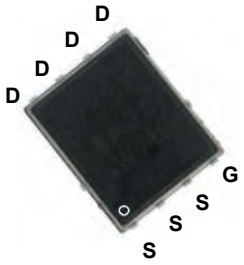
GOOD-ARK SEMICONDUCTOR

GSGP8R012

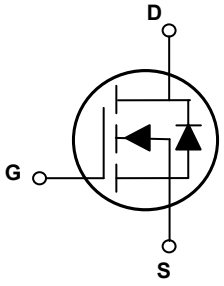
120V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	120V
$R_{DS(ON)}$	8mΩ (Max.)
I_D	90A



PPAK5x6



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 GSGP8R012 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	Value	Unit
Drain-Source Voltage	V_{DS}	120	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current (T_C=25°C)[1]	I_D	90	A
Drain Current (T_C=100°C)[1]		57	
Drain Current (T_A=25°C)[1]		22	
Drain Current (T_A=70°C)[1]		17	
Pulsed Drain Current[3]	I_{DM}	358	A
Total Power Dissipation (T_C=25°C)[4]	P_D	125	W
Total Power Dissipation (T_A=25°C)[4]		7.4	W
Max. Thermal Resistance Junction-to-Ambient[2,5]	$R_{\theta JA}$	17	°C/W
Max. Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1	°C/W
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	120	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=120V, V_{GS}=0V, T_C=25°C	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1	-	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A	-	6.5	8	mΩ
		V_{GS}=4.5V, I_D=24A	-	8.2	10.6	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz	-	3450	-	pF
Output Capacitance	C_{oss}		-	1740	-	
Reverse Transfer Capacitance	C_{rss}		-	77	-	
Total Gate Charge	Q_g	V_{DS}=60V, I_D=20A, V_{GS}=10V	-	57	-	nC
Gate Source Charge	Q_{gs}		-	10.3	-	
Gate Drain Charge	Q_{gd}		-	11.4	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=60V, I_D=30A, R_{GEN}=6Ω	-	11.4	-	nS
Turn-On Rise Time	t_r		-	9.8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	66.2	-	
Turn-Off Fall Time	t_f		-	25.8	-	
Drain-Source Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=30A, V_{GS}=0V	-	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	81	A

Notes:
1. Silicon limit and the maximum current rating is package limited.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.
3. Single pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
4. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
5. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JA}$ and case to ambient.

Typical Electrical and Thermal Characteristic Curves

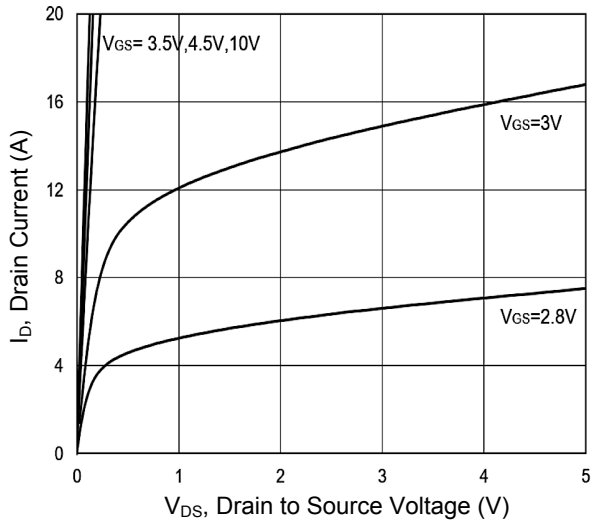


Figure 1. Output Characteristics

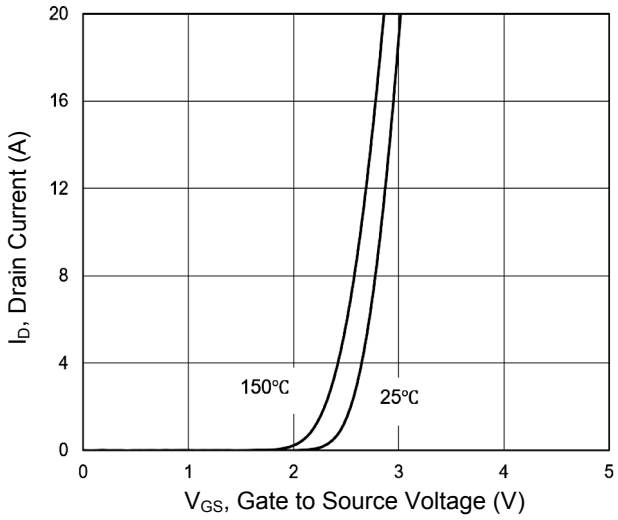


Figure 2. Transfer Characteristics

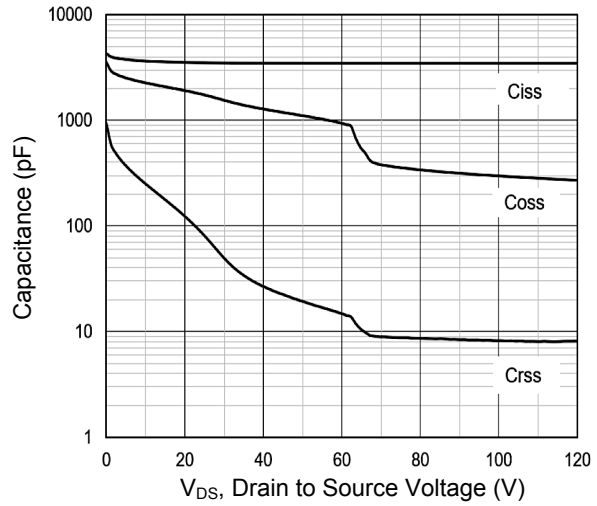


Figure 3. Capacitance Characteristics

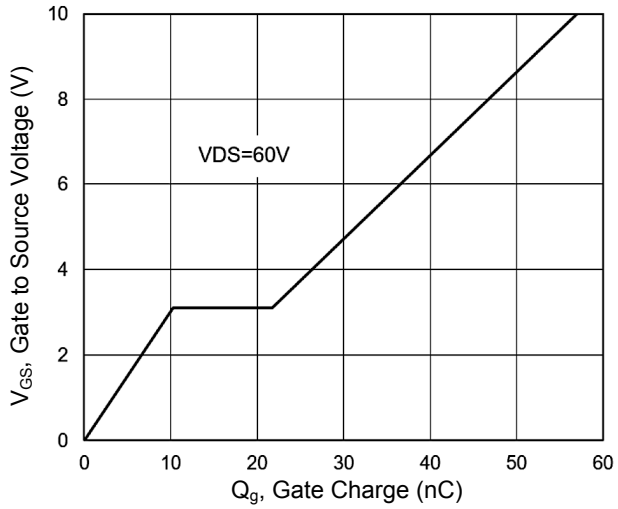


Figure 4. Gate Charge

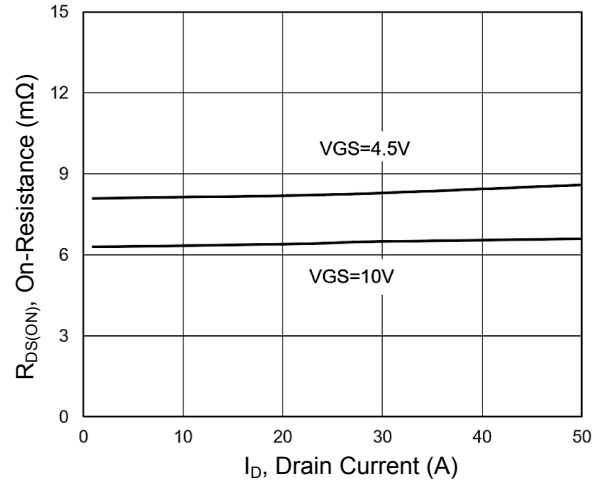


Figure 5. Drain-Source On Resistance

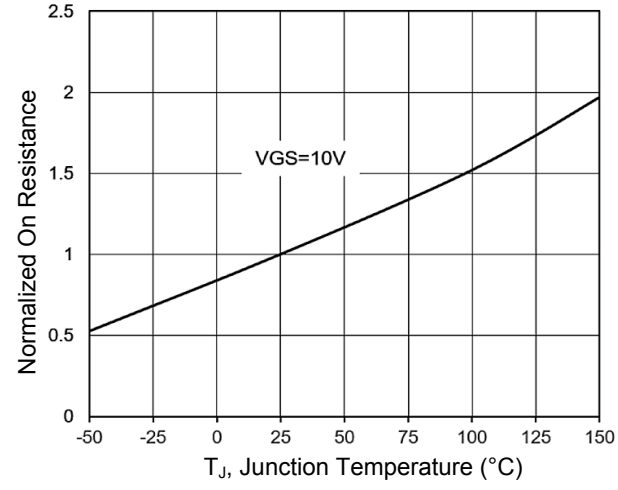


Figure 6. Normalized On-Resistance vs. T_J

Typical Electrical and Thermal Characteristic Curves

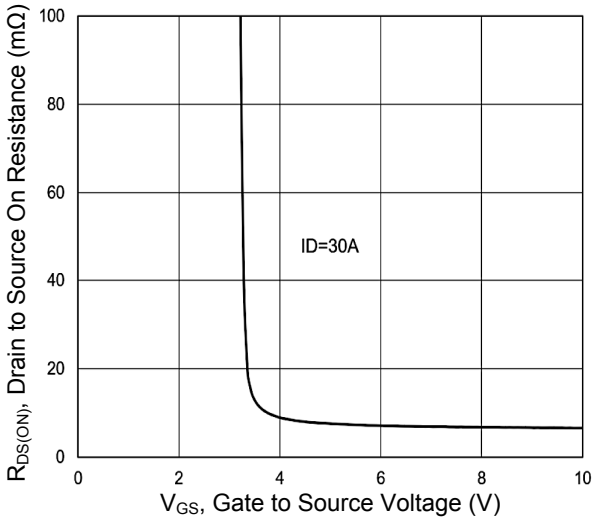


Figure 7. Typical Drain to Source On Resistance vs. Gate Voltage

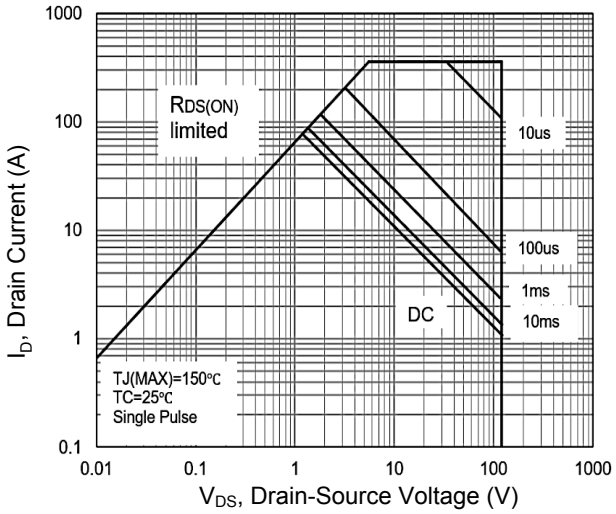


Figure 8. Safe Operation Area

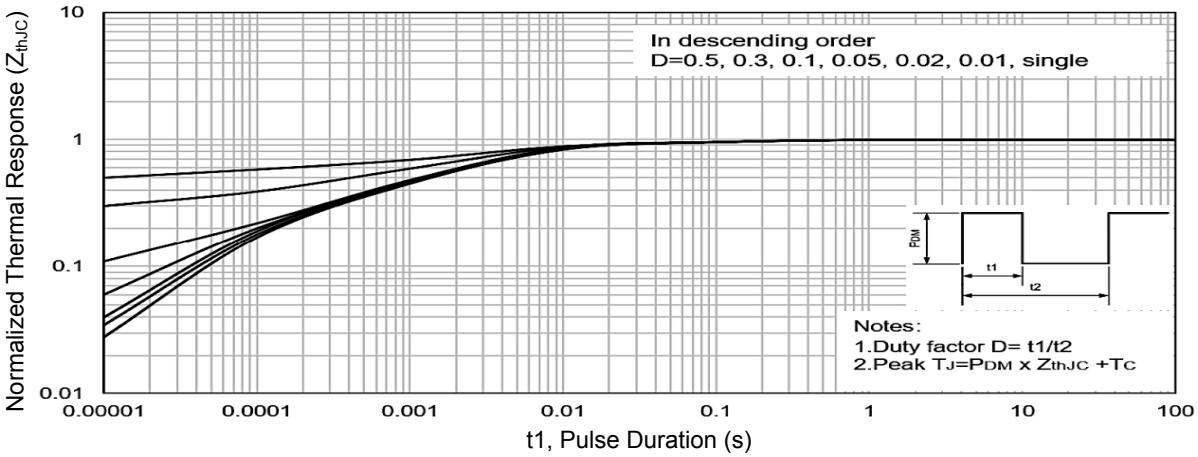
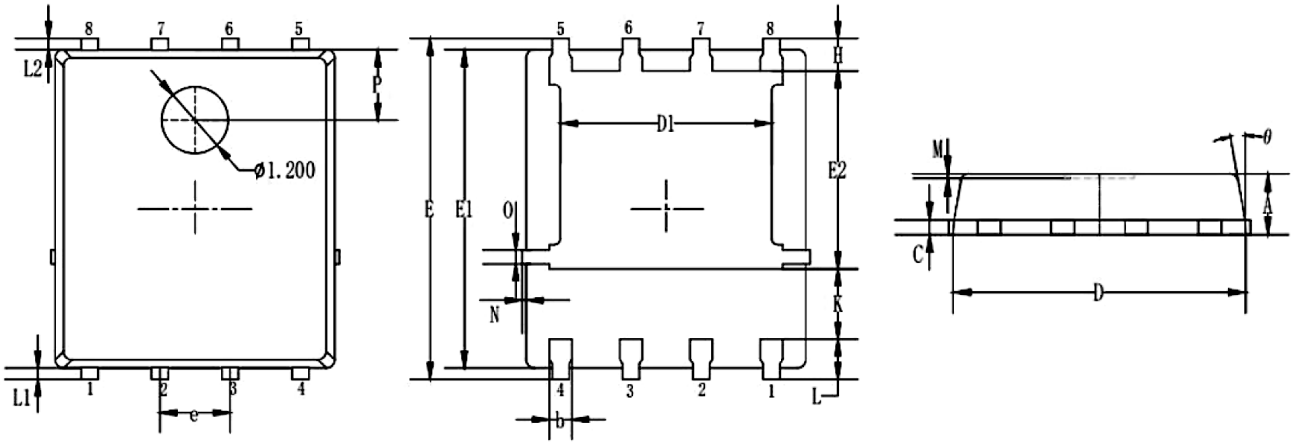


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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	0.35	0.50	0.014	0.020
c	0.20	0.35	0.008	0.014
D	4.90	5.20	0.193	0.205
D1	3.72	3.92	0.146	0.154
E	6.00	6.30	0.236	0.248
E1	5.60	5.90	0.220	0.232
E2	3.47	3.67	0.137	0.144
e	1.27 BSC		0.050 BSC	
H	0.48	0.68	0.019	0.027
K	1.17	1.37	0.046	0.054
L	0.64	0.84	0.025	0.033
L1	0.20 REF		0.008 REF	
L2	0.20 REF		0.008 REF	
M	0.08 REF		0.003 REF	
N	0.00	0.15	0.000	0.006
O	0.25 REF		0.010 REF	
P	1.28 REF		0.050 REF	
θ	8°	12°	8°	12°

Order Information

Device	Package	Marking	Packaging	SPQ
GSGP8R012	PPAK5x6	N12007	Tape & Reel	5,000 Pcs / Reel