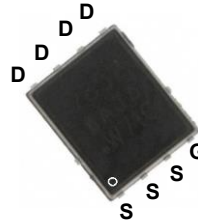
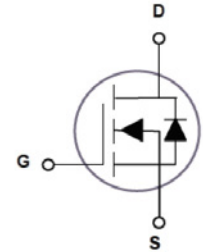


### Main Product Characteristics

$V_{(BR)DSS}$	80V
$R_{DS(ON)}$	3.9m $\Omega$
$I_D$	80A



PPAK 5x6



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 SSFP8974 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	80	V
Gate-Source Voltage	V <sub>GS</sub>	+20/-12	V
Drain Current – Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	80	A
Drain Current – Continuous (T <sub>C</sub> =100°C)		50	A
Drain Current – Pulsed <sup>1</sup>	I <sub>DM</sub>	320	A
Single Pulse Avalanche Energy <sup>2</sup>	E <sub>AS</sub>	245	mJ
Single Pulse Avalanche Current <sup>2</sup>	I <sub>AS</sub>	70	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	142	W
Power Dissipation – Derate above 25°C		1.14	W/°C
Storage Temperature Range	T <sub>STG</sub>	-50 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-50 to +150	°C

### Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	---	62	°C/W
Thermal Resistance Junction to Case	R <sub>θJC</sub>	---	0.88	°C/W

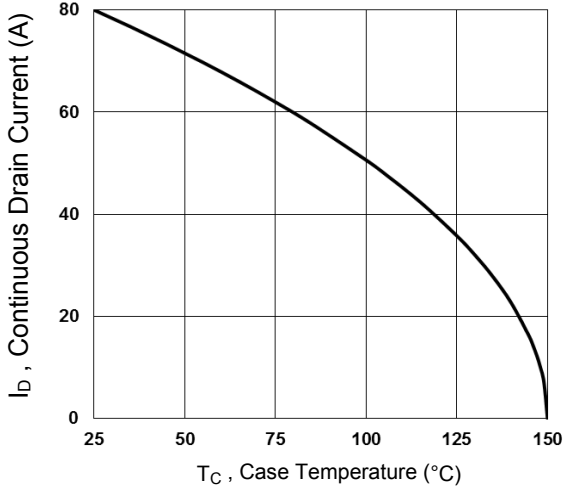
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	80	---	---	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA	---	0.03	---	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>Ds</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	μA
		V <sub>Ds</sub> =64V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C	---	---	10	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =20V, V <sub>Ds</sub> =0V	---	---	100	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	---	3.2	3.9	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	---	4.6	6.2	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>Ds</sub> , I <sub>D</sub> =250μA	1.0	1.6	2.5	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		---	-5.8	---	mV/°C
Forward Transconductance	g <sub>fs</sub>	V <sub>Ds</sub> =10V, I <sub>D</sub> =5A	---	10	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	Q <sub>g</sub>	V <sub>Ds</sub> =64V, V <sub>GS</sub> =10V, I <sub>D</sub> =10A	---	88	132	nC
Gate-Source Charge <sup>3,4</sup>	Q <sub>gs</sub>		---	10.2	15	
Gate-Drain Charge <sup>3,4</sup>	Q <sub>gd</sub>		---	24	32	
Turn-On Delay Time <sup>3,4</sup>	T <sub>d(on)</sub>	V <sub>DD</sub> =40V, V <sub>GS</sub> =10V, R <sub>G</sub> =6Ω, I <sub>D</sub> =1A	---	20	40	nS
Rise Time <sup>3,4</sup>	T <sub>r</sub>		---	13	26	
Turn-Off Delay Time <sup>3,4</sup>	T <sub>d(off)</sub>		---	36	72	
Fall Time <sup>3,4</sup>	T <sub>f</sub>		---	18	36	
Input Capacitance	C <sub>iss</sub>	V <sub>Ds</sub> =25V, V <sub>GS</sub> =0V, F=1MHz	---	5160	10200	pF
Output Capacitance	C <sub>oss</sub>		---	1346	2700	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	40	80	
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>Ds</sub> =0V, F=1MHz	---	1.65	---	Ω
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	80	A
Pulsed Source Current	I <sub>SM</sub>		---	---	320	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	---	---	1	V

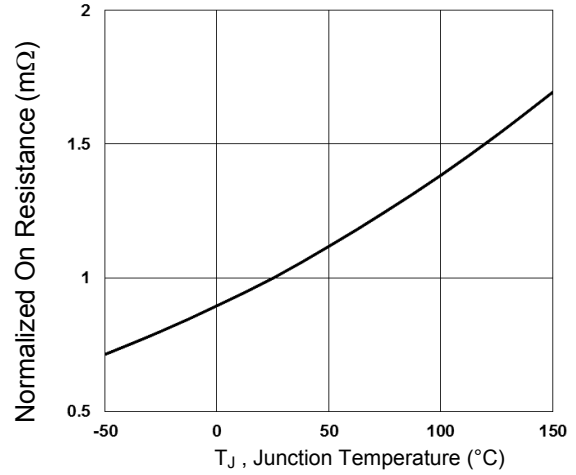
**Note:**

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. V<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=70A, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C.
3. The data tested by pulsed, pulse width ≤ 300μS, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

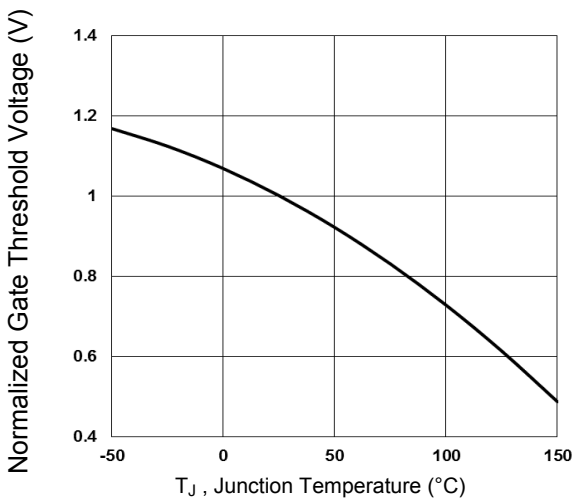
## Typical Electrical and Thermal Characteristic Curves



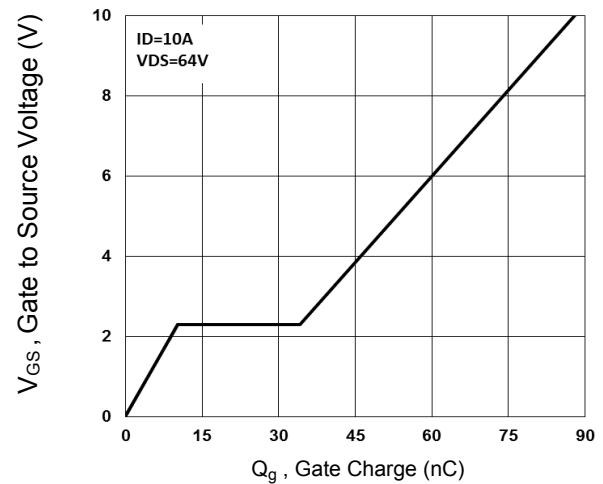
**Fig.1 Continuous Drain Current vs.  $T_C$**



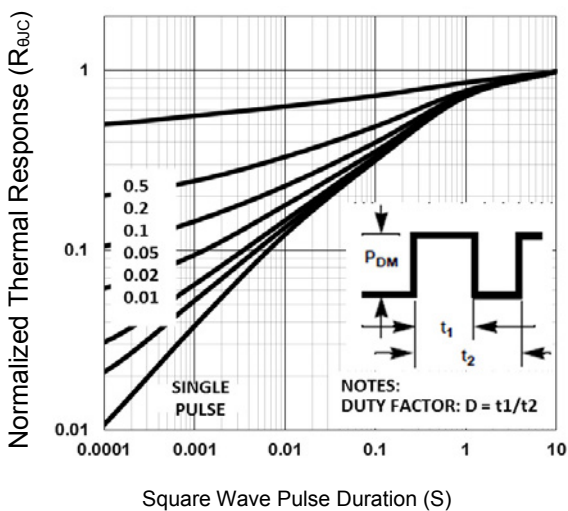
**Fig.2 Normalized  $R_{DS(ON)}$  vs.  $T_J$**



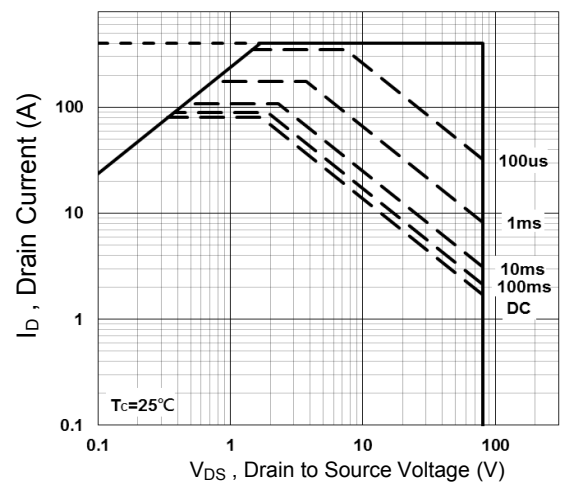
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Characteristics**

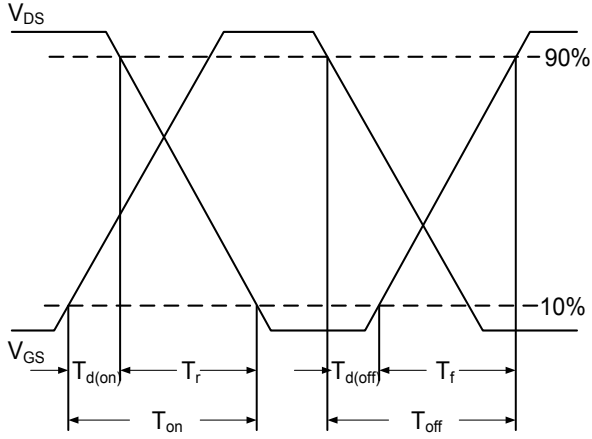


**Fig.5 Normalized Transient Impedance**

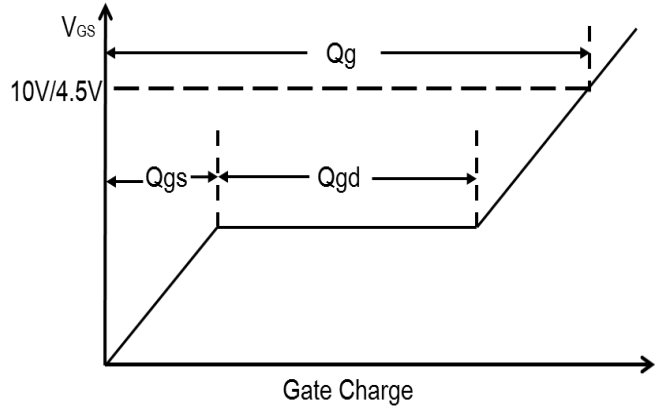


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

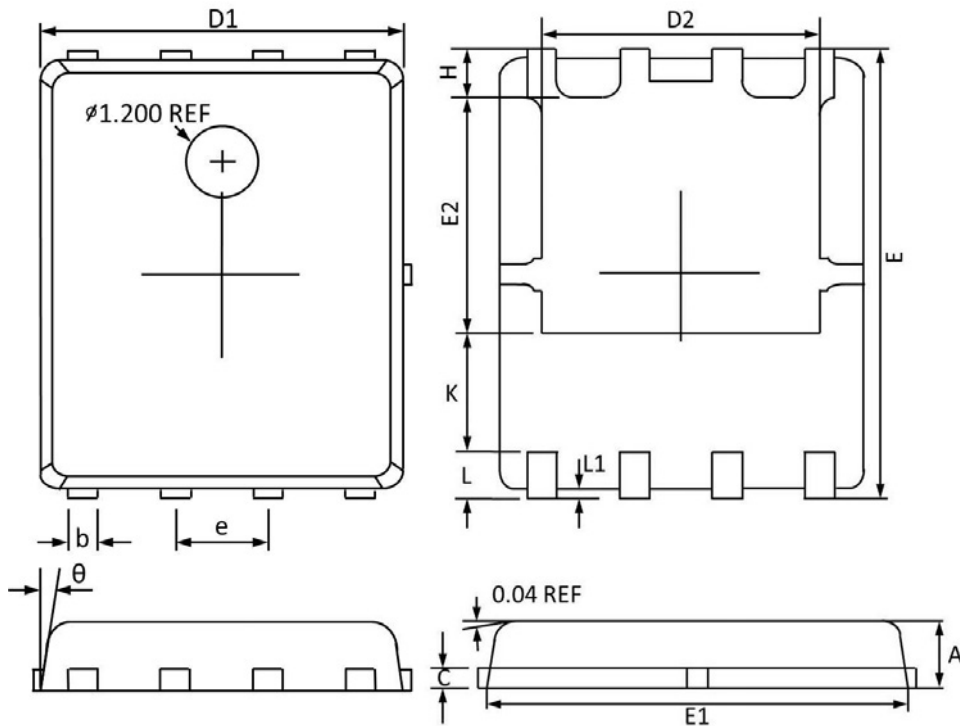


**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

## Package Outline Dimensions PPAK5x6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
theta	12°	0°	12°	0°