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)	< 20mΩ
$R_{DS(ON)}$ (at V_{GS} = 2.5V)	< 25mΩ
ESD Rating: 2000V HBM	

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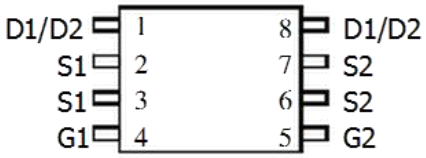
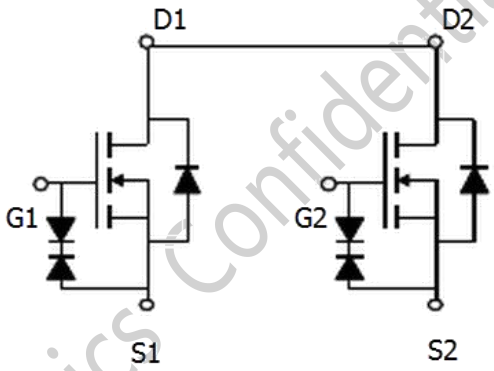
Top View





ABSOLUTE MAXIMUM RATINGS (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous @ T_J=25℃	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	℃

THERMAL CHARACTERISTIC

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Ambient [a]	$R_{\theta JA}$	100	℃/W

ELECTRICAL CHARACTERISTICS (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ[c]	Max	Uni
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	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}=±10V,V_{DS}=0V	-	-	±10	μA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.55	0.7	1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6A	-	14	20	mΩ
		V_{GS}=2.5V, I_D=5A	-	17	25	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=6A	-	20	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	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}=3Ω , R =1.5Ω	-	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-Sourse Diode Forward	I_S	V_{GS}=0V	-	-	2.0	A

Notes:

a. Surface Mounted on FR4 Board ,T<10 sec ;

b. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

c. Guaranteed by Design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

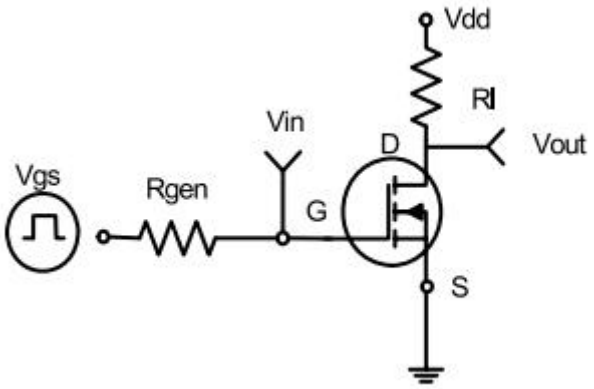


Figure 1: Switching Test Circuit

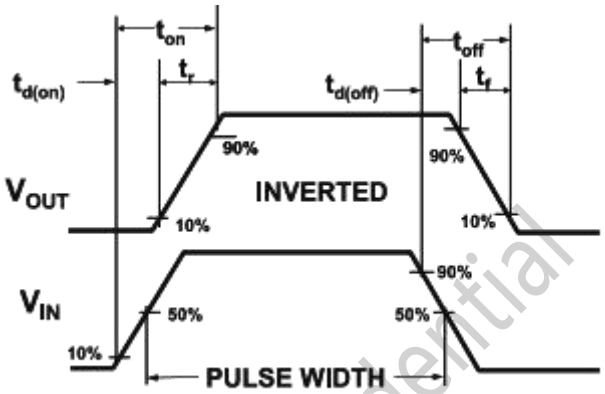


Figure 2: Switching Waveforms

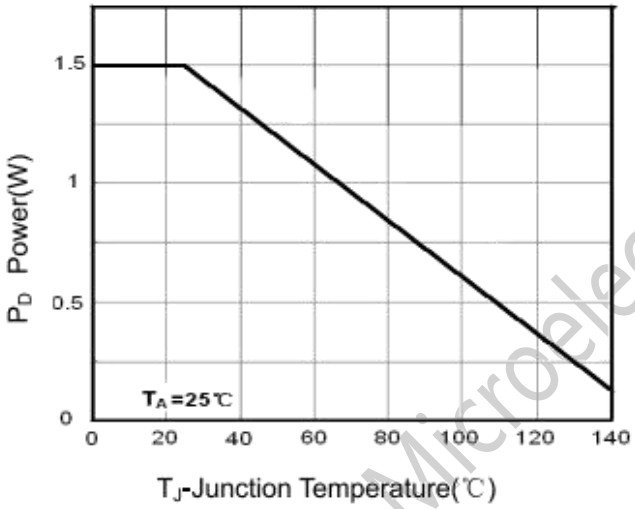


Figure 3: Power Dissipation

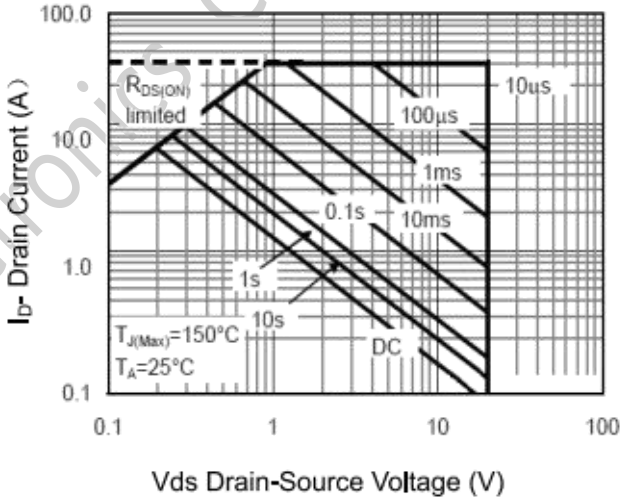


Figure 4: Safe Operation Area

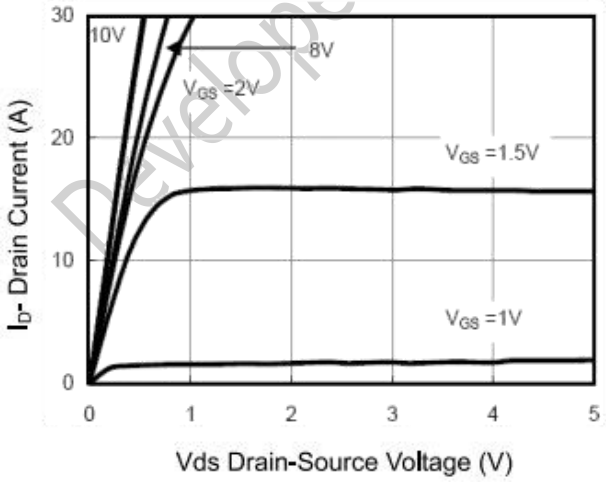


Figure 5: Output Characteristics

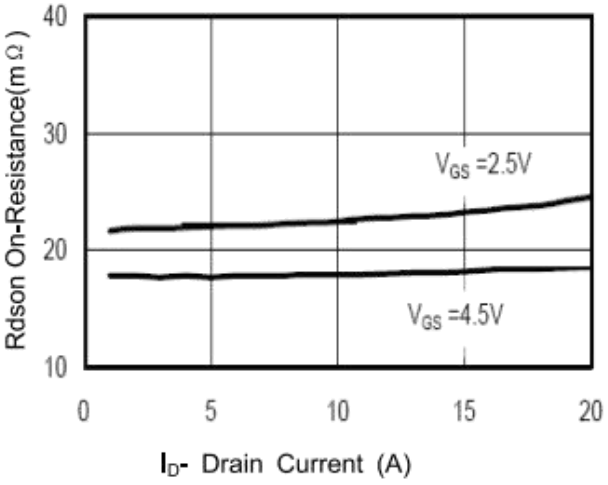


Figure 6: Drain-Source On-Rsistance

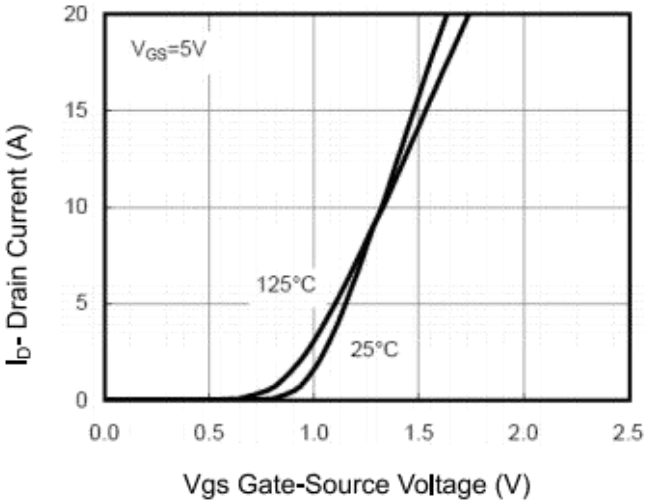


Figure 7: Transfer Characteristics

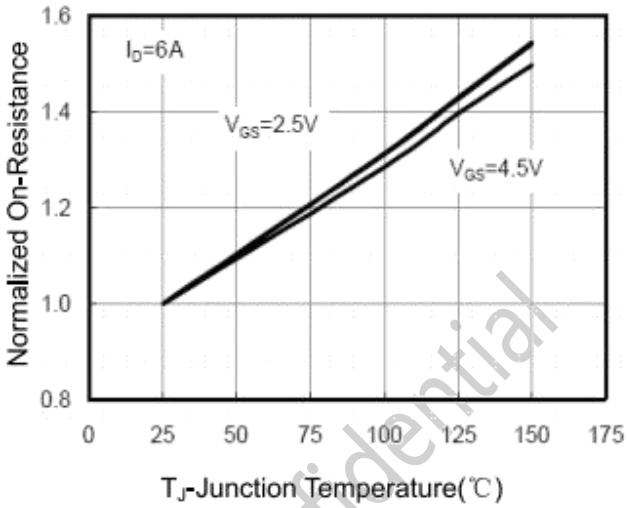


Figure 8: Drain-Source On-Rsistance

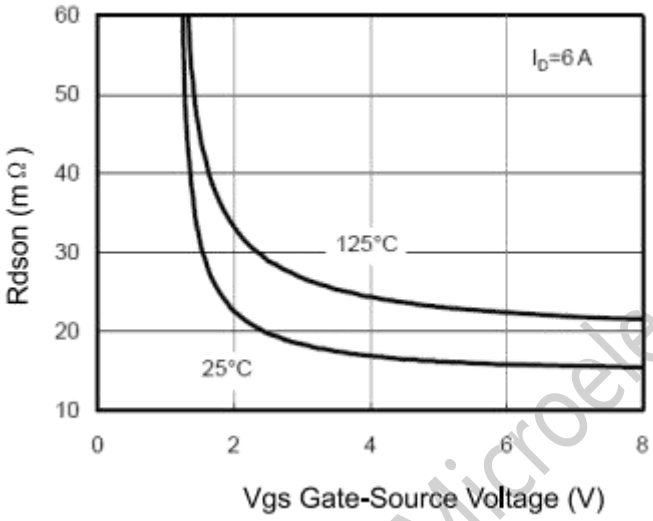


Figure 9: RDS(ON) VS VGS

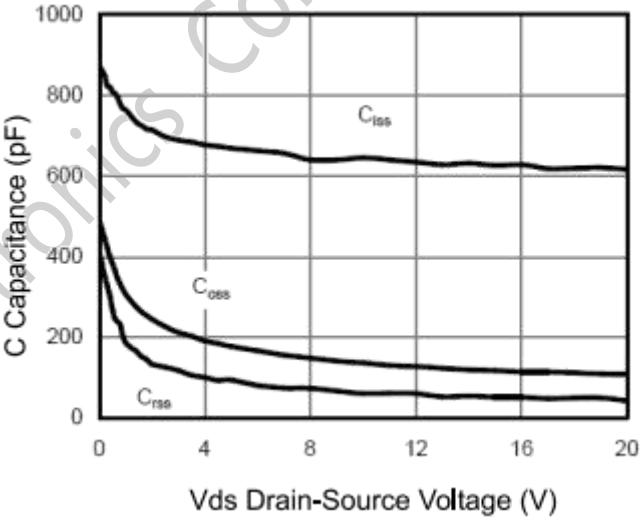


Figure 10: Capacitance VS VDS

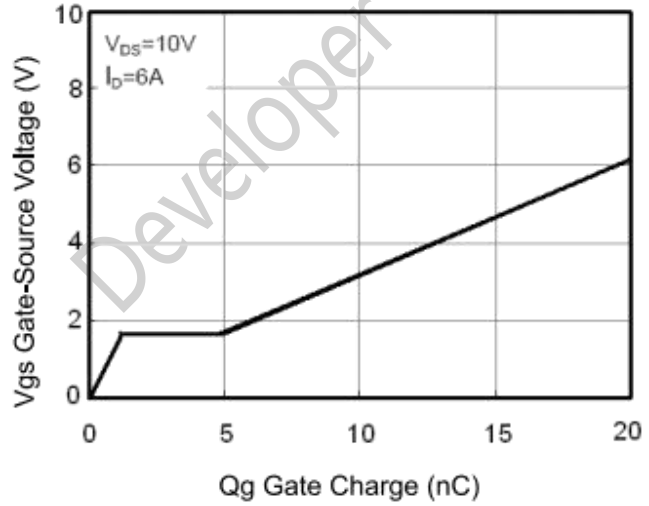


Figure 11: Gate Charge

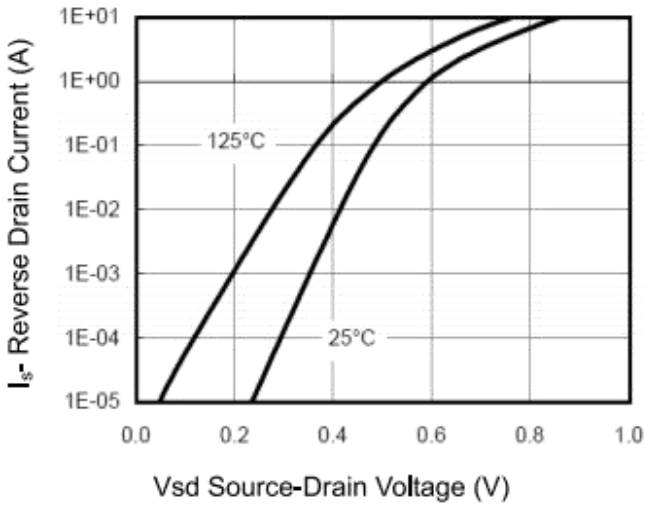


Figure 12: Source-Drain Diode Forward

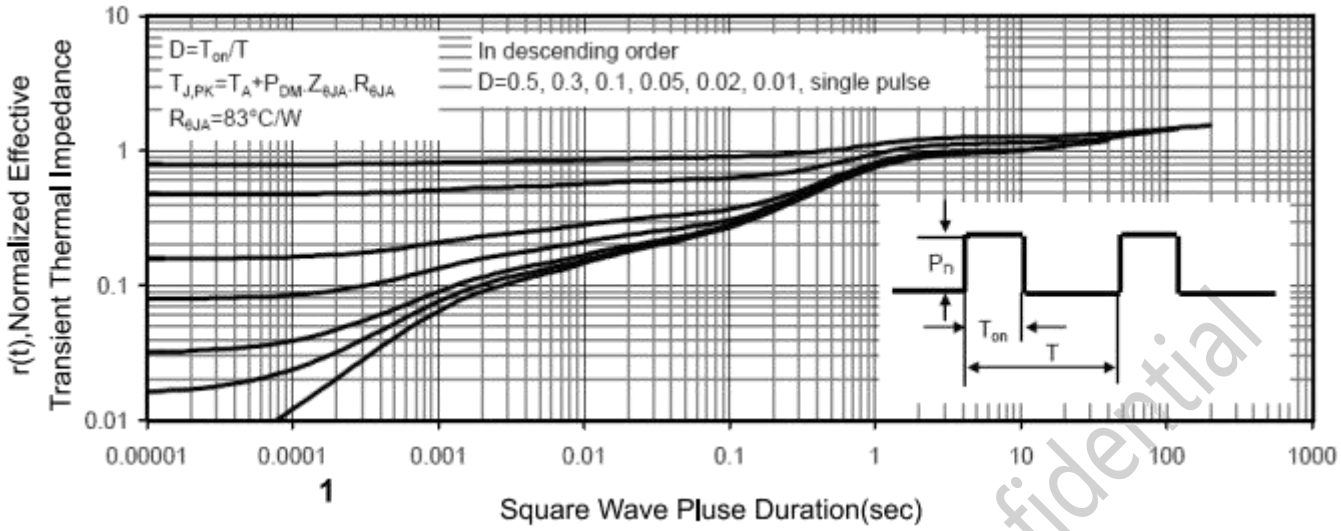


Figure 13: Normalized Maximum Transient Thermal Impedence

MARKING DESCRIPSION

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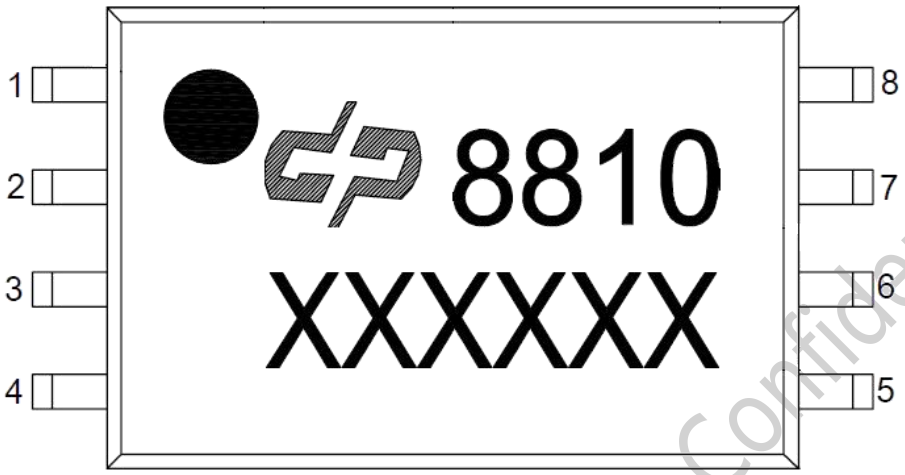

NOTE:

Y —Code of productive year code(the last number of the year)

M —Code of productive month(for example: A means January, B means February…)

DD —Productive date(the number of the date)

NN —Lot number of wafer

FOR EXCAMPLE:

5G1103

Means this product was produced in 2015-07-11 , and 03 is the wafer lot.

PACKAGE OUTLINE DIMENSIONS

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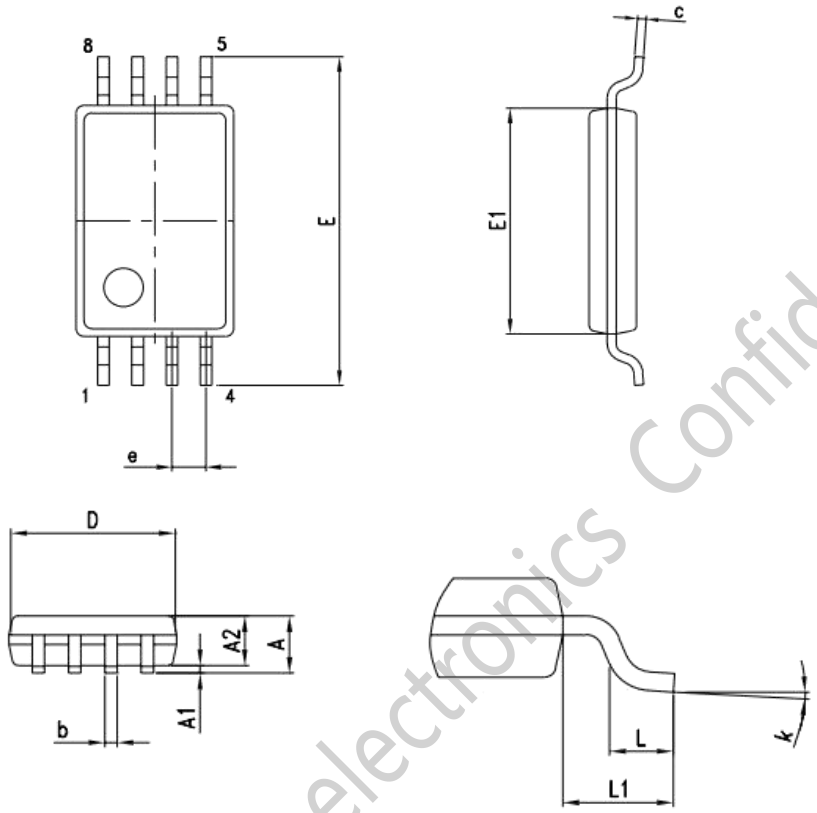

DIM.	mm.			inch.		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	1.05		1.20	0.041		0.047
A1	0.05		0.15	0.002		0.006
A2	0.80		1.05	0.032		0.041
b	0.19		0.30	0.008		0.012
c	0.090		0.20	0.003		0.007
D	2.90		3.10	0.114		0.122
E	6.20		6.60	0.240		0.260
E1	4.30		4.50	0.170		0.177
e		0.65			0.025	
L	0.45		0.75	0.018		0.030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

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