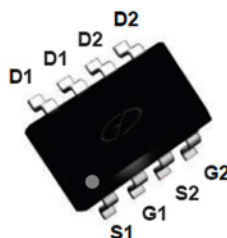
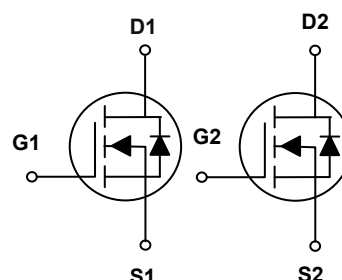


Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	54mΩ (Max.)
I_D	5A



SOP-8



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery
- AEC-Q101 qualified



Description

The GSFQ6810AU 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 supplies 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-to-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-De-rate above 25°C		0.017	W/°C
Max. Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60.0	°C/W
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-50 to +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	60	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.07	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _J =25°C	-	-	1	uA
		V _{DS} =48V, V _{GS} =0V, T _J =125°C	-	-	10	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	44	54	mΩ
		V _{GS} =4.5V, I _D =3A	-	50	63	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-4.2	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =10A	-	6.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DS} =48V, V _{GS} =10V, I _D =4A	-	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 _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _G =6Ω, I _D =4A	-	14	27	nS
Rise Time ^{3,4}	t _r		-	4	8	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	32	60	
Fall Time ^{3,4}	t _f		-	2	4	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1MHz	-	835	1300	pF
Output Capacitance	C _{oss}		-	69	130	
Reverse Transfer Capacitance	C _{rss}		-	40	80	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHZ	-	1.7	3.4	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	5.0	A
Pulsed Source Current	I _{SM}		-	-	20	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	-	-	1	V
Reverse Recovery Time ³	T _{rr}	V _{GS} =0V, I _S =1A, dI/dt=100A/μS, T _J =25°C	-	14.6	28	nS
Reverse Recovery Charge ³	Q _{rr}		-	6.6	15	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=15A, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300uS, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

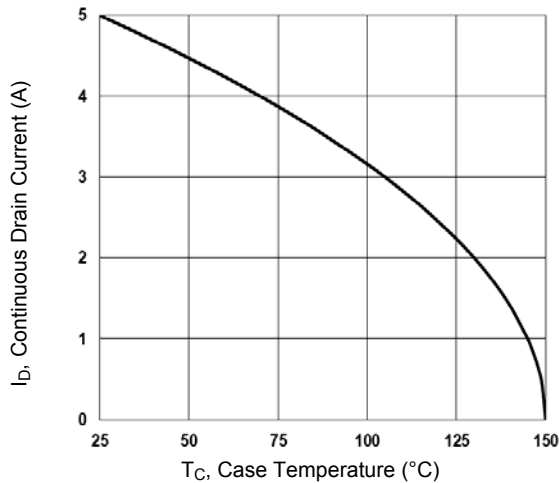


Figure 1. Continuous Drain Current vs. T_C

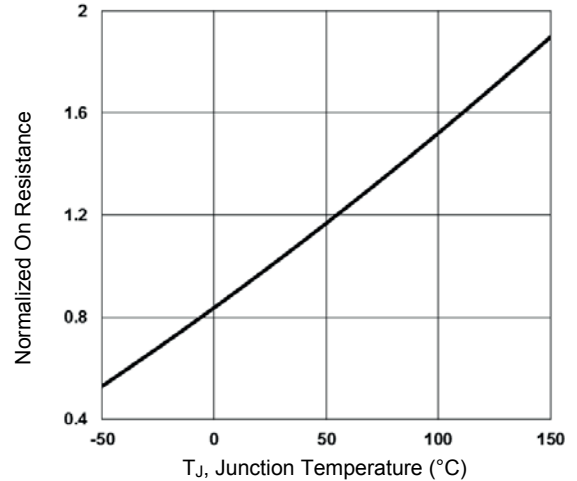


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

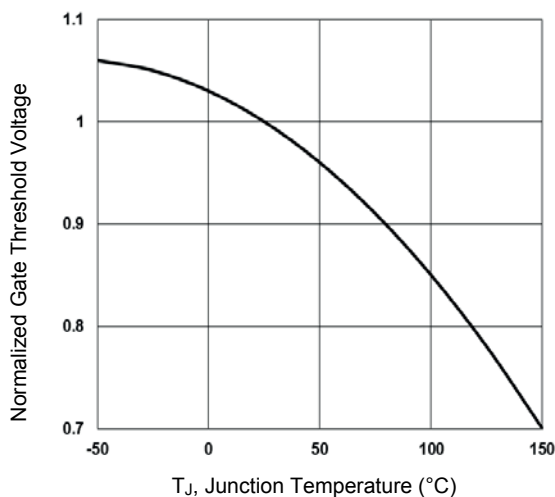


Figure 3. Normalized V_{th} vs. T_J

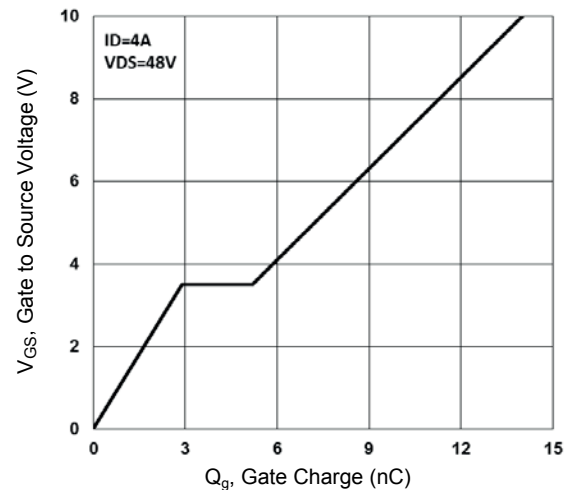


Figure 4. Gate Charge Waveform

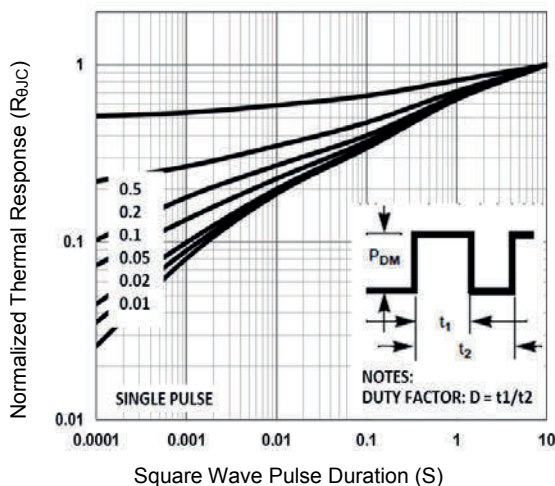


Figure 5. Normalized Transient Impedance

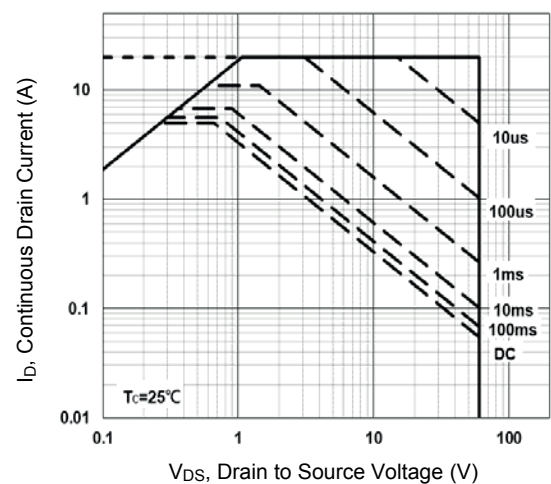
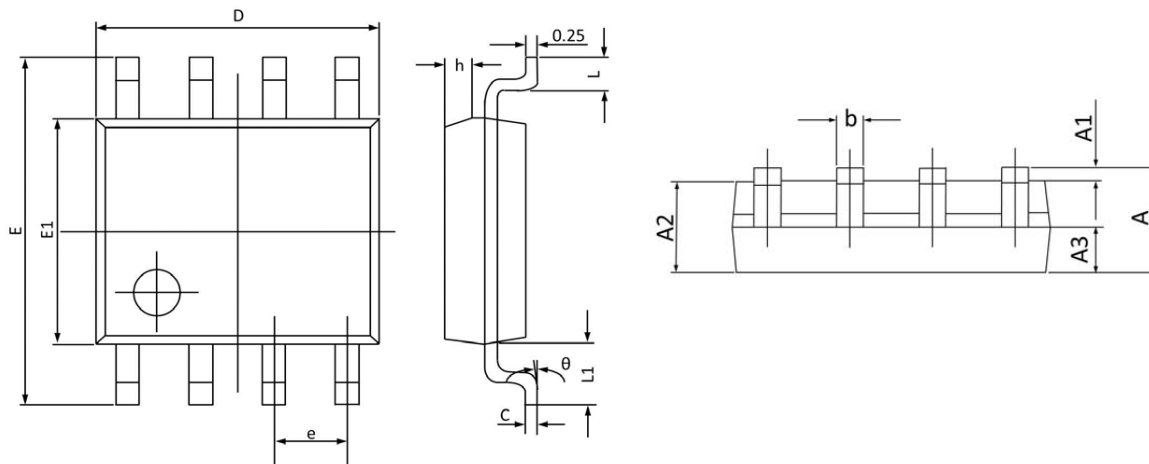


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.068
A1	0.100	0.250	0.004	0.009
A2	1.300	1.500	0.052	0.059
A3	0.600	0.700	0.024	0.027
b	0.390	0.480	0.016	0.018
c	0.210	0.260	0.009	0.010
D	4.700	5.100	0.186	0.200
E	5.800	6.200	0.229	0.244
E1	3.700	4.100	0.146	0.161
e	1.270 (BSC)		0.050 (BSC)	
h	0.250	0.500	0.010	0.019
L	0.500	0.800	0.019	0.031
L1	1.050 (BSC)		0.041 (BSC)	
θ	0°	8°	0°	8°

Order Information

Device	Package	Marking	Carrier	Quantity
GSFQ6810AU	SOT-23	Q6810AU	Tape & Reel	3,000 Pcs / Reel