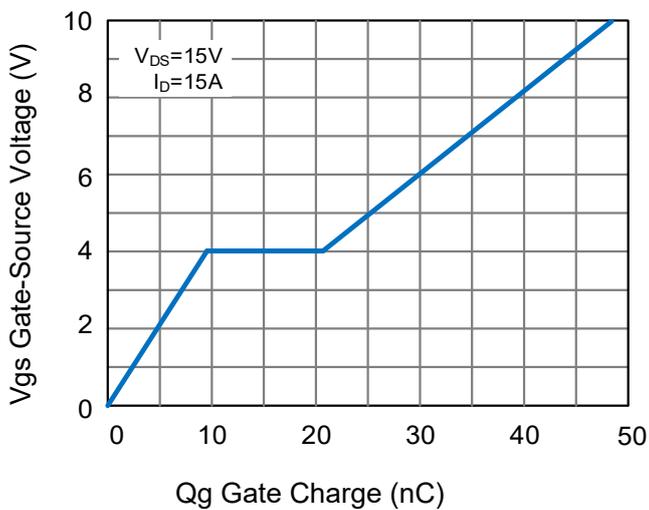


Figure 11 Gate Charge

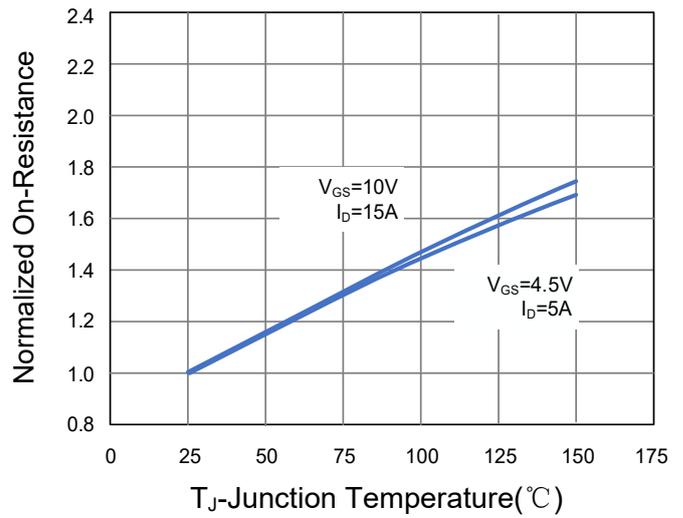


Figure 8 Rdson vs Junction Temperature

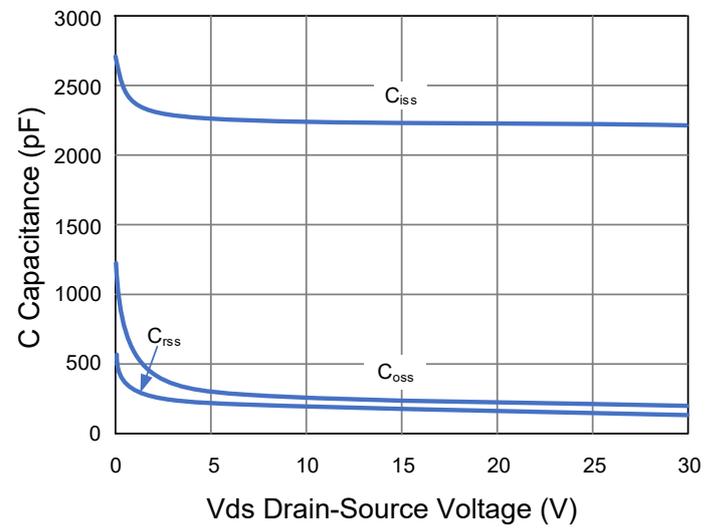


Figure 10 Capacitance vs Vds

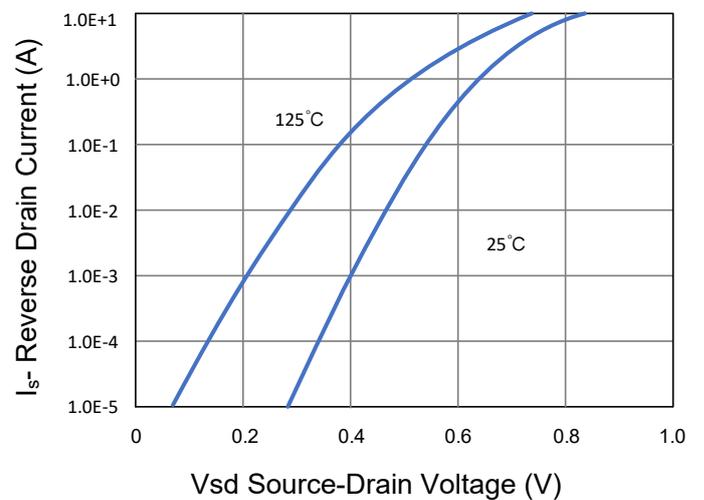


Figure 12 Source- Drain Diode Forward

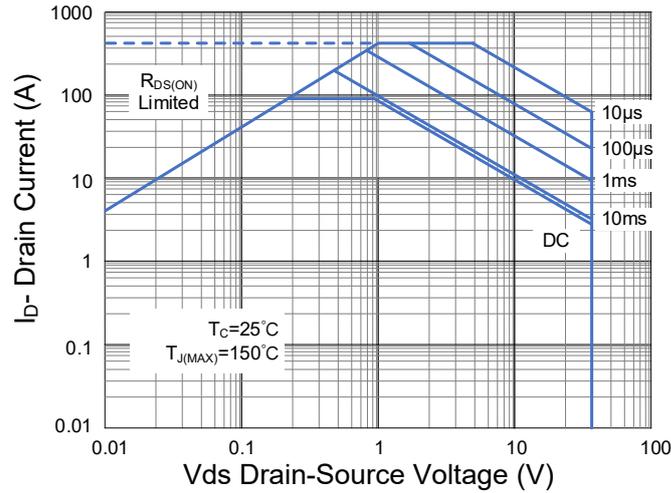


Figure 13 Safe Operation Area

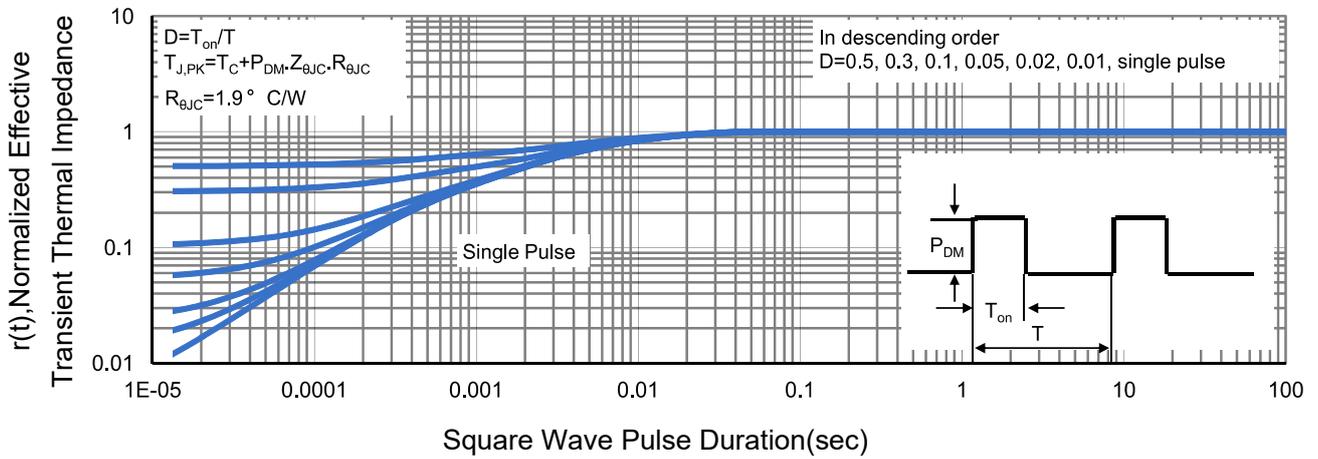
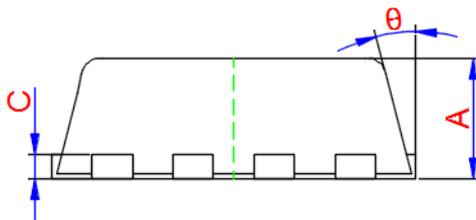
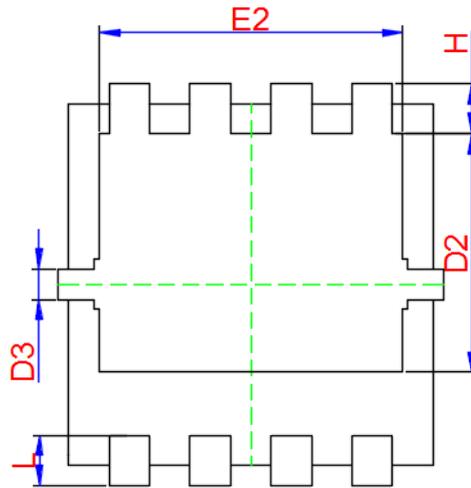
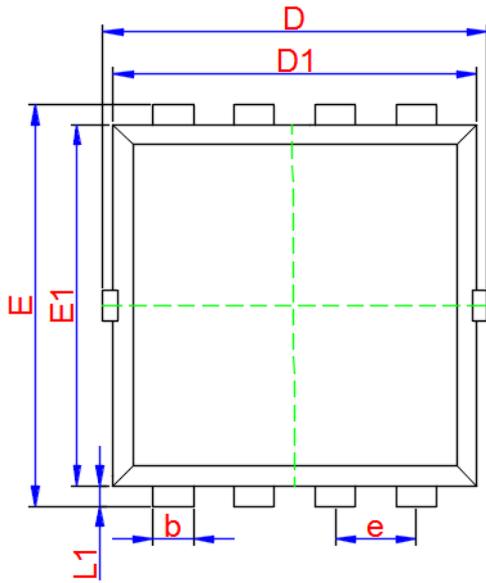


Figure 14 Normalized Maximum Transient Thermal Impedance

PDFN3.3x3.3-8L Package Information



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.680	0.775	0.900
b	0.250	0.300	0.350
c	0.100	0.150	0.250
D	3.150	3.300	3.400
D1	2.950	3.100	3.200
D2	1.700	1.800	1.930
D3	-	0.130	-
E	3.050	3.250	3.350
E1	2.950	3.150	3.200
E2	2.300	2.400	2.550
e	0.650 TYP.		
H	0.330	0.430	0.530
L	0.300	0.400	0.500
L1	0.080	0.130	0.180
θ	-	10°	-