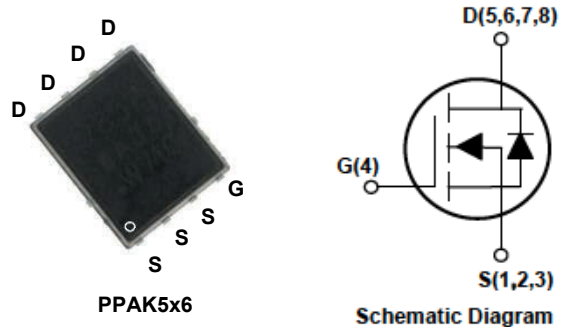


Main Product Characteristics

$V_{(BR)DSS}$	120V
$R_{DS(ON)}$	7.8m Ω (Max)
I_D	90A



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 GSGP7R812 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}	120	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$) ¹	I_D	90	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		78	A
Pulsed Drain Current ²	I_{DM}	360	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	216	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		1.73	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	210	mJ
Junction-to-Case	$R_{\theta JC}$	0.58	$^\circ\text{C/W}$
Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

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 _{GS} =0V, I _D =250uA	120	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =120V, V _{GS} =0V,	-	-	1	μA
		T _J =125°C	-	-	20	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	5.8	7.8	mΩ
		V _{GS} =4.5V, I _D =20A	-	7.3	9.5	
Gate Resistance	R _g	F=1MHz	-	2.4	-	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.1	-	2.7	V
Dynamic and Switching Characteristics						
Total Gate Charge	Q _g	V _{DS} =60V, I _D =20A V _{GS} =10V	-	40	-	nC
Gate-Source Charge	Q _{gs}		-	9.1	-	
Gate-to-Drain("Miller") Charge	Q _{gd}		-	9.9	-	
Turn-On Delay Time	t _{d(on)}	V _{DS} =60V, R _G =3Ω, V _{GS} =10V, I _D =30A	-	13	-	nS
Rise Time	t _r		-	25	-	
Turn-Off Delay Time	t _{d(off)}		-	37	-	
Fall Time	t _f		-	33	-	
Input Capacitance	C _{iss}	V _{DS} =60V, V _{GS} =0V, F=1MHz	-	3495	-	pF
Output Capacitance	C _{oss}		-	1066	-	
Reverse Transfer Capacitance	C _{rss}		-	20	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	90	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	360	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A	-	1	1.3	V
Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =15A, di/dt=100A/μs	-	65	-	nS
Reverse Recovery Charge	Q _{rr}		-	70	-	nC

Notes:

1. Pulse test: Pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. $L=0.5\text{mH}, V_{DD}=60V, I_{AS}=29A, R_G=25\Omega, T_J=25^\circ\text{C}$.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

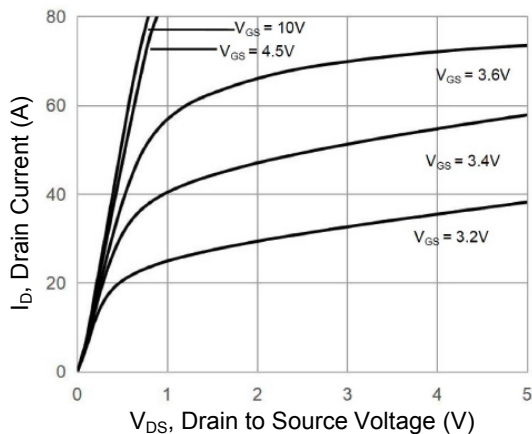


Figure 1. Output Characteristics

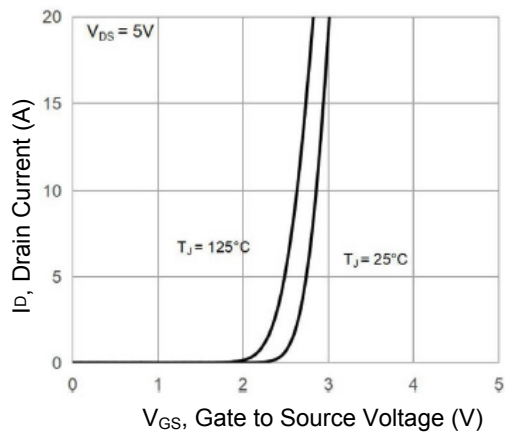


Figure 2. Transfer Characteristics

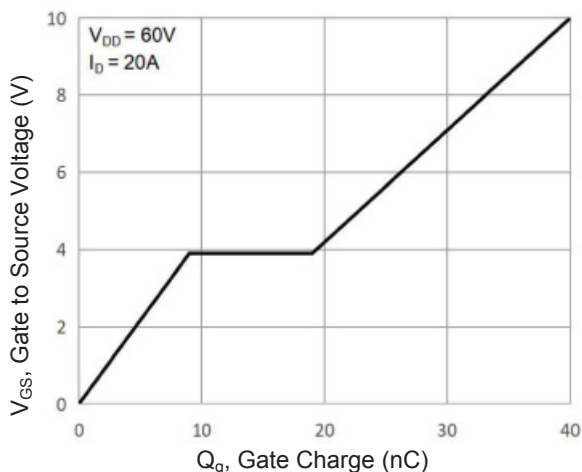


Figure 3. Gate Charge

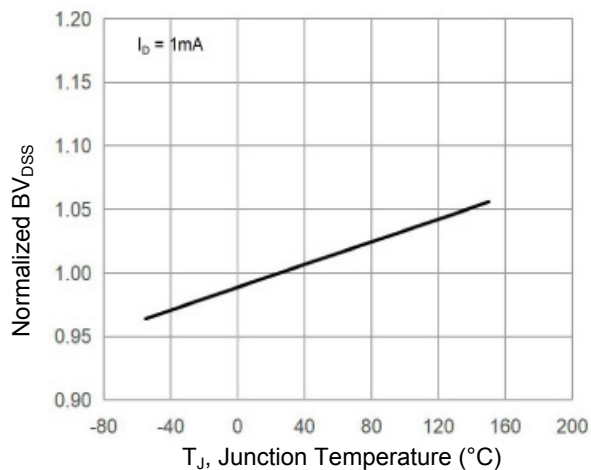


Figure 4. Normalized BV_{DS} vs. T_J

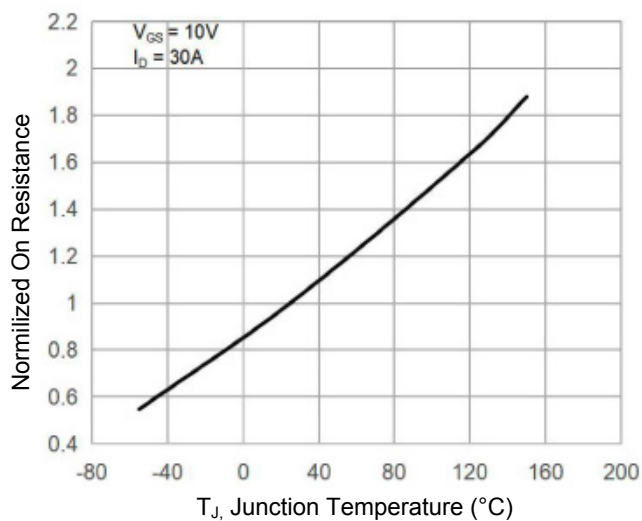


Figure 5. Normalized On Resistance vs. T_J

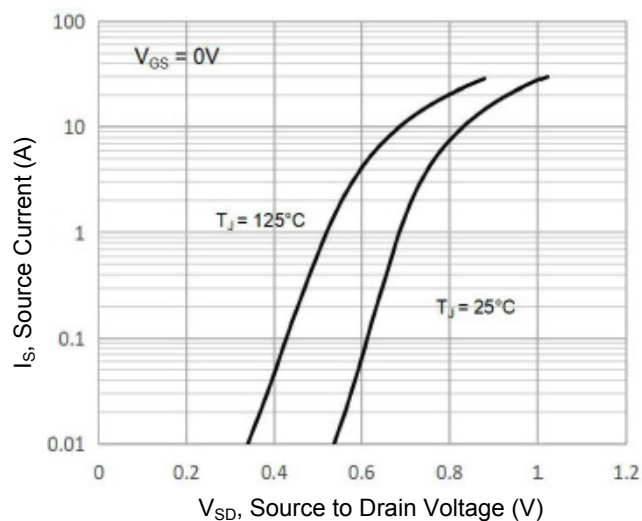


Figure 6. Body Diode Characteristics

Typical Electrical and Thermal Characteristic Curves

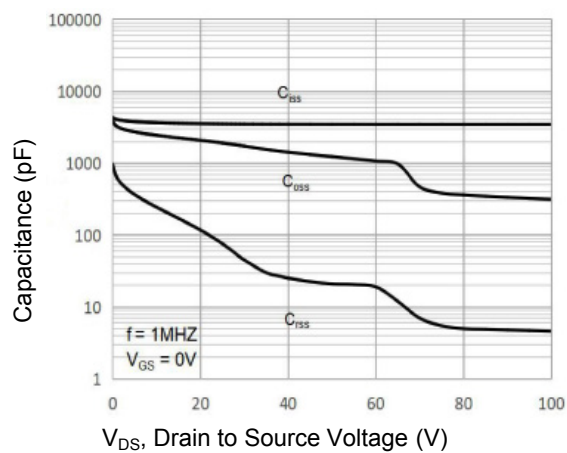


Figure 7. Capacitance Characteristics

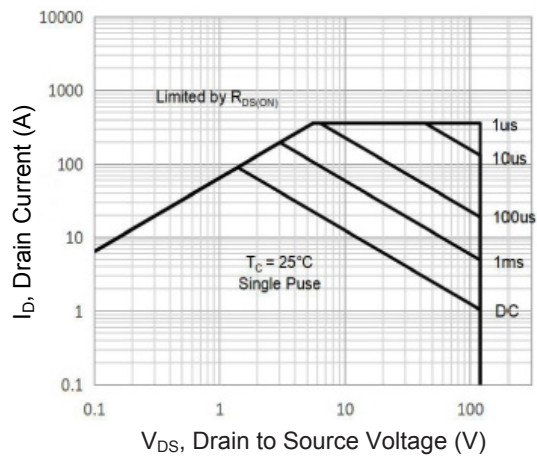
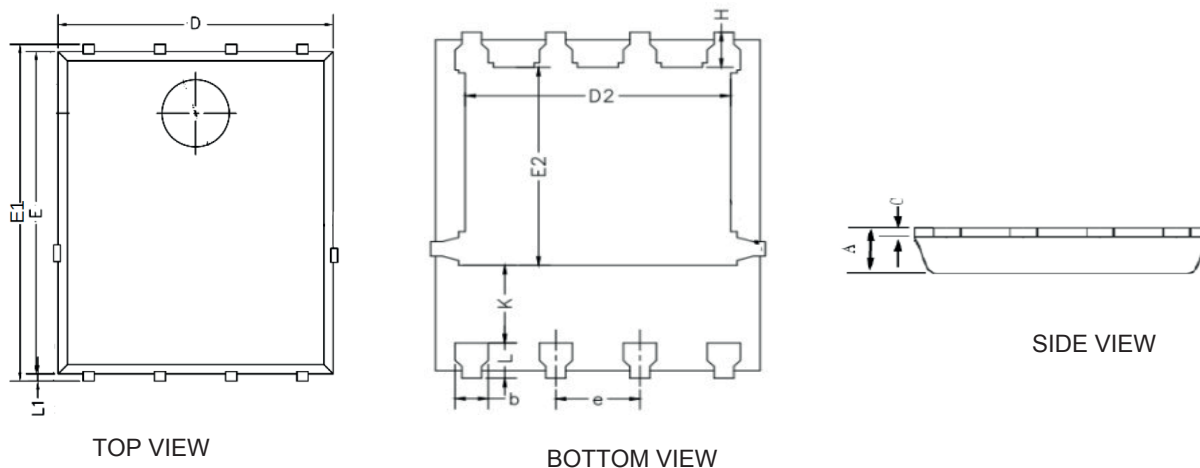


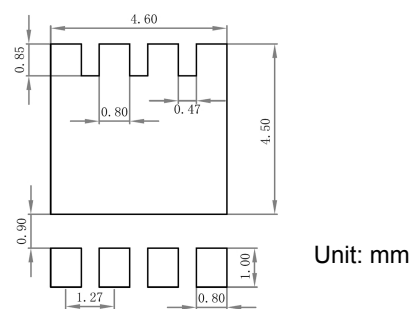
Figure 8. Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.20	0.035	0.047
b	0.30	0.55	0.012	0.022
C	0.15	0.35	0.006	0.014
D	4.70	5.20	0.185	0.205
D2	3.76	4.20	0.148	0.165
E2	3.30	3.85	0.130	0.152
E	5.60	5.90	0.220	0.232
E1	5.80	6.20	0.228	0.244
K	1.10	-	0.043	-
H	0.45	0.75	0.018	0.030
L	0.45	0.75	0.018	0.030
L1	0.25	0.45	0.010	0.018
e	1.27 BSC		0.050 BSC	

Recommended Pad Layout



Order Information

Device	Package	Marking	Carrier	Quantity
GSGP7R812	PPAK5x6	P7R812	Tape & Reel	5,000pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com