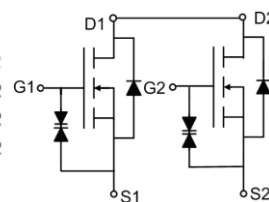


**Main Product Characteristics:**

$V_{DSS}$	20V
$R_{DS(on)}$	14m $\Omega$ (typ.)
$I_D$	8A <sup>①</sup>


**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 handling capability
- 150°C operating temperature
- G/S ESD protect 2KV (HBM)


**Description:**

The SSF8810 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	8 <sup>①</sup>	A
$I_D$ @ TC = 100°C	Continuous Drain Current	6.2 <sup>①</sup>	
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	25	
$P_D$ @TC = 25°C	Power Dissipation <sup>③</sup>	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

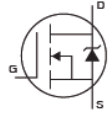
**Thermal Resistance**

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JA}$	Junction-to-ambient (t ≤ 10s) <sup>④</sup>	—	90	°C/W

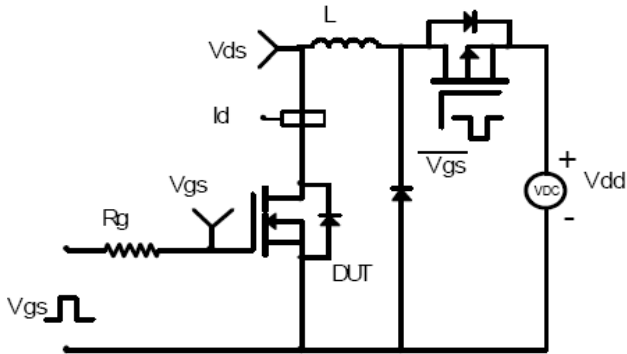
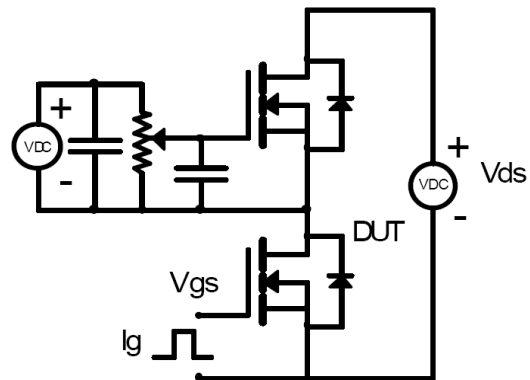
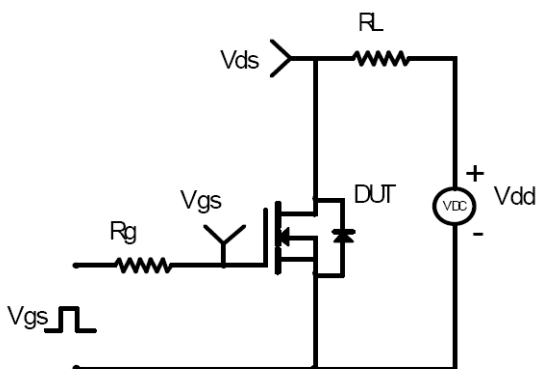
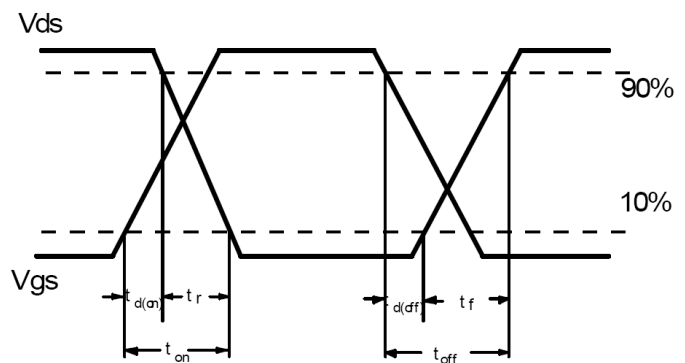
**Electrical Characteristics** @ $T_A=25^{\circ}\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	20	—	—	V	$V_{GS} = 0V, I_D = 250\mu A$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	14	20	m $\Omega$	$V_{GS}=4.5V, I_D = 7A$ $T_J = 125^{\circ}\text{C}$
		—	18	—		
		—	20	28	m $\Omega$	$V_{GS}=2.5V, I_D = 5.5A$ $T_J = 125^{\circ}\text{C}$
		—	24	—		
		—	38	50	m $\Omega$	$V_{GS}=1.8V, I_D = 5A$ $T_J = 125^{\circ}\text{C}$
—	42	—				
$V_{GS(th)}$	Gate threshold voltage	0.6	—	1	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS} = 20V, V_{GS} = 0V$ $T_J = 125^{\circ}\text{C}$
		—	—	50		
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 4.5V$
		—	—	-100		$V_{GS} = -4.5V$
		—	—	10	$\mu A$	$V_{GS} = 10V$
		—	—	-10		$V_{GS} = -10V$
$Q_g$	Total gate charge	—	10	—	nC	$I_D = 7A,$ $V_{DS}=10V,$ $V_{GS} = 4.5V$
$Q_{gs}$	Gate-to-Source charge	—	2.3	—		
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	3	—		
$t_{d(on)}$	Turn-on delay time	—	7.3	—	ns	$V_{GS}=4.5V, V_{DS} = 10V,$ $R_{GEN}=3\Omega, I_D = 6.5$
$t_r$	Rise time	—	60	—		
$t_{d(off)}$	Turn-Off delay time	—	18	—		
$t_f$	Fall time	—	5.9	—		
$C_{iss}$	Input capacitance	—	632	—	pF	$V_{GS} = 0V$
$C_{oss}$	Output capacitance	—	142	—		$V_{DS} = 10V$
$C_{rss}$	Reverse transfer capacitance	—	134	—		$f = 1\text{MHz}$

**Source-Drain Ratings and Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	8 ①	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	$T_J = 25^{\circ}\text{C}, I_F = 7A,$ $di/dt = 100A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	—	7.2	—	nC	

## Test circuits and Waveforms

**EAS Test Circuit:**

**Gate charge test circuit:**

**Switching Time Test Circuit:**

**Switching Waveforms:**


### Notes:

- ① Calculated continuous current based on maximum allowable junction temperature.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The 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  $T_A = 25^\circ\text{C}$

Typical electrical and thermal characteristics

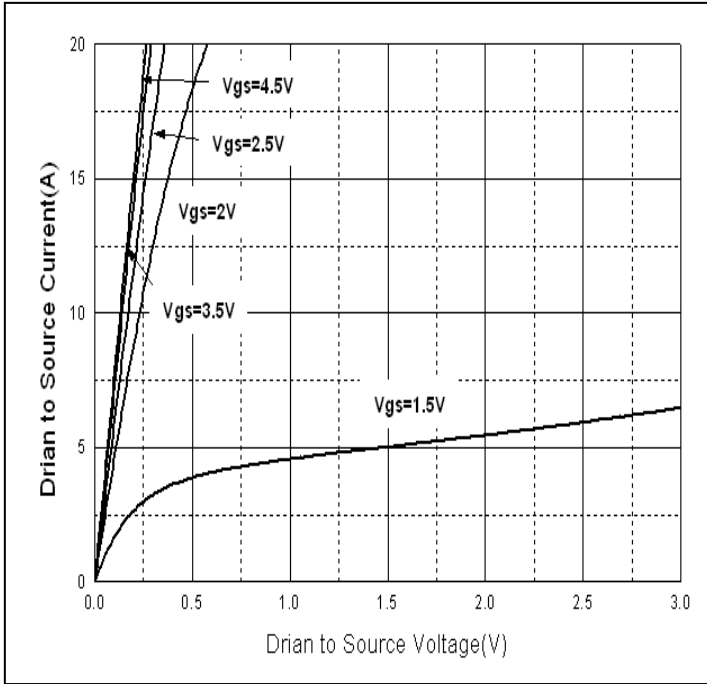


Figure 1: Typical Output Characteristics

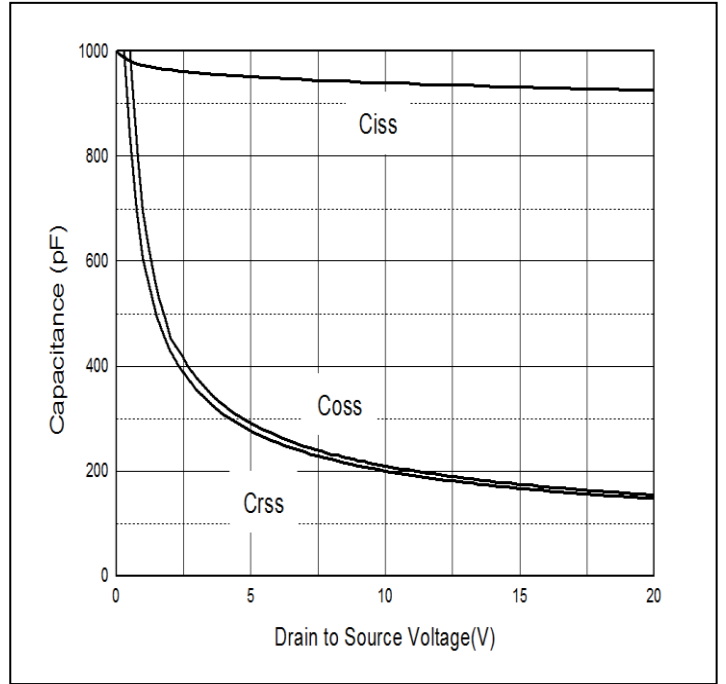


Figure 2: Typical Capacitance Vs. Drain-to-Source Voltage

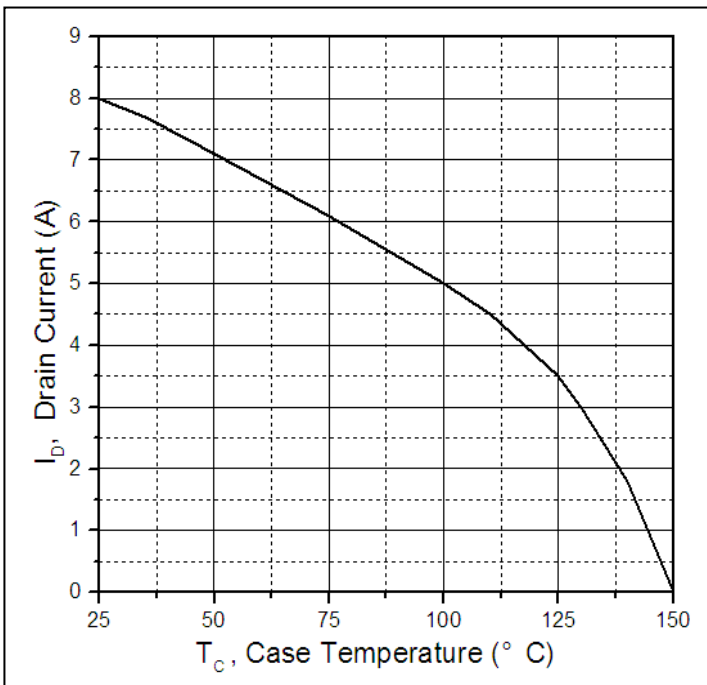


Figure 3: Maximum Drain Current Vs. Case Temperature

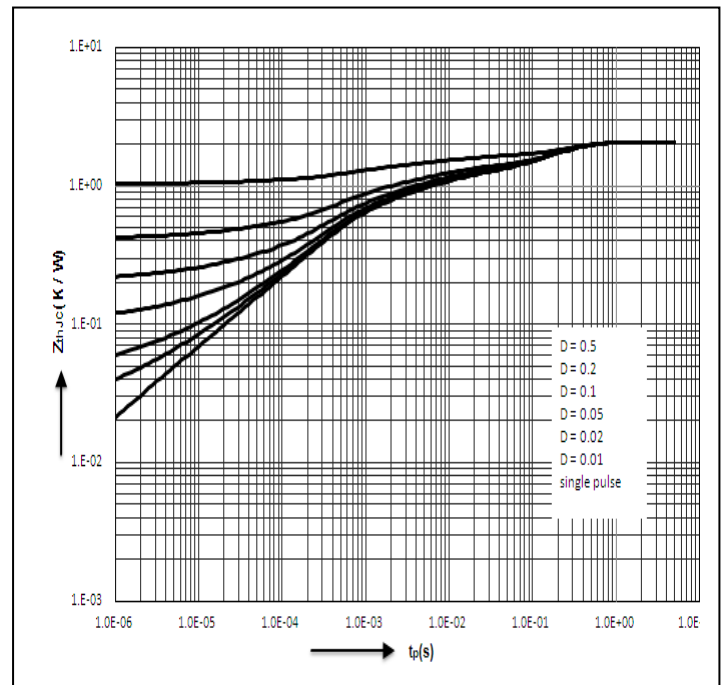
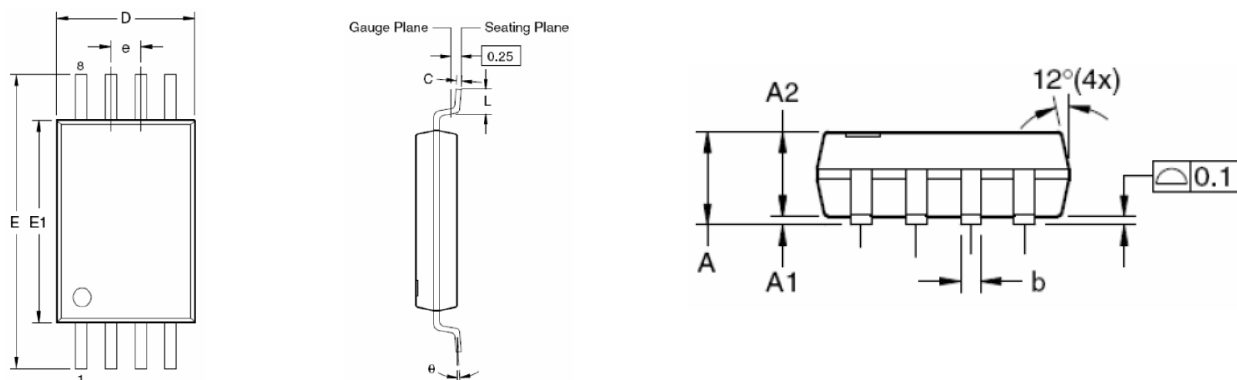
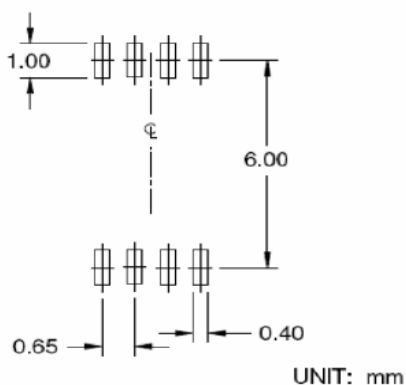


Figure 4: Maximum Effective Transient Thermal Impedance, Junction-to-Case

**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
$\theta$	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
$\theta$	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: SSF8810**

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

**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 <sub>j</sub> =125°C to 150°C @ 80% of Max V <sub>DSS</sub> /V <sub>CES</sub> /VR	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	T <sub>j</sub> =150°C @ 100% of Max V <sub>GSS</sub>	168 hours 500 hours 1000 hours	3 lots x 77 devices

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