

Datasheet of DP8810 (TSSOP-8)

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DP8810

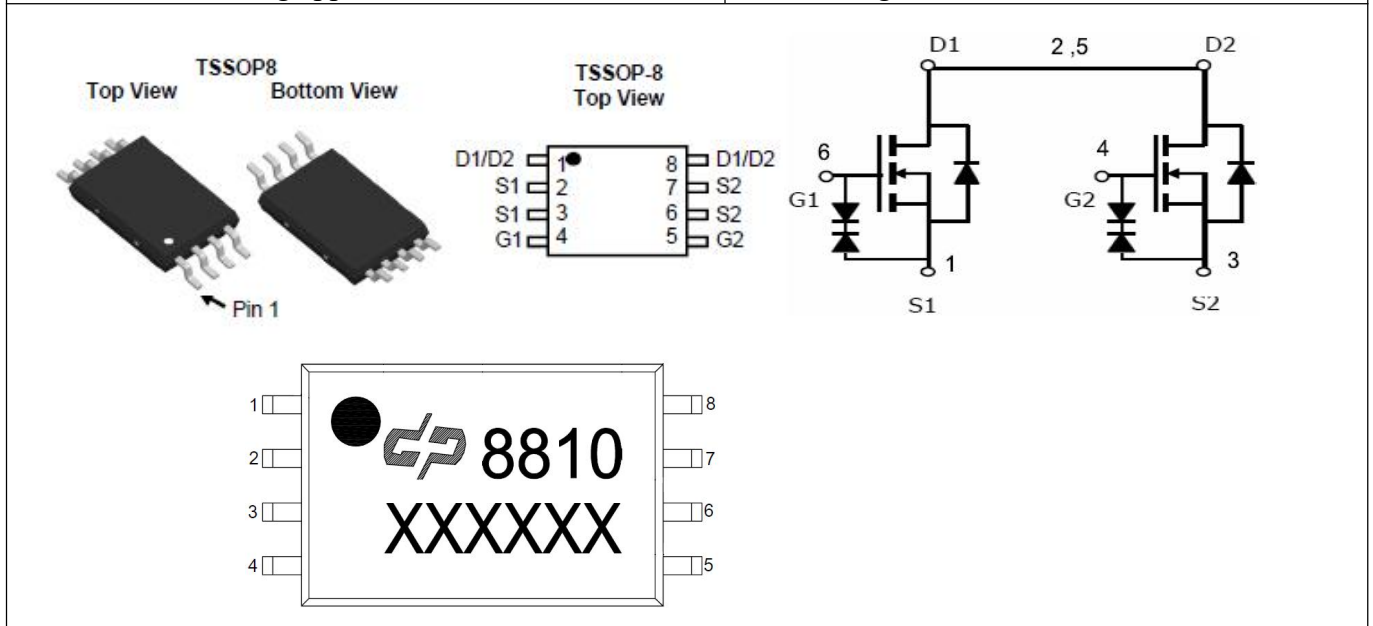
Dual N-Channel Enhancement Power MOSFET

General Description

DP8810 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. It is ESD protected. This device is suitable for use as a Battery protection or in other Switching application.

Product Summary

V_{DS}	20 V
I_D (at $V_{GS}=4.5V$)	6.0A
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	< 20m Ω
$R_{DS(ON)}$ (at $V_{GS} = 2.5V$)	< 25m Ω
ESD Rating: 2000V HBM	



Package Marking and Ordering Information

Part #	Marking	Package	Packing	Reel Size	Tape Width	Qty
DP8810	DP8810	TSSOP-8	Reel	N/A	N/A	5000pcs

Absolute Maximum Ratings $T_A=25^{\circ}C$ unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current-Continuous @ $T_J=25^{\circ}C$	I_D	6	A
Pulsed ^b	I_{DM}	30	A
Maximum Power Dissipation ^a	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristic

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient ^a	$R_{\theta JA}$	100	$^{\circ}C/W$



Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ ^c	Max	Uni
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 8V, V_{DS}=0V$	-	-	± 10	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.55	0.7	1	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=6A$	-	14	20	m Ω
		$V_{GS}=2.5V, I_D=5A$	-	17	25	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=6A$	-	20	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=10V,$ $V_{GS}=0V,$ $F=1.0MHz$	-	650	-	pF
Output Capacitance	C_{oss}		-	140	-	pF
Reverse Transfer Capacitance	C_{rss}		-	60	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=10V,$ $I_D=1A$ $V_{GS}=5V,$ $R_{GEN}=3\Omega,$ $R_L=1.5\Omega$	-	0.5	-	nS
Turn-on Rise Time	t_r		-	1	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	12	-	nS
Turn-Off Fall Time	t_f		-	4	-	nS
Total Gate Charge	Q_g	$V_{DS}=10V,$ $I_D=6A,$ $V_{GS}=4.5V$	-	8	-	nC
Gate-Source Charge	Q_{gs}		-	2.5	-	nC
Gate-Drain Charge	Q_{gd}		-	3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1.7A$	-	-	1.2	V
Drain-Source Diode Forward Current ^a	I_S	$V_{GS}=0V$	-	-	2.0	A

Notes:

- Surface Mounted on FR4 Board, $T < 10$ sec ;
- Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
- Guaranteed by Design, not subject to production testing.



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

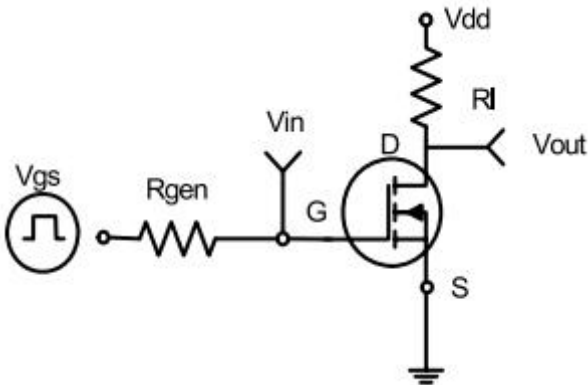


Figure 1: Switching Test Circuit

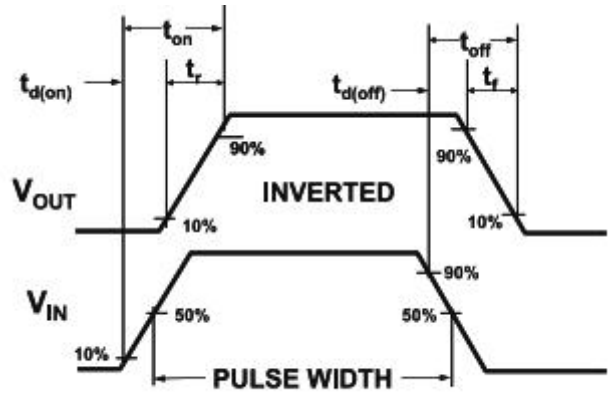


Figure 2: Switching Waveforms

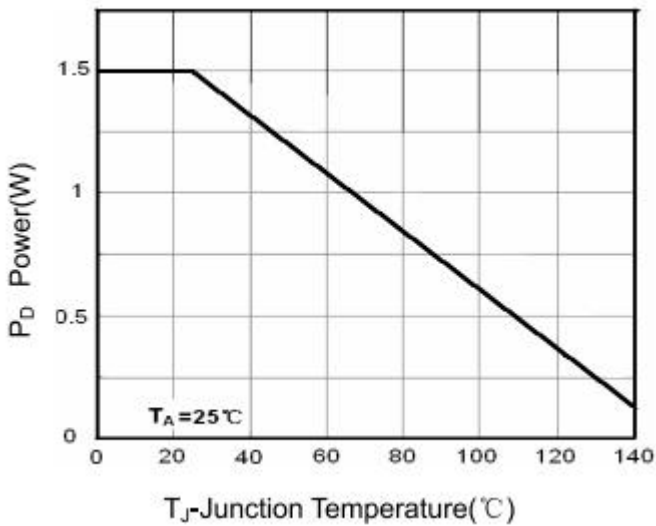


Figure 3: Power Dissipation

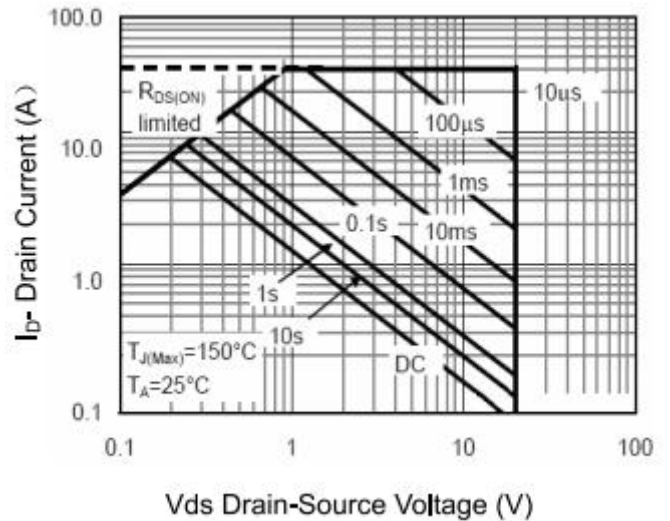


Figure 4: Safe Operation Area

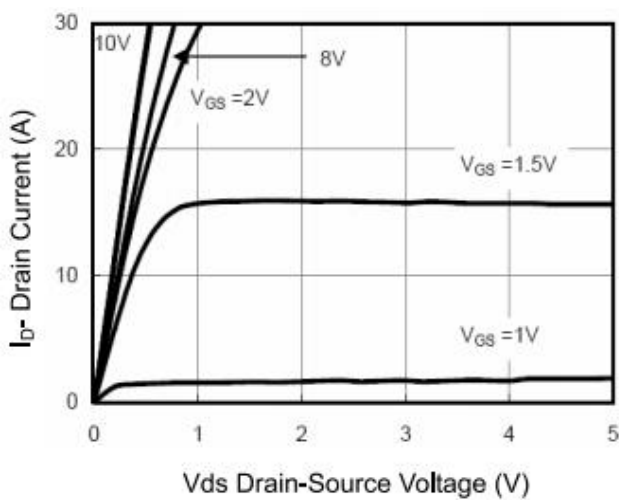


Figure 5: Output Characteristics

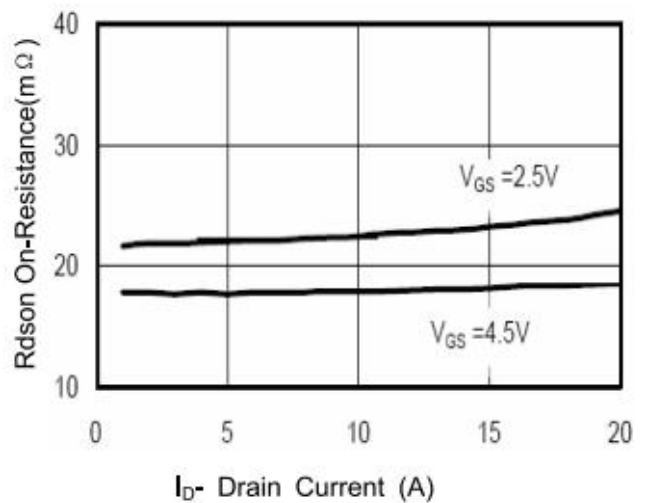


Figure 6: Drain-Source On-Resistance

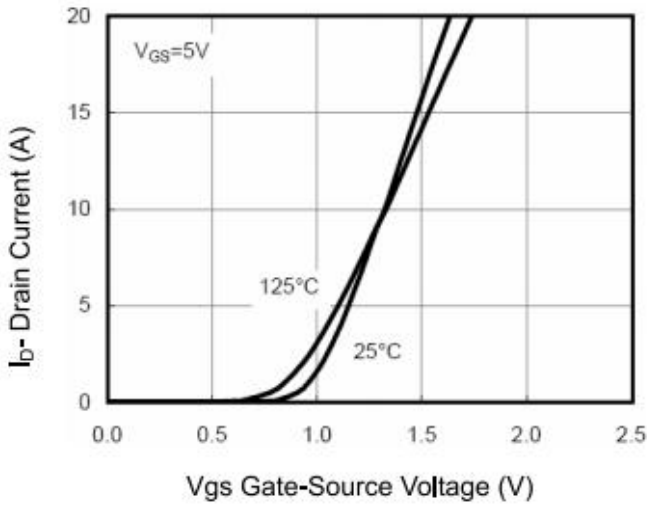


Figure 7: Transfer Characteristics

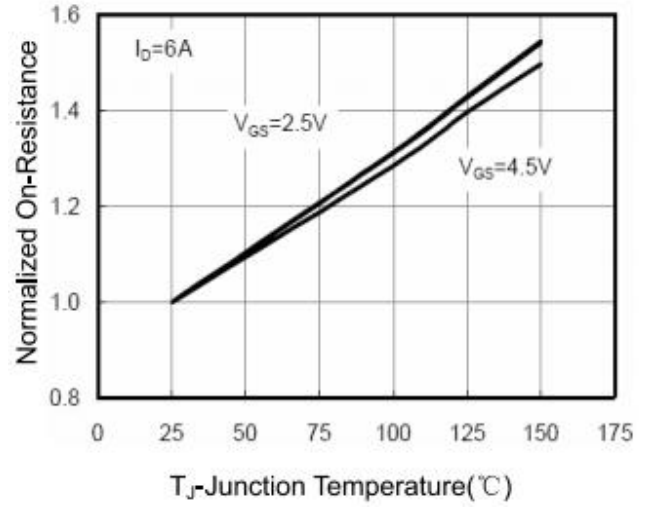


Figure 8: Drain-Source On-Resistance

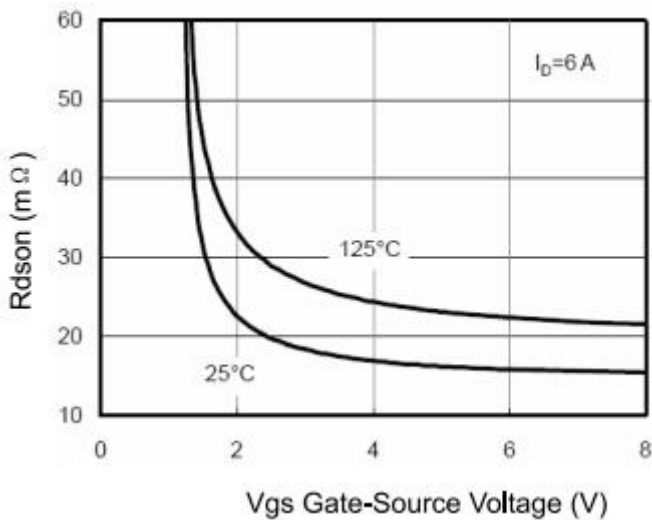


Figure 9: $R_{DS(ON)}$ VS V_{GS}

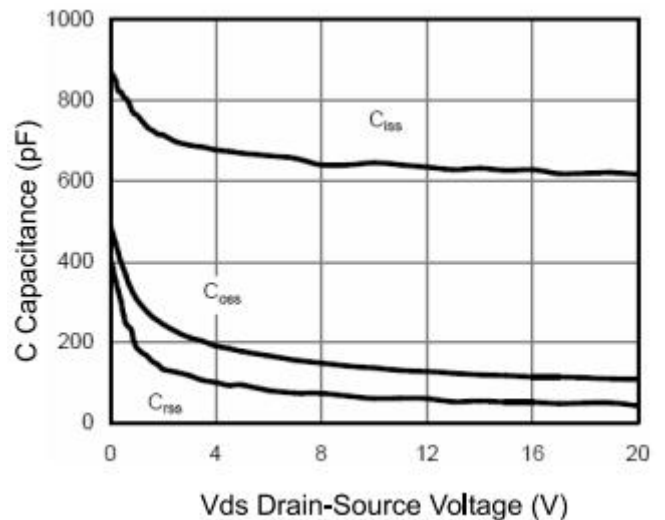


Figure 10: Capacitance VS V_{DS}

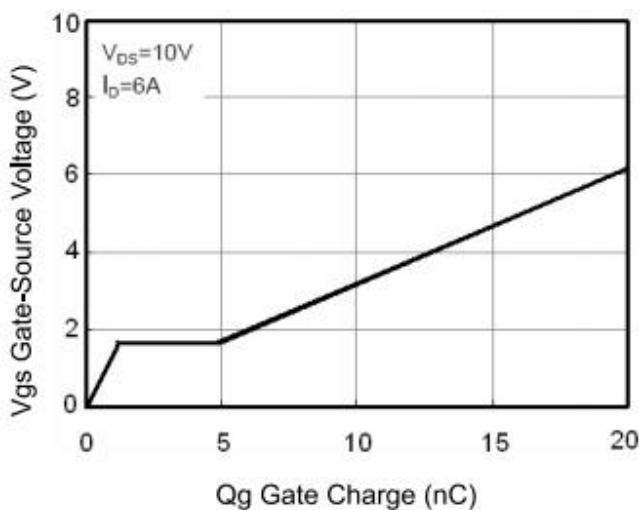


Figure 11: Gate Charge

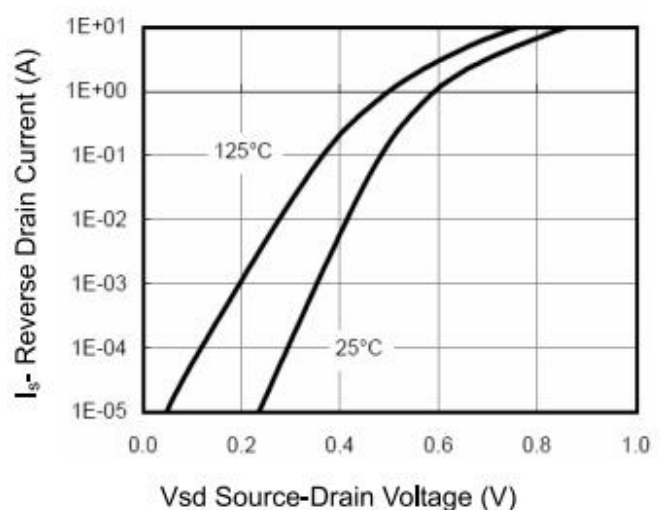


Figure 12: Source-Drain Diode Forward



DP8810

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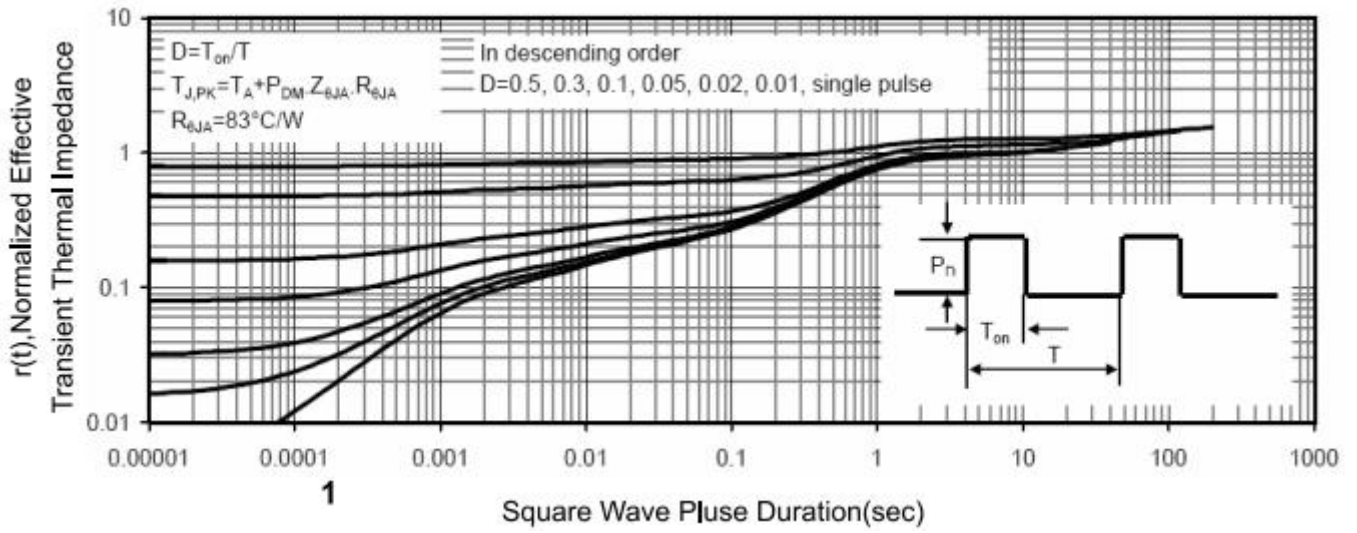
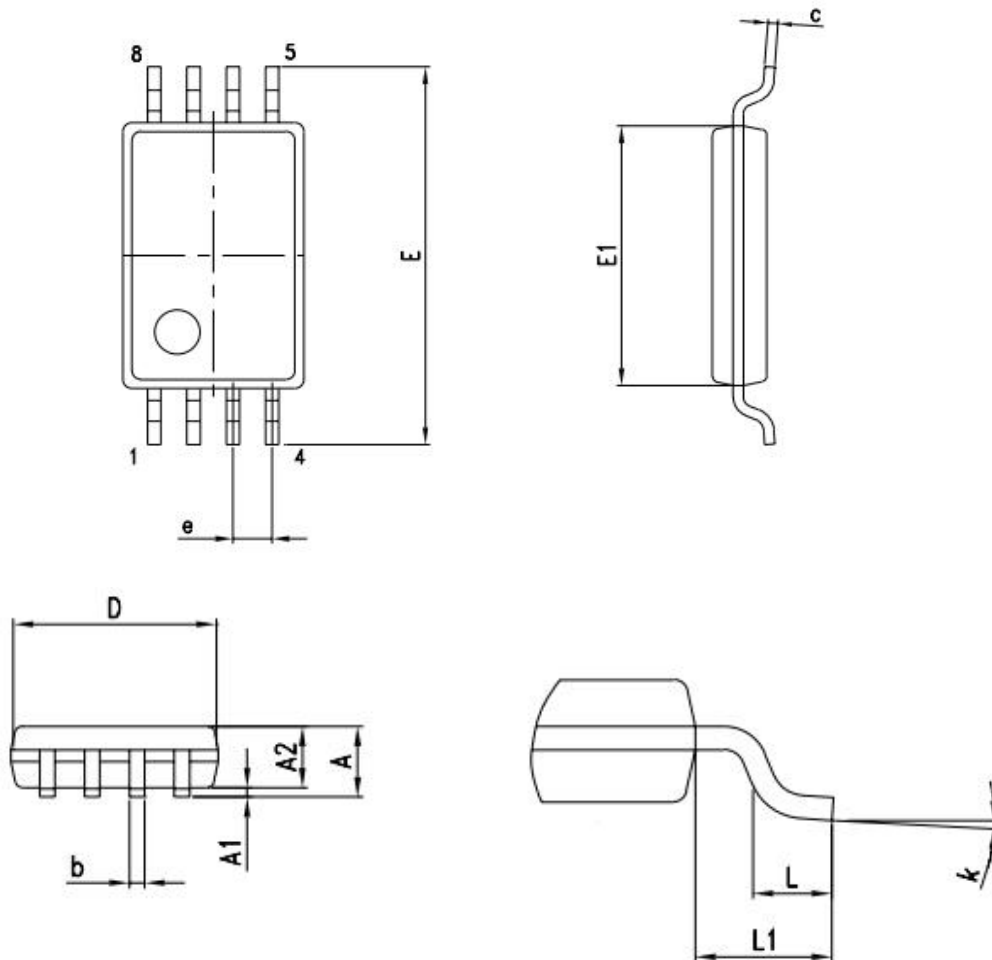


Figure 13: Normalized Maximum Transient Thermal Impedance



Package Outline Dimensions

TSSOP-8



DIM.	mm.			inch.		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.05		1.20	0.041		0.047
A1	0.05		0.15	0.002		0.006
A2	0.80		1.05	0.032		0.041
b	0.19		0.30	0.008		0.012
c	0.090		0.20	0.003		0.007
D	2.90		3.10	0.114		0.122
E	6.20		6.60	0.240		0.260
E1	4.30		4.50	0.170		0.177
e		0.65			0.025	
L	0.45		0.75	0.018		0.030
L1		1.00			0.039	
k	0°		8°	0.192		0.208



DP8810

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Revision History

Date	Rev	Description	Framer	Review	Approver
2019/11/07	3.3	Update LOGO	Zhou Hui	xulonghui	xuyan