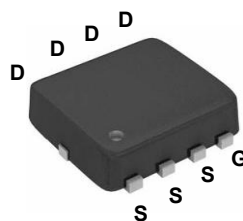
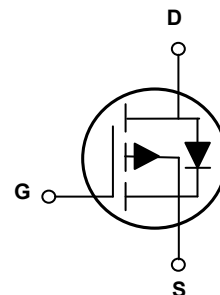


### Main Product Characteristics

$BV_{DSS}$	-60V
$R_{DS(ON)}$	65mΩ
$I_D$	-14A



PPAK3x3



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 SSFN6907 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 ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	-14	A
Drain Current-Continuous ( $T_C=100^\circ\text{C}$ )		-8.9	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	-56	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	31	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	-25	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	33.8	W
Power Dissipation-De-rate above 25°C		0.27	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.7	°C/W
Operating Junction Temperature Range	$T_J$	-55 To +150	°C
Storage Temperature Range	$T_{STG}$	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^{\circ}\text{C}$ , $I_D=-1mA$	-	-0.05	-	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	-1	$\mu A$
		$V_{DS}=-48V, V_{GS}=0V,$ $T_J=125^{\circ}\text{C}$	-	-	-10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-8A$	-	54	65	m $\Omega$
		$V_{GS}=-4.5V, I_D=-6A$	-	70	90	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	-1.6	-2.2	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	5	-	mV/ $^{\circ}\text{C}$
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-3A$	-	7	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	$Q_g$	$V_{DS}=-30V, I_D=-3A,$ $V_{GS}=-10V$	-	16.4	23	nC
Gate-Source Charge <sup>3,4</sup>	$Q_{gs}$		-	2.8	4	
Gate-Drain Charge <sup>3,4</sup>	$Q_{gd}$		-	3.6	6	
Turn-On Delay Time <sup>3,4</sup>	$t_{d(on)}$	$V_{DD}=-30V, R_G=6\Omega,$ $V_{GS}=-10V, I_D=-1A$	-	8.3	16	nS
Rise Time <sup>3,4</sup>	$t_r$		-	29.6	56	
Turn-Off Delay Time <sup>3,4</sup>	$t_{d(off)}$		-	51.7	98	
Fall Time <sup>3,4</sup>	$t_f$		-	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	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	-14	A
Pulsed Source Current	$I_{SM}$		-	-	-28	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.  $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-25A, R_G=25\Omega,$  starting  $T_J=25^{\circ}\text{C}$ .
3. Pulse test: pulse width  $\leq 300\mu s,$  duty cycle  $\leq 2\%$ .
4. Essentially independent of operation temperature.

### Typical Electrical and Thermal Characteristic Curves

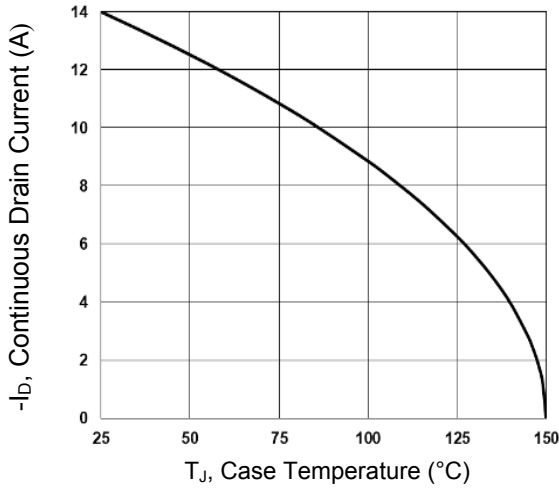


Figure 1. Continuous Drain Current vs.  $T_J$

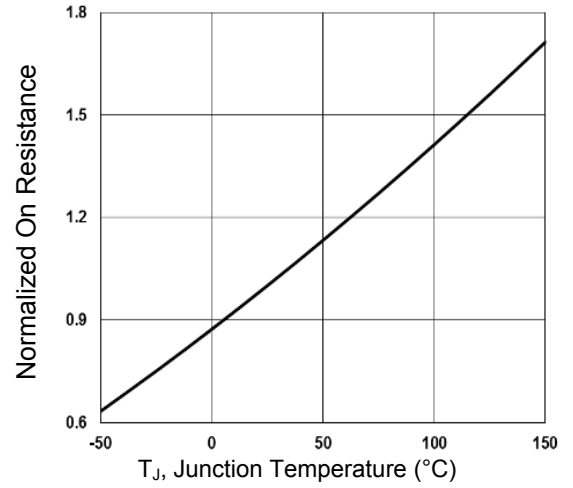


Figure 2. Normalized  $R_{DS(ON)}$  vs.  $T_J$

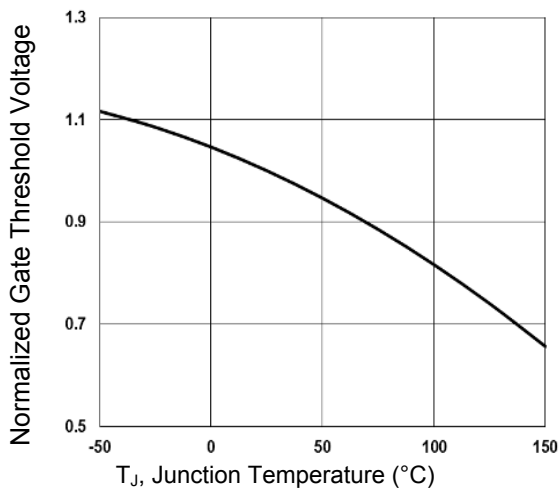


Figure 3. Normalized  $V_{th}$  vs.  $T_J$

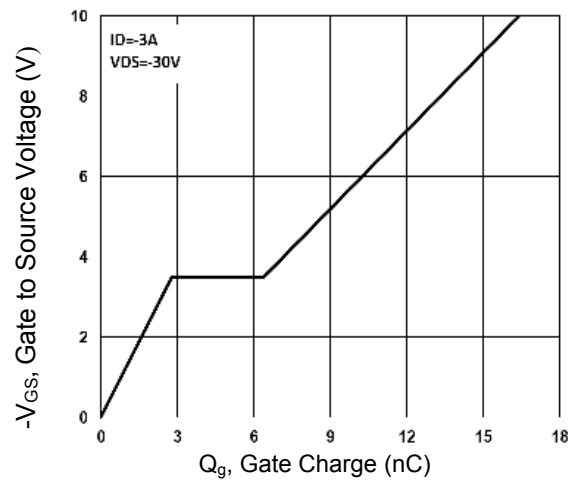


Figure 4. Gate Charge Waveform

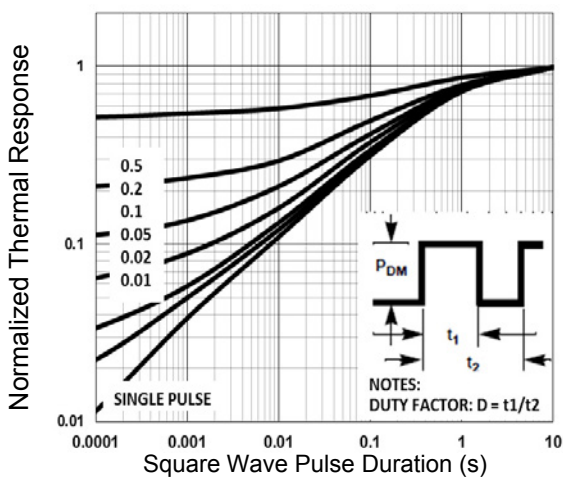


Figure 5. Normalized Transient Impedance

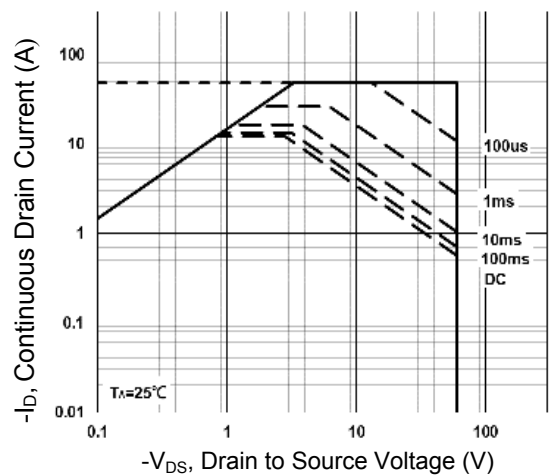
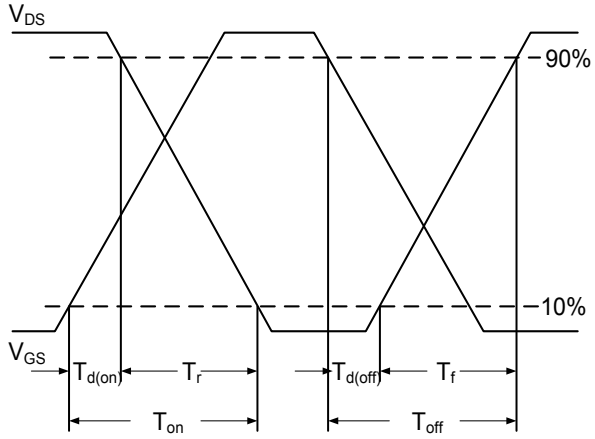
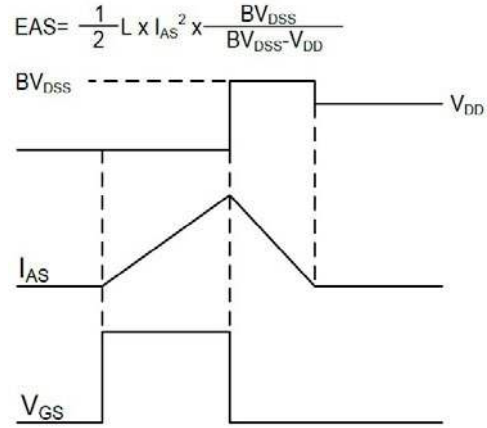


Figure 6. Maximum Safe Operation Area

**Typical Electrical and Thermal Characteristic Curves**

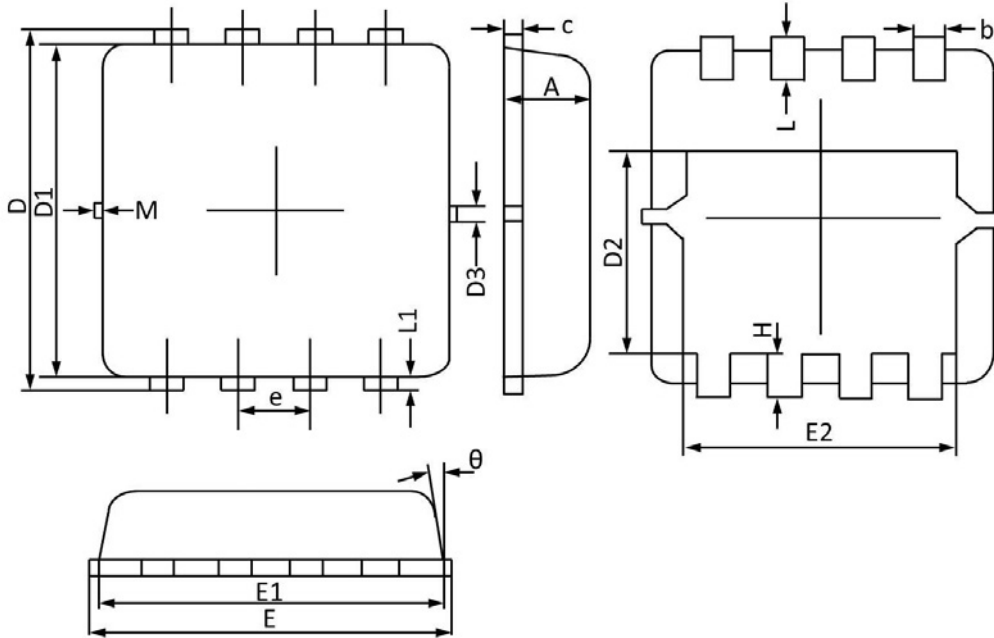


**Figure 7. Switching Time Waveform**



**Figure 8. E<sub>AS</sub> Waveform**

**Package Outline Dimensions (PPAK3x3)**



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.050	3.500	0.120	0.138
D1	2.900	3.200	0.114	0.126
D2	1.350	1.950	0.053	0.077
E	3.000	3.400	0.118	0.134
E1	2.900	3.300	0.114	0.130
E2	2.350	2.600	0.093	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.750	0.012	0.030
L	0.300	0.600	0.012	0.024
L1	0.060	0.200	0.002	0.008
θ	6°	14°	6°	14°