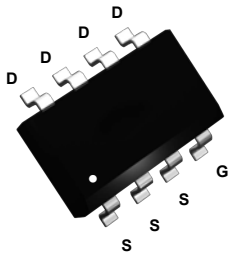
GOOD-ARK
SEMICONDUCTOR

SSFQ6907

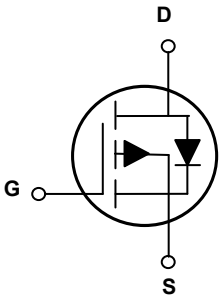
60V P-Channel MOSFET

Main Product Characteristics

BV_{DSS}	-60V
$R_{DS(ON)}$	72mΩ (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

RoHS Compliant

Description

The SSFQ6907 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°C unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_A=25°C)	I_D	-3.3	A
Drain Current-Continuous (T_A=70°C)		-2.6	A
Drain Current-Continuous (T_C=25°C)		-5	A
Drain Current-Continuous (T_C=100°C)		-3.2	A
Drain Current-Pulsed[1]	I_{DM}	-13.2	A
Single Pulse Avalanche Energy[2]	E_{AS}	31	mJ
Single Pulse Avalanche Current[2]	I_{AS}	-25	A
Power Dissipation (T_C=25°C)	P_D	4	W
Power Dissipation-Derate above 25°C		0.03	W/°C
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	85	°C/W
Max. Thermal Resistance Junction to Case	$R_{\theta JC}$	31.2	°C/W
Storage Temperature Range	T_{STG}	-50 to +150	°C
Operating Junction Temperature Range	T_J	-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	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I_D=-1mA	-	-0.05	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-60V, V_{GS}=0V, T_J=25°C	-	-	-1	μA
		V_{DS}=-48V, V_{GS}=0V, T_J=125°C	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3A	-	60	72	mΩ
		V_{GS}=-4.5V, I_D=-2A	-	75	90	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-1.2	-1.6	-3	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	5	-	mV/°C
Forward Transconductance	gfs	V_{DS}=-10V, I_D=-3A	-	8.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[3,4]	Q_g	V_{DS}=-30V, I_D=-3A, V_{GS}=-10V	-	16.4	23	nC
Gate-Source Charge[3,4]	Q_{gs}		-	2.8	4	
Gate-Drain Charge[3,4]	Q_{gd}		-	3.6	6	
Turn-On Delay Time[3,4]	$t_{d(on)}$	V_{DD}=-30V, R_G=6Ω, V_{GS}=-10V, I_D=-1A	-	8.3	16	nS
Rise Time[3,4]	t_r		-	29.6	56	
Turn-Off Delay Time[3,4]	$t_{d(off)}$		-	51.7	98	
Fall Time[3,4]	t_f		-	15.6	30	
Input Capacitance	C_{iss}	V_{DS}=-30V, V_{GS}=0V, F=1MHz	-	870	1260	pF
Output Capacitance	C_{oss}		-	70	100	
Reverse Transfer Capacitance	C_{rss}		-	42	60	
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	16	32	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	-5	A
Pulsed Source Current	I_{SM}		-	-	-10	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-1A, T_J=25°C	-	-	-1	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-25A, 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

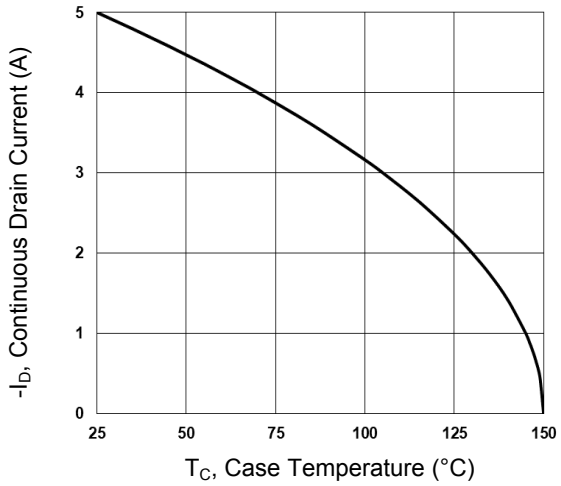


Figure 1. Continuous Drain Current vs. T_C

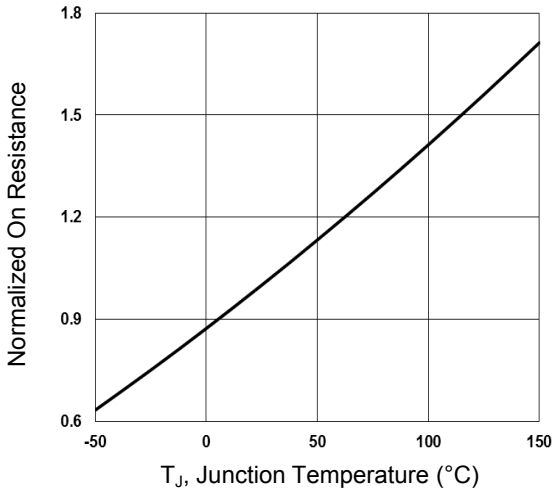


Figure 2. Normalized R_{DSON} vs. T_J

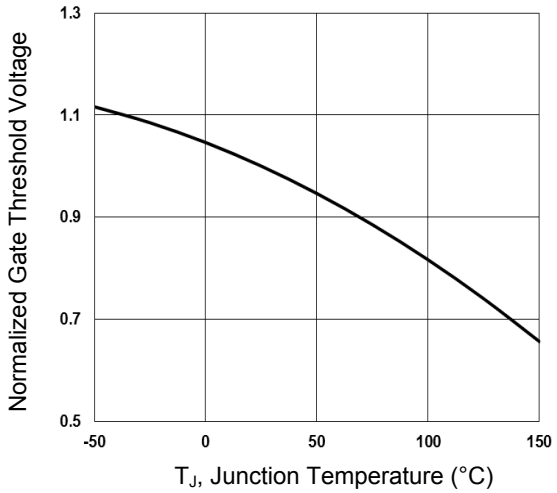


Figure 3. Normalized V_{th} vs. T_J

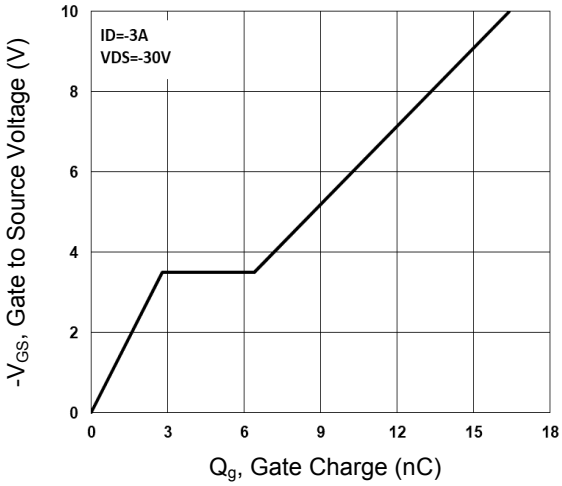


Figure 4. Gate Charge Waveform

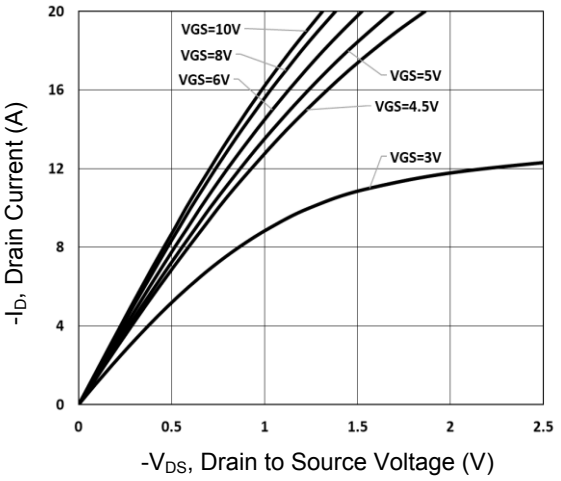


Figure 5. Typical Output Characteristics

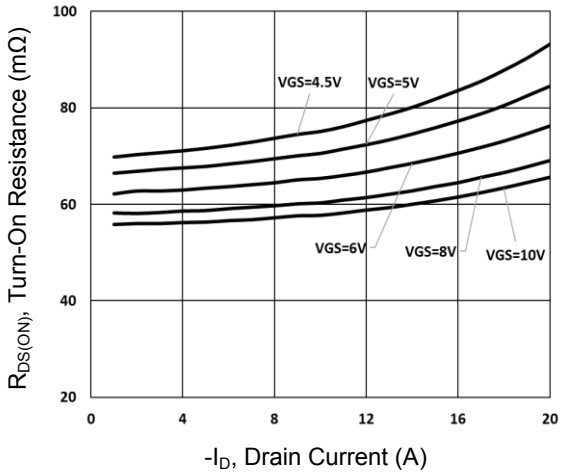


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristic Curves

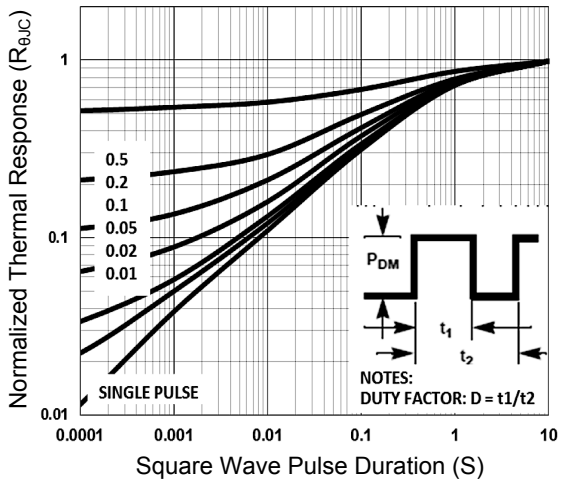


Figure 7. Normalized Transient Impedance

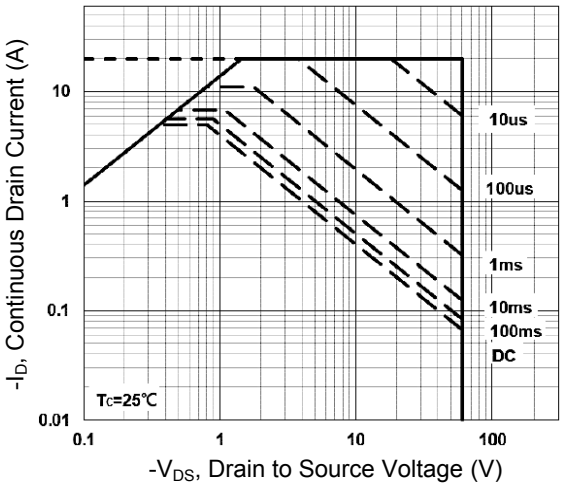
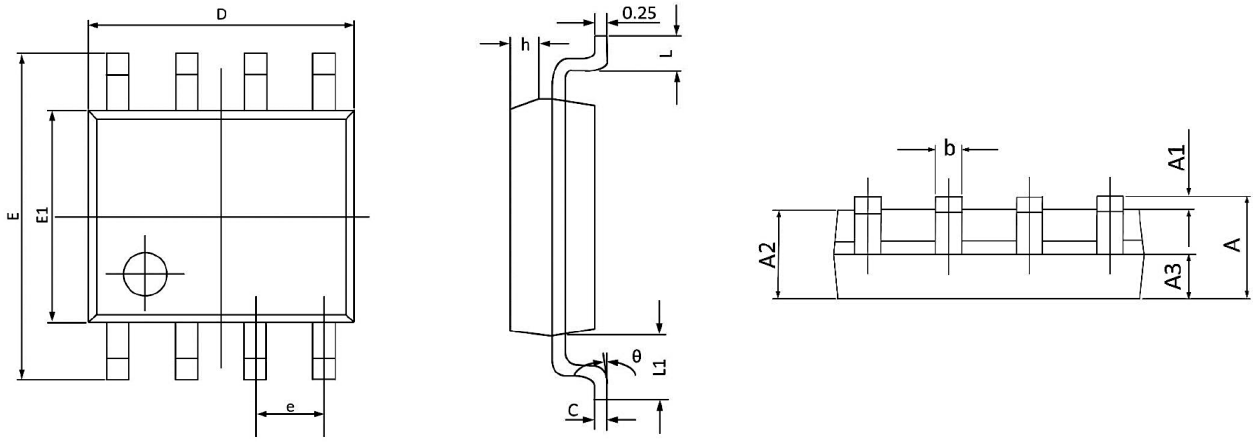


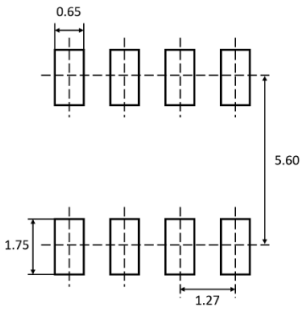
Figure 8. Maximum Safe Operation Area

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



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
SSFQ6907	SOP-8	DS6907	Tape & Reel	3,000 Pcs / Reel