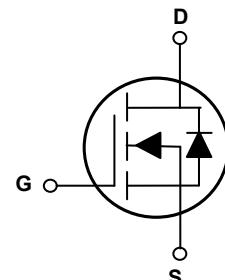
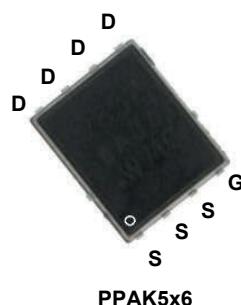


## Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	3.9mΩ (Max)
$I_D$	136A



## 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 GSFP3R910 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	Parameter.	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current, @ Steady-State ( $T_C=25^\circ\text{C}$ )	$I_D$	136	A
Continuous Drain Current, @ Steady-State ( $T_C=100^\circ\text{C}$ )		88	A
Pulsed Drain Current ( $T_C=25^\circ\text{C}$ ) <sup>1</sup>	$I_{DM}$	544	A
Power Dissipation ( $T_C=25^\circ\text{C}$ ) <sup>2</sup>	$P_D$	147	W
Single Pulse Avalanche Energy	$E_{AS}$	289	mJ
Single Pulse Current	$I_{AS}$	34	A
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$
Junction-to-Case	$R_{\theta JC}$	0.85	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^\circ\text{C}$
Soldering Temperature (SMD)	$T_{\text{sold}}$	260	$^\circ\text{C}$

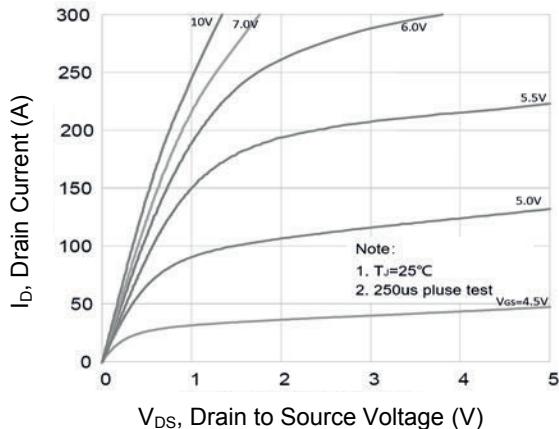
**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}}=0\text{V}, I_D=250\mu\text{A}$	100	-	-	V
Drain-to-Source Leakage Current	$I_{\text{DSS}}$	$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1.0	$\mu\text{A}$
		$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	2.0	-	
Gate-to-Source Forward Leakage	$I_{\text{GSS}}$	$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=20\text{V}$	-	-	100	$\text{nA}$
		$V_{\text{DS}}=0\text{V}, V_{\text{GS}}=-20\text{V}$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_D=50\text{A}$	-	3.3	3.9	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{DS}}=V_{\text{GS}}, I_D=250\mu\text{A}$	2.1	-	3.9	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{\text{iss}}$	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=50\text{V}, f=1\text{MHz}$	-	4755	-	$\text{pF}$
Output Capacitance	$C_{\text{oss}}$		-	630	-	
Reverse Transfer Capacitance	$C_{\text{rss}}$		-	18	-	
Total Gate Charge <sup>3,4</sup>	$Q_g$	$I_D=50\text{A}, V_{\text{DD}}=50\text{V}, V_{\text{GS}}=10\text{V}$	-	62	-	$\text{nC}$
Gate-to-Source Charge <sup>3,4</sup>	$Q_{\text{gs}}$		-	30	-	
Gate-to-Drain ("Miller") Charge <sup>3,4</sup>	$Q_{\text{gd}}$		-	9.2	-	
Gate-to-Plateau <sup>3,4</sup>	$V_{\text{plateau}}$		-	5.8	-	V
Turn-on Delay Time <sup>3,4</sup>	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=50\text{V}, V_{\text{GS}}=10\text{V}, R_G=3.0\Omega, I_D=50\text{A}$	-	32	-	$\text{nS}$
Rise Time <sup>3,4</sup>	$t_r$		-	95	-	
Turn-Off Delay Time <sup>3,4</sup>	$t_{\text{d}(\text{off})}$		-	60	-	
Fall Time <sup>3,4</sup>	$t_f$		-	26	-	
Gate Resistance	$R_g$	$f=1\text{MHz}$	-	3.3	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_s$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	136	A
Diode Pulse Current	$I_{s, \text{pulse}}$		-	-	544	A
Diode Forward Voltage	$V_{\text{SD}}$	$I_s=50\text{A}, V_{\text{GS}}=0\text{V}$	-	-	1.4	V
Reverse Recovery Time <sup>3</sup>	$T_{\text{rr}}$	$I_s=50\text{A}, V_{\text{GS}}=0\text{V}, V_R=50\text{V}, dI_F/dt=100\text{A/us}$	-	59	-	nS
Reverse Recovery Charge <sup>3</sup>	$Q_{\text{rr}}$		-	98	-	nC

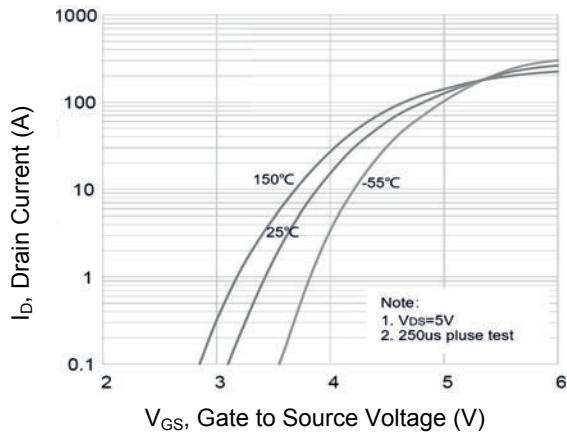
Notes

1. Pulse time of 5μs.
2. The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 0.55°C/W for every 1 degree of temperature increase.
3. Pulse test : pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Basically unaffected by operating temperature.

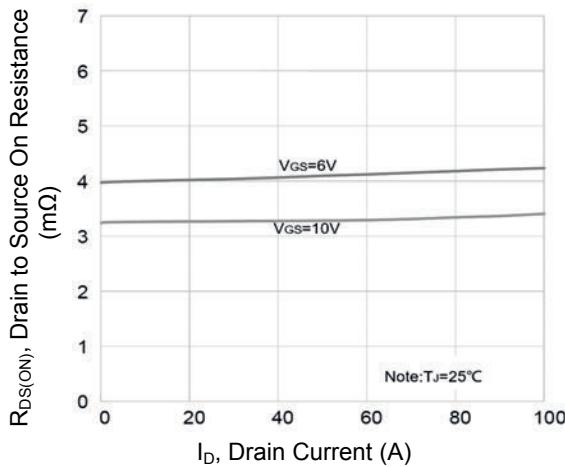
## Typical Electrical and Thermal Characteristic Curves



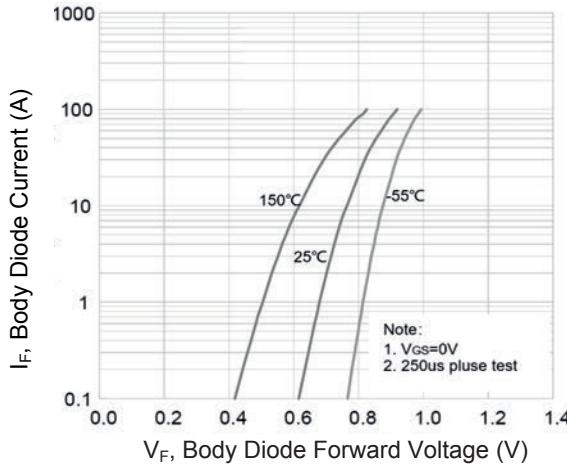
**Figure 1. Typical Output Characteristics**



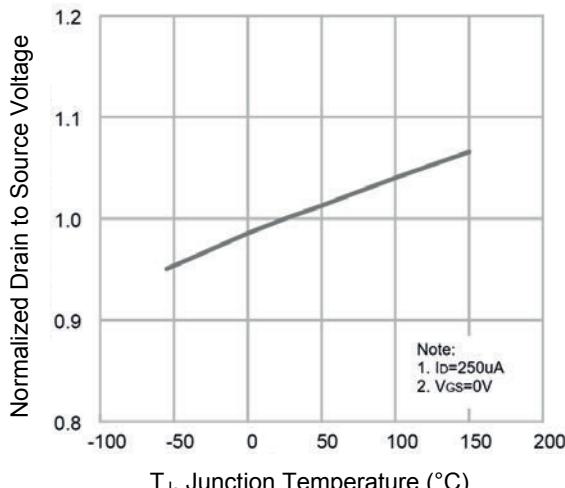
**Figure 2. Transfer Characteristics**



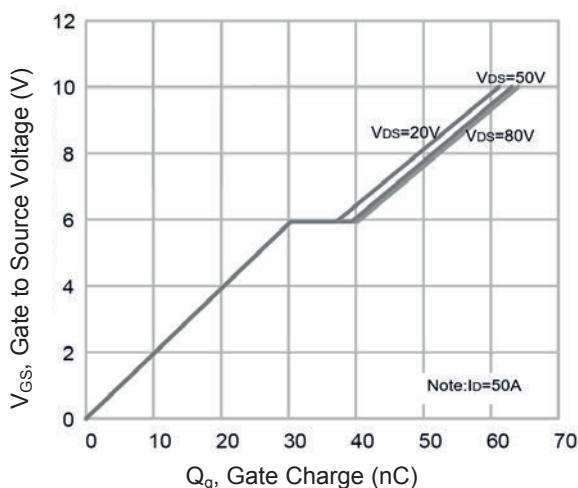
**Figure 3.  $R_{DS(ON)}$  Vs. Drain Current**



**Figure 4. Body Diode Characteristics**

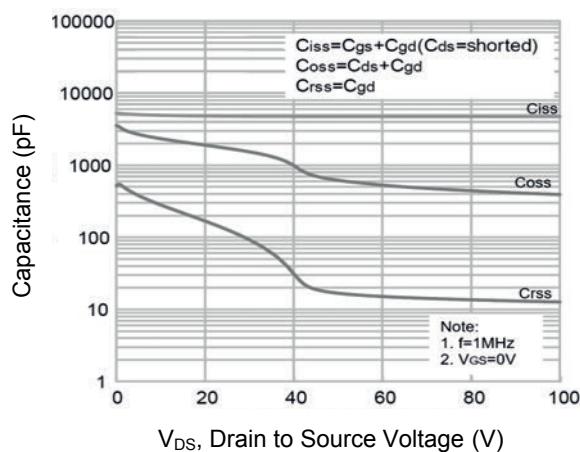


**Figure 5. Normalized  $BV_{DSS}$  Vs.  $T_J$**

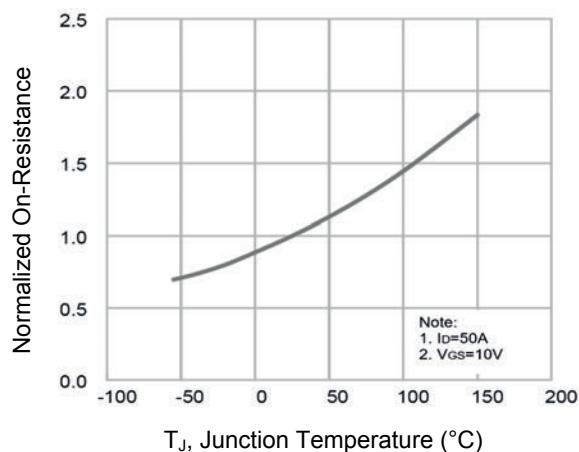


**Figure 6. Gate Charge**

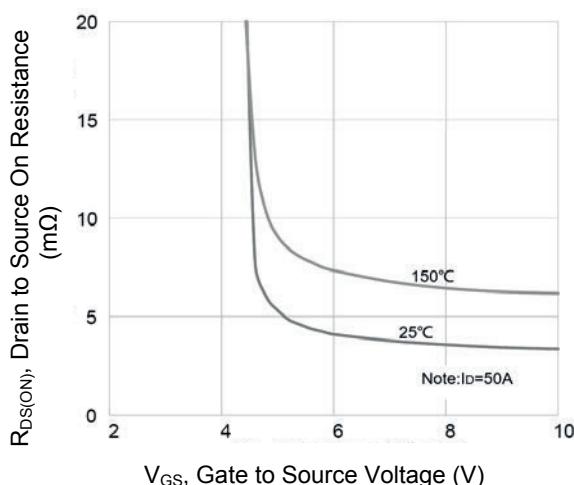
## Typical Electrical and Thermal Characteristic Curves



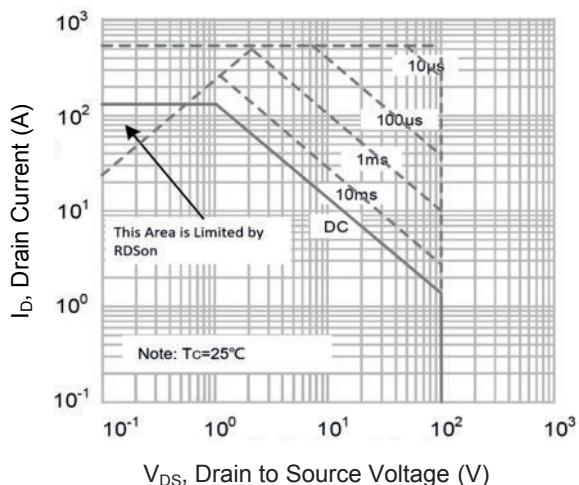
**Figure 7. Capacitance Characteristics**



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

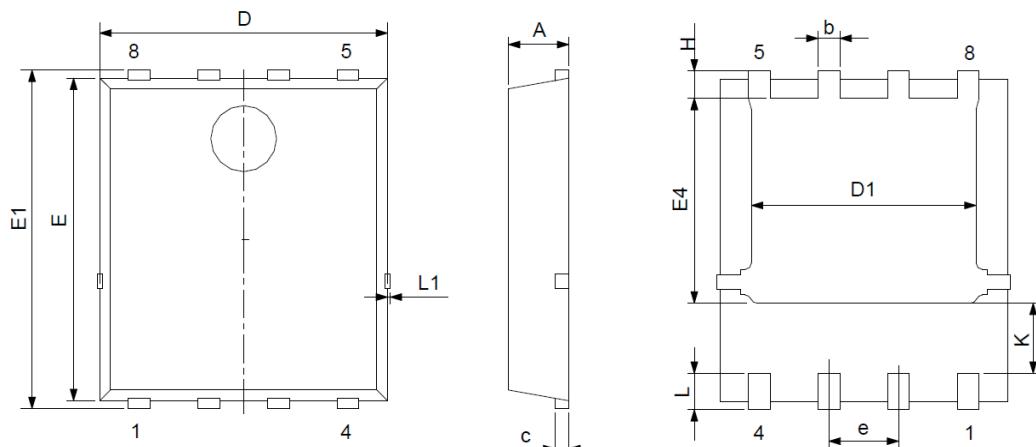


**Figure 9.  $R_{DS(ON)}$  Vs.  $V_{GS}$  Curve**



**Figure 10. 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

### Recommended Pad Layout

