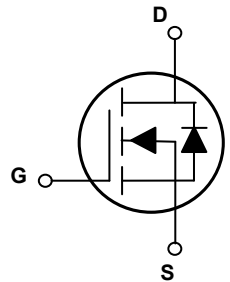
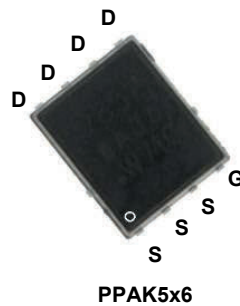


Main Product Characteristics

$V_{(BR)DSS}$	60V
$R_{DS(ON)}$	2.3m Ω (Max.)
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 GSGP2R306H 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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Parameter	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	170	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		108	A
Pulsed Drain Current	I_{DM}	900	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	118	W
		0.94	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	756	mJ
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	1.06	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$	-	-	1.0	μA
		$V_{DS}=60V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	100	μA
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$	-	1.9	2.3	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	-	3.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=30V, f=1\text{MHz}$	-	6312	-	pF
Output Capacitance	C_{oss}		-	1679	-	
Reverse Transfer Capacitance	C_{rss}		-	39.6	-	
Total Gate Charge ^{2,3}	Q_g	$I_D=20A, V_{DS}=30V, V_{GS}=10V$	-	94.4	-	nC
Gate-to-Source Charge ^{2,3}	Q_{gs}		-	17.2	-	
Gate-to-Drain ("Miller") Charge ^{2,3}	Q_{gd}		-	13.2	-	
Turn-on Delay Time ^{2,3}	$t_{d(on)}$	$V_{DS}=30V, V_{GS}=10V, R_G=1.5\Omega, R_{GEN}=6\Omega$	-	19.8	-	nS
Rise Time ^{2,3}	t_r		-	14.8	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	77.2	-	
Fall Time ^{2,3}	t_f		-	20.4	-	
Gate Resistance	R_g	$f=1\text{MHz}$	-	1.8	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	170	A
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$	-	-	1.2	V
Reverse Recovery Time ²	T_{rr}	$I_F=20A, V_{GS}=0V, dI_F/dt=100A/\mu s$	-	65.8	-	nS
Reverse Recovery Charge ²	Q_{rr}		-	82.3	-	nC

Notes

1. $L=0.5\text{mH}, V_{DD}=40V, V_G=10V, R_G=25\Omega, T_J=25^\circ\text{C}$.
2. Pulse test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

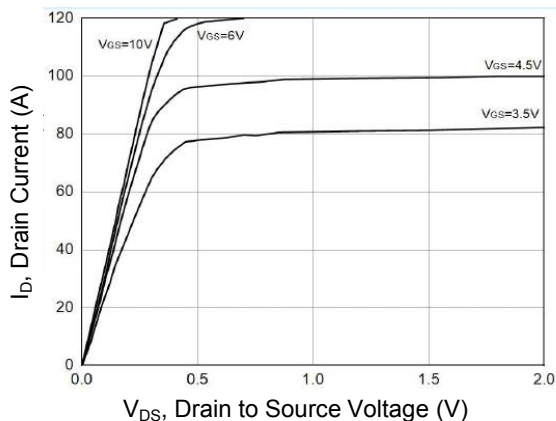


Figure 1. Typical Output Characteristics

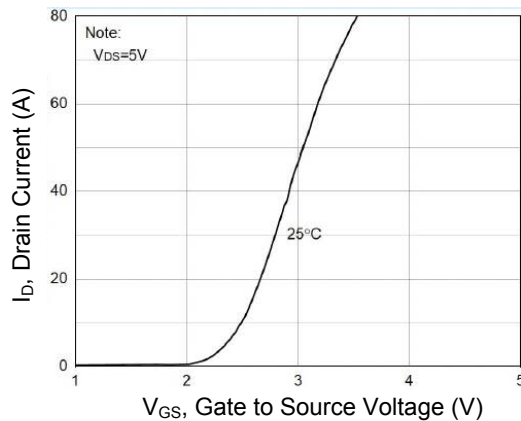


Figure 2. Transfer Characteristics

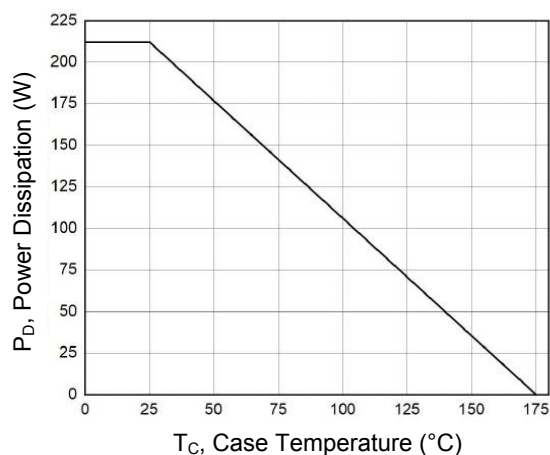


Figure 3. Power Dissipation vs. T_C

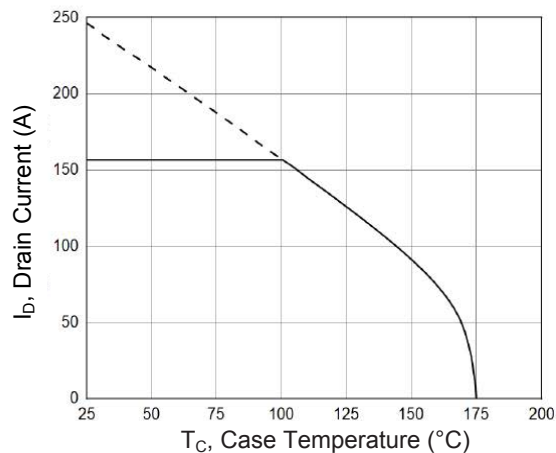


Figure 4. Drain Current vs. T_C

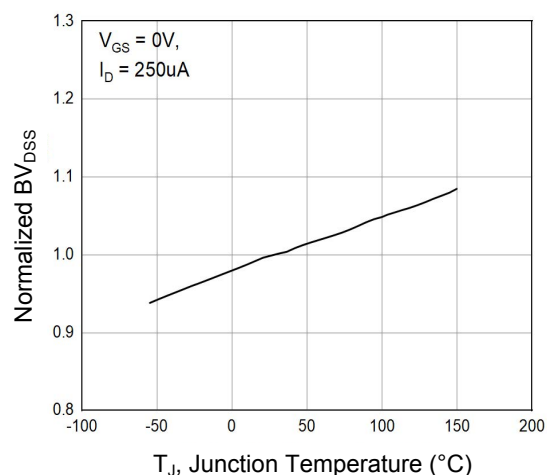


Figure 5. Normalized BV_{DSS} vs. T_J

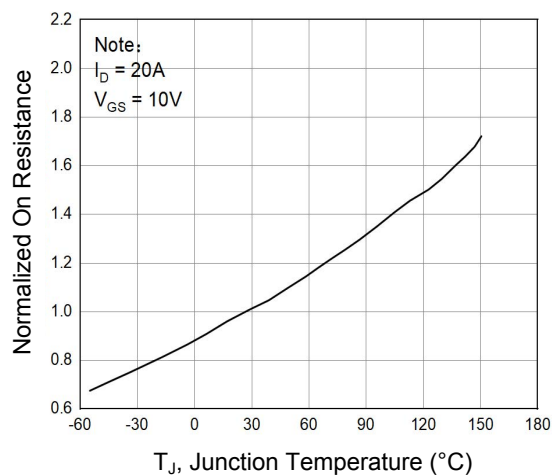


Figure 6. Normalized $R_{DS(ON)}$ vs. T_J

Typical Electrical and Thermal Characteristic Curves

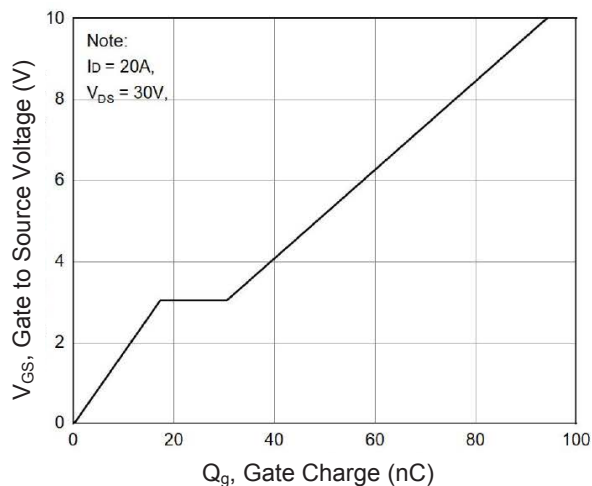


Figure 7. Gate Charge Characteristics

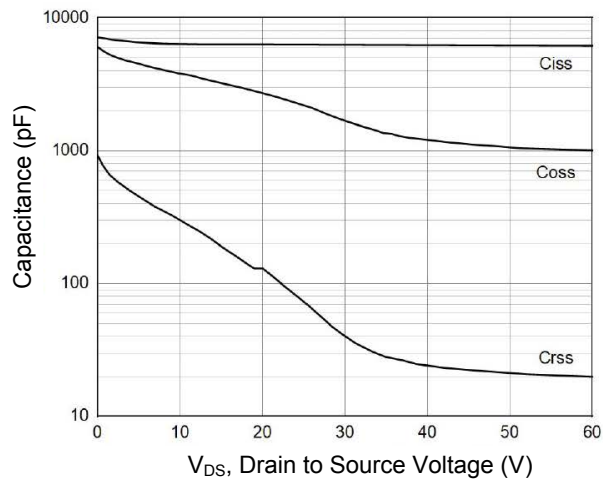


Figure 8. Capacitance Characteristics

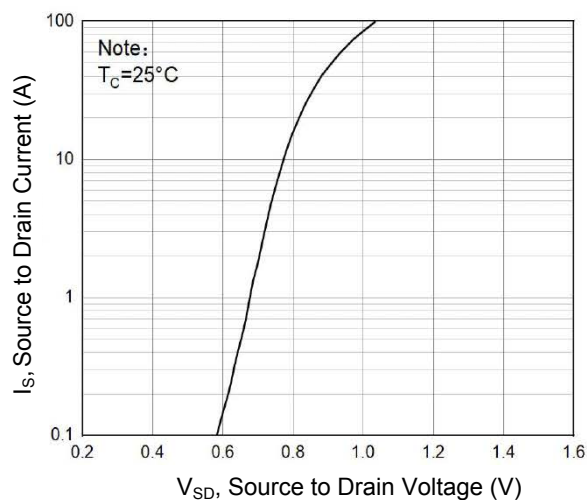


Figure 9. Body Diode Characteristics

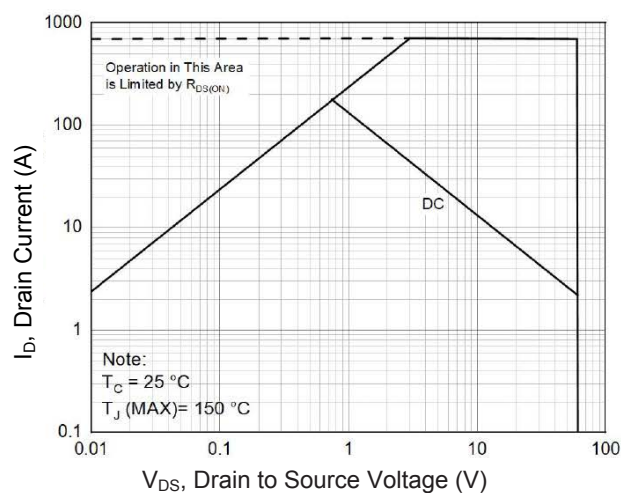
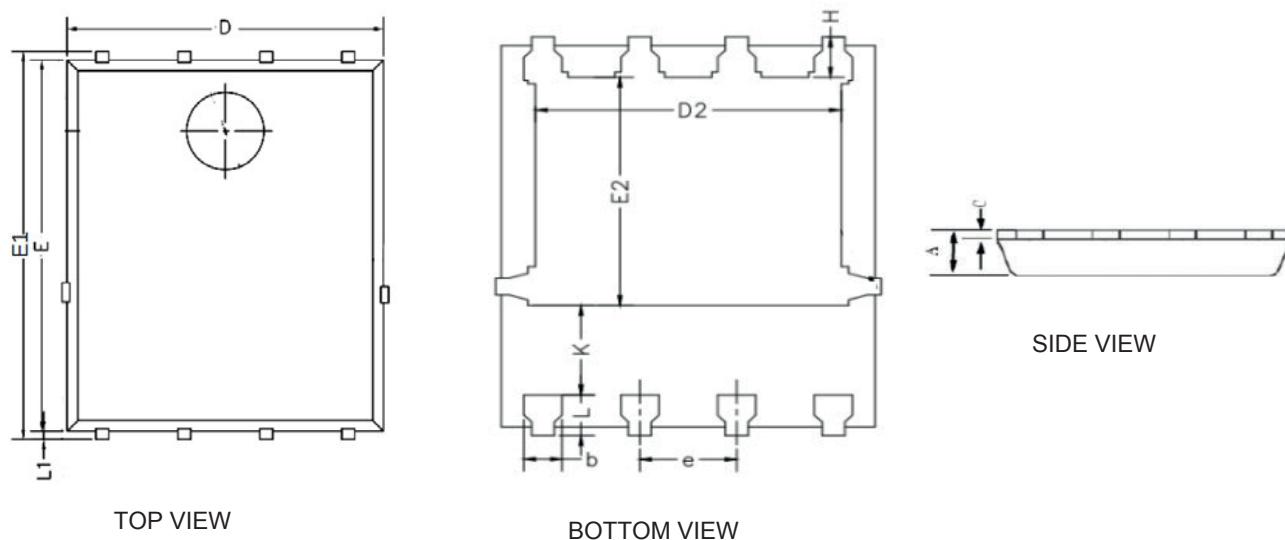


Figure 10. Safe Operation Area

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	

Order Information

Device	Package	Marking	Carrier	Quantity
GSGP2R306H	PPAK5x6	P2R306H	Tape & Reel	5,000 Pcs / Reel