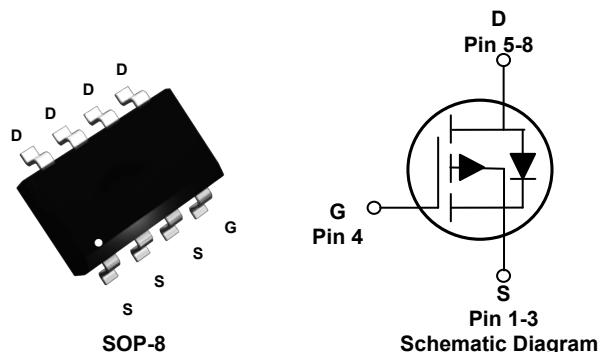


Main Product Characteristics

V_{BDSS}	-30V
$R_{DS(ON)}$	15.5mΩ (max.)
I_D	-10A



Features and Benefits

- Advanced MOSFET process technology
- Ideal for battery operated systems, load switching, power converters and other general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFQ3905 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 ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_A=25^\circ\text{C}$)	I_D	-10	A
Drain Current-Continuous ($T_A=70^\circ\text{C}$)		-8	A
Drain Current-Pulsed ¹	I_{DM}	-40	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	2.5	W
Power Dissipation-Derate Above 25°C		0.02	W/°C
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	50	°C/W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=-250\mu\text{A}$	-30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	Reference to 25°C , $I_{\text{D}}=-1\text{mA}$	-	-0.03	-	$\text{V}/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=-30\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{\text{DS}}=-24\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{\text{DS(ON)}}$	$V_{\text{GS}}=-10\text{V}, I_{\text{D}}=-8\text{A}$	-	12.4	15.5	$\text{m}\Omega$
		$V_{\text{GS}}=-4.5\text{V}, I_{\text{D}}=-6\text{A}$	-	19.2	25	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS(th)}}$	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=-250\mu\text{A}$	-1	-1.6	-2.5	V
$V_{\text{GS(th)}}$ Temperature Coefficient	$\Delta V_{\text{GS(th)}}$		-	4	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{\text{DS}}=-10\text{V}, I_{\text{D}}=-8\text{A}$	-	10.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{\text{DS}}=-15\text{V}, V_{\text{GS}}=-4.5\text{V}, I_{\text{D}}=-8\text{A}$	-	14.6	21	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	4.1	6	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	6.3	9	
Turn-On Delay Time ^{2,3}	$t_{\text{d(on)}}$	$V_{\text{DD}}=-15\text{V}, V_{\text{GS}}=-10\text{V}, R_{\text{G}}=6\Omega, I_{\text{D}}=-1\text{A}$	-	9	17	nS
Rise Time ^{2,3}	t_r		-	21.8	41	
Turn-Off Delay Time ^{2,3}	$t_{\text{d(off)}}$		-	59.8	114	
Fall Time ^{2,3}	t_f		-	14.4	27	
Input Capacitance	C_{iss}	$V_{\text{DS}}=-15\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	1730	2510	pF
Output Capacitance	C_{oss}		-	180	260	
Reverse Transfer Capacitance	C_{rss}		-	125	180	
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_s	$V_G=V_D=0\text{V}$, Force Current	-	-	-10	A
Pulsed Source Current	I_{SM}		-	-	-40	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

Notes:

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 Characteristics

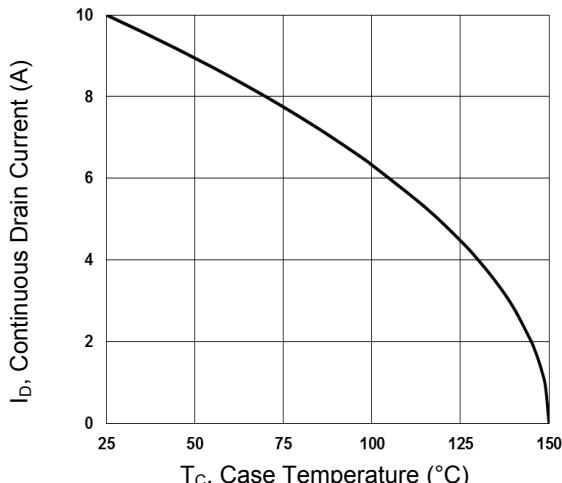


Figure 1. Continuous Drain Current vs. T_C

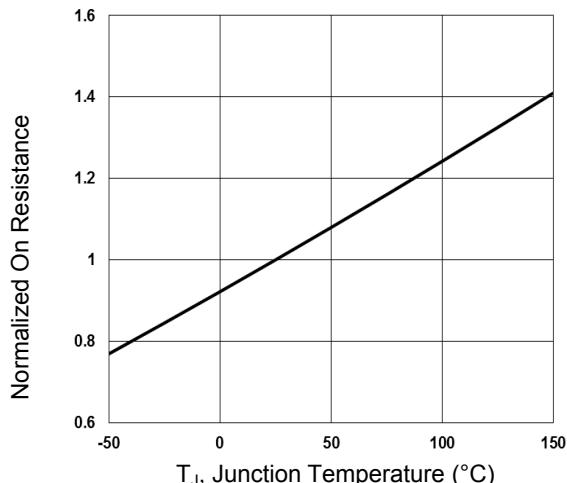


Figure 2. Normalized R_{DS(ON)} vs. T_J

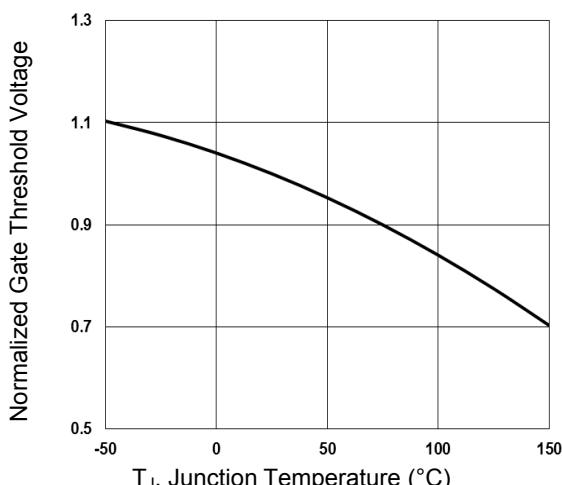


Figure 3. Normalized V_{th} vs. T_J

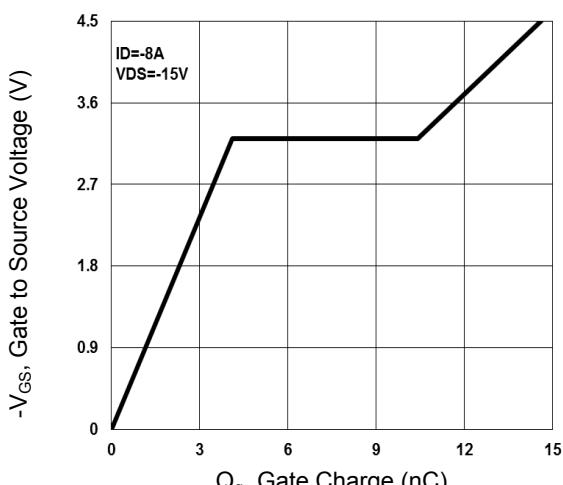


Figure 4. Gate Charge Waveform

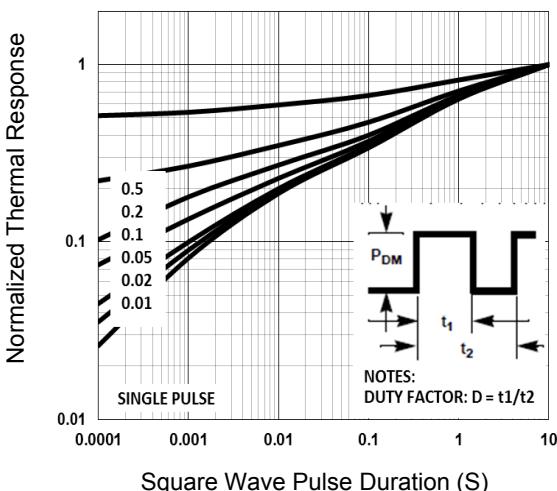


Figure 5. Normalized Transient Impedance

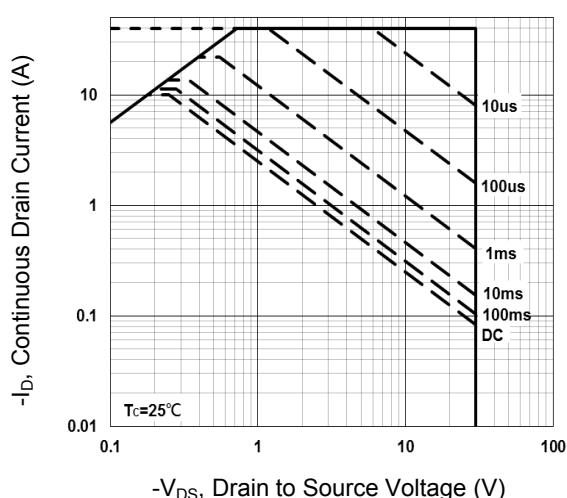
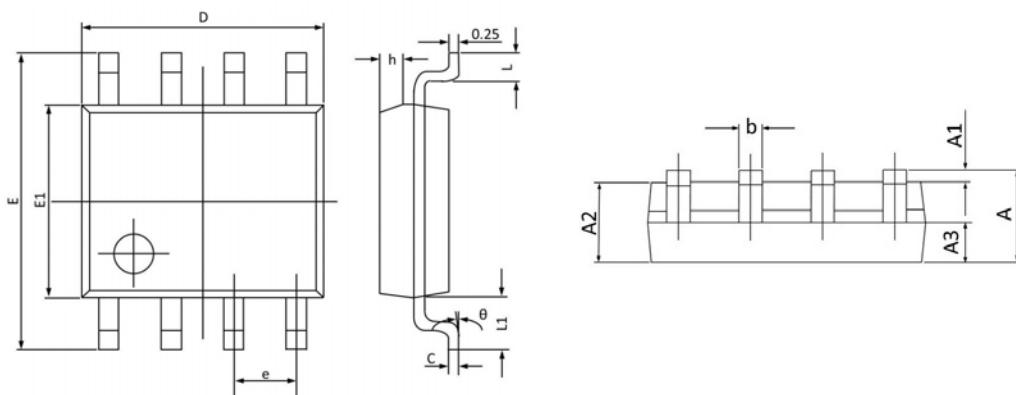


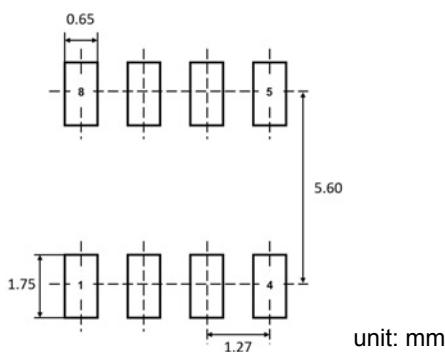
Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (SOP-8)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.800	0.053	0.069
A1	0.050	0.250	0.002	0.010
A2	1.250	1.650	0.049	0.065
A3	0.500	0.700	0.020	0.028
b	0.300	0.510	0.012	0.020
c	0.150	0.260	0.006	0.010
D	4.700	5.100	0.185	0.201
E	5.800	6.200	0.228	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	0.020
L	0.400	1.000	0.016	0.039
L1	1.050 (BSC)		0.041 (BSC)	
θ	0°	8°	0°	8°

Recommended Pad Layout



Order Information

Device	Package	Marking	Carrier	Quantity
SSFQ3905	SOP-8	DS3905	Tape & Reel	3,000pcs / Reel

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