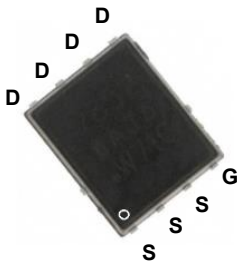
GOOD-ARK SEMICONDUCTOR

GSGP2R608

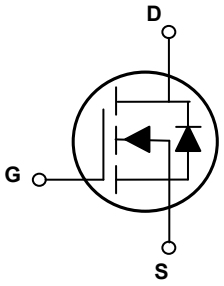
80V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	80V
$R_{DS(ON)}$	2.2mΩ (Typ.)
I_D	170A



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 GSGP2R608 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}	80	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous, @Steady-State (T_C=25°C)	I_D	170	A
Drain Current-Continuous, @Steady-State (T_C=100°C)		110	
Drain Current-Pulsed (T_C=25°C)[1]	I_{DM}	680	A
Single Pulse Avalanche Energy	E_{AS}	380	mJ
Single Pulse Avalanche Current	I_{AS}	39	A
Power Dissipation (T_C=25°C)[2]	P_D	150	W
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.84	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_A=25°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	80	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, T_J=125°C	-	5.0	-	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=50A	-	2.2	2.6	mΩ
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS}=V_{DS}, I_D=250uA	2.1	-	3.9	V
Dynamic and Switching Characteristics						
Total Gate Charge[3,4]	Q_g	V_{DD}=40V, I_D=50A, V_{GS}=10V	-	95	-	nC
Gate-Source Charge[3,4]	Q_{gs}		-	37	-	
Gate-Drain ("Miller") Charge[3,4]	Q_{gd}		-	17	-	
Gate to Plateau[3,4]	$V_{plateau}$		-	5.5	-	V
Turn-On Delay Time[3,4]	$t_{d(on)}$	V_{DD}=40V, R_G=3Ω, V_{GS}=10V, I_D=50A	-	32	-	nS
Rise Time[3,4]	t_r		-	82	-	
Turn-Off Delay Time[3,4]	$t_{d(off)}$		-	80	-	
Fall Time[3,4]	t_f		-	34	-	
Input Capacitance	C_{lss}	V_{DS}=40V, V_{GS}=0V, F=1MHz	-	6022	-	pF
Output Capacitance	C_{oss}		-	846	-	
Reverse Transfer Capacitance	C_{rss}		-	37	-	
Gate Resistance	R_g	F=1MHz	-	3.4	-	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.	-	-	170	A
Pulsed Source Current	$I_{S.pulse}$		-	-	680	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=50A	-	-	1.4	V
Reverse Recovery Time[3]	t_{rr}	V_{GS}=0V, I_S=50A, dI_F/dt=100A/μs	-	39	-	nS
Reverse Recovery Charge[3]	Q_{rr}		-	80	-	nC

Note:

1. Pulse time of 5us, pulse width limited by maximum junction temperature.
2. The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 1.0°C/W for every 1 degree of temperature increase.
3. Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

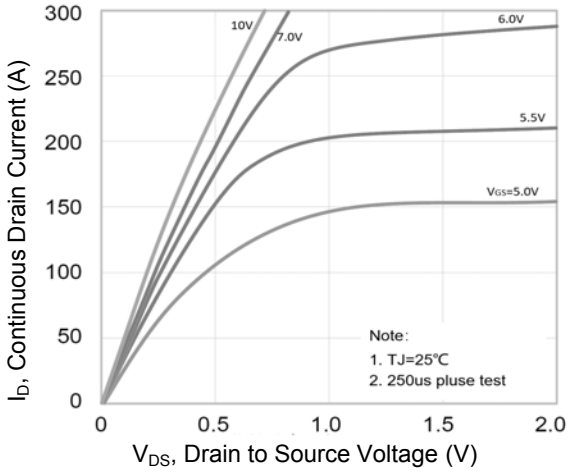


Figure 1. Typical Output Characteristics

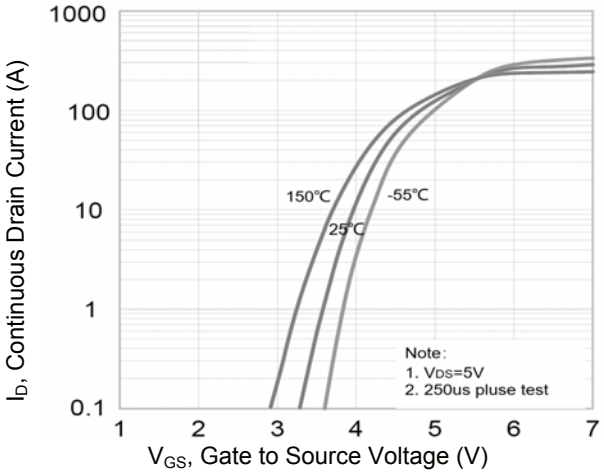


Figure 2. Transfer Characteristics

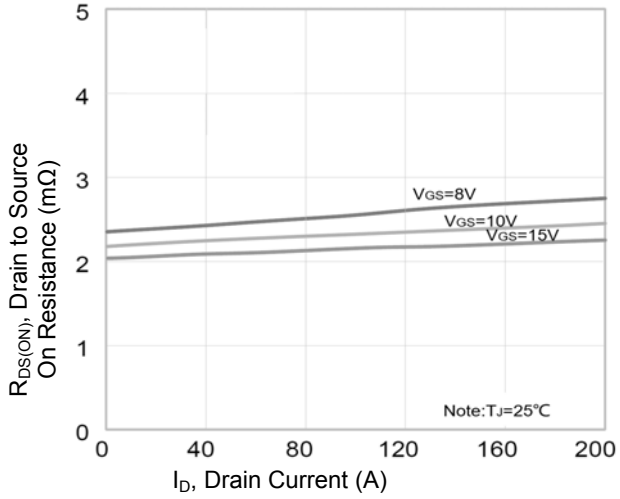


Figure 3. $R_{DS(ON)}$ vs. Drain Current

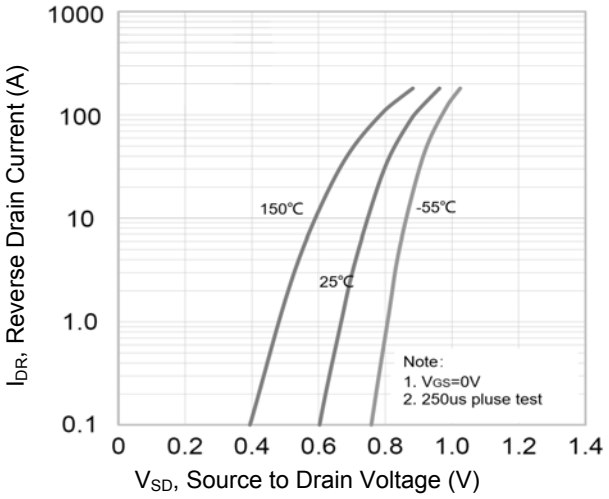


Figure 4. Body Diode Characteristics

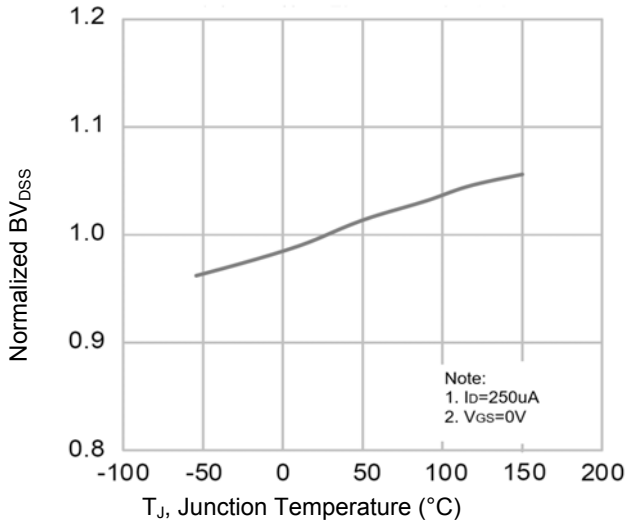


Figure 5. Normalized BV_{DSS} vs. T_J

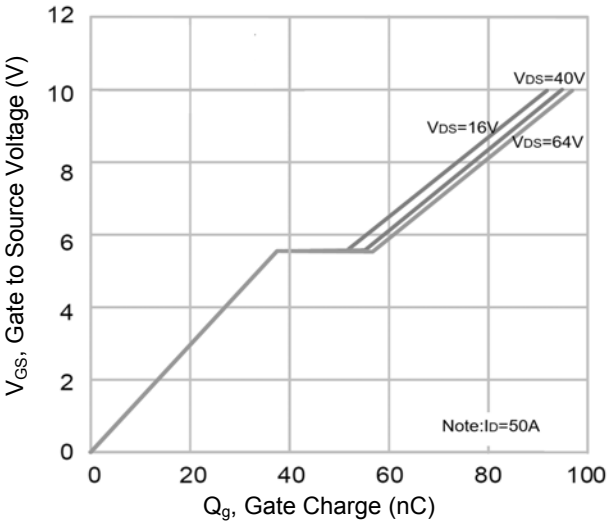


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

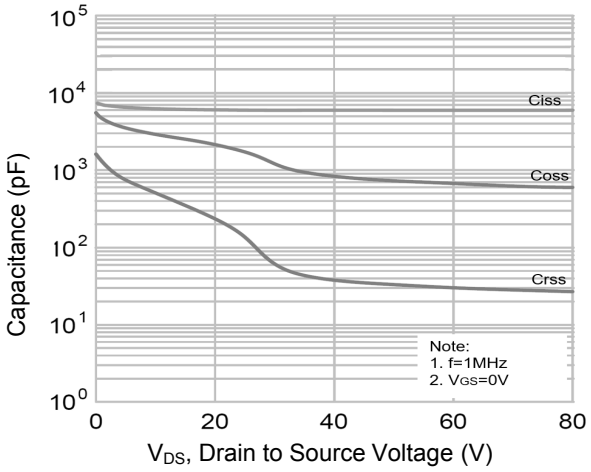


Figure 7. Capacitance Characteristics

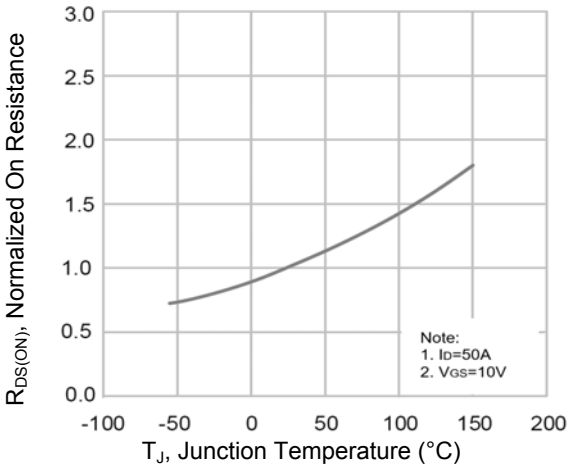


Figure 8. Normalized $R_{DS(ON)}$ vs. T_J

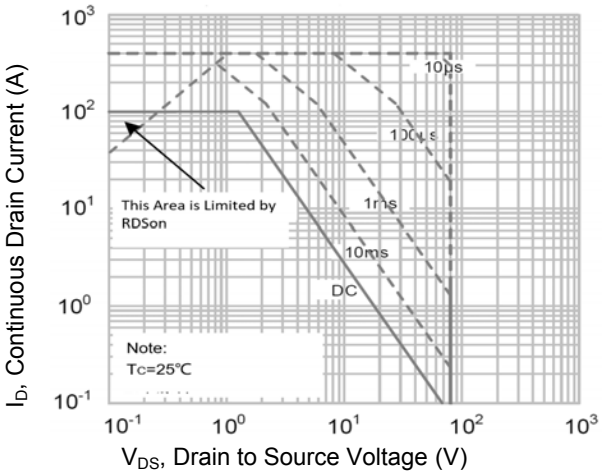
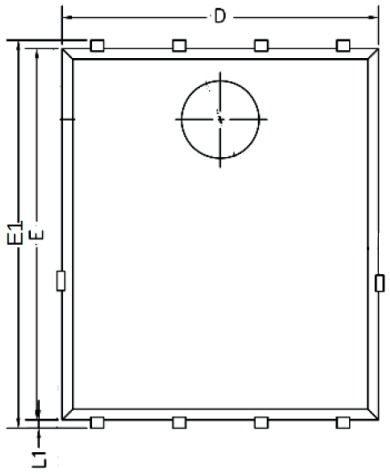
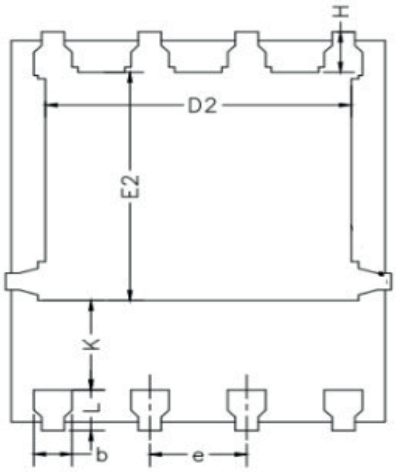


Figure 9. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



TOP VIEW



BOTTOM VIEW

SIDE VIEW

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	

Order Information

Device	Package	Marking	Carrier	Quantity
GSGP2R608	PPAK5x6	P2R608	Tape & Reel	5,000 Pcs / Reel