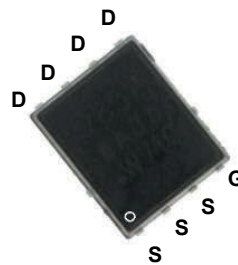
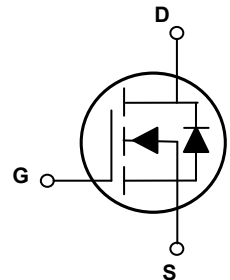


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	5.0mΩ (Max.)
I_D	100A



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 GSGP5R010AU 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}	100	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^{\circ}\text{C}$)	I_D	100	A
Continuous Drain Current, @ Steady-State ($T_C=100^{\circ}\text{C}$)		64	A
Pulsed Drain Current	I_{DM}	400	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	128	W
		0.85	W/ $^{\circ}\text{C}$
Single Pulse Avalanche Energy ¹	E_{AS}	240	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.17	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	55	$^{\circ}\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^{\circ}\text{C}$

Electrical Characteristics (T_J=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	100	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1.0	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 =40A	-	3.9	5.0	mΩ
		V _{GS} =4.5V, I _D =30A	-	5.8	7.4	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	-	2.7	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	-	4616	-	pF
Output Capacitance	C _{oss}		-	804	-	
Reverse Transfer Capacitance	C _{rss}		-	25	-	
Total Gate Charge ^{2,3}	Q _g	I _D =50A, V _{DD} =50V, V _{GS} =10V	-	66	-	nC
Gate-to-Source Charge ^{2,3}	Q _{gs}		-	19	-	
Gate-to-Drain ("Miller") Charge ^{2,3}	Q _{gd}		-	11	-	
Gate-to-Plateau ^{2,3}	V _{plateau}		-	4.0	-	V
Turn-on Delay Time ^{2,3}	t _{d(on)}	V _{GS} =10V, V _{DD} =50V, R _g =3.0Ω, I _D =50A	-	20	-	nS
Rise Time ^{2,3}	t _r		-	40	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	71	-	
Fall Time ^{2,3}	t _f		-	17	-	
Gate Resistance	R _g	f=1MHz	-	2.7	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	100	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	400	A
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time ²	T _{rr}	V _{GS} =0V, I _S =50A, dI _F /dt=100A/μs	-	61	-	nS
Reverse Recovery Charge ²	Q _{rr}		-	0.12	-	uC

Notes:

1. L=0.5mH, R_G=25Ω, I_{AS}=31A, V_{DD}=80V, T_J=25°C.
2. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
3. Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

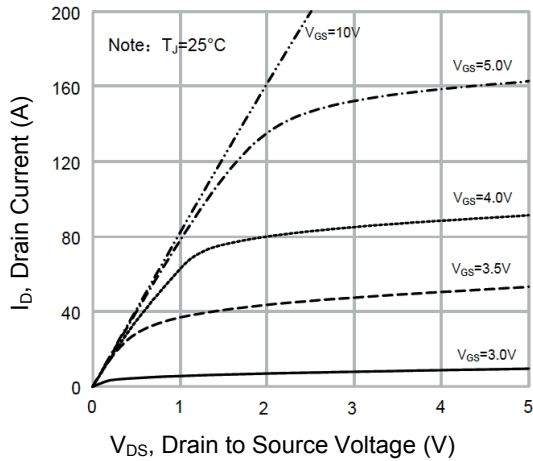


Figure 1. Output Characteristics

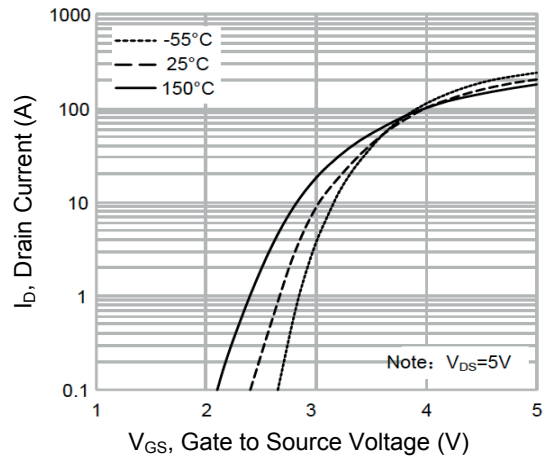


Figure 2. Transfer Characteristics

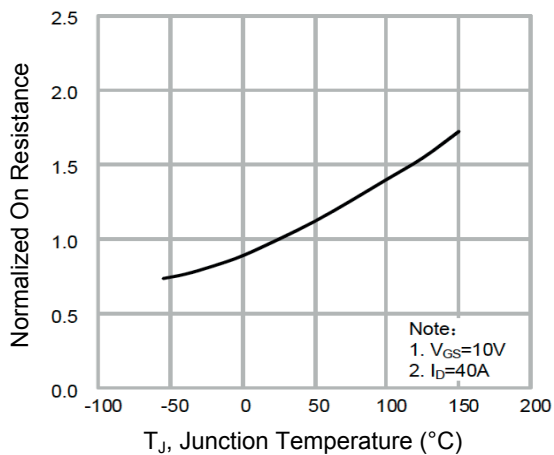


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

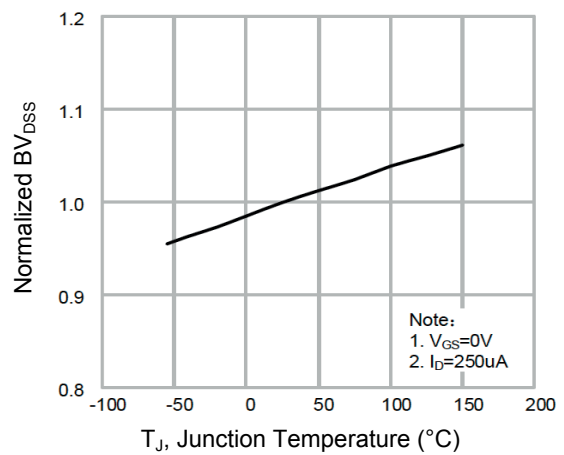


Figure 4. Normalized BV_{DS} vs. T_J

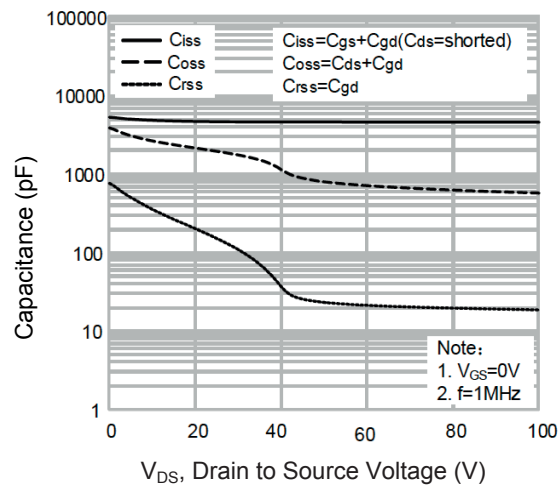


Figure 5. Capacitance Characteristics

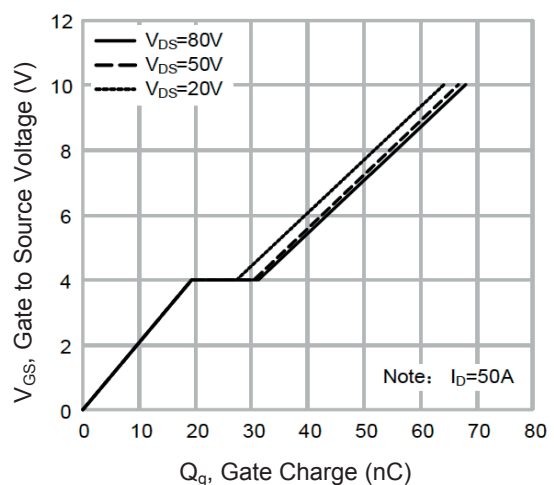


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

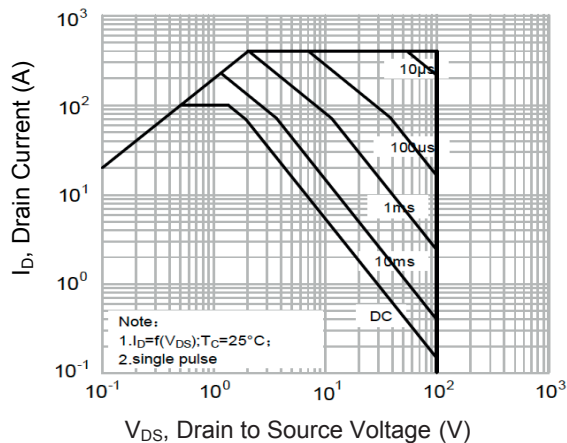


Figure 7. Safe Operation Area

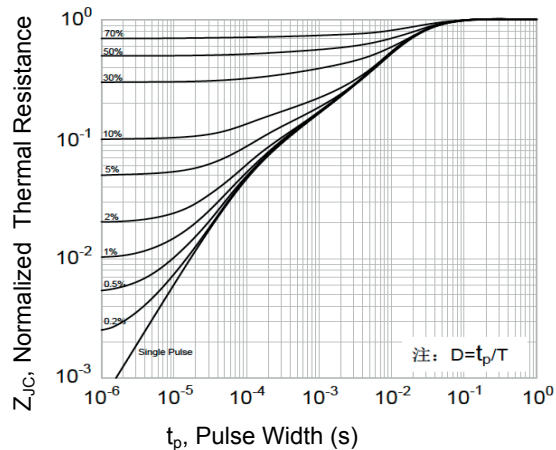


Figure 8. Transient Thermal Impedance vs. t_p

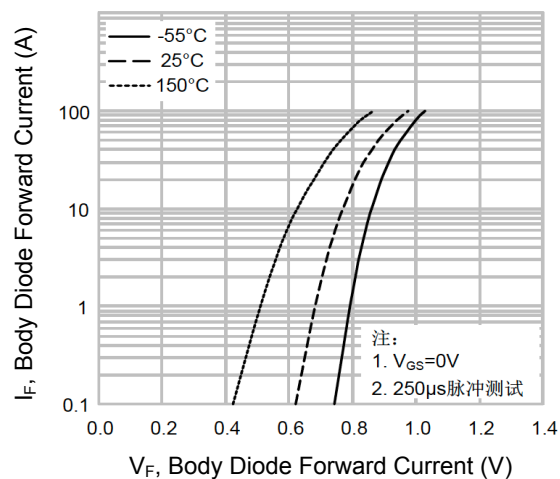


Figure 9. Body Diode Characteristics

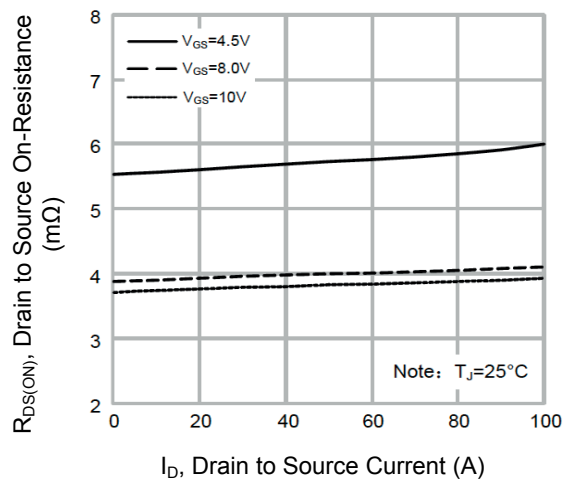
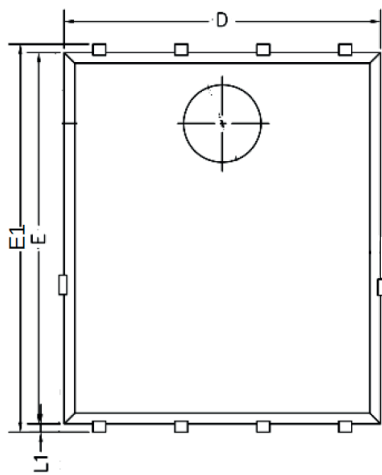
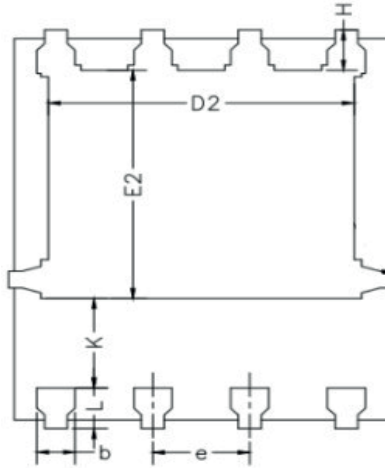


Figure 10. $R_{DS(ON)}$ vs. Drain Current

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
GSGP5R010AU	PPAK5x6	P5R010AU	Tape & Reel	5,000 Pcs / Reel