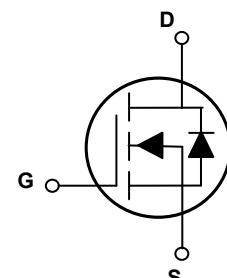
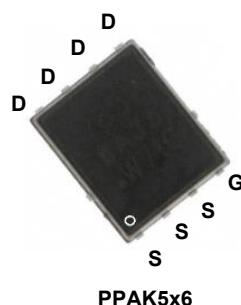


Main Product Characteristics

BV _{DSS}	100V
R _{DS(ON)}	3.2mΩ (Max)
I _D	162A



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 GSFP3R210 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°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current-Continuous, @Steady-State (T _C =25°C)	I _D	162	A
Drain Current-Continuous, @Steady-State (T _C =100°C)		106	
Drain Current-Pulsed (T _C =25°C) ¹	I _{DM}	656	A
Single Pulse Avalanche Energy	E _{AS}	347	mJ
Single Pulse Avalanche Current	I _{AS}	41	A
Power Dissipation (T _C =25°C) ²	P _D	165	W
Junction-to-Ambient (PCB Mounted, Steady-State)	R _{θJA}	50	°C/W
Thermal Resistance, Junction-to-Case	R _{θJC}	0.76	°C/W
Operating Junction Temperature Range	T _J	-55 To +150	°C
Storage Temperature Range	T _{STG}	-55 To +150	°C
Soldering Temperature (SMD)	T _{sold}	260	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{\text{GS}}=0\text{V}, I_{\text{D}}=250\mu\text{A}$	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{\text{DS}}=100\text{V}, V_{\text{GS}}=0\text{V}, T_J=125^\circ\text{C}$	-	2	-	μA
Gate-Source Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{\text{DS}(\text{ON})}$	$V_{\text{GS}}=10\text{V}, I_{\text{D}}=50\text{A}$	-	2.7	3.2	$\text{m}\Omega$
Gate Threshold Voltage	$V_{\text{GS}(\text{th})}$	$V_{\text{GS}}=V_{\text{DS}}, I_{\text{D}}=250\mu\text{A}$	2.1	-	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{\text{DD}}=50\text{V}, I_{\text{D}}=50\text{A}, V_{\text{GS}}=10\text{V}$	-	64	-	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	32	-	
Gate-Drain ("Miller") Charge ^{3,4}	Q_{gd}		-	10.2	-	
Gate to Plateau ^{3,4}	V_{plateau}		-	5.8	-	
Turn-On Delay Time ^{3,4}	$t_{\text{d}(\text{on})}$	$V_{\text{DD}}=50\text{V}, R_{\text{G}}=3\Omega, V_{\text{GS}}=10\text{V}, I_{\text{D}}=50\text{A}$	-	33	-	nS
Rise Time ^{3,4}	t_r		-	90	-	
Turn-Off Delay Time ^{3,4}	$t_{\text{d}(\text{off})}$		-	60	-	
Fall Time ^{3,4}	t_f		-	27	-	
Input Capacitance	C_{iss}	$V_{\text{DS}}=50\text{V}, V_{\text{GS}}=0\text{V}, F=1\text{MHz}$	-	4985	-	pF
Output Capacitance	C_{oss}		-	650	-	
Reverse Transfer Capacitance	C_{rss}		-	21	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	2.1	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I_s	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	164	A
Diode Pulse Current	$I_{s,\text{pulse}}$		-	-	656	A
Diode Forward Voltage	V_{SD}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=50\text{A}$	-	-	1.4	V
Reverse Recovery Time ³	t_{rr}	$V_{\text{GS}}=0\text{V}, I_{\text{S}}=50\text{A}, \text{dI/F/dt}=100\text{A}/\mu\text{s}$	-	58	-	nS
Reverse Recovery Charge ³	Q_{rr}		-	105	-	nC

Note:

1. Pulse time of 5us.
2. The dissipated power value will change with the temperature. When it is greater than 25°C , the dissipated power value will decrease by $0.55^\circ\text{C}/\text{W}$ for every 1 degree of temperature increase.
3. Pulse test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

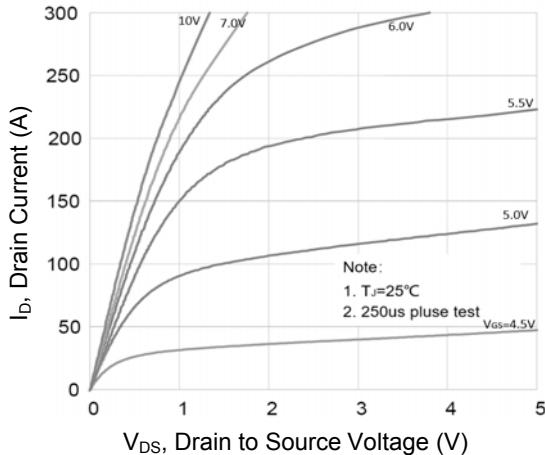


Figure 1. Typical Output Characteristics

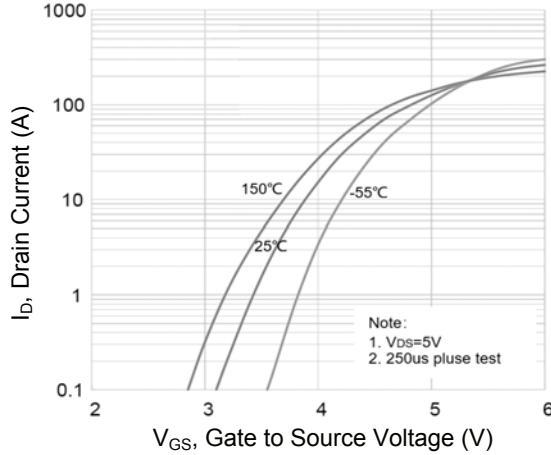


Figure 2. Transfer Characteristics

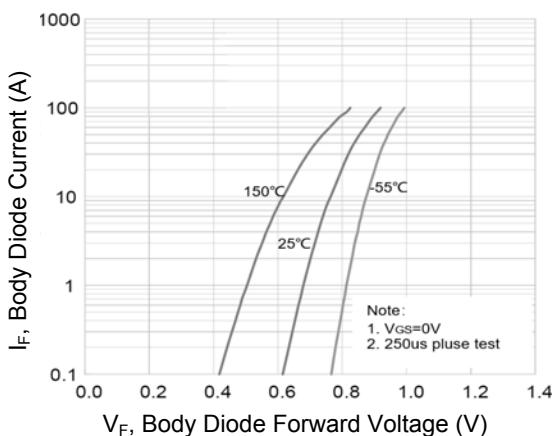


Figure 3. Body Diode Characteristics

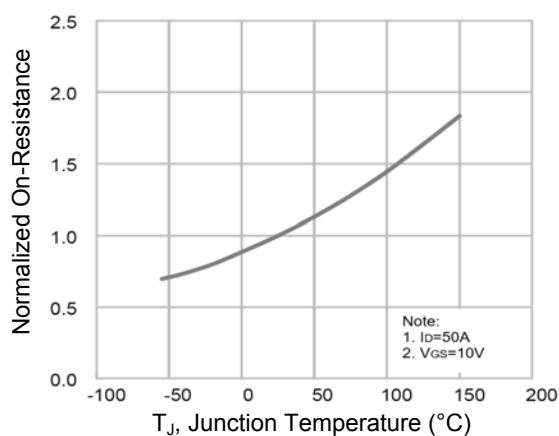


Figure 4. Normalized $R_{DS(\text{ON})}$ vs. T_J

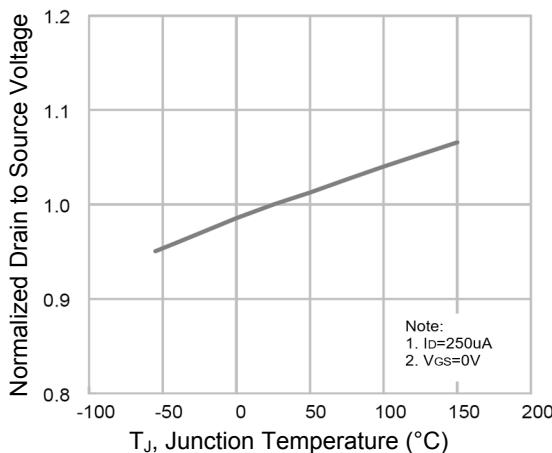


Figure 5. Normalized BV_{dss} vs. T_J

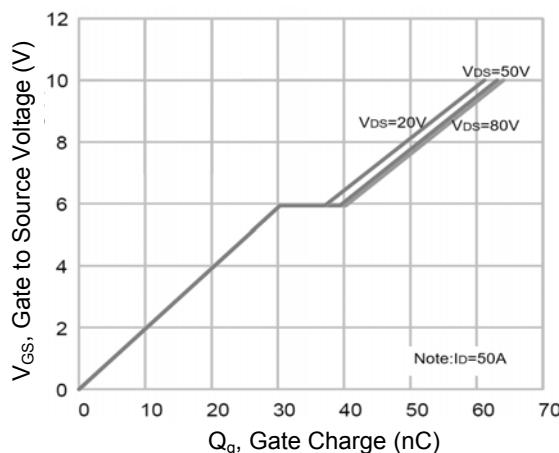


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

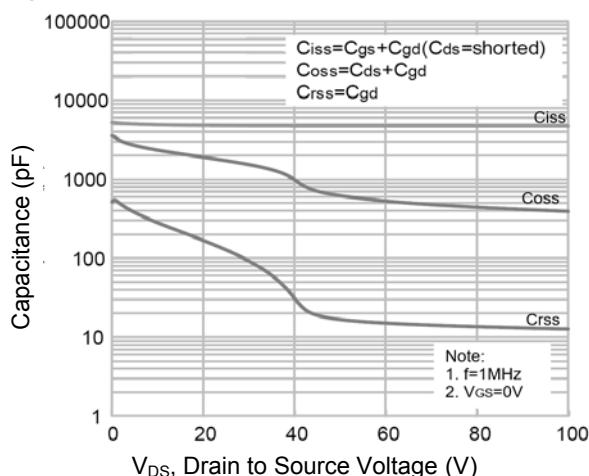


Figure 7. Capacitance Characteristics

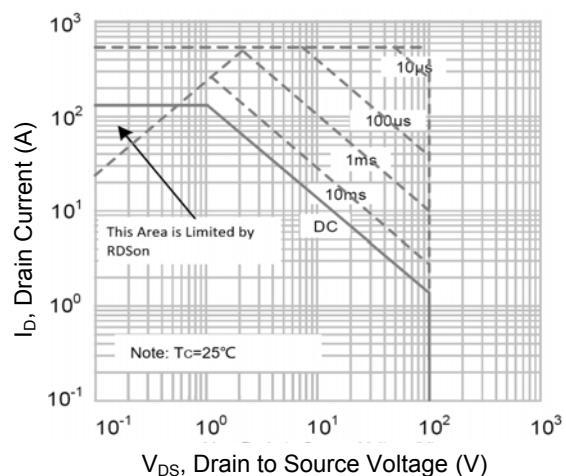
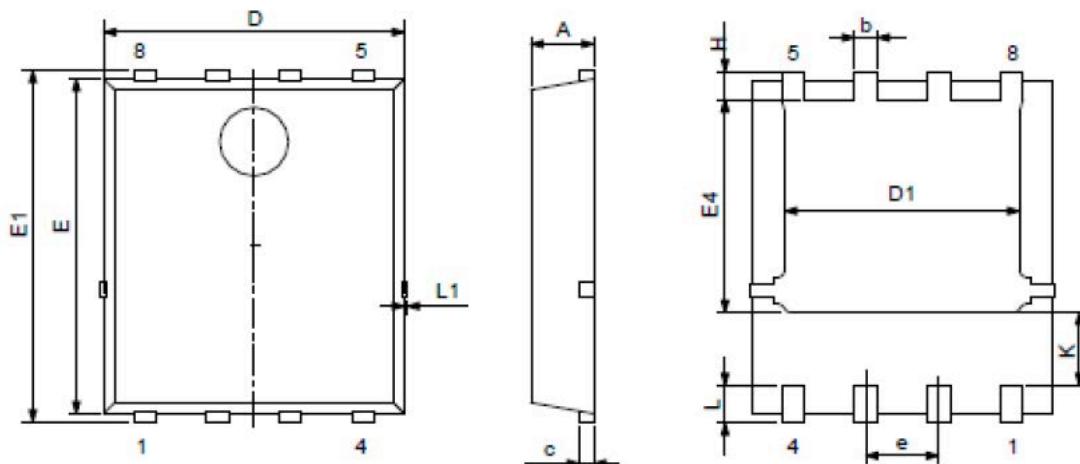


Figure 8. Safe Operation Area

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