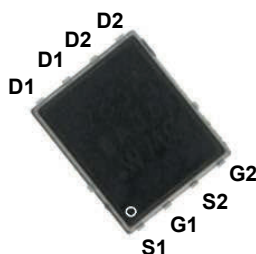
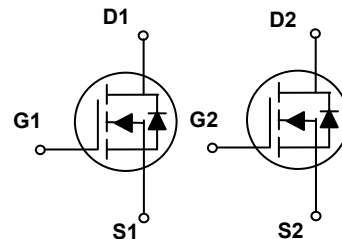


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	12m Ω (Max.)
I_D	60A



PPAK5x6



Schematic Diagram

Features and Benefits

- Low on-resistance with low gate charge
- Fast switching and reverse body recovery
- High ruggedness and robustness
- AEC-Q101 qualified



Description

The GSFP12810AU 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 ($T_C=25^\circ\text{C}$ 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 ($T_C=25^\circ\text{C}$) ¹	I_D	60	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		42	A
Pulsed Drain Current ²	I_{DM}	200	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	96	W
Linear Derating Factor ($T_C=25^\circ\text{C}$)		0.77	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ³	E_{AS}	31	mJ
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.31	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State) ⁴	$R_{\theta JA}$	62.0	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	$^\circ\text{C}$

Electrical Characteristics (T_C=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	μA
		T _J =125°C	-	-	20	
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 =20A	-	9.3	12	mΩ
		V _{GS} =4.5V, I _D =10A	-	12	17	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	-	2.9	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, f=1MHz	-	1716	-	pF
Output Capacitance	C _{oss}		-	171	-	
Reverse Transfer Capacitance	C _{rss}		-	4	-	
Total Gate Charge	Q _g	I _D =20A, V _{DS} =50V, V _{GS} =10V	-	29	-	nC
Gate-to-Source Charge	Q _{gs}		-	7.1	-	
Gate-to-Drain ("Miller") Charge	Q _{gd}		-	7.0	-	
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V, V _{DS} =50V, I _D =20A, R _{GEN} =3Ω	-	7.6	-	nS
Rise Time	t _r		-	28	-	
Turn-Off Delay Time	t _{d(off)}		-	32	-	
Fall Time	t _f		-	11	-	
Gate Resistance	R _g	f=1MHz	-	2.4	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	60	A
Pulsed Source Current (Body Diode)	I _{SM}		-	-	200	A
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	1.0	1.3	V
Reverse Recovery Time	t _{rr}	T _J =25°C, I _F =20A, di/dt=100A/μs	-	42	-	nS
Reverse Recovery Charge	Q _{rr}		-	50	-	nC

Notes:

1. Pulse test: Pulse width ≤300us, duty cycle ≤2%.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. L=0.1mH, V_{DD}=80V, I_{AS}=25A, R_G=25Ω, T_J=25°C.
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical Electrical and Thermal Characteristic Curves

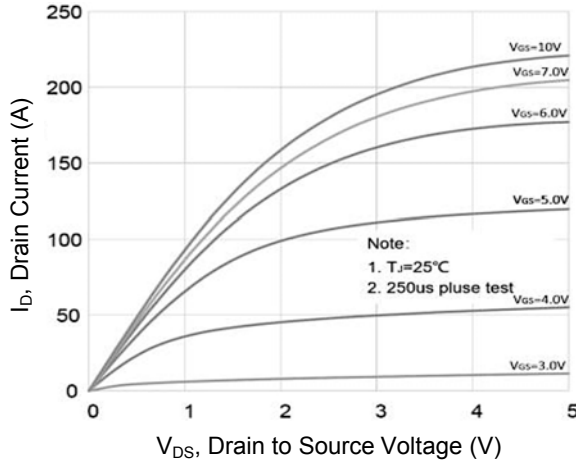


Figure 1. Output Characteristics

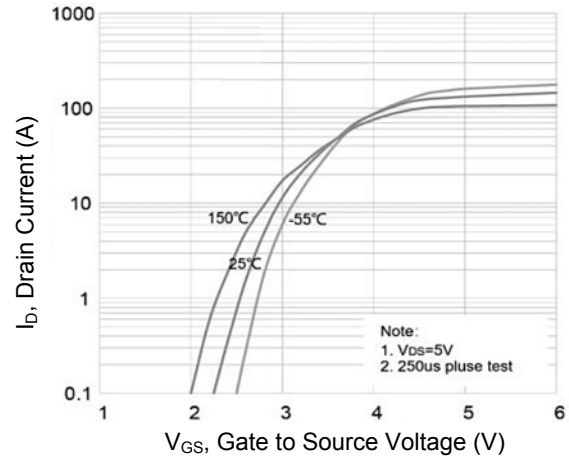


Figure 2. Transfer Characteristics

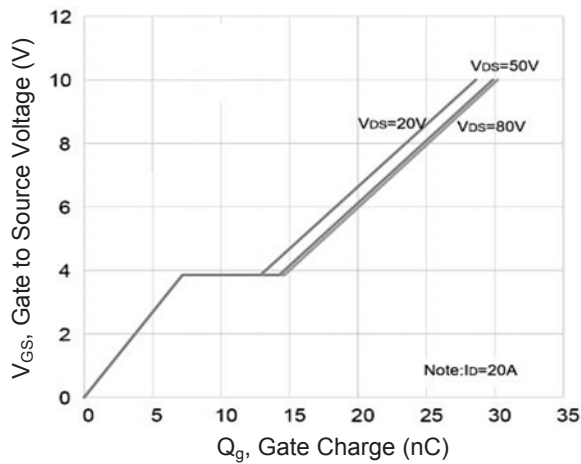


Figure 3. Gate Charge

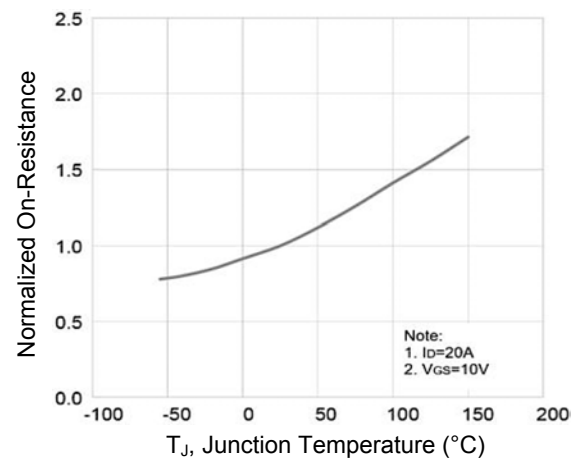


Figure 4. Normalized $R_{DS(ON)}$ vs. T_J

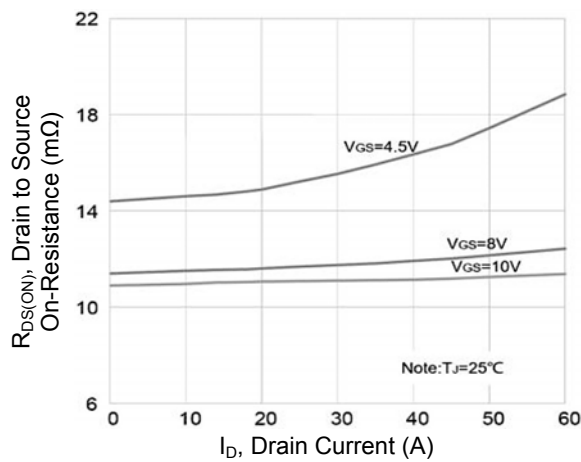


Figure 5. $R_{DS(ON)}$ vs. Drain Current

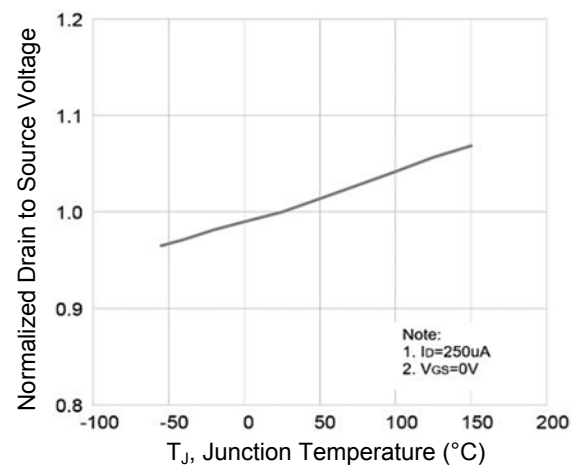


Figure 6. Normalized BV_{DSS} vs. T_J

Typical Electrical and Thermal Characteristic Curves

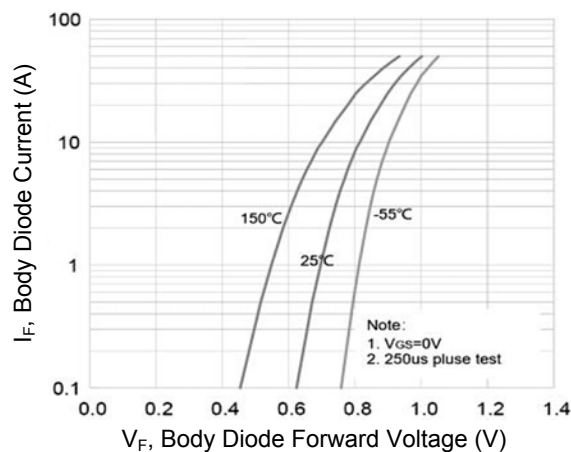


Figure 7. Body Diode Characteristics

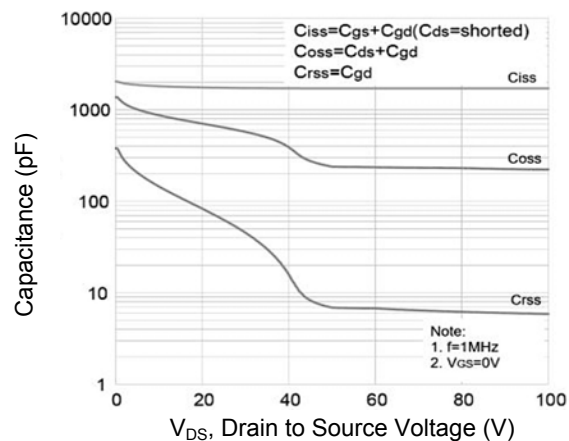


Figure 8. Capacitance Characteristics

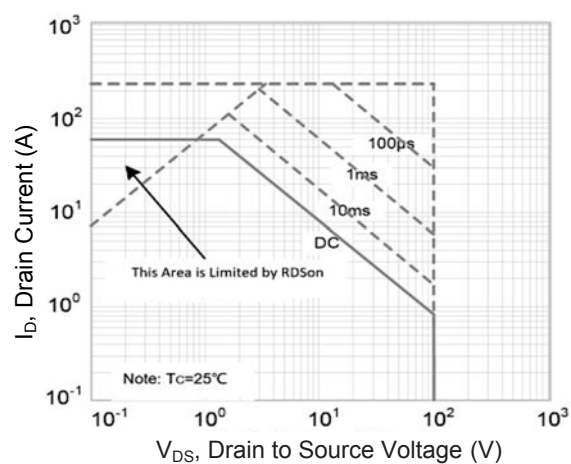
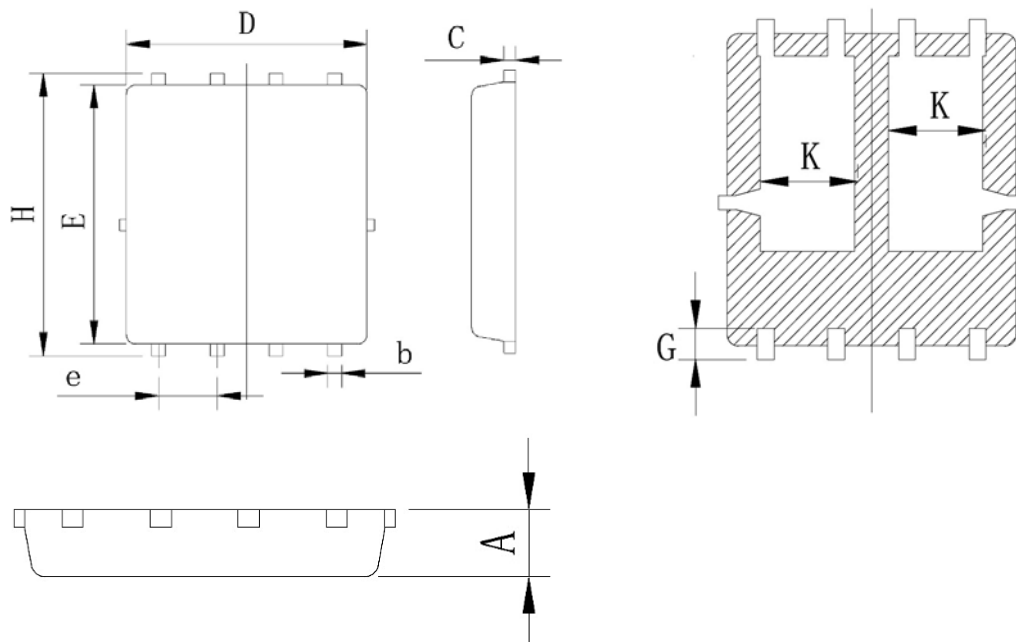


Figure 9. Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.80	1.00	0.031	0.039
b	0.25	0.49	0.010	0.019
C	0.254 REF		0.010 REF	
D	4.90	5.40	0.193	0.213
E	5.70	5.90	0.224	0.232
e	1.270 BSC		0.050 BSC	
H	5.95	6.20	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
GSFP12810AU	PPAK5x6	P12810AU	Tape & Reel	5,000 Pcs / Reel