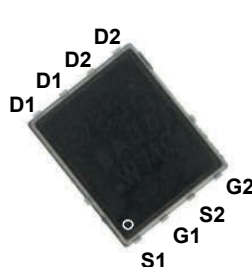


GSGP6R804HDAU

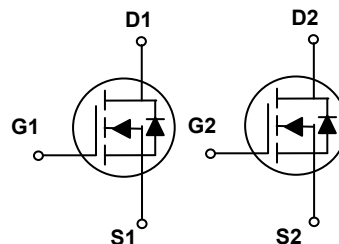
40V Dual N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	40V
$R_{DS(ON)}$	6.8m Ω (Max.)
I_D	65A



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
- AEC-Q101 qualified



Description

The GSGP6R804HDAU 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	Max.	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	65	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		39	A
Pulsed Drain Current ($T_C=25^{\circ}\text{C}$) ¹	I_{DM}	290	A
Power Dissipation ($T_C=25^{\circ}\text{C}$) ²	P_D	65	W
Single Pulse Avalanche Energy	E_{AS}	132	mJ
Single Pulse Current	I_{AS}	23	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	40	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.31	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^{\circ}\text{C}$
Soldering Temperature (SMD)	T_{solder}	260	$^{\circ}\text{C}$

Electrical Characteristics (T_A=25°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 =250μA	40	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V, T _J =25°C	-	-	1.0	μA
		V _{DS} =40V, V _{GS} =0V, T _J =125°C	-	2.0	-	
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	5.3	6.8	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2.1	-	2.8	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =20V, f=1MHz	-	825	-	pF
Output Capacitance	C _{oss}		-	275	-	
Reverse Transfer Capacitance	C _{rss}		-	19	-	
Total Gate Charge ^{3,4}	Q _g	I _D =20A, V _{DD} =20V, V _{GS} =10V	-	49	-	nC
Gate-to-Source Charge ^{3,4}	Q _{gs}		-	10.2	-	
Gate-to-Drain ("Miller") Charge ^{3,4}	Q _{gd}		-	10.2	-	
Gate-to-Plateau ^{3,4}	V _{plateau}		-	3.9	-	V
Turn-on Delay Time ^{3,4}	t _{d(on)}	V _{DD} =20V, V _{GS} =10V, R _G =6Ω, I _D =20A	-	10	-	nS
Rise Time ^{3,4}	t _r		-	29	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	39	-	
Fall Time ^{3,4}	t _f		-	7	-	
Gate Resistance	R _g	f=1MHz	-	1.2	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	65	A
Diode Pulse Current	I _{S,pulse}		-	-	290	A
Diode Forward Voltage	V _{SD}	I _S =5A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time ³	T _{rr}	I _S =20A, V _{GS} =0V, V _R =30V, dI _F /dt=100A/us	-	11.2	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	5.1	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=40V, V_{GS}=10V, L=0.5mH, R_g=25Ω, starting T_J=25°C.
3. Pulse test: pulse width ≤300us, duty cycle ≤2%.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

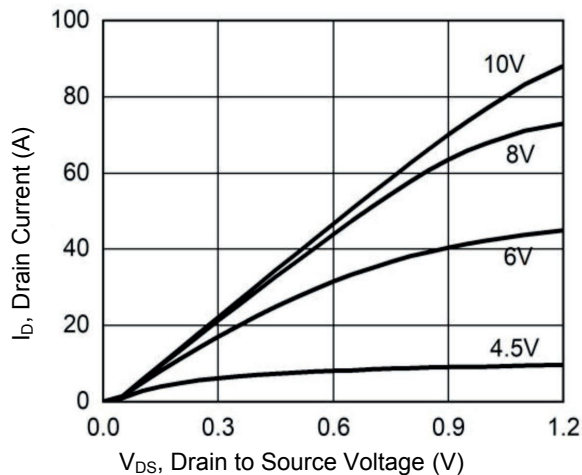


Figure 1. Output Characteristics

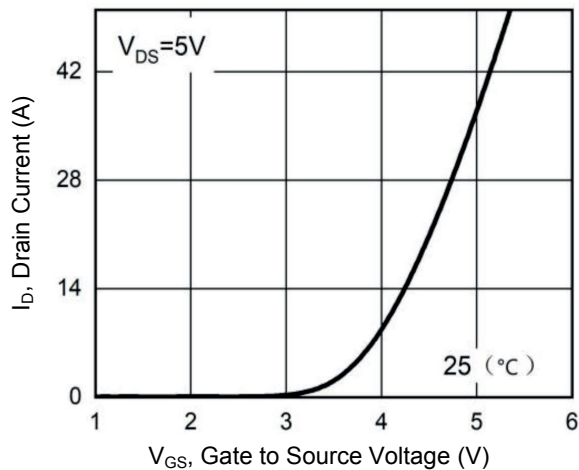


Figure 2. Transfer Characteristics

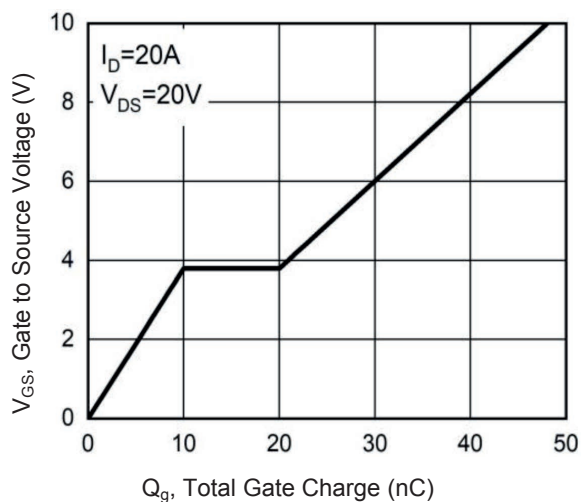


Figure 3. Gate Charge Characteristics

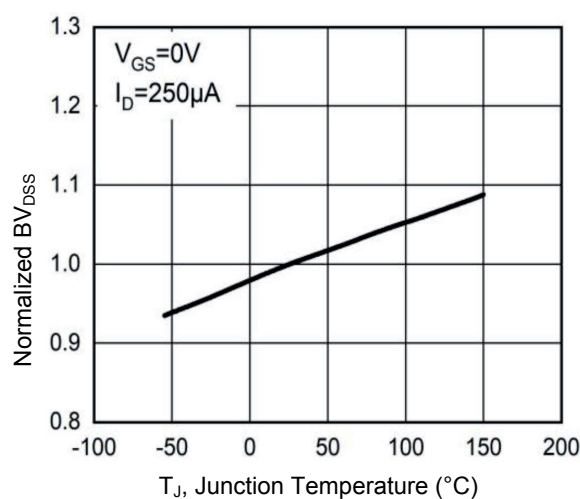


Figure 4. Normalized BV_{DS} vs. T_J

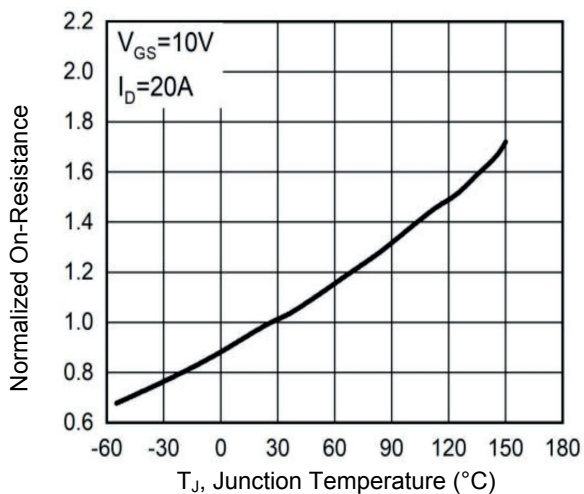


Figure 5. Normalized On-Resistance vs. T_J

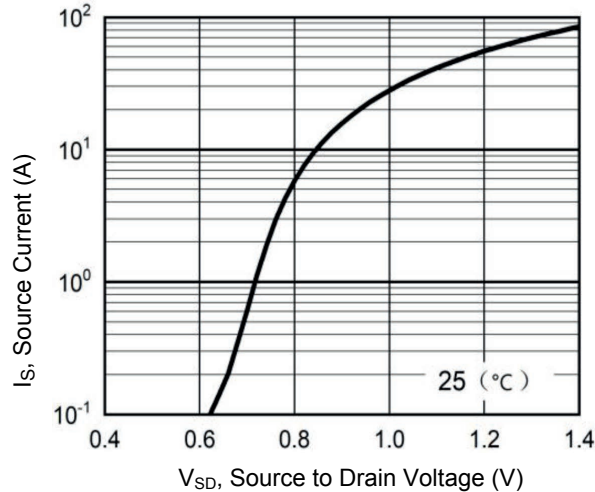


Figure 6. Body Diode Characteristics

Typical Electrical and Thermal Characteristic Curves

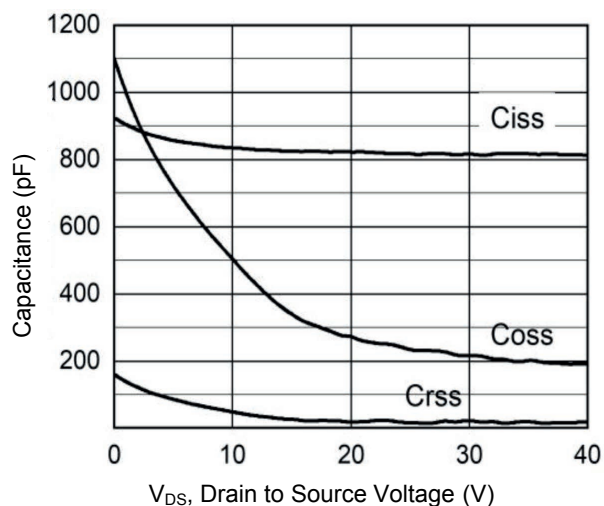


Figure 7. Capacitance Characteristics

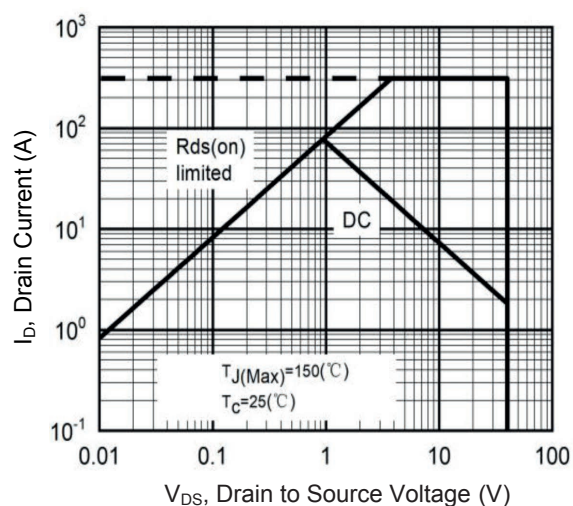
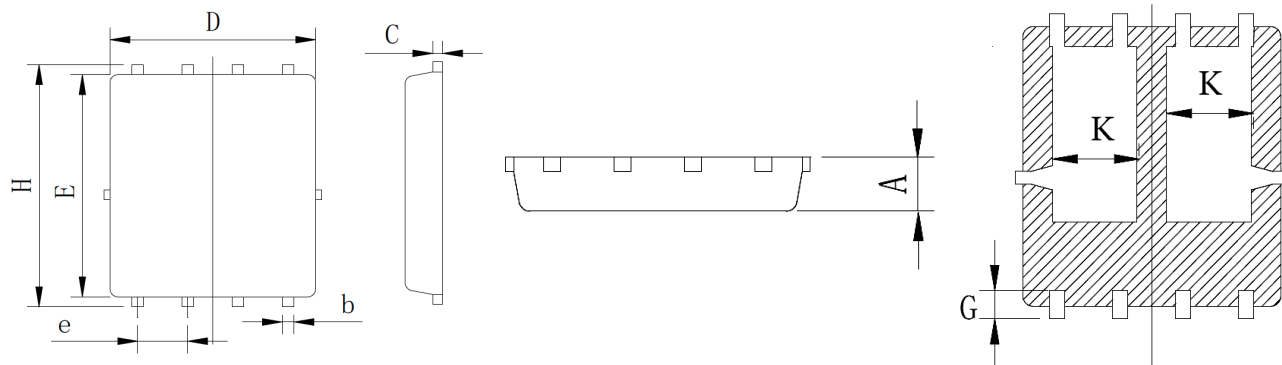


Figure 8. Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.031	0.039
b	0.250	0.490	0.010	0.019
C	0.254 REF		0.010 REF	
D	4.900	5.400	0.193	0.213
E	5.700	5.900	0.224	0.232
e	1.270 BSC		0.050 BSC	
H	5.950	6.200	0.234	0.244
G	0.600 REF		0.024 REF	
K	1.600 REF		0.063 REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSGP6R804HDAU	PPAK5x6	P6R804HD	Tape & Reel	5,000 Pcs / Reel