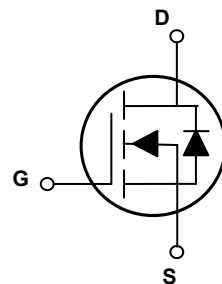
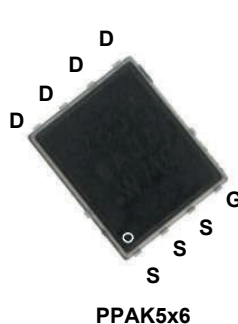


Main Product Characteristics

BV_{DSS}	40V
$R_{DS(ON)}$	6.0m Ω (Max.)
I_D	80A



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 GSFP4006AU 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}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_C=25^{\circ}\text{C}$)	I_D	80	A
Drain Current-Continuous ($T_C=100^{\circ}\text{C}$)		56	
Drain Current-Pulsed ¹	I_{DM}	320	A
Single Pulse Avalanche Energy ²	E_{AS}	256	mJ
Single Pulse Avalanche Current ²	I_{AS}	32	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	75	W
Power Dissipation-De-rate above 25°C		0.5	W/ $^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.0	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +175	$^{\circ}\text{C}$
Storage Temperature Range	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-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	40	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.03	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =32V, V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance ³	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	4.9	6	mΩ
		V _{GS} =4.5V, I _D =10A	-	6.2	8	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	1.1	1.6	2.8	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-4	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =20A	-	38	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DS} =20V, I _D =20A, V _{GS} =10V	-	55	-	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	8.8	-	
Gate-Drain Charge ^{3,4}	Q _{gd}		-	13.4	-	
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =10V, R _G =3Ω, V _{GS} =10V, I _D =10A	-	14	-	nS
Rise Time ^{3,4}	t _r		-	8	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	44	-	
Fall Time ^{3,4}	t _f		-	15	-	
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, F=1MHz	-	3000	-	pF
Output Capacitance	C _{oss}		-	250	-	
Reverse Transfer Capacitance	C _{rss}		-	170	-	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	0.9	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	80	A
Pulsed Source Current ³	I _{SM}		-	-	320	A
Diode Forward Voltage ³	V _{SD}	V _{GS} =0V, I _S =20A, T _J =25°C	-	-	1.4	V
Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=500A/us	-	44	-	nS
Reverse Recovery Charge	Q _{rr}		-	49	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=25V, V_{GS}=10V, L=0.5mH, I_{AS}=32A, 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

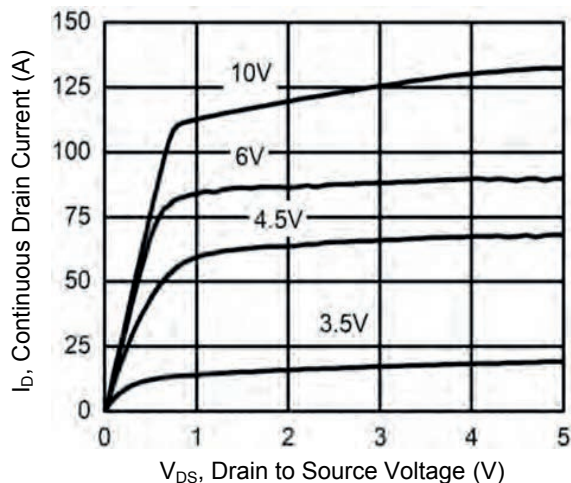


Figure 1. Output Characteristics

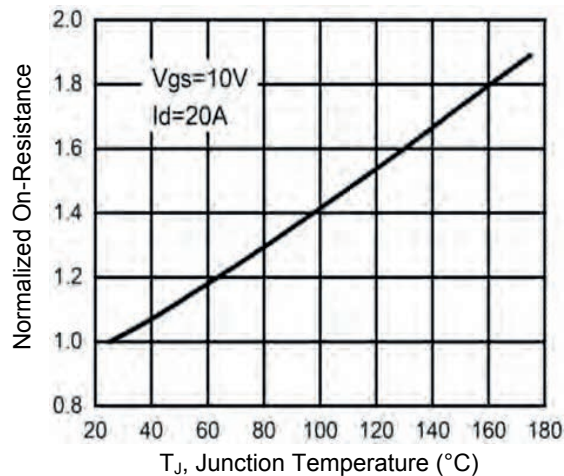


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

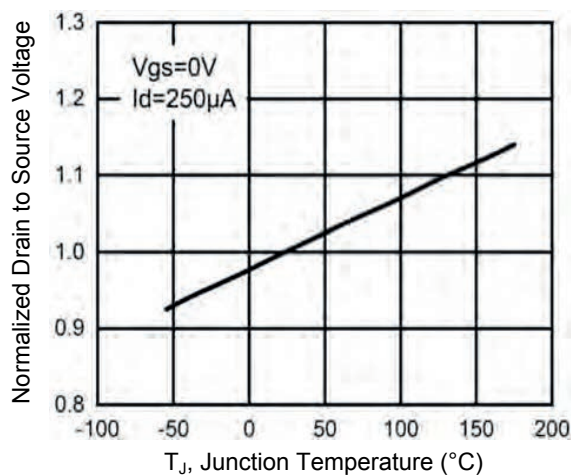


Figure 3. Normalized BV_{DSS} vs. T_J

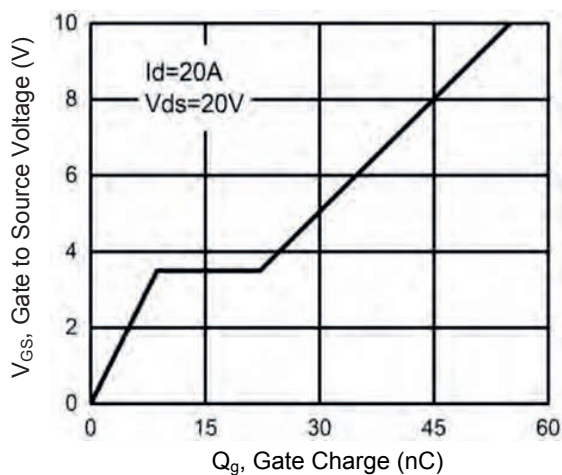


Figure 4. Gate Charge Waveform

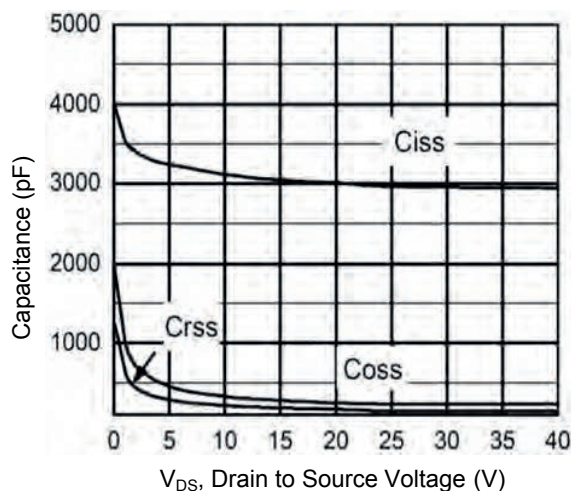


Figure 5. Capacitance Characteristics

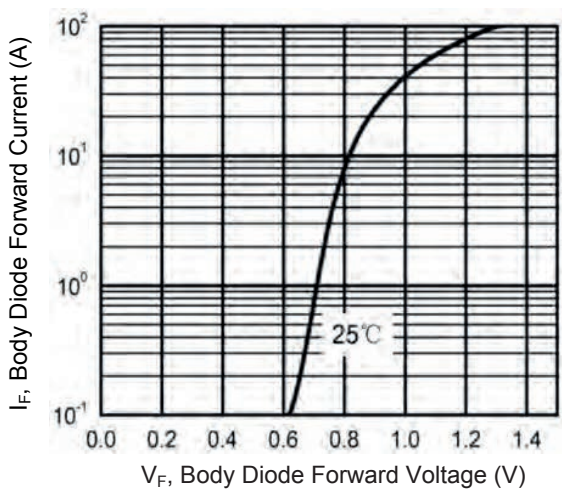
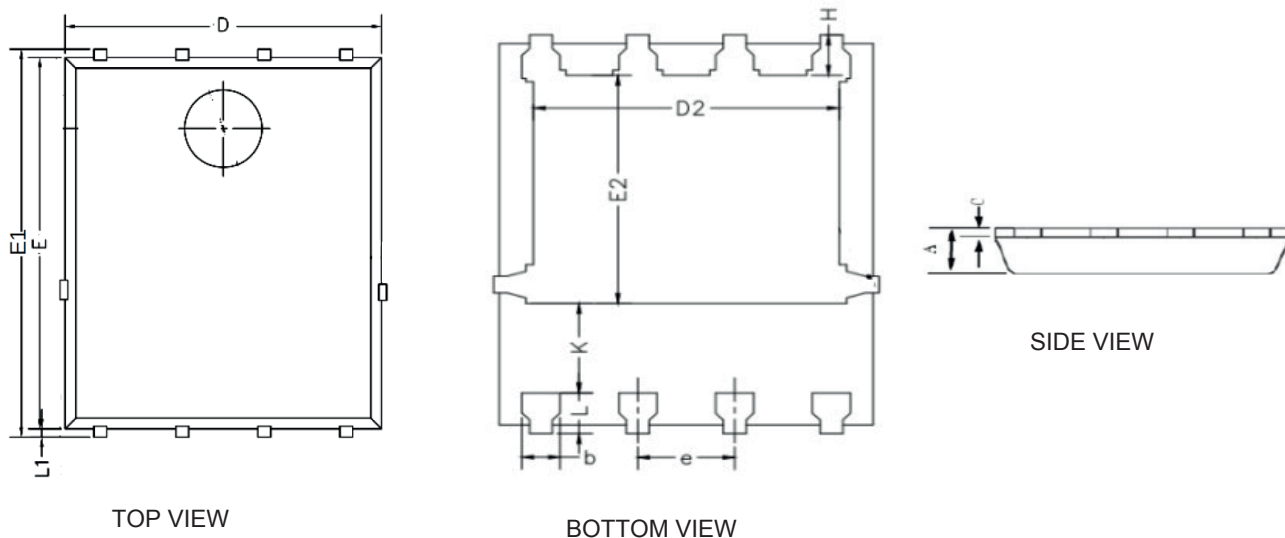


Figure 6. Body Diode Characteristics

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
GSFP4006AU	PPAK5x6	P4X06	Tape & Reel	5,000 Pcs / Reel