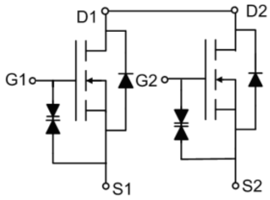
Main Product Characteristics:

V_{DSS}	20V
$R_{DS}(on)$	10mΩ (typ.)
I_D	8A①

TSSOP-8

Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced MOSFET process technology
- Ultra low on-resistance with low gate charge
- High Power and current handing capability
- 150℃ operating temperature
- G/S ESD protect 2KV (HBM)

Description:

The SSF2810EH2 series MOSFETs is a new technology, which combines an innovative technology and advance process. This new technology achieves low Rdson, energy saving, high reliability and uniformity, superior power density and space saving.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current ①	8	A
I_D @ TC = 100°C	Continuous Drain Current ①	6.2	
I_{DM}	Pulsed Drain Current ②	25	
P_D @TC = 25°C	Power Dissipation ③	2	W
	Linear Derating Factor	0.5	W/°C
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-to-Source Voltage	± 10	V
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

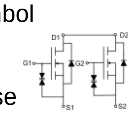
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) ④	—	90	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

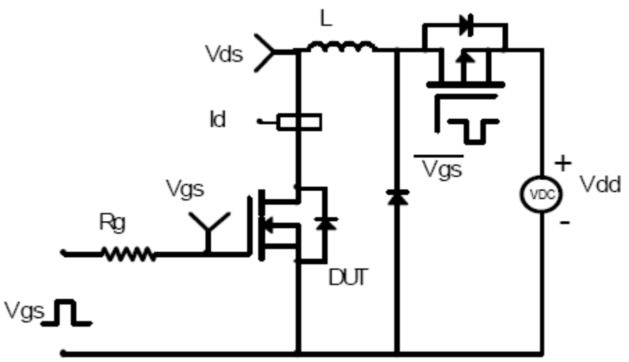
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	10	14	mΩ	V_{GS}=4.5V,I_D = 8A
		—	20	—		T_J = 125°C
		—	14	18	mΩ	V_{GS}=2.5V,I_D = 6.5A
		—	25	—		T_J = 125°C
$V_{GS(th)}$	Gate threshold voltage	0.6	—	1	V	V_{DS} = V_{GS}, I_D = 250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} = 20V,V_{GS} = 0V
		—	—	50		T_J = 125°C
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} = 4.5V
		—	—	-100		V_{GS} = -4.5V
		—	—	10	uA	V_{GS} = 10V
		—	—	-10		V_{GS} = -10V
Q_g	Total gate charge	—	10	—	nC	I_D = 8A,
Q_{gs}	Gate-to-Source charge	—	2.3	—		V_{DS}=10V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	3	—		V_{GS} = 4.5V
$t_{d(on)}$	Turn-on delay time	—	8.1	—	ns	V_{GS}=4.5V, V_{DS} =10V,
t_r	Rise time	—	49	—		R_{GEN}=3Ω,I_D =6.5
$t_{d(off)}$	Turn-Off delay time	—	26	—		
t_f	Fall time	—	8.7	—		
C_{iss}	Input capacitance	—	950	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	209	—		V_{DS} = 10V
C_{rss}	Reverse transfer capacitance	—	100	—		f = 1MHz

Source-Drain Ratings and Characteristics

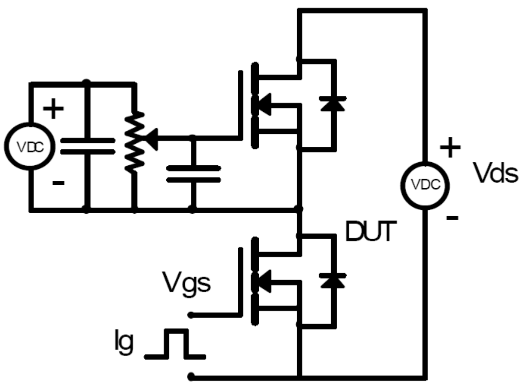
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode) ①	—	—	8	A	MOSFET symbol showing the integral reverse p-n junction diode. 
I_{SM}	Pulsed Source Current (Body Diode)	—	—	25	A	
V_{SD}	Diode Forward Voltage	—	—	1.2	V	I_S=2.8A, V_{GS}=0V
t_{rr}	Reverse Recovery Time	—	35	—	nS	T_J = 25°C, I_F =1A,
Q_{rr}	Reverse Recovery Charge	—	7.2	—	nC	di/dt = 100A/μs

Test Circuits and Waveforms

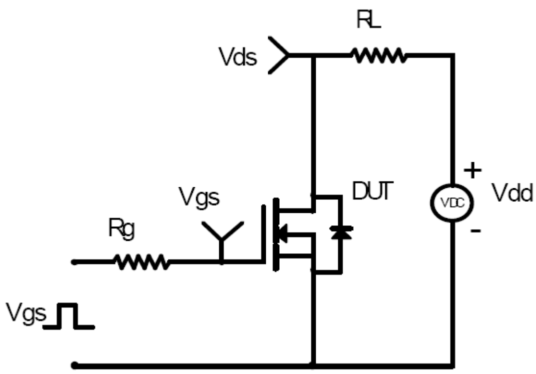
EAS Test Circuit:



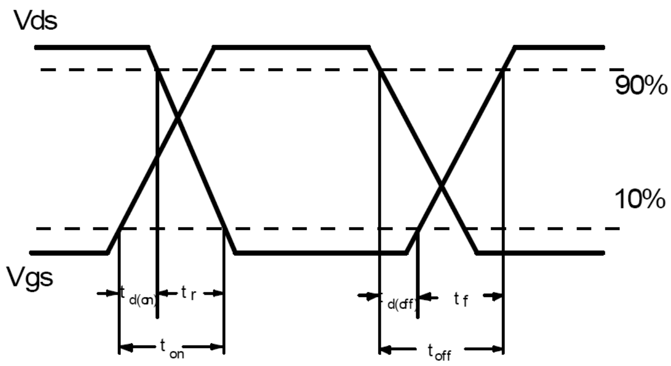
Gate Charge Test Circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

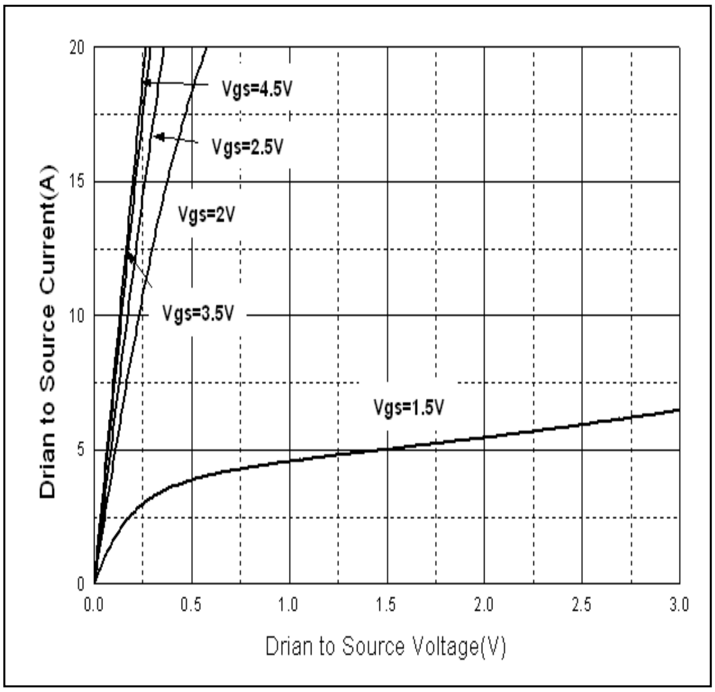
①Calculated continuous current based on maximum allowable junction temperature.

②Repetitive rating; pulse width limited by max. junction temperature.

③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

④The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C

Typical Electrical and Thermal Characteristics



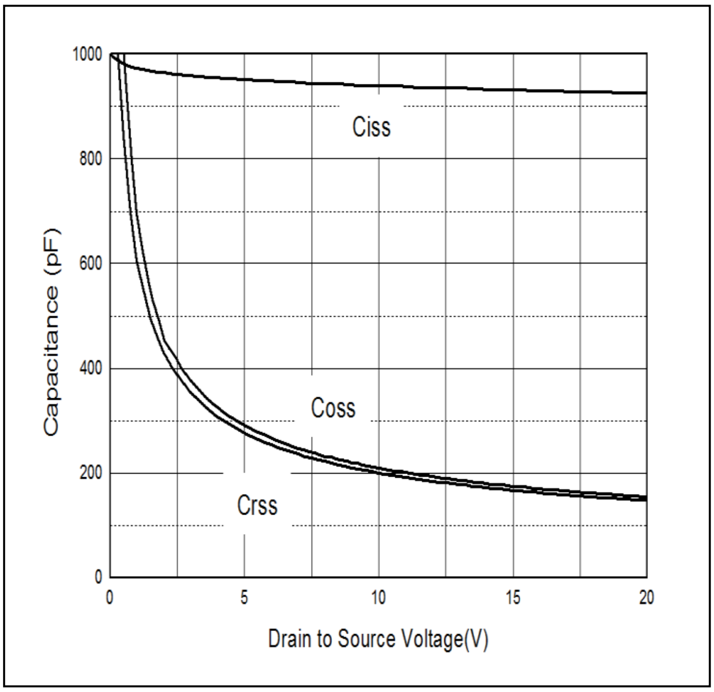
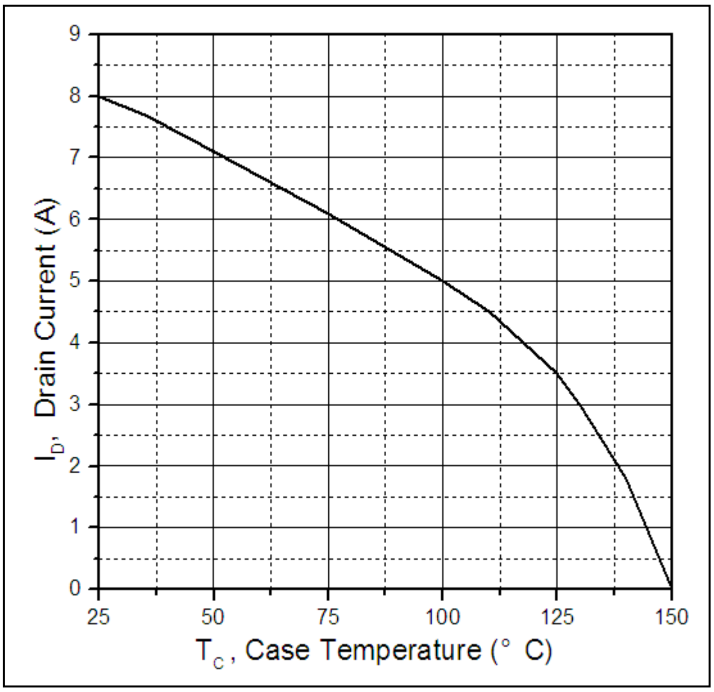


Figure 1: Typical Output Characteristics

Figure2. Typical Capacitance Vs. Drain-to-Source Voltage



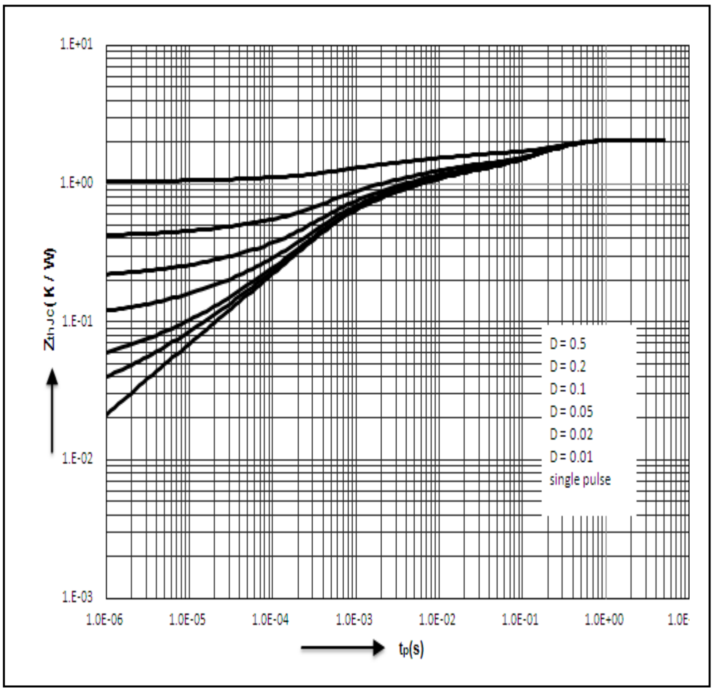
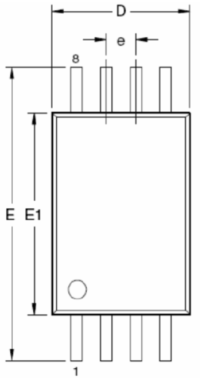


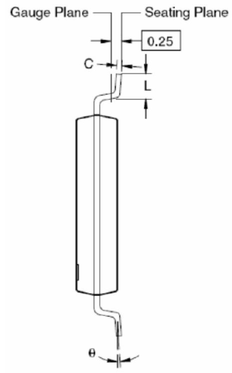
Figure 3. Maximum Drain Current Vs. Case Temperature

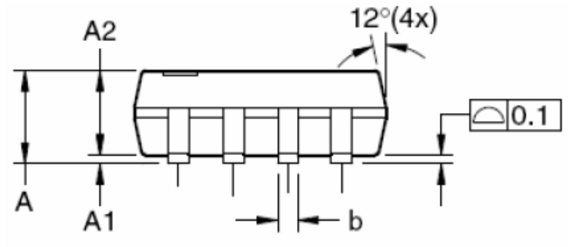
Figure4. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Mechanical Data：

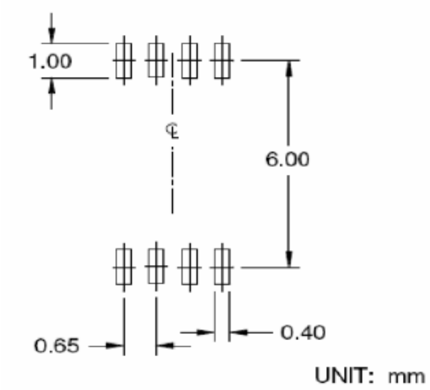
TSSOP-8　　Dimensions in Millimeters (UNIT:mm)







RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	—	—	1.20
A1	0.05	—	0.15
A2	0.80	1.00	1.05
b	0.19	—	0.30
C	0.09	—	0.20
D	2.90	3.00	3.10
E	6.40 BSC		
E1	4.30	4.40	4.50
e	0.65 BSC		
L	0.45	0.60	0.75
θ	0°	—	8°

Dimensions in inches

Symbols	Min.	Nom.	Max.
A	—	—	0.047
A1	0.002	—	0.006
A2	0.031	0.039	0.041
b	0.007	—	0.012
C	0.004	—	0.008
D	0.114	0.118	0.122
E	0.252 BSC		
E1	0.169	0.173	0.177
e	0.026 BSC		
L	0.018	0.024	0.030
θ	0°	—	8°

NOTES：

1. All dimensions are in millimeters.
2. Dimensions are inclusive of plating
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 6 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

Ordering and Marking Information

Device Marking: 2810EH2

Package (Available)
TSSOP-8
Operating Temperature Range
C : -55 to 150 ºC

Devices per Unit

Package Type	Units/ Tube	Tubes/Inner Box	Units/Inner Box	Inner Boxes/Carton Box	Units/Carton Box
TSSOP-8	3000	2	6000	8	48000

Reliability Test Program

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	T_j=125℃ to 150℃ @ 80% of Max V_{DSS}/V_{CES}/VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T_j=150℃@ 100% of Max V_{GSS}	168 hours 500 hours 1000 hours	3 lots x 77 devices

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