AP8810

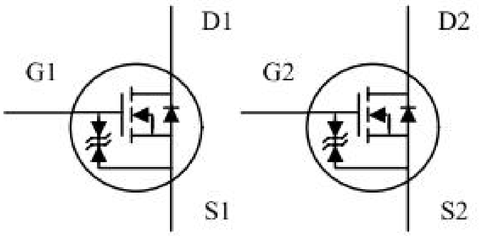
N-Channel Enhancement Mosfet

DATA SHEET

Features

- 20V,8A
  $R_{DS(ON)} < 15m\Omega$ @V_{GS}= 4.5V TYP: 12mΩ
  $R_{DS(ON)} < 18m\Omega$ @V_{GS}= 2.5V TYP: 15mΩ

- Advanced Trench Technology
- Lead free product is acquired
- ESD Protected Up to 2.0KV(HBM)



Schematic Diagram

Applications

- Load Switch
- DC/DC Converter
- Power Management

Marking and pin Assignment

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity (PCS)
8810	AP8810	TSSOP-8	-	-	5000

ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current (T_A=25℃) (1)	I_D	8	A
Continuous Drain Current (T_A=100℃)	I_D	5.1	A
Pulsed Drain Current (1)	I_{DM}	30	A
Drain Power Dissipation	P_D	1	W
Thermal Resistance from Junction to Ambient (2)	$R_{\theta JA}$	125	℃/W
Junction Temperature	T_J	-55~ +150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Notes:

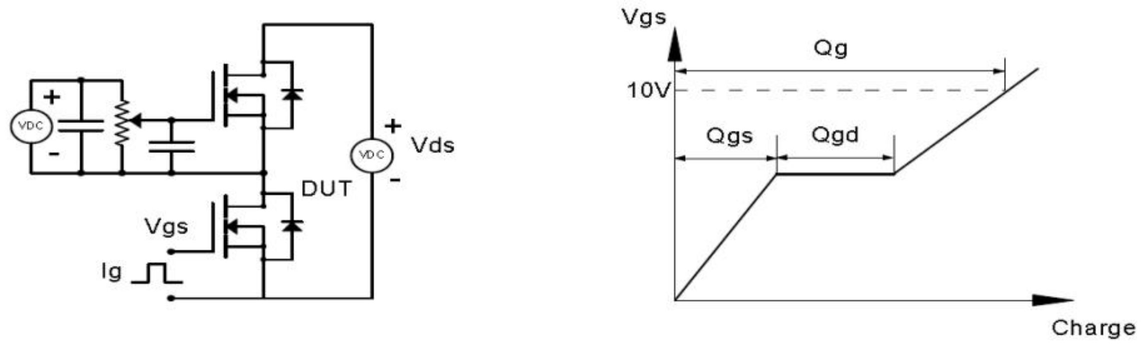
1) Repetitive Rating: pulse width limited by maximum junction temperature
2) The value of RθJA Mounted on FR4 Board（25.4mm*25.4mm*t1.6mm）With 2oz Copper TA=25℃

MOSFET ELECTRICAL CHARACTERISTICS(T_J=25℃ unless otherwise noted)

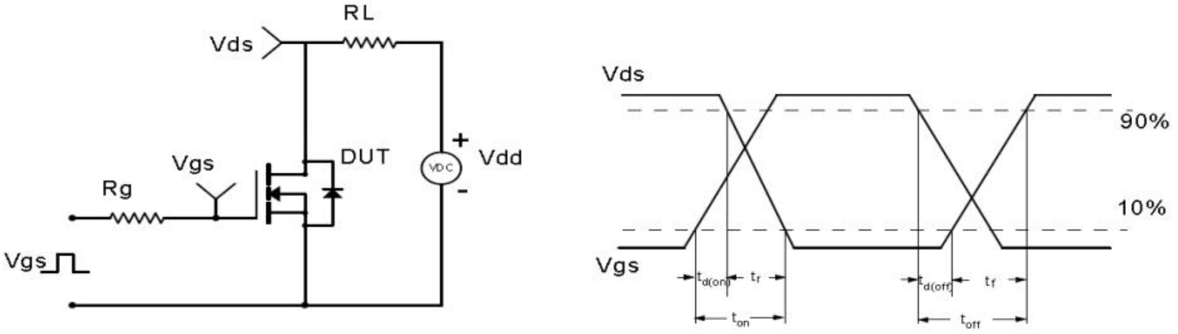
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V, V_{GS} = 0V	-	-	1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±12V, V_{DS} = 0V	-	-	±10	μA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.3	0.7	1.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =4.5V, I_D =1A	-	12	15	mΩ
		V_{GS} =2.5V, I_D =1A	-	15	18	mΩ
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =20V, VGS=0V, f=1MHz	-	1630	-	pF
Output Capacitance	C_{oss}		-	295	-	
Reverse Transfer Capacitance	C_{rss}		-	270	-	
Switching characteristics						
Turn-on delay time	$t_{d(on)}$	V_{DD}=15V, I_D=1A, R_G=3.3Ω, V_{GS}=5V	-	11	-	ns
Turn-on rise time	t_r		-	14	-	
Turn-off delay time	$t_{d(off)}$		-	22	-	
Turn-off fall time	t_f		-	58	-	
Total Gate Charge	Qg	V_{DS}=16V, I_D=6A, V_{GS}=4.5V	-	28	-	nC
Gate-Source Charge	Qgs		-	4	-	
Gate-Drain Charge	Qgd		-	9	-	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	T_J=25℃, V_{GS} =0V, I_S=0.2A	-	-	1.2	V
Diode Forward current	I_S	T_C=25℃	-	-	8	A

Test Circuit & Waveform

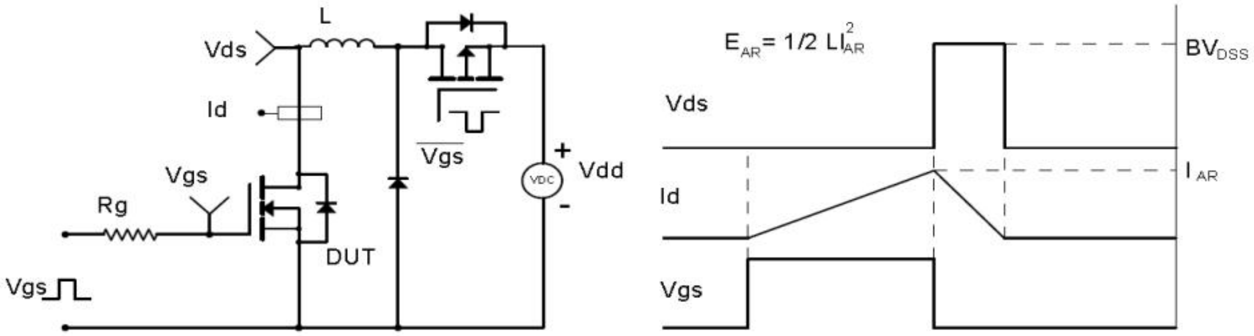
Gate Charge Test Circuit & Waveform



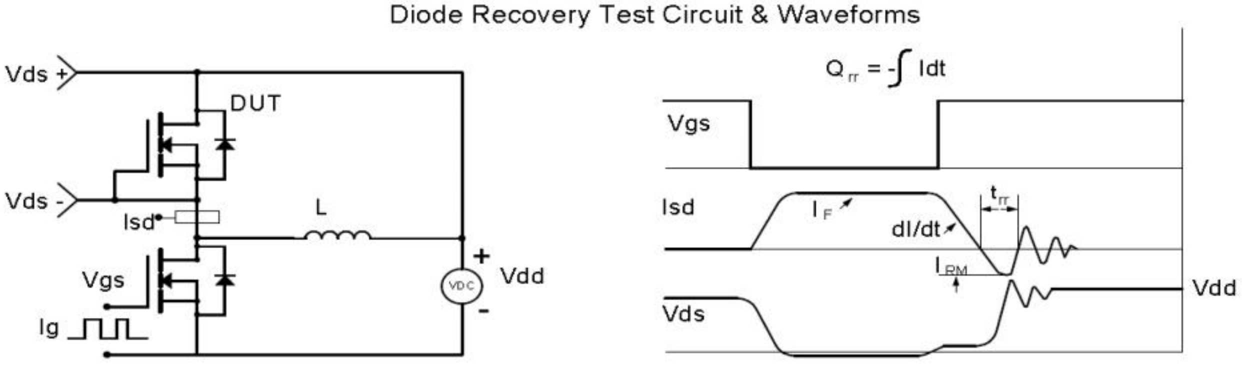
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Typical Characteristics

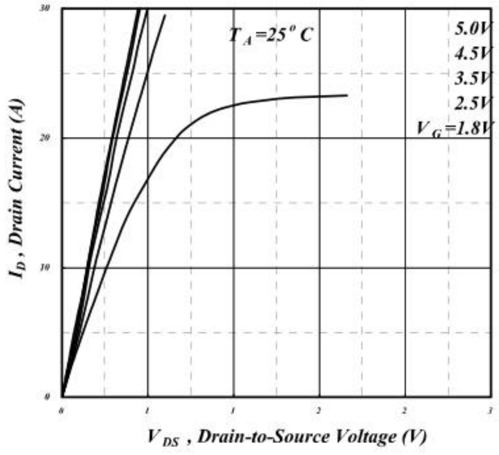


Fig 1. Typical Output Characteristics

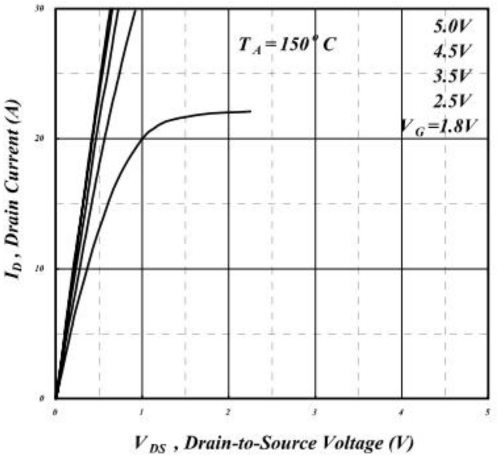


Fig 2. Typical Output Characteristics

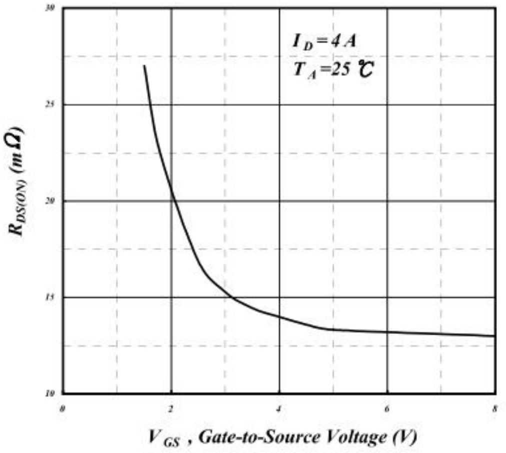


Fig 3. On-Resistance v.s. Gate Voltage

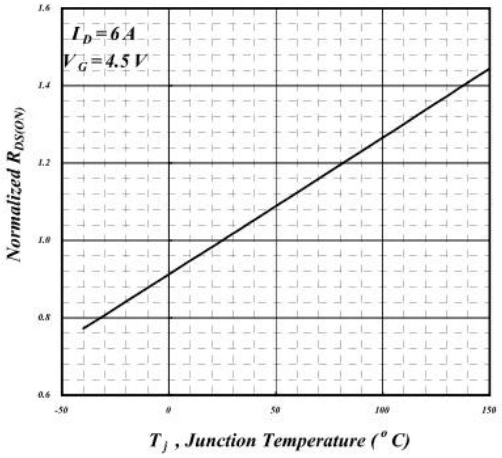


Fig 4. Normalized On-Resistance
v.s. Junction Temperature

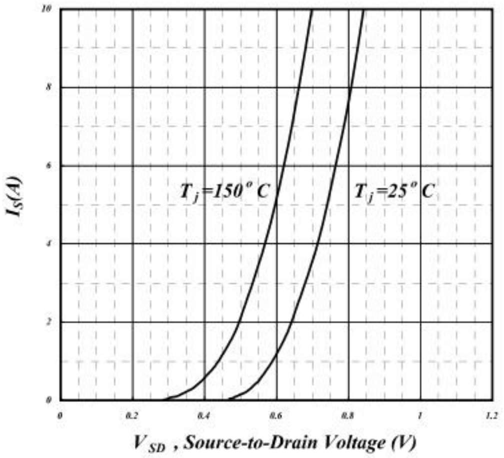


Fig 5. Forward Characteristic of
Reverse Diode

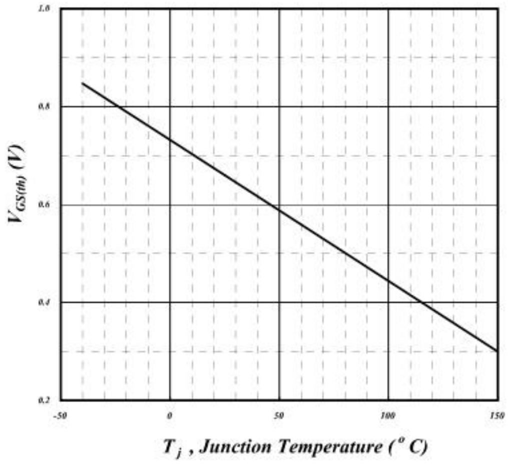


Fig 6. Gate Threshold Voltage v.s.
Junction Temperature

Typical Characteristics

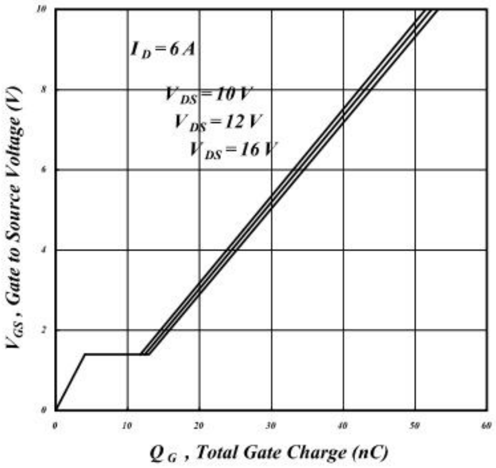


Fig 7. Gate Charge Characteristics

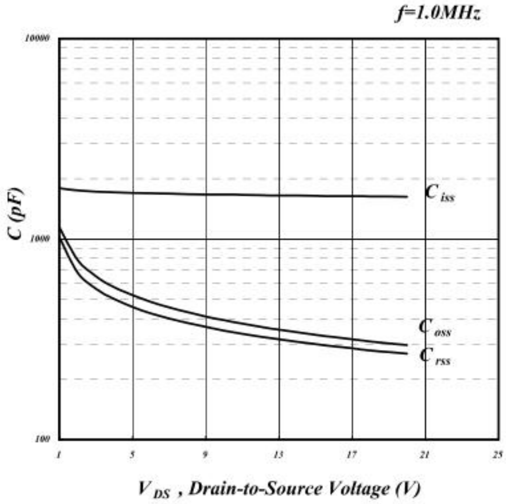


Fig 8. Typical Capacitance Characteristics

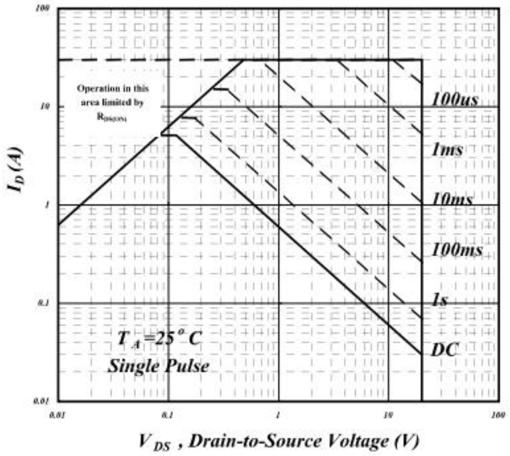


Fig 9. Maximum Safe Operating Area

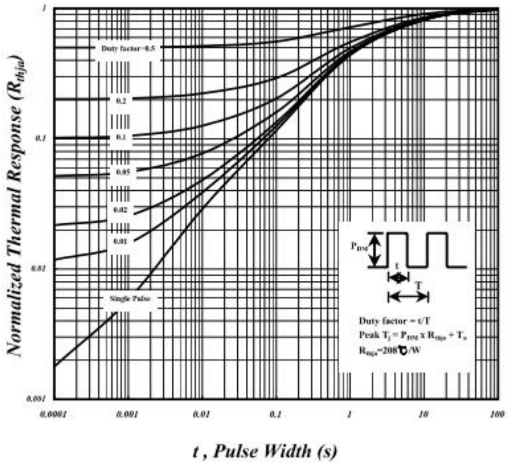
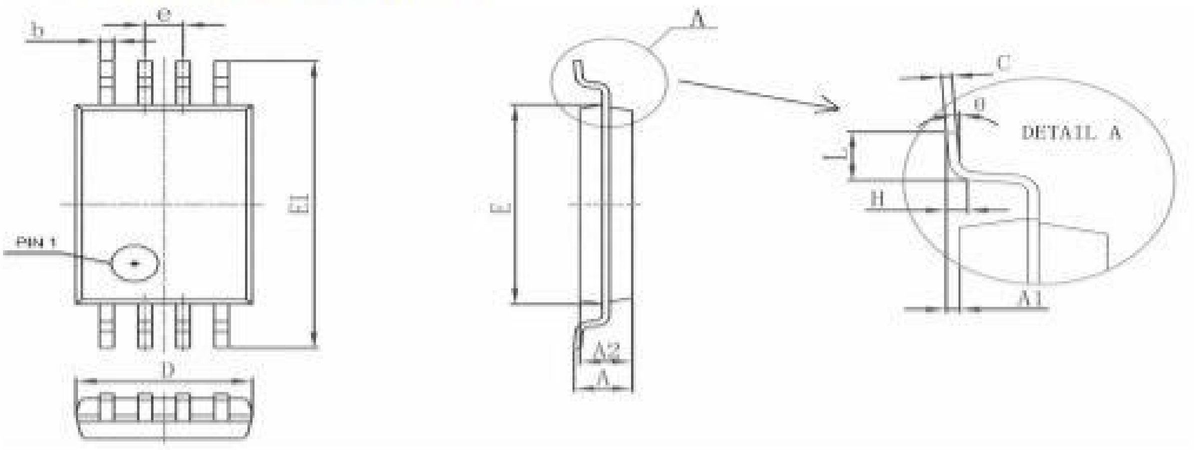


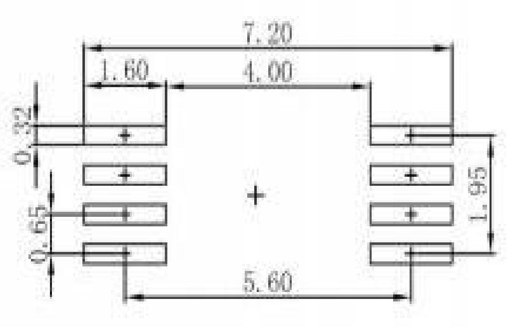
Fig 10. Effective Transient Thermal Impedance

TSSOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.200		0.047
A2	0.800	1.000	0.031	0.039
A1	0.050	0.150	0.002	0.006
e	0.65(BSC)		0.026(BSC)	
L	0.500	0.700	0.020	0.028
H	0.25(TYP)		0.01(TYP)	
θ	1°	7°	1°	7°

TSSOP-8 Suggested Pad Layout



Note:

1.Controlling dimension: in millimeters

2.General tolerance: ±0.05mm

3.The pad layout is for reference purposes only

Revision History

Revision	Release	Remark
V1.1	2025/03/01	Initial Release

Disclaimer

The information given in this document describes the independent performance of the product,but similar performance is not guaranteed under other working conditions,and cannot be guaranteed when installed with other products or equipment.To achieve the required performance of the product in actual scenarios,the customer should conduct a complete application test to assess the functionality of the product.

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