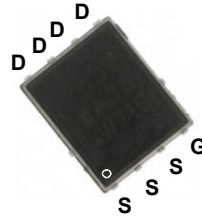
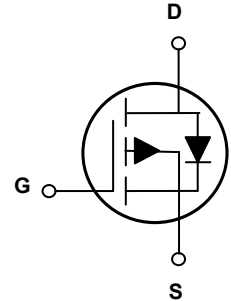


## Main Product Characteristics

$V_{(BR)DSS}$	-40V
$R_{DS(ON)}$	5.8m $\Omega$
$I_D$	-85A



PPAK5x6



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 SSFP4959A 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	$V_{DS}$	-40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	-85	A
Drain Current-Continuous ( $T_C=100^\circ\text{C}$ )		-53.7	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	-340	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	245	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	-70	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	135	W
Power Dissipation-De-rate above 25 $^\circ\text{C}$		1.09	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.92	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-50 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-50 To +150	$^\circ\text{C}$

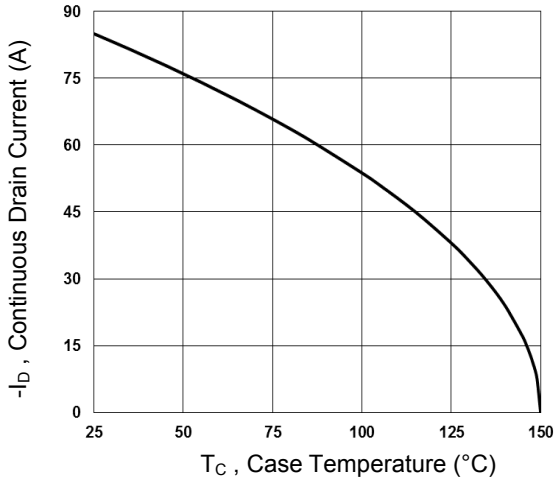
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^{\circ}\text{C}$ , $I_D=-1mA$	-	-0.03	-	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-40V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	-1	$\mu A$
		$V_{DS}=-32V, V_{GS}=0V,$ $T_J=125^{\circ}\text{C}$	-	-	-10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-25A$	-	4.7	5.8	m $\Omega$
		$V_{GS}=-4.5V, I_D=-12A$	-	6.4	8.5	
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	$\Delta V_{GS(th)}$		-	5.38	-	$mV/^{\circ}\text{C}$
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-3A$	-	15	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	$Q_g$	$V_{DS}=-32V,$ $I_D=-10A,$ $V_{GS}=-10V$	-	106	160	nC
Gate-Source Charge <sup>3,4</sup>	$Q_{gs}$		-	13.1	20	
Gate-Drain Charge <sup>3,4</sup>	$Q_{gd}$		-	24.9	38	
Turn-On Delay Time <sup>3,4</sup>	$t_{d(on)}$	$V_{DD}=-32V, R_G=6\Omega,$ $V_{GS}=-10V, I_D=-1A$	-	41.6	82	nS
Rise Time <sup>3,4</sup>	$t_r$		-	12.7	26	
Turn-Off Delay Time <sup>3,4</sup>	$t_{d(off)}$		-	308	600	
Fall Time <sup>3,4</sup>	$t_f$		-	70	140	
Input Capacitance	$C_{iss}$	$V_{DS}=-25V,$ $V_{GS}=0V, F=1MHz$	-	5720	8580	pF
Output Capacitance	$C_{oss}$		-	527	790	
Reverse Transfer Capacitance	$C_{rss}$		-	352	528	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$	-	4.2	6.3	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	-85	A
Pulsed Source Current	$I_{SM}$		-	-	-170	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1A,$ $T_J=25^{\circ}\text{C}$	-	-	-1	V

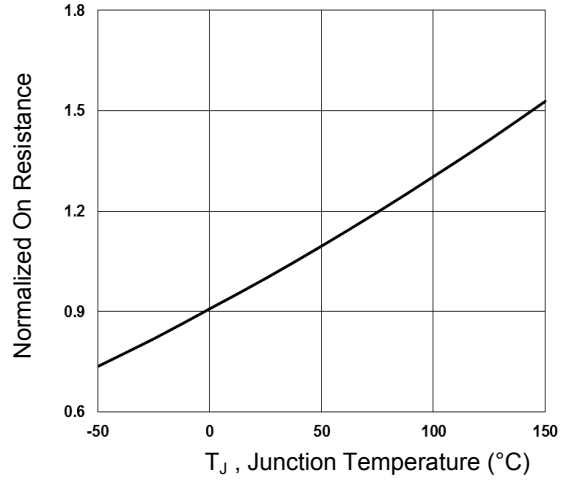
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-70A, R_G=25\Omega,$  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.

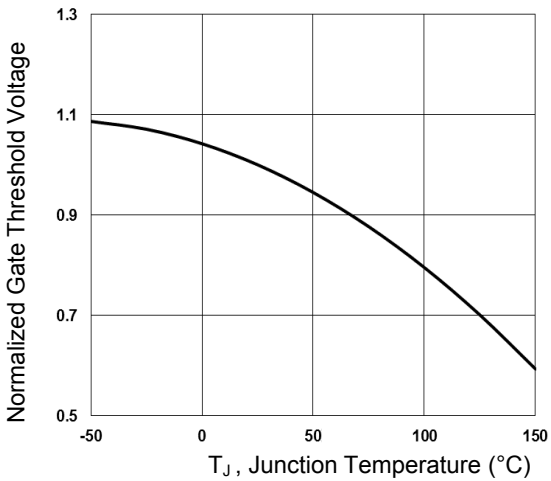
**Typical Electrical and Thermal Characteristic Curves**



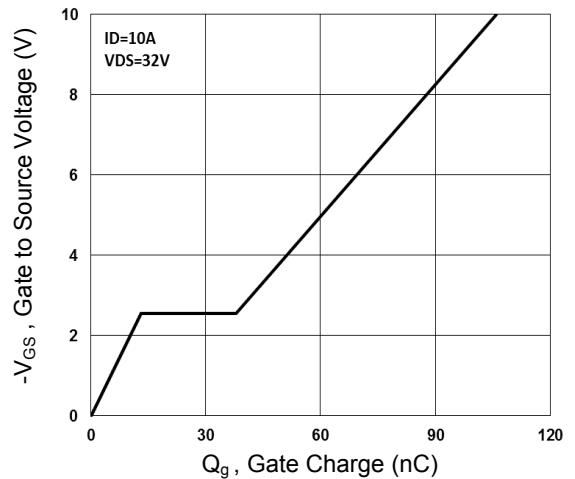
**Figure 1. Continuous Drain Current vs.  $T_C$**



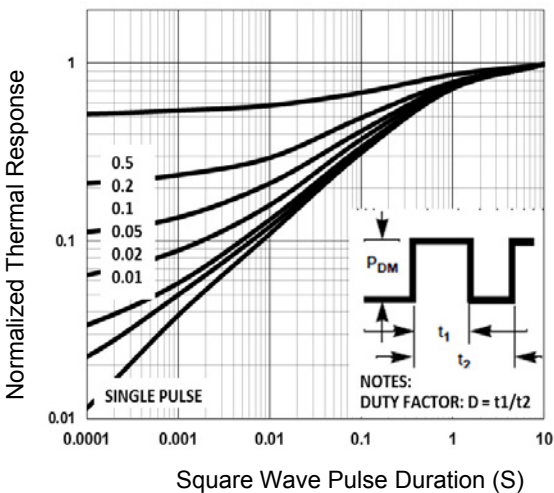
**Figure 2. Normalized  $R_{DS(ON)}$  vs.  $T_J$**



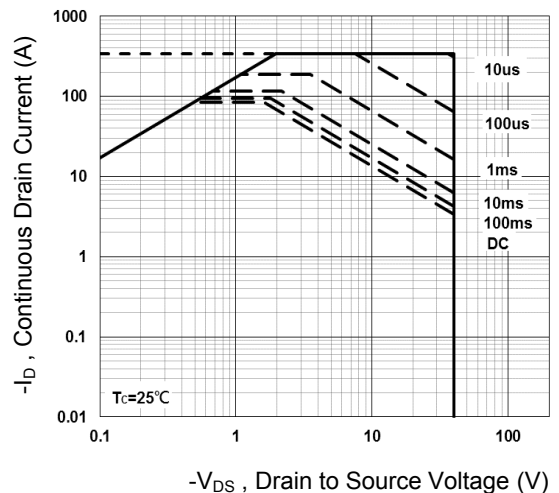
**Figure 3. Normalized  $V_{th}$  vs.  $T_J$**



**Figure 4. Gate Charge Waveform**

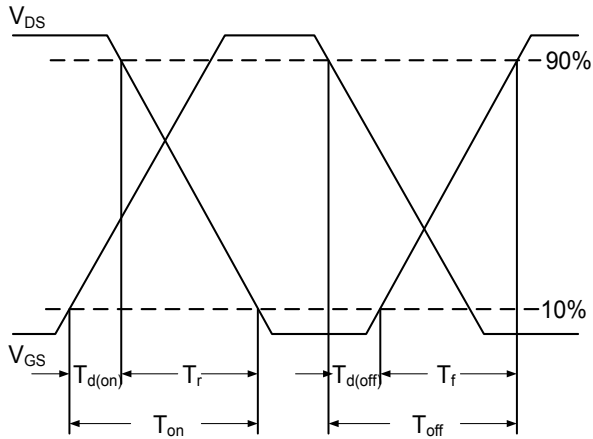


**Figure 5. Normalized Transient Impedance**

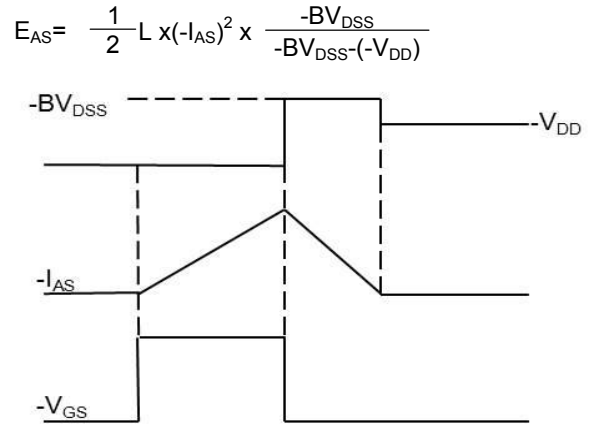


**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



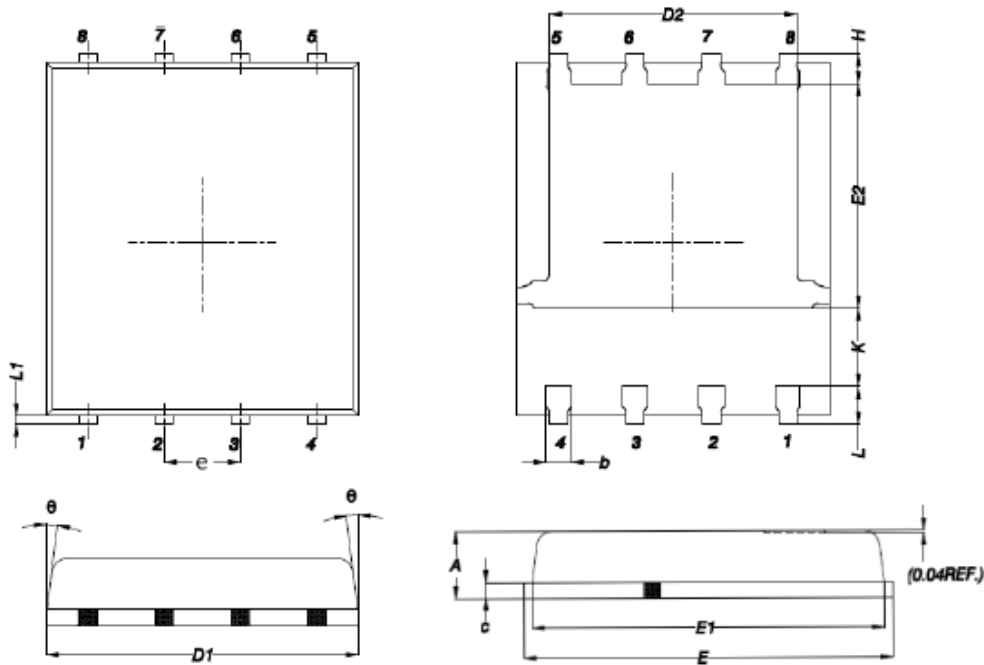
**Figure 7. Switching Time Waveform**



**Figure 8. EAS Waveform**

**Package Outline Dimensions**

**PPAK5x6**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.300	0.020	0.012
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	-	1.100	-	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)