

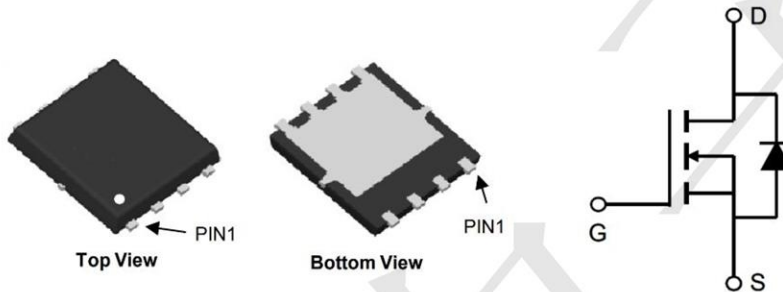
**Features**

- Advanced trench cell design
- Low Thermal Resistance
- Low Gate Charge

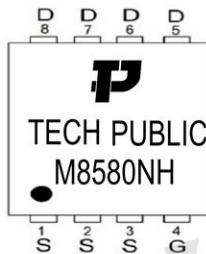
**Application**

- Motor/Body Load Control
- Load Switch
- PWM Application
- DC-DC converters and Off-line UPS

**PDFN5X6-8L Pin Configuration**



**Marking:**



**Absolute Maximum Ratings (at Ta = 25°C unless otherwise specified)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	85	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	T <sub>C</sub> = 25°C	85
		T <sub>C</sub> = 100°C	56
Peak Drain Current, Pulsed <sup>1)</sup>	I <sub>DM</sub>	200	A
Avalanche Current	I <sub>AS</sub>	53	A
Single Pulse Avalanche Energy <sup>2)</sup>	E <sub>AS</sub>	140	mJ
Power Dissipation	P <sub>tot</sub>	83	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55~150	°C

**Thermal Characteristics**

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Case <sup>3)</sup>	R <sub>θJC</sub>	1.5	°C/W
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	55	°C/W

**Characteristics at Ta = 25°C unless otherwise specified**

Parameter	Symbol	Min.	Type.	Max.	Unit
<b>STATIC PARAMETERS</b>					
Drain-Source Breakdown Voltage at $I_D = 250\mu A$	$BV_{DSS}$	85			V
Drain-Source Leakage Current at $V_{DS} = 80 V$	$I_{DSS}$			1	$\mu A$
Gate Leakage Current at $V_{GS} = \pm 20 V$	$I_{GSS}$			$\pm 100$	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	3	4	V
Drain-Source On-State Resistance at $V_{GS} = 10 V, I_D = 30 A$	$R_{DS(on)}$		4.5	5	m $\Omega$
<b>DYNAMIC PARAMETERS</b>					
Gate resistance at $V_{DS} = 0 V, f = 1 MHz$	$R_g$		1.35	2.1	$\Omega$
Forward Transconductance at $V_{DS} = 5 V, I_D = 20 A$	$g_{fs}$		70		S
Input Capacitance at $V_{GS} = 0 V, V_{DS} = 40 V, f = 1 MHz$	$C_{iss}$		4194		pF
Output Capacitance at $V_{GS} = 0 V, V_{DS} = 40 V, f = 1 MHz$	$C_{oss}$		665		pF
Reverse Transfer Capacitance at $V_{GS} = 0 V, V_{DS} = 40 V, f = 1 MHz$	$C_{rss}$		31		pF
Gate charge total at $V_{DS} = 40 V, I_D = 20 A, V_{GS} = 10 V$	$Q_g$		36.5	51	nC
Gate to Source Charge at $V_{DS} = 40 V, I_D = 20 A, V_{GS} = 10 V$	$Q_{gs}$		11		nC
Gate to Drain Charge at $V_{DS} = 40 V, I_D = 20 A, V_{GS} = 10 V$	$Q_{gd}$		6		nC
Turn-On Delay Time at $V_{GS} = 10 V, V_{DS} = 40 V, R_L = 2 \Omega, R_g = 3 \Omega$	$t_{d(on)}$		11		nS
Turn-On Rise Time at $V_{GS} = 10 V, V_{DS} = 40 V, R_L = 2 \Omega, R_g = 3 \Omega$	$t_r$		5		nS
Turn-Off Delay Time at $V_{GS} = 10 V, V_{DS} = 40 V, R_L = 2 \Omega, R_g = 3 \Omega$	$t_{d(off)}$		25		nS
Turn-Off Fall Time at $V_{GS} = 10 V, V_{DS} = 40 V, R_L = 2 \Omega, R_g = 3 \Omega$	$t_f$		6		nS
<b>Body-Diode PARAMETERS</b>					
Drain-Source Diode Forward Voltage at $I_S = 1 A, V_{GS} = 0 V$	$V_{SD}$		0.71	1	V
Body Diode Reverse Recovery Time at $I_F = 20 A, di/dt = 500 A / \mu s$	$t_{rr}$		30		nS
Body Diode Reverse Recovery Charge at $I_F = 20 A, di/dt = 500 A / \mu s$	$Q_{rr}$		126		nC

**Typical Characteristics**

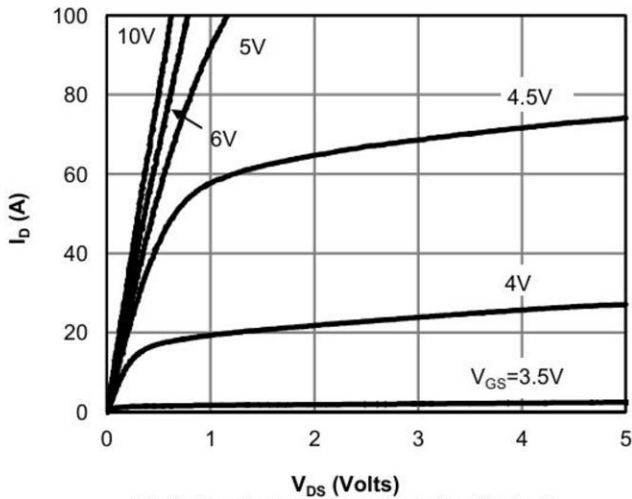


Fig 1: On-Region Characteristics (Note E)

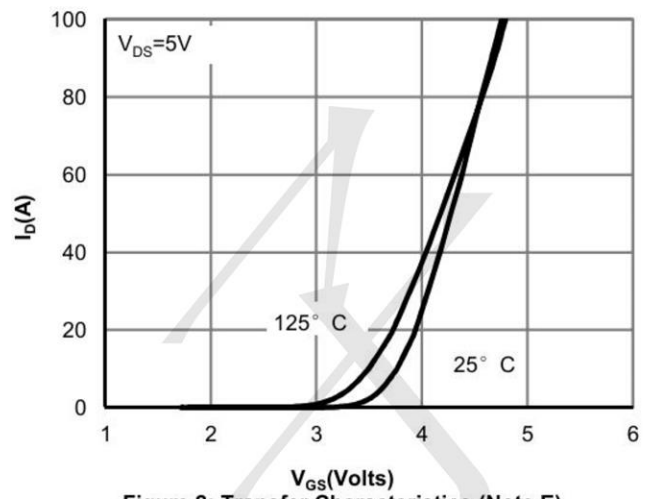


Figure 2: Transfer Characteristics (Note E)

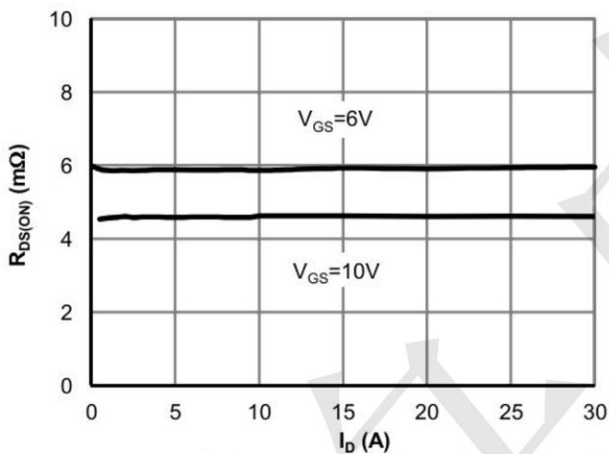


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

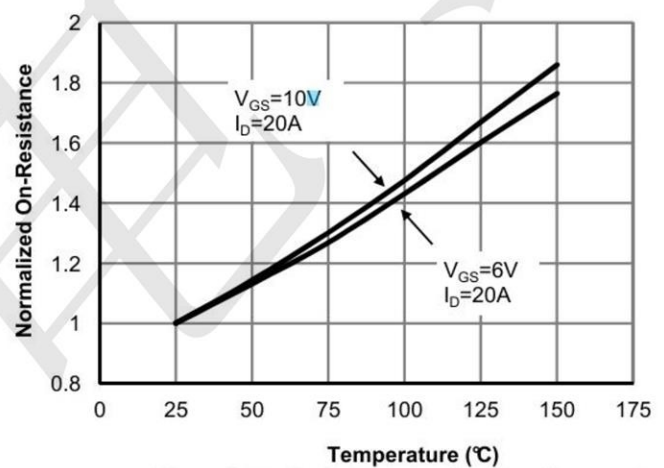


Figure 4: On-Resistance vs. Junction Temperature (Note E)

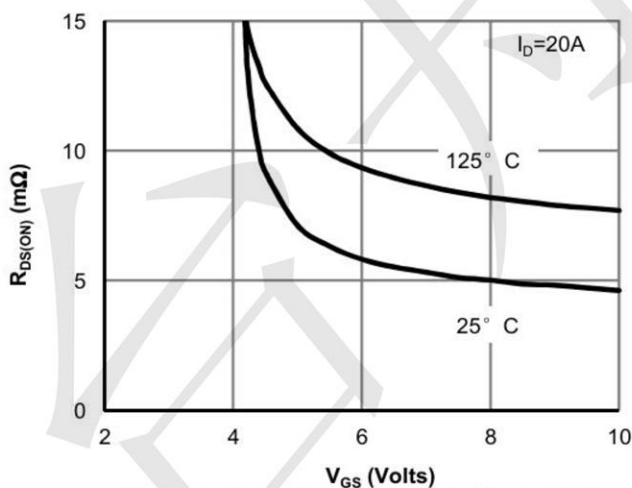


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

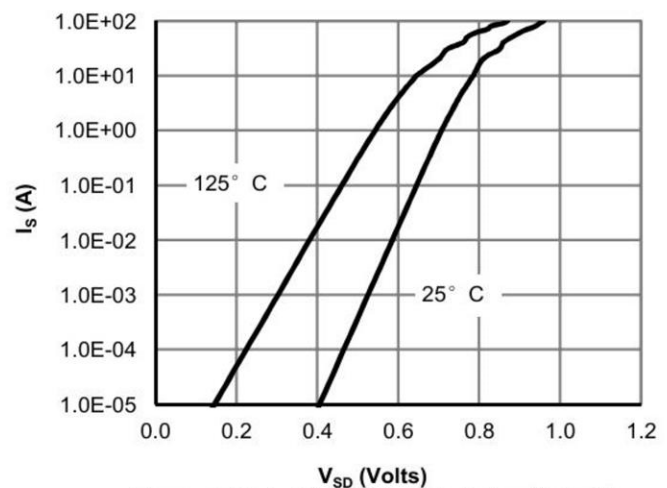


Figure 6: Body-Diode Characteristics (Note E)

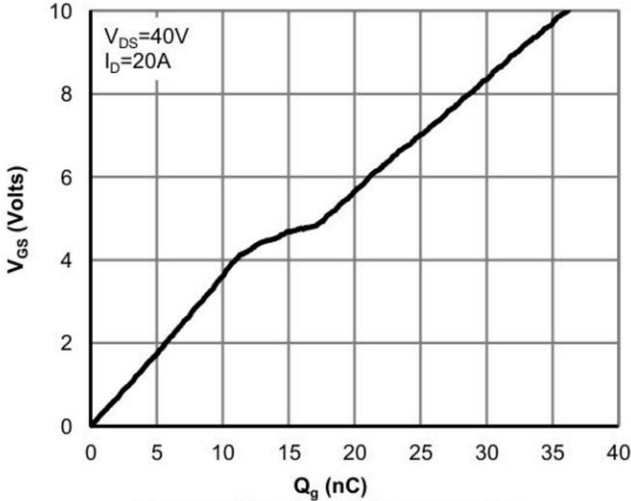


Figure 7: Gate-Charge Characteristics

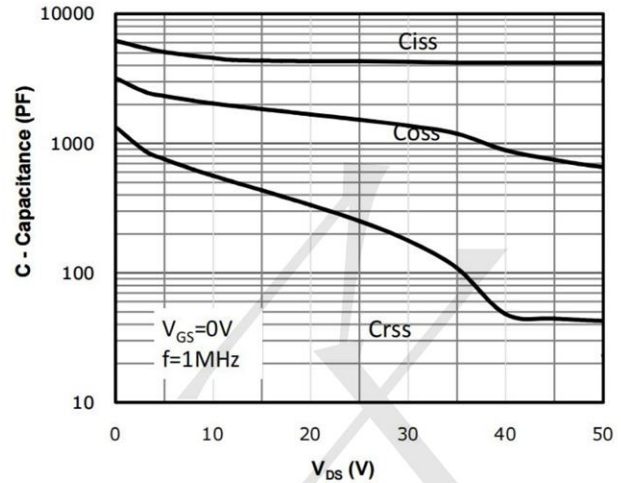


Figure 8: Capacitance Characteristics

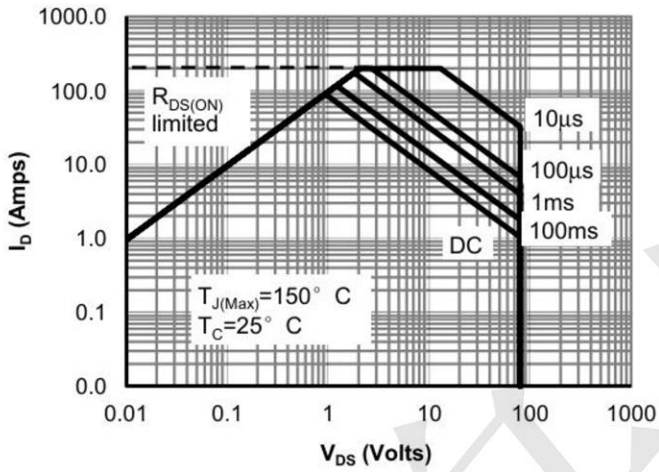


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

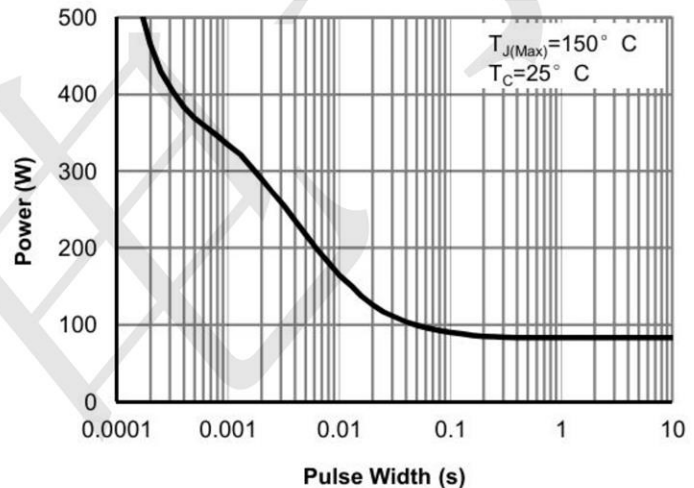


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

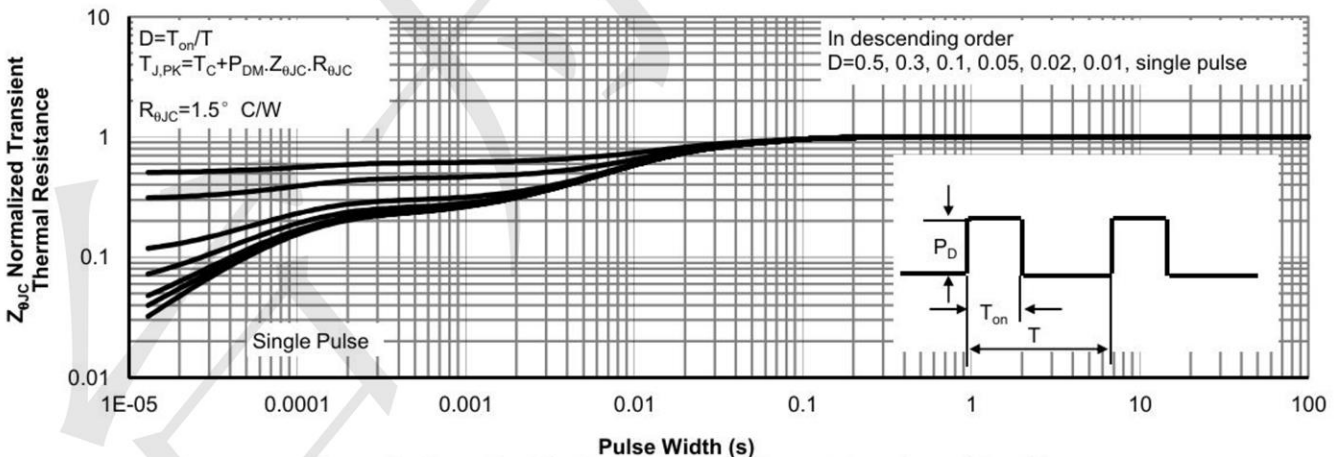


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

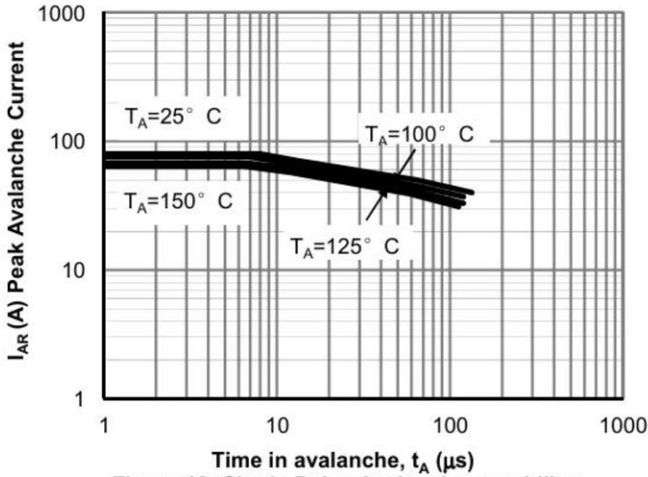


Figure 12: Single Pulse Avalanche capability (Note C)

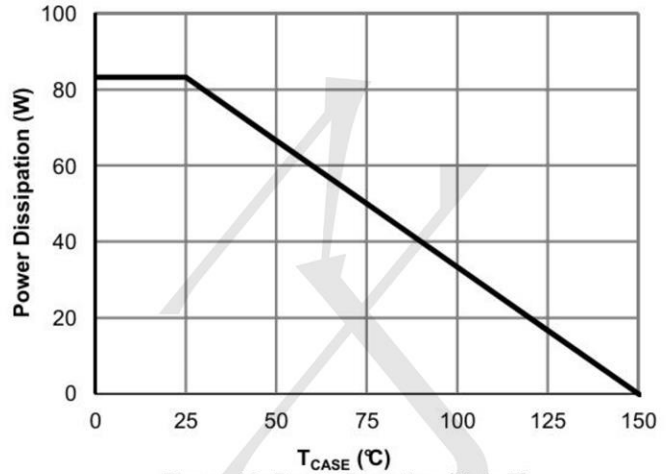


Figure 13: Power De-rating (Note F)

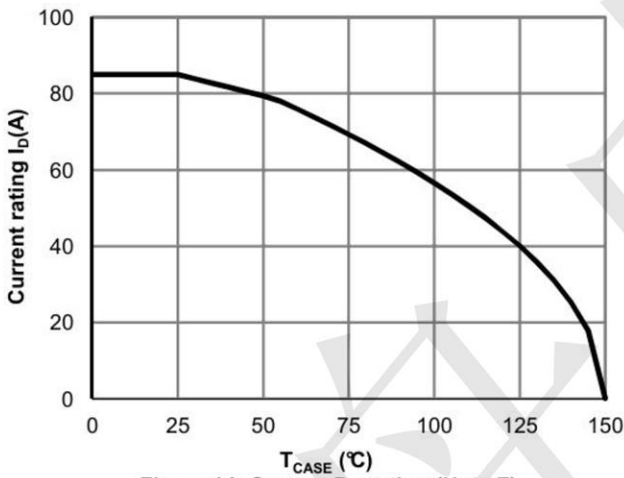


Figure 14: Current De-rating (Note F)

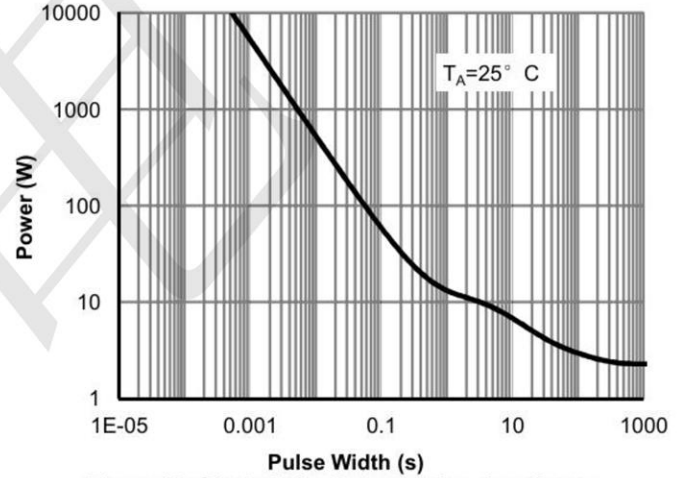


Figure 15: Single Pulse Power Rating Junction-to-Ambient (Note H)

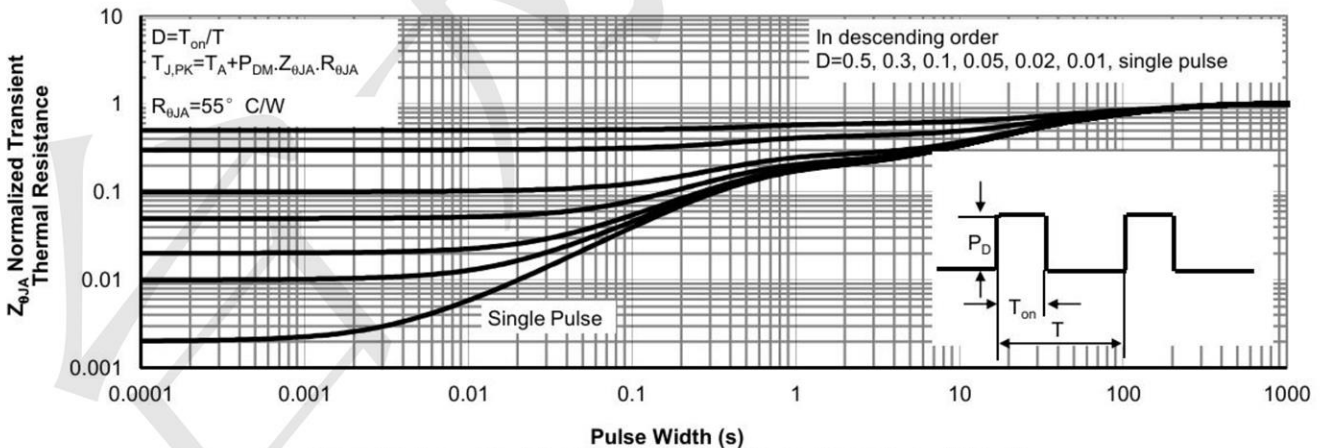
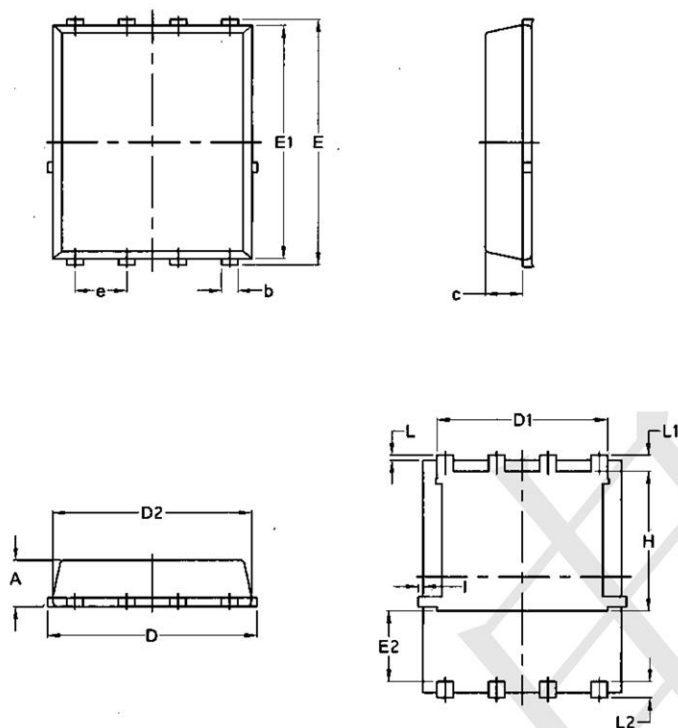


Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)

Package Outline Dimensions PDFN5\*6-8L



Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

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