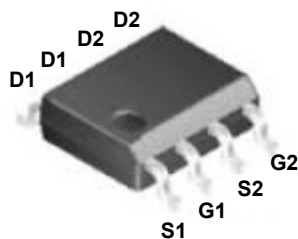
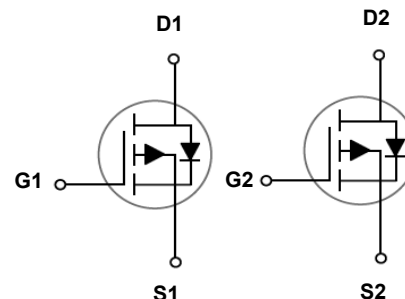


### Main Product Characteristics

$V_{(BR)DSS}$	-30V
$R_{DS(ON)}$	16mΩ
$I_D$	-18.4A



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



### Description

The SSFQ3805 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 ( $T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage (base on $I_{GSS1}$ condition)	$V_{GS}$	±20	V
Gate-Source Voltage (base on $I_{GSS2}$ condition)	$V_{GS}$	±25	V
Drain Current – Continuous ( $T_C=25^{\circ}C$ )	$I_D$	-18.4	A
Drain Current – Continuous ( $T_C=100^{\circ}C$ )		-11.6	A
Drain Current – Pulsed <sup>1</sup>	$I_{DM}$	-73.6	A
Power Dissipation ( $T_C=25^{\circ}C$ )	$P_D$	8.9	W
Power Dissipation – Derate above 25°C		0.07	W/°C
Storage Temperature Range	$T_{STG}$	-55 to +150	°C
Operating Junction Temperature Range	$T_J$	-55 to +150	°C

### Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	85	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	---	14	°C/W

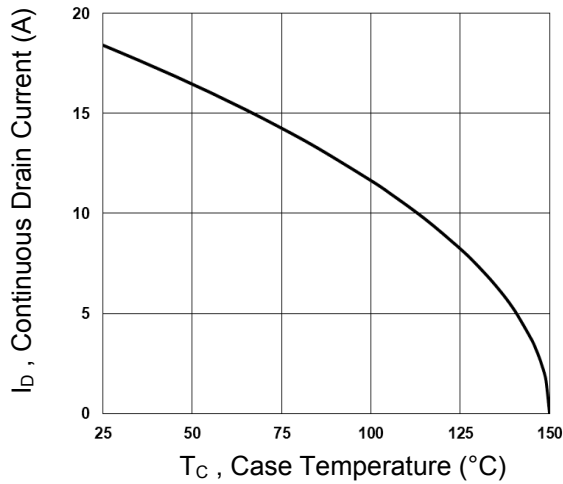
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30	---	---	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=-1\text{mA}$	---	-0.03	---	$V/^\circ\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	$\mu A$
		$V_{DS}=-24V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	-10	$\mu A$
Gate-Source Leakage Current	$I_{GSS1}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Gate-Source Leakage Current	$I_{GSS2}$	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	$\pm 1$	mA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-8A$	---	12	16	$m\Omega$
		$V_{GS}=-4.5V, I_D=-6A$	---	18	26	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	-1.6	-2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	4	---	$mV/^\circ\text{C}$
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-8A$	---	10.5	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2, 3</sup>	$Q_g$	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-8A$	---	14.6	21	nC
Gate-Source Charge <sup>2, 3</sup>	$Q_{gs}$		---	4.1	6	
Gate-Drain Charge <sup>2, 3</sup>	$Q_{gd}$		---	6.3	9	
Turn-On Delay Time <sup>2, 3</sup>	$T_{d(on)}$	$V_{DD}=-15V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A$	---	9	17	nS
Rise Time <sup>2, 3</sup>	$T_r$		---	21.8	41	
Turn-Off Delay Time <sup>2, 3</sup>	$T_{d(off)}$		---	59.8	114	
Fall Time <sup>2, 3</sup>	$T_f$		---	14.4	27	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V, F=1\text{MHz}$	---	1730	2510	pF
Output Capacitance	$C_{oss}$		---	180	260	
Reverse Transfer Capacitance	$C_{rss}$		---	125	180	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	---	---	-18.4	A
Pulsed Source Current	$I_{SM}$		---	---	-73.6	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-1	V

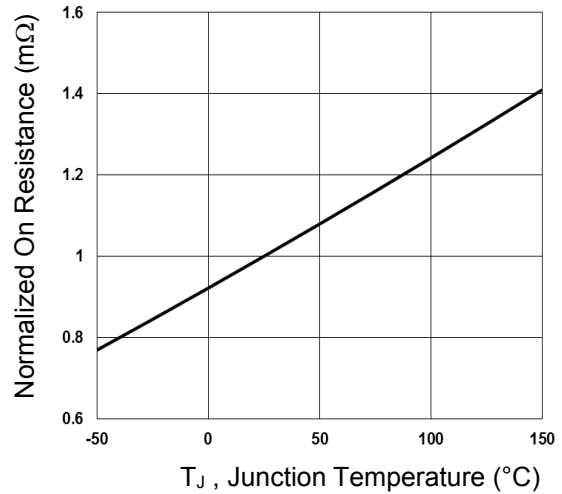
Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

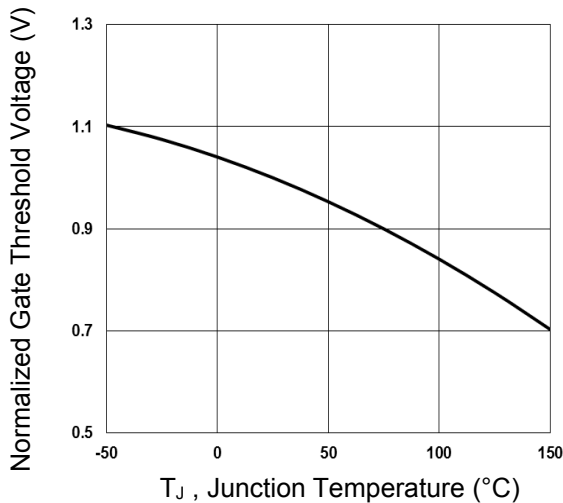
**Typical Electrical and Thermal Characteristic Curves**



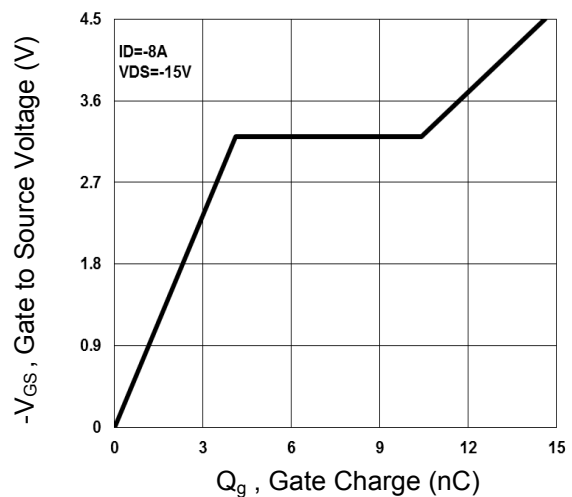
**Fig.1 Continuous Drain Current vs.  $T_c$**



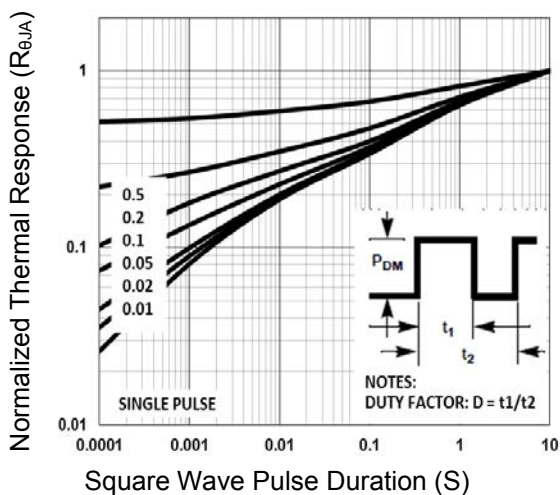
**Fig.2 Normalized  $R_{DS(ON)}$  vs.  $T_j$**



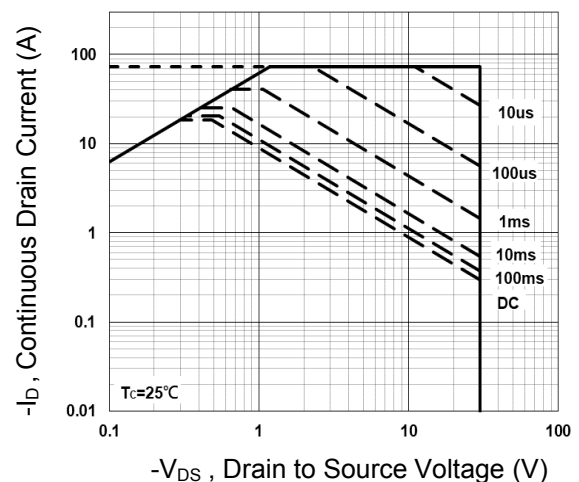
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



**Fig.4 Gate Charge Waveform**

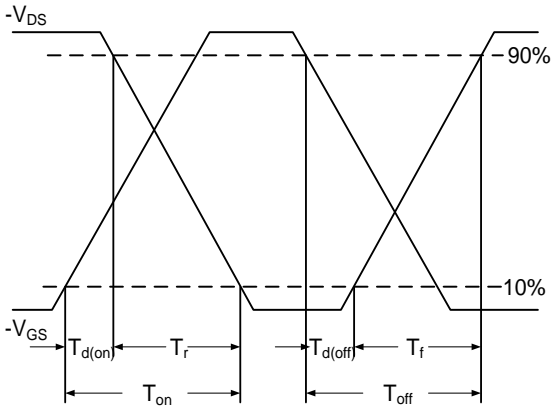


**Fig.5 Normalized Transient Impedance**

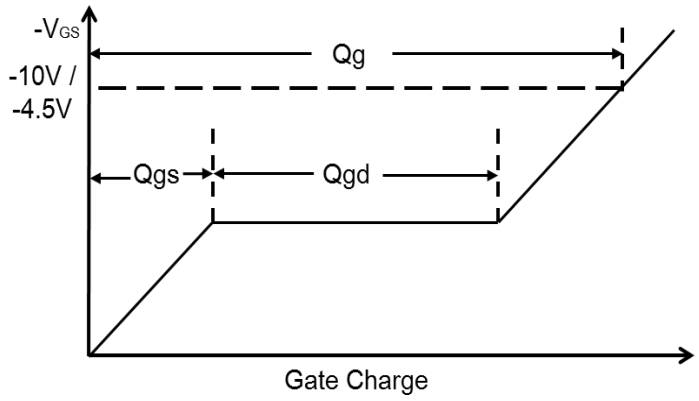


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



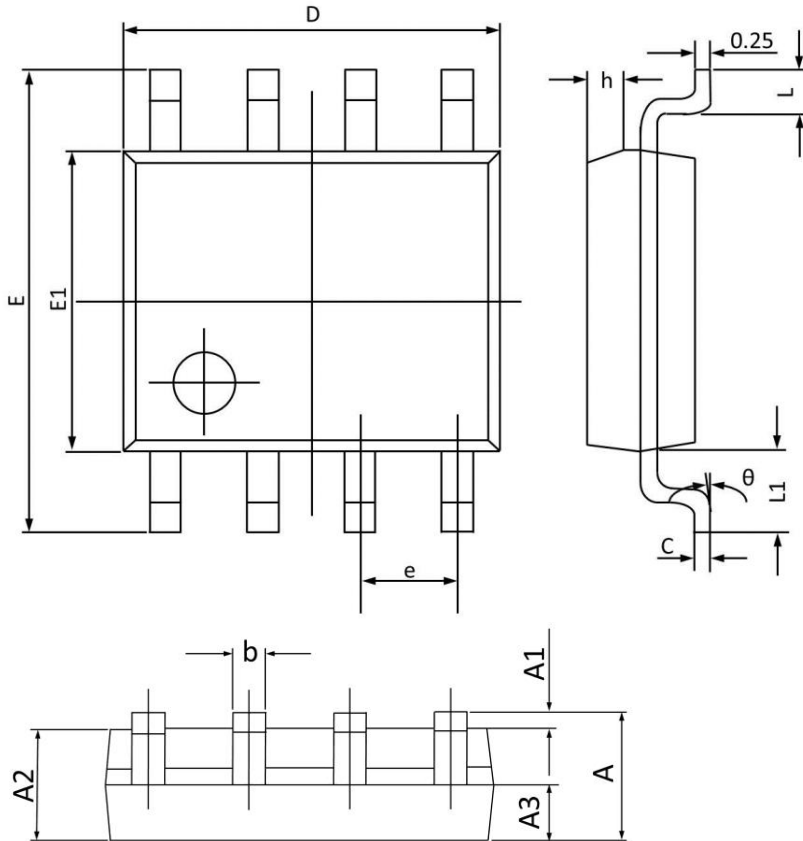
**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

**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°