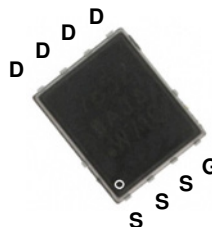
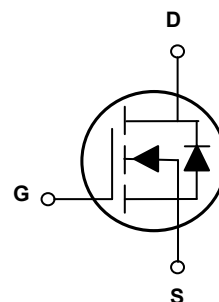


Main Product Characteristics

$V_{(BR)DSS}$	120V
$R_{DS(ON)}$	5.6m Ω (Typ.)
I_D	100A



PPAK5x6



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switch mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The GSGP12100 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_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{(BR)DSS}$	120	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T _C =25°C)	I_D	100	A
Drain Current-Continuous (T _C =100°C)		70	
Pulsed Drain Current	I_{DM}	400	A
Single Pulse Avalanche Energy ¹	E_{AS}	400	mJ
Maximum Power Dissipation	P_D	130	W
Derating Factor		1.04	W/°C
Junction-to-Case	$R_{\theta JC}$	0.96	°C/W
Operating Junction Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics ($T_C=25^\circ\text{C}$ 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
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =120V, V _{GS} =0V	-	-	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =45A	-	5.6	6.5	mΩ
		V _{GS} =4.5V, I _D =45A	-	6.9	7.8	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =45A	-	60	-	S
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.2	1.8	2.5	V
Dynamic and Switching Characteristics						
Total Gate Charge ²	Q _g	V _{DS} =60V, I _D =45A V _{GS} =10V	-	90	-	nC
Gate-Source Charge ²	Q _{gs}		-	21	-	
Gate-to-Drain Charge ²	Q _{gd}		-	23.5	-	
Turn-On Delay Time ²	t _{d(on)}	V _{DD} =60V, R _G =1.6Ω, V _{GS} =10V, I _D =45A	-	20	-	nS
Rise Time ²	t _r		-	15	-	
Turn-On Delay Time ²	t _{d(off)}		-	40	-	
Fall Time ²	t _f		-	10	-	
Input Capacitance	C _{iss}	V _{DS} =60V, V _{GS} =0V, F=1MHz	-	4900	-	pF
Output Capacitance	C _{oss}		-	300	-	
Reverse Transfer Capacitance	C _{rss}		-	34	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =45A	-	-	1.2	V
Diode Forward Current	I _S	-	-	-	100	A
Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =45A, di/dt=100A/μs	-	70	-	nS
Reverse Recovery Charge	Q _{rr}		-	137	-	nC

Notes

1. E_{AS} condition: $T_J=25^\circ\text{C}, V_{DD}=50V, V_G=10V, L=0.25mH, R_g=25\Omega$.
2. Guaranteed by design, not subject to production.
3. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heat sink, assuming a maximum junction temperature of $T_J(MAX)=150^\circ\text{C}$. The SOA curve provides a single pulse rating.

Typical Electrical and Thermal Characteristic Curves

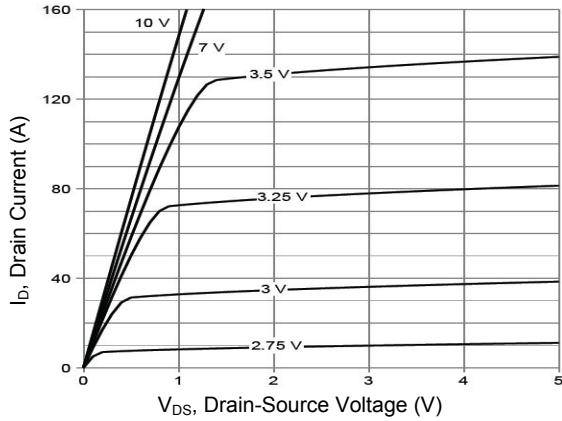


Figure 1. Output Characteristics

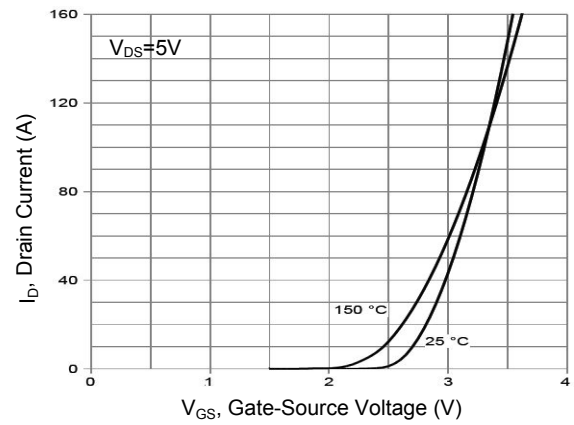


Figure 2. Transfer Characteristics

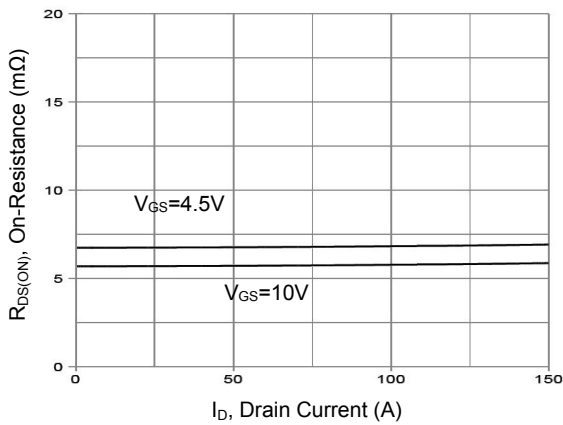


Figure 3. $R_{DS(ON)}$ Vs. Drain Current

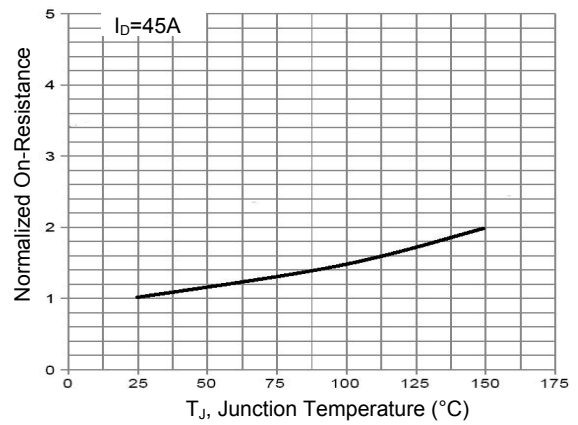


Figure 4. $R_{DS(ON)}$ Vs. Junction Temperature

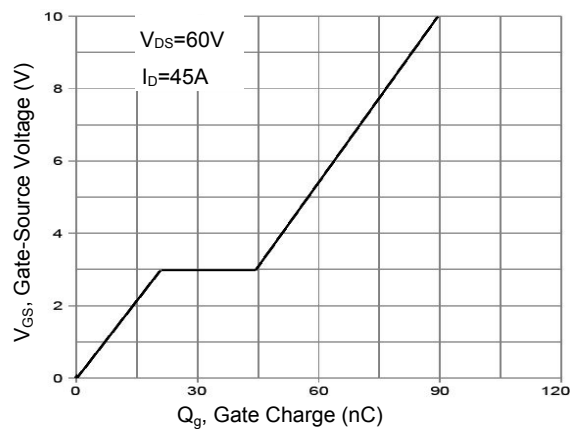


Figure 5. Gate Charge

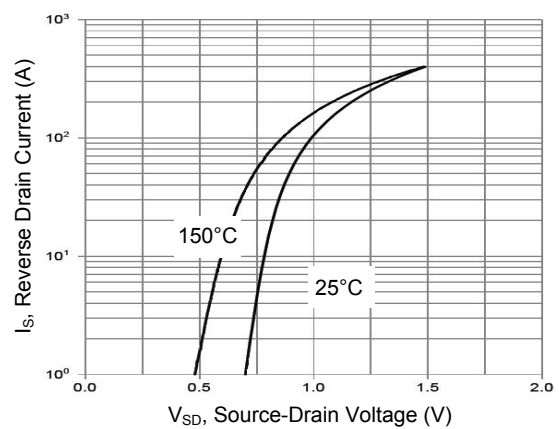


Figure 6. Source-Drain Diodes Forward

Typical Electrical and Thermal Characteristic Curves

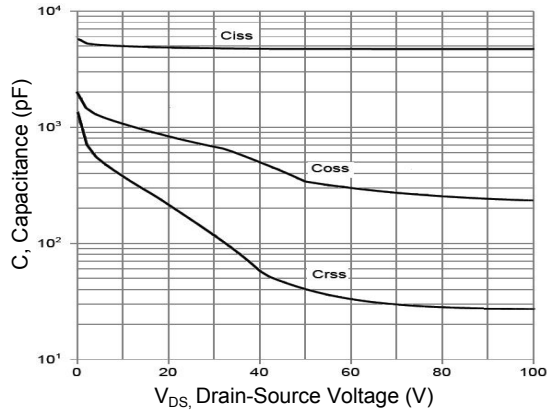


Figure 7. Capacitance Vs. V_{DS}

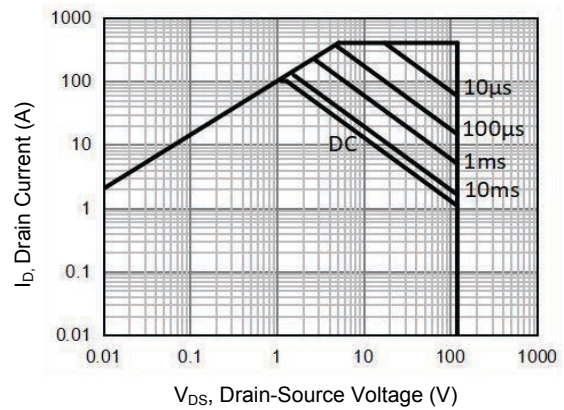


Figure 8. Safe Operation Area³

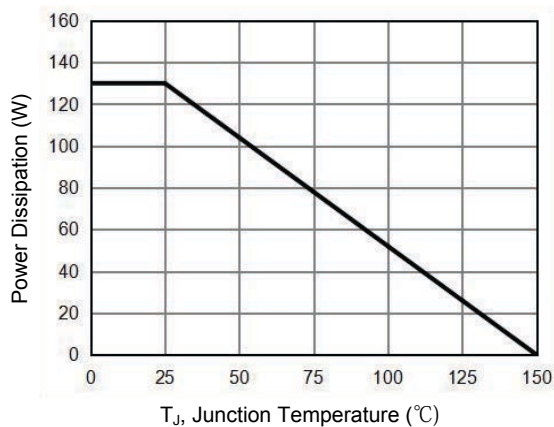


Figure 9. Power Derating

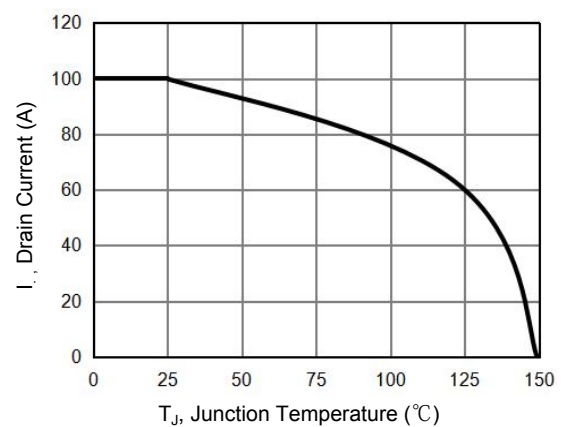


Figure 10. Current Derating

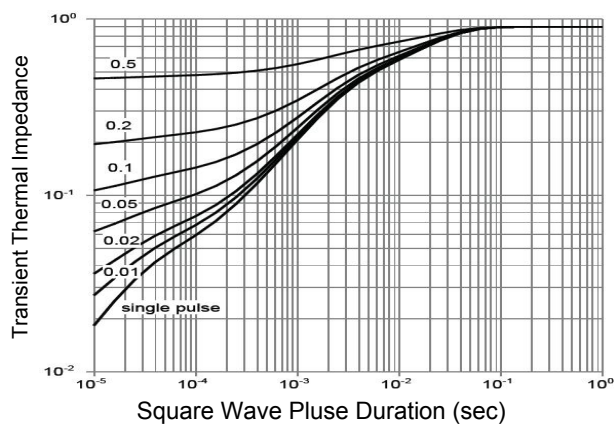
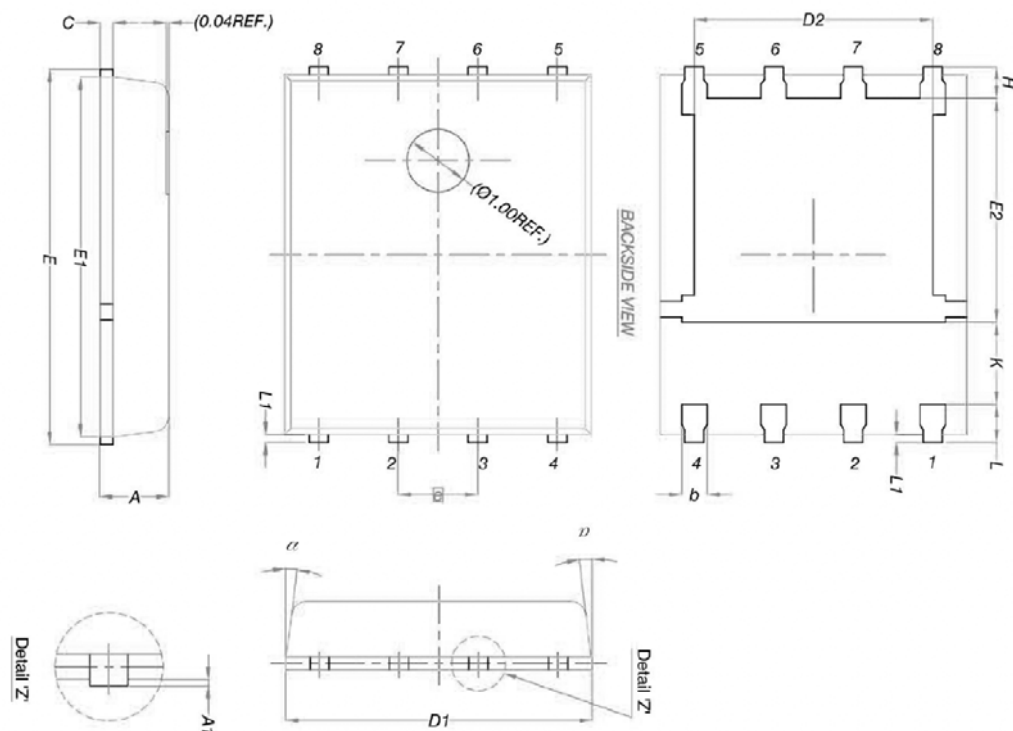


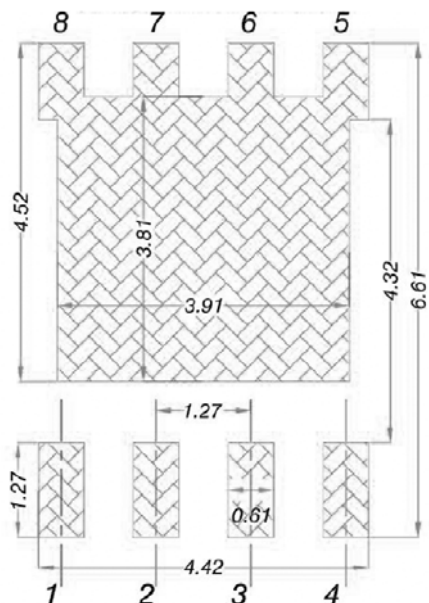
Figure 11. Normalized Maximum Transient Thermal Impedance

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.90	1.10	0.035	0.043
A1	0.00	0.05	0.000	0.002
b	0.33	0.51	0.013	0.020
C	0.20	0.30	0.008	0.012
D1	4.80	5.00	0.189	0.197
D2	3.61	3.96	0.142	0.156
E	5.90	6.10	0.232	0.240
E1	5.70	5.80	0.224	0.228
E2	3.38	3.78	0.133	0.149
e	1.27 BSC		0.050 BSC	
H	0.41	0.61	0.016	0.024
K	1.10	-	0.043	-
L	0.51	0.71	0.020	0.028
L1	0.06	0.20	0.002	0.008
a	0°	12°	0°	12°

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSGP12100	PPAK5x6	P12100	Tape & Reel	3,000 Pcs / Reel

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