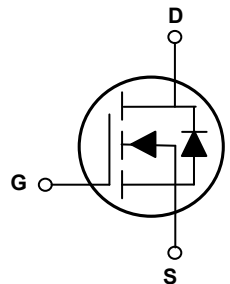
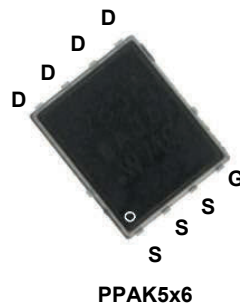


### Main Product Characteristics

$BV_{DSS}$	150V
$R_{DS(ON)}$	9.1m $\Omega$ (Max)
$I_D$	87A



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 GSGP9R115 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 ( $T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	150	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous, @ Steady-State ( $T_C=25^{\circ}\text{C}$ )	$I_D$	87	A
Drain Current-Continuous, @ Steady-State ( $T_C=100^{\circ}\text{C}$ )		55	
Drain Current-Pulsed ( $T_C=25^{\circ}\text{C}$ ) <sup>1</sup>	$I_{DM}$	348	A
Single Pulse Avalanche Energy	$E_{AS}$	193	mJ
Single Pulse Avalanche Current	$I_{AS}$	28	A
Power Dissipation ( $T_C=25^{\circ}\text{C}$ ) <sup>2</sup>	$P_D$	142	W
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.88	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^{\circ}\text{C}$

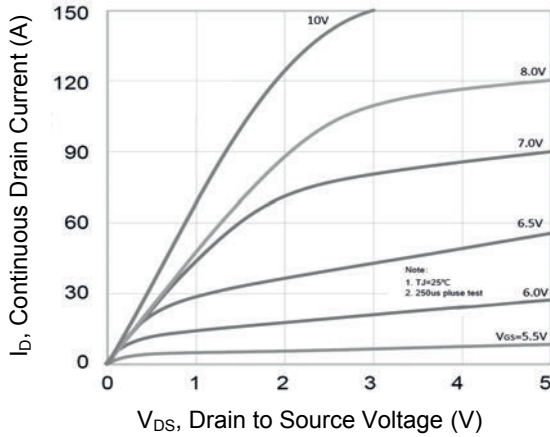
### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	150	-	-	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =150V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	-	-	1	μA
		V <sub>DS</sub> =150V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	-	4.0	-	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =42A	-	7.4	9.1	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	3.1	-	4.6	V
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	Q <sub>g</sub>	V <sub>DD</sub> =75V, I <sub>D</sub> =44A, V <sub>GS</sub> =10V	-	41	-	nC
Gate-Source Charge <sup>3,4</sup>	Q <sub>gs</sub>		-	24	-	
Gate-Drain ("Miller") Charge <sup>3,4</sup>	Q <sub>gd</sub>		-	6.7	-	
Gate to Plateau <sup>3,4</sup>	V <sub>plateau</sub>		-	7.3	-	V
Turn-On Delay Time <sup>3,4</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> =75V, R <sub>G</sub> =3Ω, V <sub>GS</sub> =10V, I <sub>D</sub> =44A	-	25	-	nS
Rise Time <sup>3,4</sup>	t <sub>r</sub>		-	90	-	
Turn-Off Delay Time <sup>3,4</sup>	t <sub>d(off)</sub>		-	27	-	
Fall Time <sup>3,4</sup>	t <sub>f</sub>		-	32	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =75V, V <sub>GS</sub> =0V, F=1MHz	-	2808	-	pF
Output Capacitance	C <sub>oss</sub>		-	712	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	17	-	
Gate Resistance	R <sub>g</sub>	F=1MHz	-	1.6	-	Ω
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	I <sub>S</sub>	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	87	A
Pulsed Source Current	I <sub>S, pulse</sub>		-	-	348	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =50A	-	-	1.4	V
Reverse Recovery Time <sup>3</sup>	T <sub>rr</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =42A, dI <sub>F</sub> /dt=100A/μs	-	47	-	nS
Reverse Recovery Charge <sup>3</sup>	Q <sub>rr</sub>		-	56	-	nC

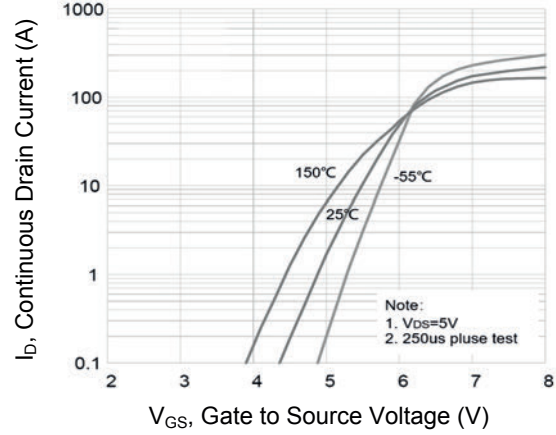
#### Notes

- Pulse time of 5us, pulse width limited by maximum junction temperature.
- The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 1.0°C/W for every 1 degree of temperature increase.
- Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.
- Essentially independent of operating temperature.

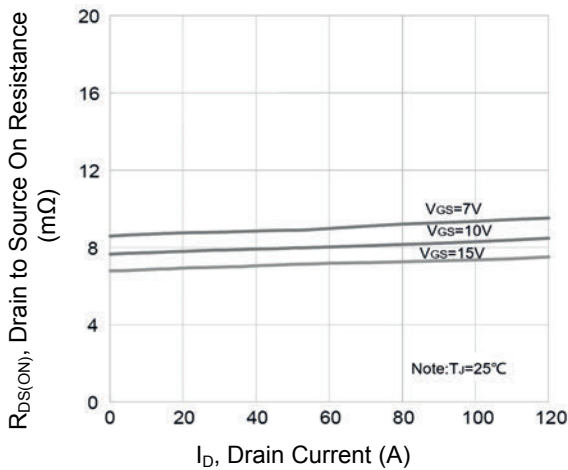
### Typical Electrical and Thermal Characteristic Curves



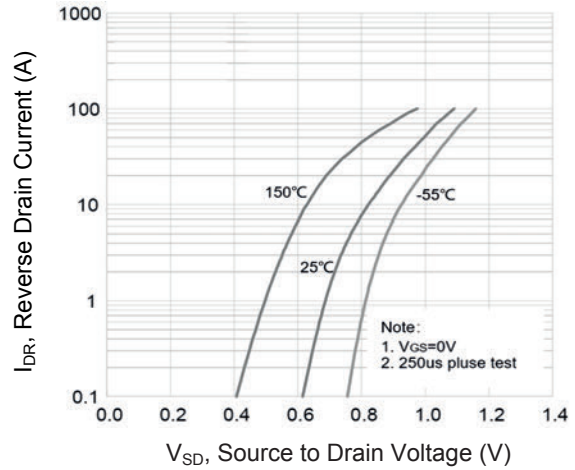
**Figure 1. Typical Output Characteristics**



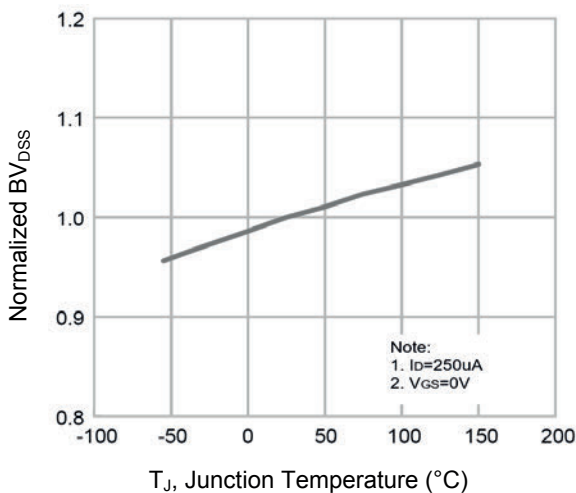
**Figure 2. Transfer Characteristics**



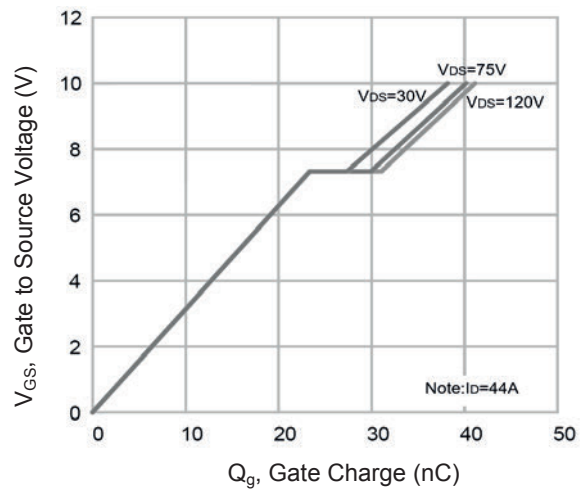
**Figure 3.  $R_{DS(ON)}$  Vs. Drain Current**



**Figure 4. Body Diode Characteristics**

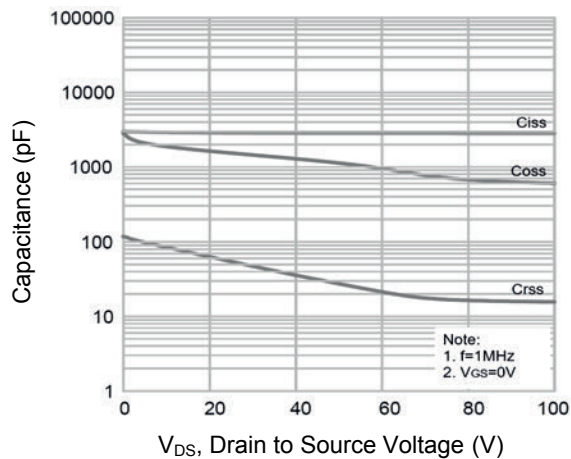


**Figure 5. Normalized  $BV_{DSS}$  Vs.  $T_J$**

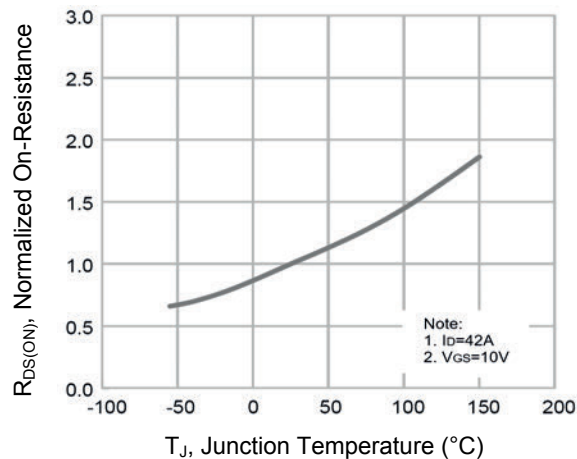


**Figure 6. Gate Charge Characteristics**

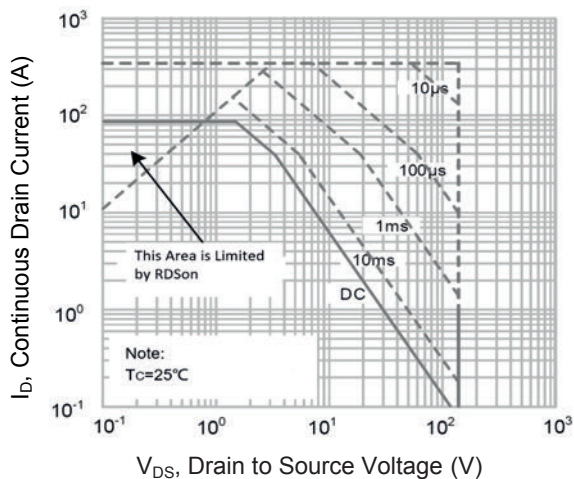
### Typical Electrical and Thermal Characteristic Curves



**Figure 7. Capacitance Characteristics**

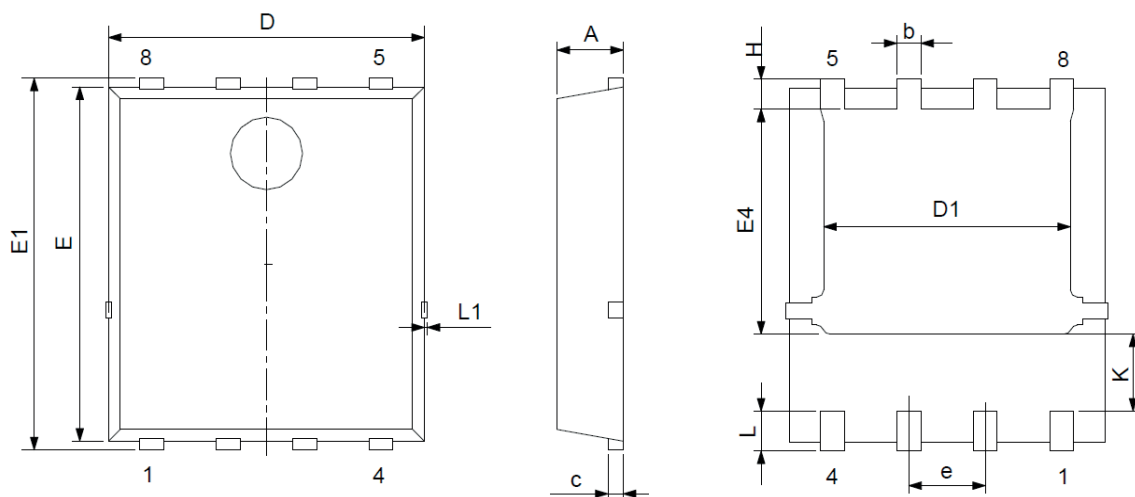


**Figure 8. Normalized  $R_{DS(ON)}$  Vs.  $T_J$**



**Figure 9. Safe Operation Area**

## Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.200	0.035	0.047
c	0.154	0.354	0.006	0.014
D	4.800	5.400	0.189	0.213
E	5.660	6.060	0.223	0.239
D1	3.760	4.300	0.148	0.169
E1	5.900	6.350	0.232	0.250
b	0.300	0.550	0.012	0.022
k	1.100	1.500	0.043	0.059
e	1.070	1.370	0.042	0.054
E4	3.340	3.920	0.131	0.154
L	0.300	0.710	0.012	0.028
L1	-	0.120	-	0.005
H	0.400	0.710	0.016	0.028