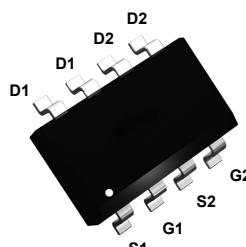
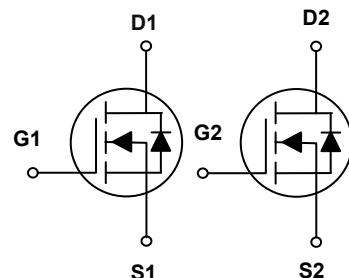


Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	54mΩ (Max.)
I_D	5.0A



SOP-8



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for hand-held devices, battery protection and load switch
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFQ6810 utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous ($T_c=25^\circ\text{C}$)	I_D	5.0	A
Drain Current – Continuous ($T_c=100^\circ\text{C}$)		3.15	A
Drain Current – Pulsed ¹	I_{DM}	20	A
Single Pulse Avalanche Energy ²	E_{AS}	11.25	mJ
Single Pulse Avalanche Current ²	I_{AS}	15	A
Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	2.1	W
Power Dissipation – Derate above 25°C		0.017	W/ $^\circ\text{C}$
Storage Temperature Range	T_{STG}	-50 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-50 to +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	-	60	$^\circ\text{C}/\text{W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	60	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	Reference to 25°C , $I_{\text{D}}=1\text{mA}$	-	0.07	-	$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	$I_{\text{DS}(\text{SS})}$	$V_{\text{DS}}=60\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{\text{DS}}=48\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 100	nA
On Characteristics						
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=5\text{A}$	-	44	54	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}, I_{\text{D}}=3\text{A}$	-	50	63	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250\mu\text{A}$	1.2	1.8	2.5	V
$V_{\text{GS}(\text{th})}$ Temperature Coefficient	$\Delta V_{\text{GS}(\text{th})}$		-	-4.2	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{\text{DS}}=10\text{V}, I_{\text{D}}=10\text{A}$	-	6.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3, 4}	Q_g	$V_{\text{DS}}=48\text{V}, V_{\text{GS}}=10\text{V}, I_{\text{D}}=4\text{A}$	-	14	21	nC
Gate-Source Charge ^{3, 4}	Q_{gs}		-	2.9	5	
Gate-Drain Charge ^{3, 4}	Q_{gd}		-	2.4	4	
Turn-On Delay Time ^{3, 4}	$T_{\text{d}(\text{on})}$	$V_{\text{DD}}=30\text{V}, V_{\text{GS}}=10\text{V}, R_{\text{G}}=6\Omega, I_{\text{D}}=4\text{A}$	-	14	27	nS
Rise Time ^{3, 4}	T_r		-	4	8	
Turn-Off Delay Time ^{3, 4}	$T_{\text{d}(\text{off})}$		-	32	60	
Fall Time ^{3, 4}	T_f		-	2	4	
Input Capacitance	C_{iss}	$V_{\text{DS}}=25\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	835	1300	pF
Output Capacitance	C_{oss}		-	69	130	
Reverse Transfer Capacitance	C_{rss}		-	40	80	
Gate Resistance	R_g	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}, F=1\text{MHz}$	-	1.7	3.4	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_s	$V_G=V_D=0\text{V}$, Force Current	-	-	5.0	A
Pulsed Source Current	I_{SM}		-	-	20	A
Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=1\text{A}, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time ³	t_{rr}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=-1\text{A}, dI/dt=100\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$	-	14.6	28	nS
Reverse Recovery Charge ³	Q_{rr}		-	6.6	15	nC

Note:

- Repetitive rating: Pulsed width limited by maximum junction temperature.
- $V_{\text{DD}}=25\text{V}, V_{\text{GS}}=10\text{V}, L=0.1\text{mH}, I_{\text{AS}}=15\text{A}, R_{\text{G}}=25\Omega$, Starting $T_J=25^\circ\text{C}$.
- The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

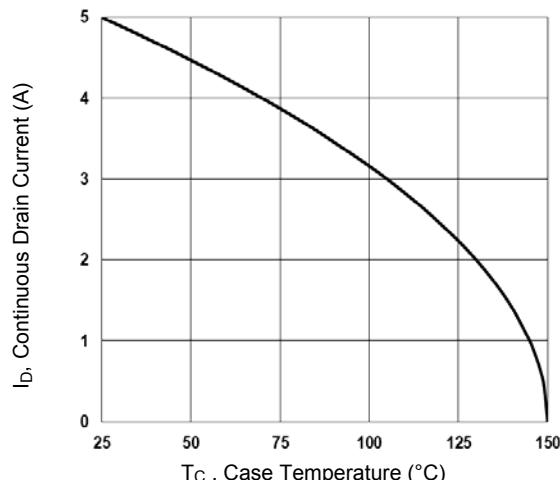


Figure 1. Continuous Drain Current vs. T_c

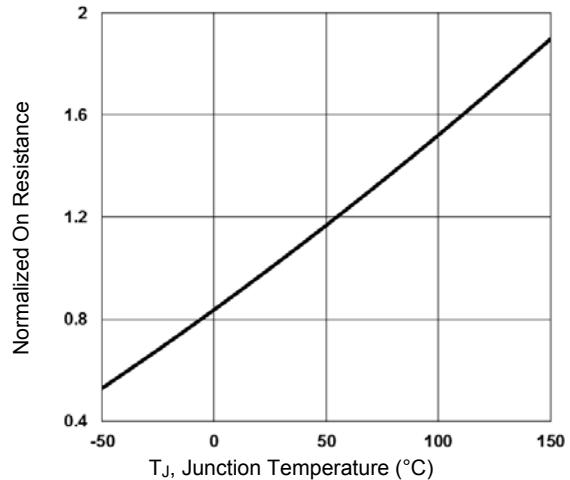


Figure 2. Normalized R_{DS(on)} vs. T_j

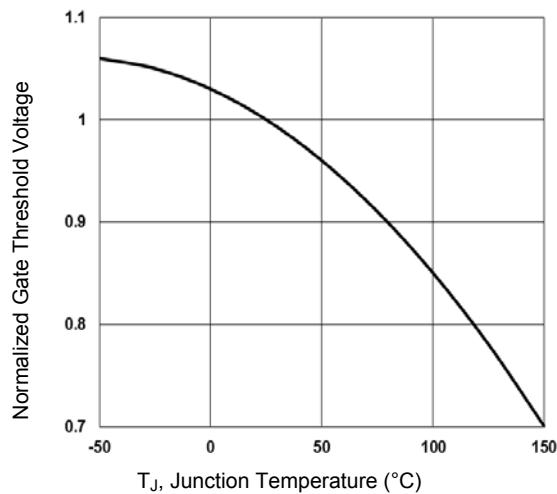


Figure 3. Normalized V_{th} vs. T_j

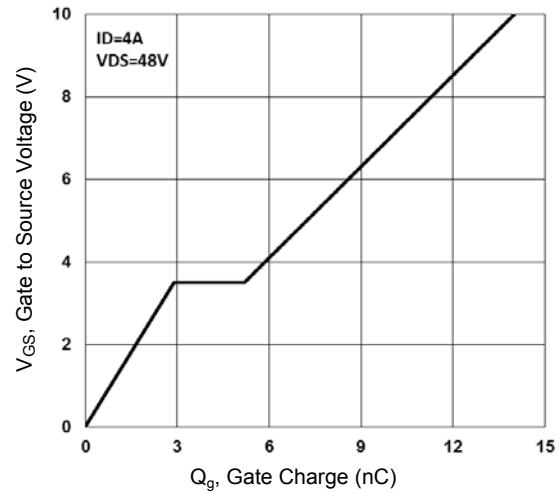


Figure 4. Gate Charge Waveform

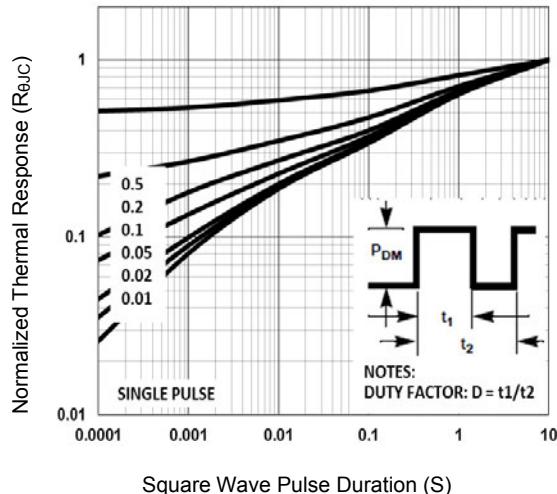


Figure 5. Normalized Transient Impedance

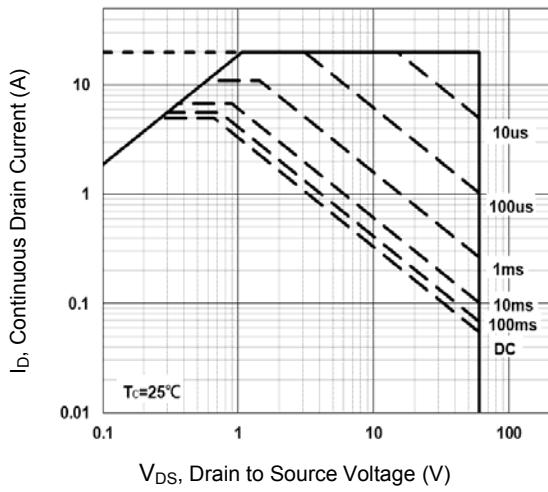
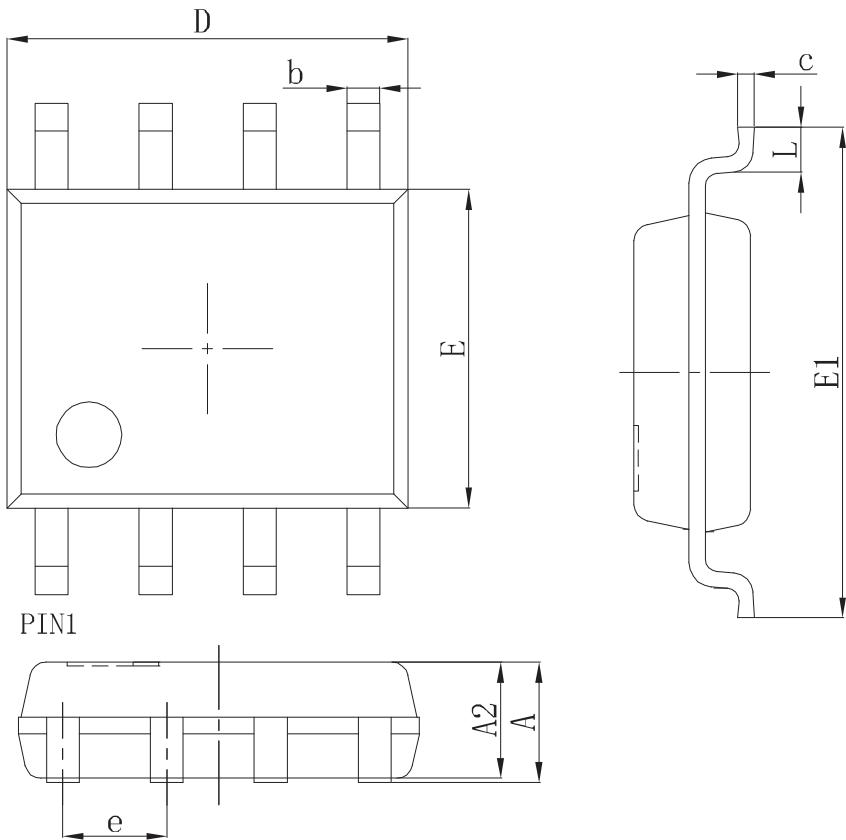


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.30	1.70	0.051	0.067
A2	1.25	1.55	0.049	0.061
c	0.17	0.25	0.007	0.010
E	3.80	4.00	0.150	0.157
E1	5.80	6.20	0.228	0.244
L	0.45	0.75	0.018	0.030
b	0.33	0.51	0.013	0.020
D	4.80	5.00	0.189	0.197
e	1.27 BSC		0.050 BSC	

Order Information

Device	Package	Marking	Carrier	Quantity
SSFQ6810	SOP-8	DS6810	Tape & Reel	3,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com