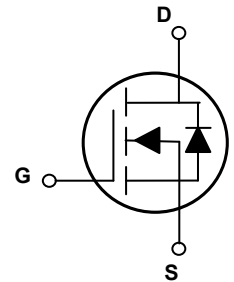
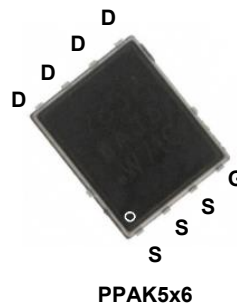


Main Product Characteristics

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



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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	80	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	5.0	-	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=50A$	-	2.2	2.6	m Ω
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	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}	$t_{d(on)}$	$V_{DD}=40V, R_G=3\Omega, V_{GS}=10V, I_D=50A$	-	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_{iss}	$V_{DS}=40V, V_{GS}=0V, F=1\text{MHz}$	-	6022	-	pF
Output Capacitance	C_{oss}		-	846	-	
Reverse Transfer Capacitance	C_{rss}		-	37	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	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}	$V_{GS}=0V, I_s=50A, di_f/dt=100A/\mu s$	-	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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

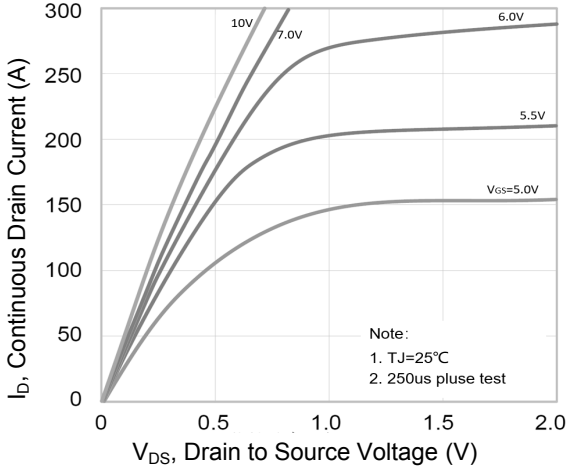


Figure 1. Typical Output Characteristics

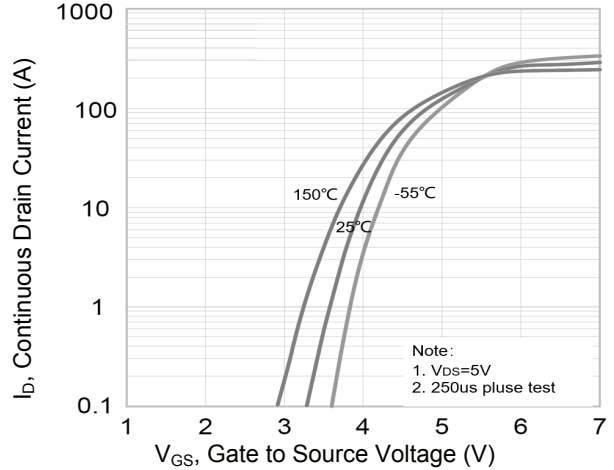


Figure 2. Transfer Characteristics

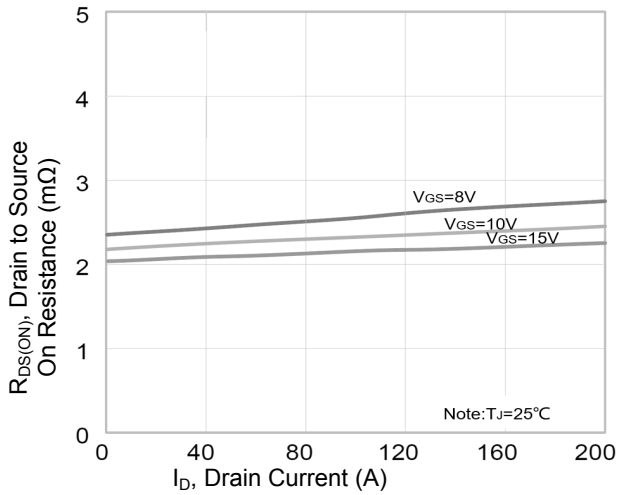


Figure 3. $R_{DS(ON)}$ vs. Drain Current

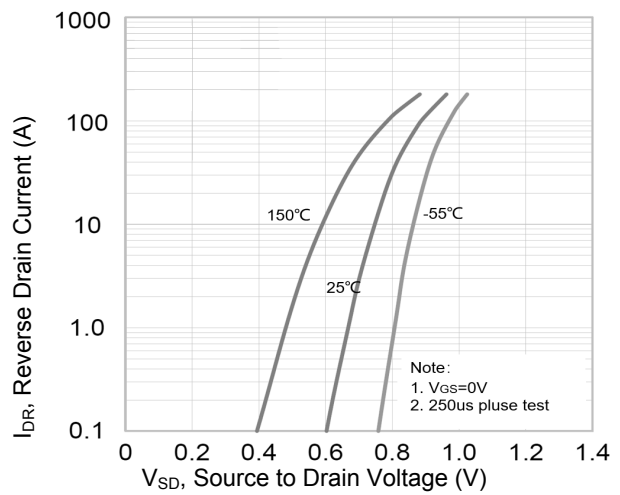


Figure 4. Body Diode Characteristics

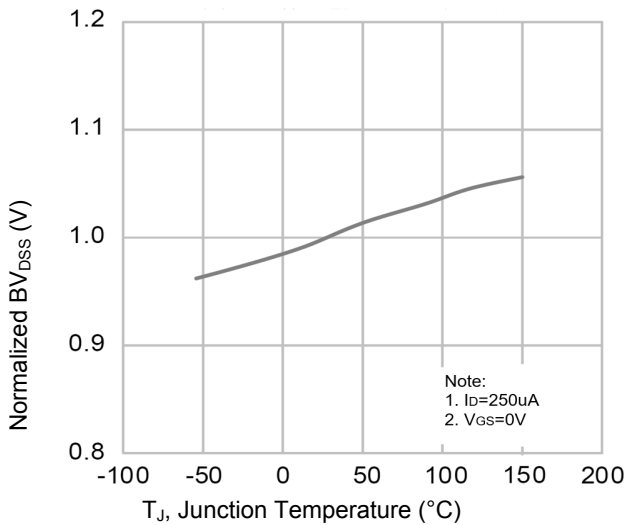


Figure 5. Normalized BV_{DSS} vs. T_J

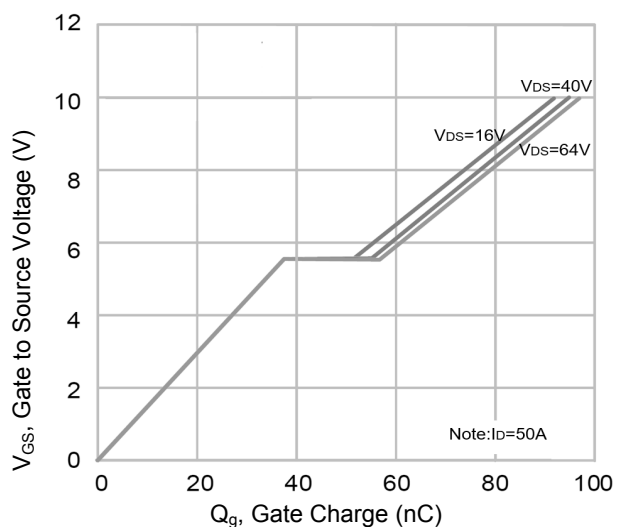


Figure 6. Gate Charge Characteristics

Typical Electrical and Thermal Characteristic Curves

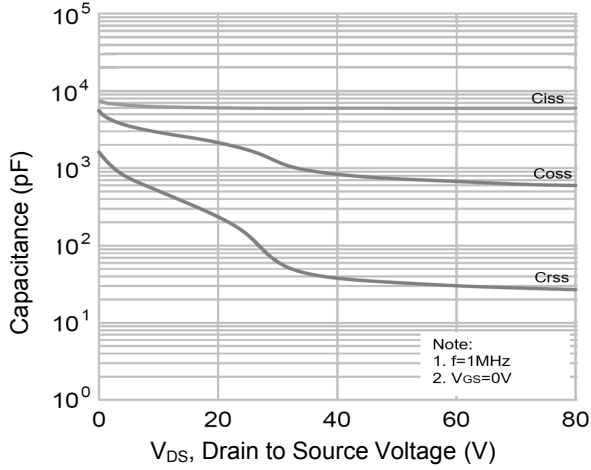


Figure 7. Capacitance Characteristics

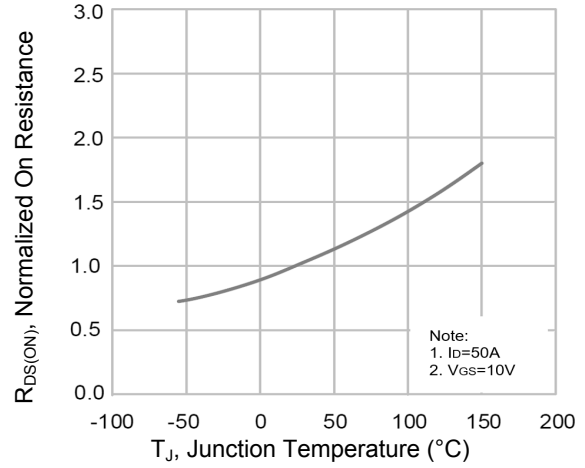


Figure 8. Normalized R_{DS(ON)} vs. T_J

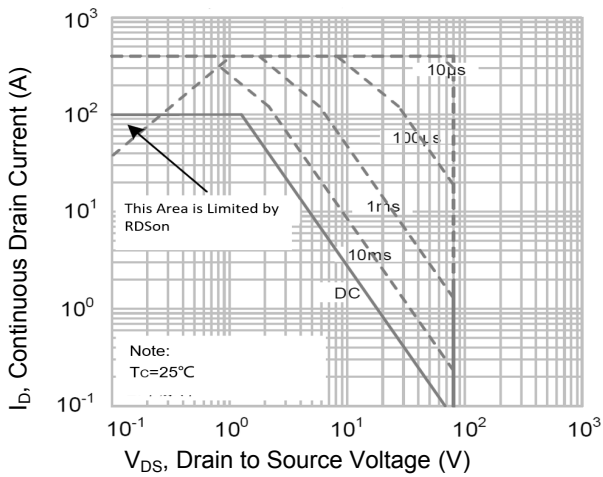
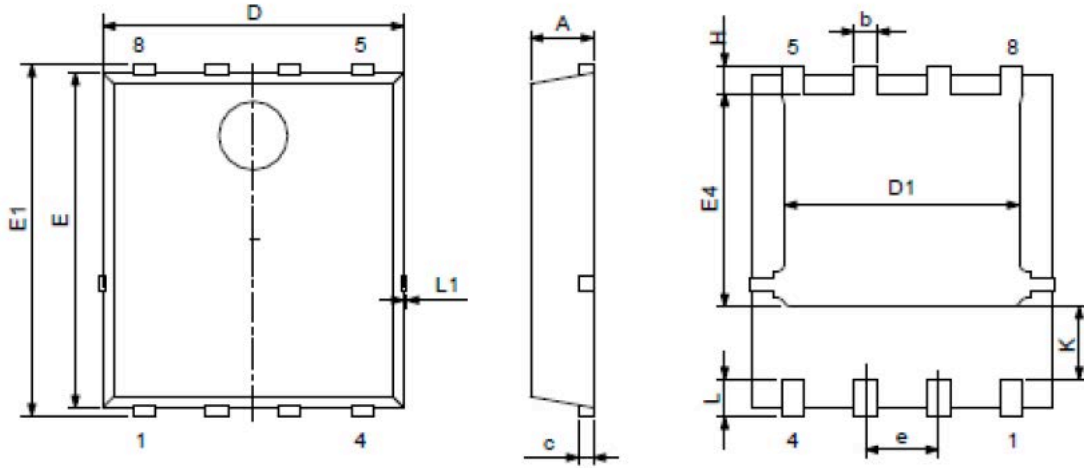


Figure 9. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



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