



PE40P95G P-Channel Enhancement Mode Power MOSFET

PE40P95G Description

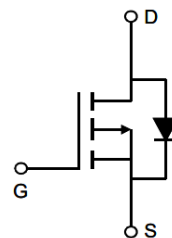
The PE40P95G uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. It can be used in a wide variety of applications.

PE40P95G General Features

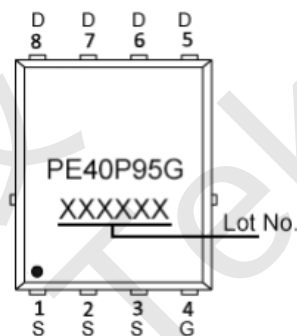
- $V_{DS} = -40V$, $I_D = -95A$
- $R_{DS(ON)} < 5.5m\Omega$ @ $V_{GS} = -10V$
- $R_{DS(ON)} < 8m\Omega$ @ $V_{GS} = -4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

PE40P95G Application

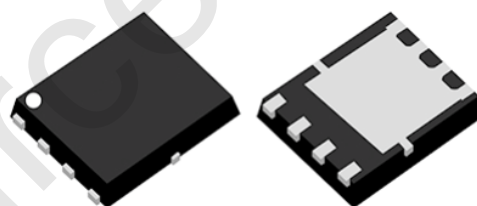
- DC-DC converter
- Load switch
- Power management



Schematic diagram



Marking and pin assignment



PDFN5x6-8L

PE40P95G Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-95	A
Drain Current-Continuous (TC=100°C)	I_D	-65	A
Pulsed Drain Current (Note 1)	I_{DM}	-380	A
Maximum Power Dissipation	P_D	135	W
Single Pulsed Avalanche Energy (L=0.1mH)	E_{AS}	2070	mJ
Operating Junction and Storage Temperature Range	T_J , T_{STG}	-55 To 150	°C

PE40P95G Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.92	°C/W
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PE40P95G Electrical Characteristics (TC=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V$	-	-	-1	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	-1.6	-2.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$	-	4.3	5.5	m Ω
		$V_{GS}=-4.5V, I_D=-20A$	-	6.3	8	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=-5V, I_D=-20A$	-	30	-	S
Dynamic Characteristics (Note 4)						
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V,$ $F=1.0MHz$	-	6165	-	pF
Output Capacitance	C_{oss}		-	517	-	pF
Reverse Transfer Capacitance (Note 4)	C_{rss}		-	477	-	pF
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, F=1.0MHz$	-	9.2	-	Ω
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS}=-20V, I_D=-20A,$ $V_{GS}=-10V, R_G=3\Omega$	-	10.5	-	nS
Turn-on Rise Time	t_r		-	4.8	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	36	-	nS
Turn-Off Fall Time	t_f		-	5	-	nS
Total Gate Charge	Q_g	$V_{DS}=-20V, I_D=-12A,$ $V_{GS}=-10V$	-	106	-	nC
Gate-Source Charge	Q_{gs}		-	13	-	nC
Gate-Drain Charge	Q_{gd}		-	24	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	$V_{GS}=0V, I_S=-20A$	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	-95	A

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.



PE40P95G Typical Electrical and Thermal Characteristics

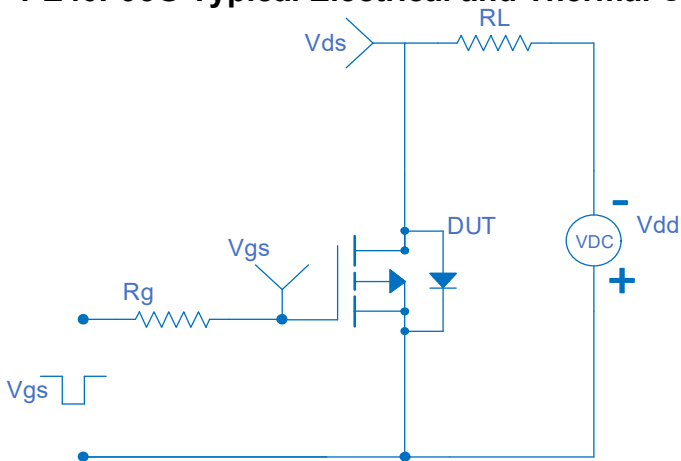


Figure 1 Switching Test Circuit

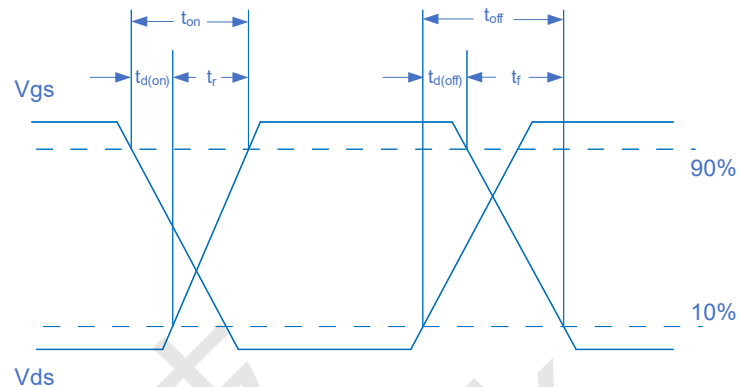


Figure 2 Switching Waveform

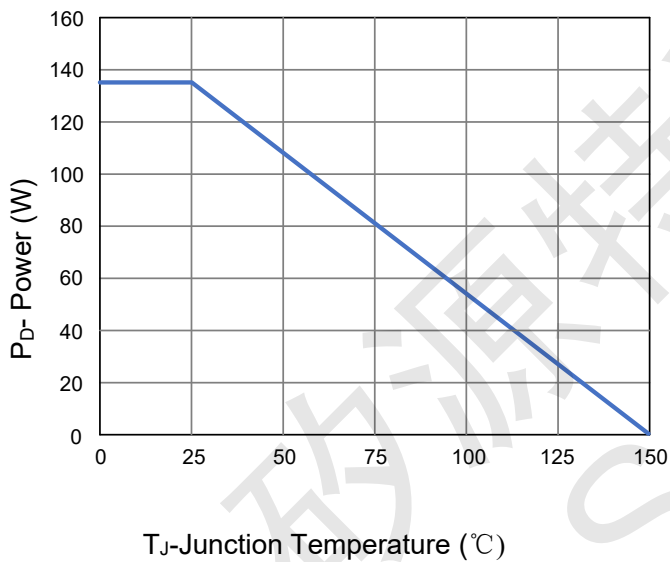


Figure 3 Power De-rating

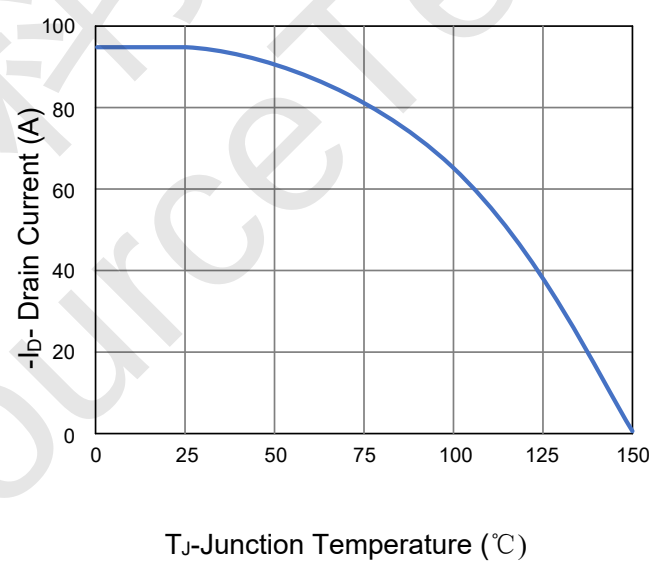


Figure 4 Drain Current

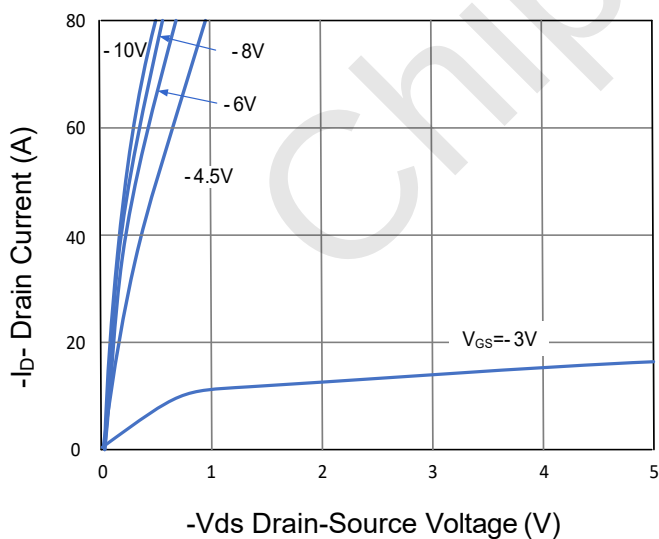


Figure 5 Output Characteristics

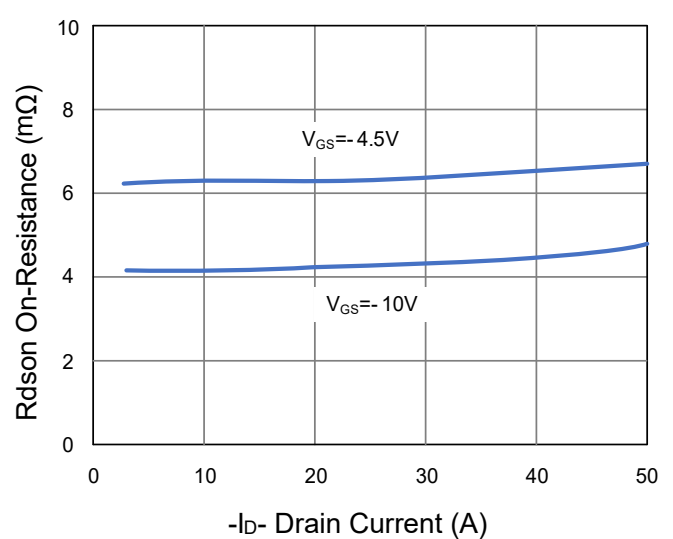


Figure 6 Rdson vs Drain Current

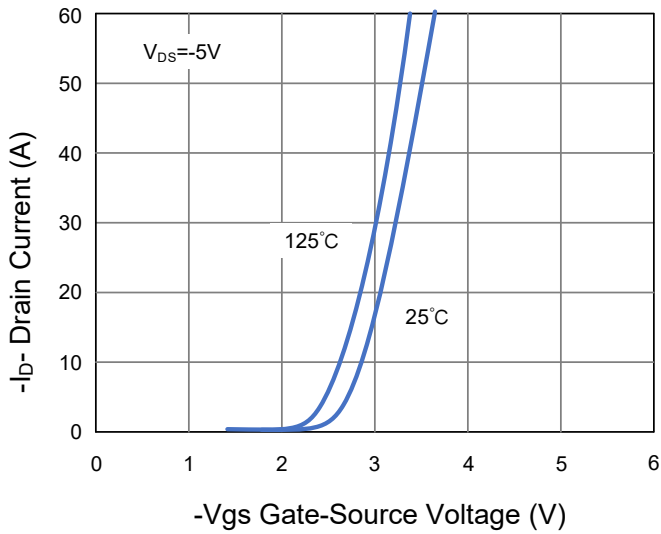


Figure 7 Transfer Characteristics

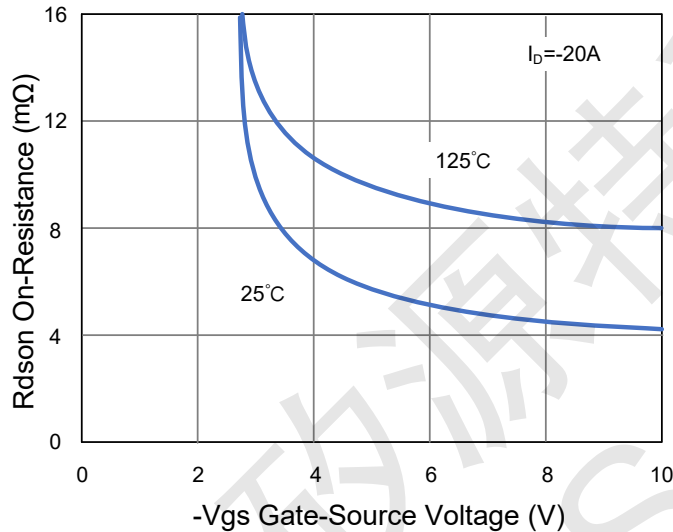


Figure 9 Rdson vs VGS

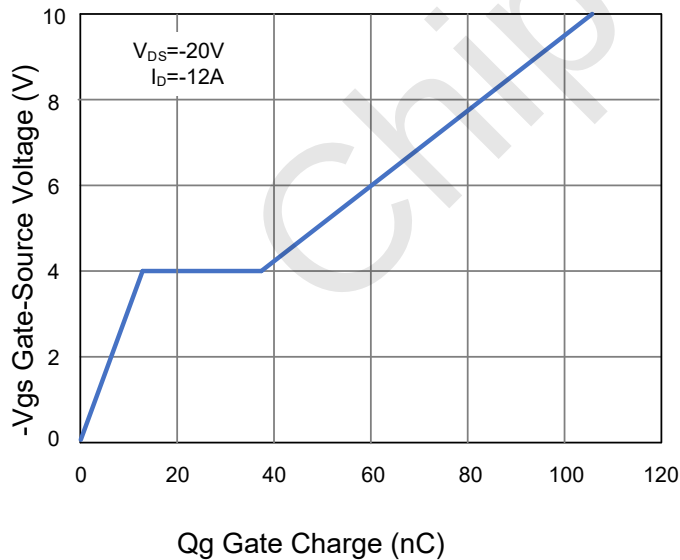


Figure 11 Gate Charge

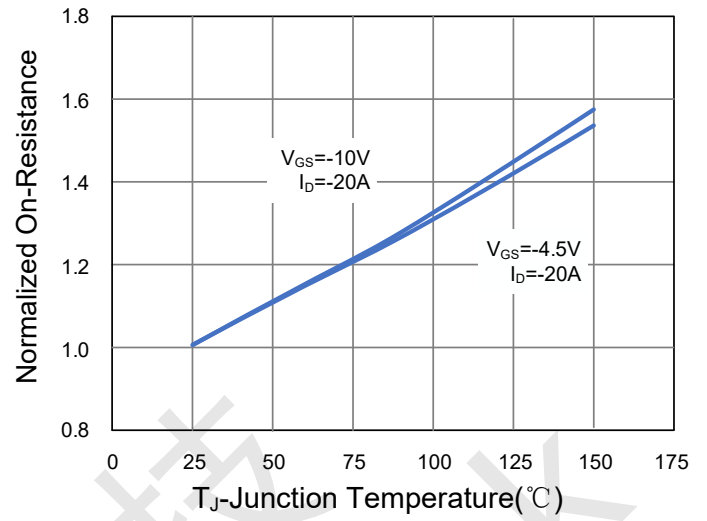


Figure 8 Rdson vs Junction Temperature

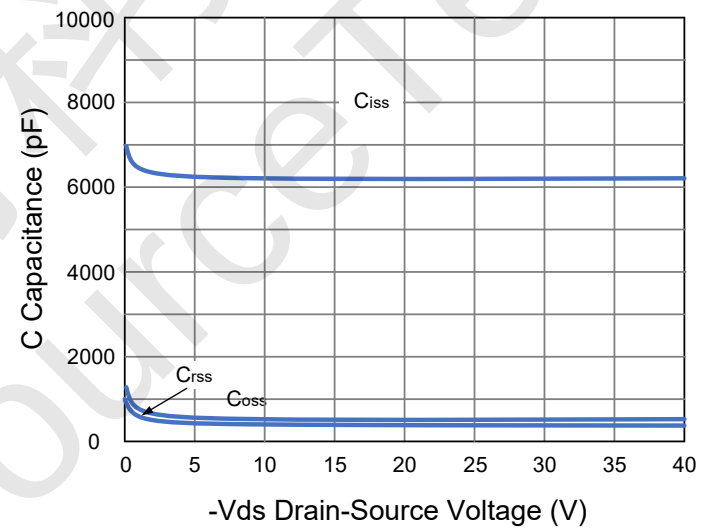


Figure 10 Capacitance vs Vds

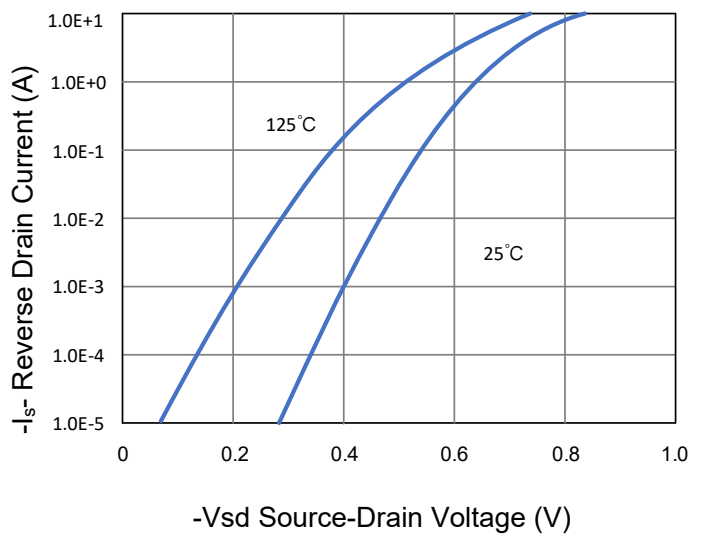


Figure 12 Source- Drain Diode Forward

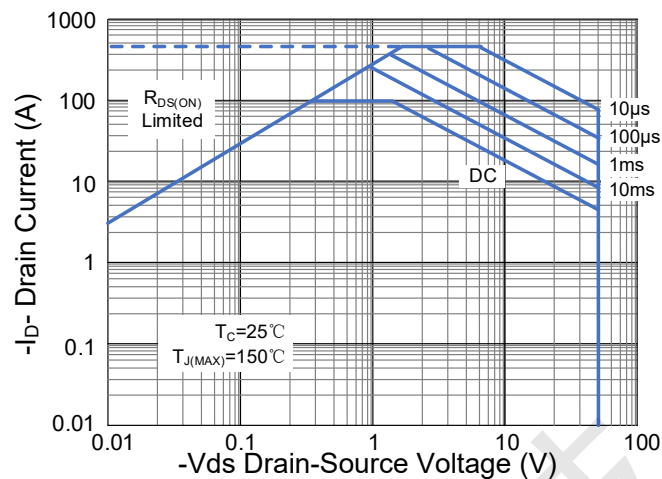


Figure 13 Safe Operation Area

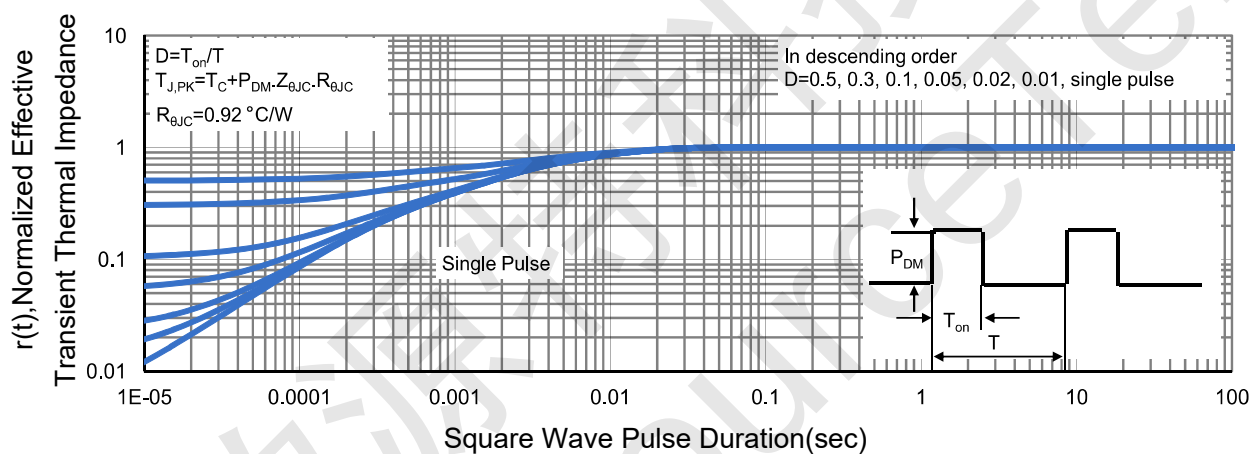
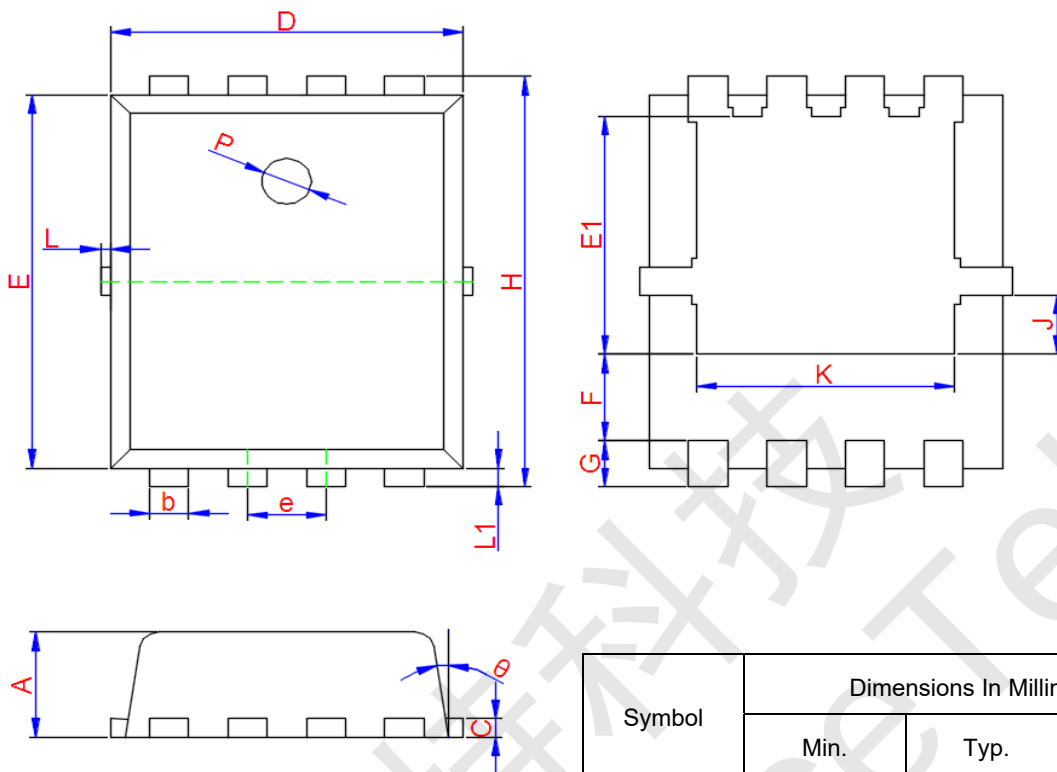


Figure 14 Normalized Maximum Transient Thermal Impedance



PE40P95G PDFN5x6-8L Package Information



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.800	1.050	1.200
b	0.250	0.350	0.490
c	0.254TYP.		
D	4.800	5.000	5.100
e	1.270TYP.		
E	5.650	5.800	5.900
E1	3.400TYP.		
F	1.300TYP.		
G	0.600TYP.		
H	5.950	6.080	6.200
J	0.950TYP.		
K	4.000TYP.		
L	-	-	0.150
L1	0.100	0.140	0.180
P	1.180TYP.		
θ	6°	10°	14°