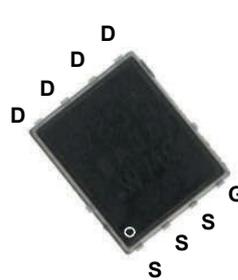
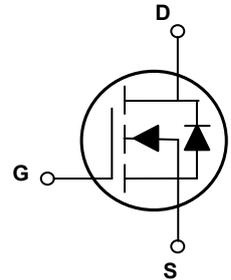


Main Product Characteristics

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



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



Description

The GSFP4006 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-Derate above 25°C		0.6	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	60	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.67	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$

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
Source-Drain 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 =1A, T _J =25°C	-	-	1	V

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

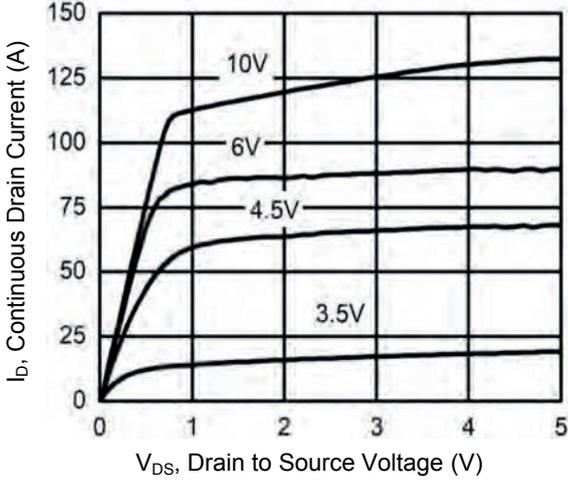


Figure 1. Output Characteristics

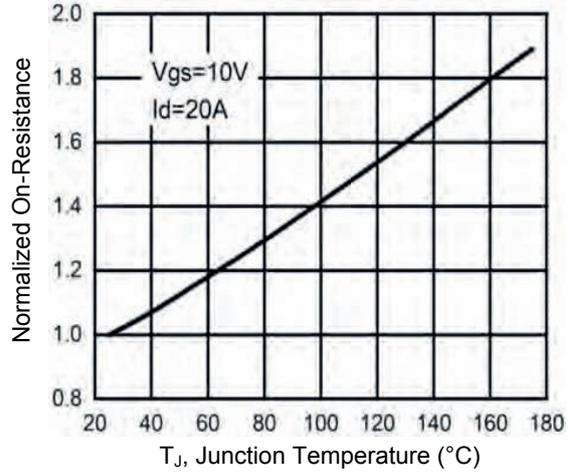


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

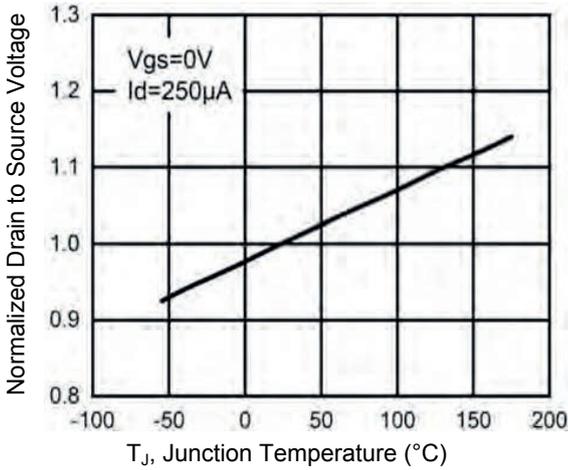


Figure 3. Normalized BV_{DSS} vs. T_J

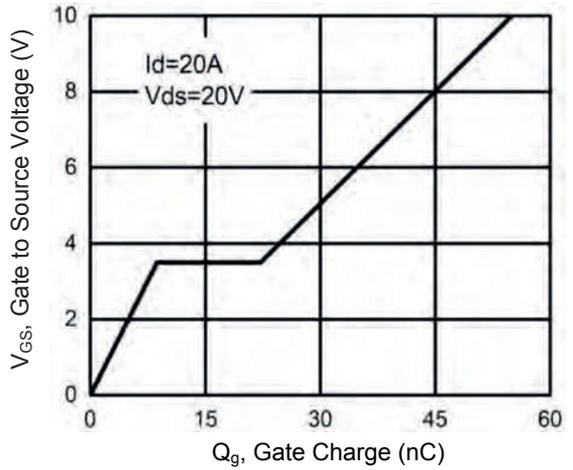


Figure 4. Gate Charge Waveform

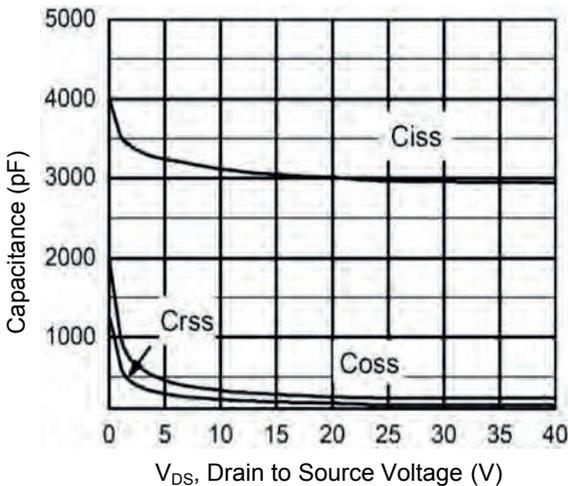


Figure 5. Capacitance Characteristics

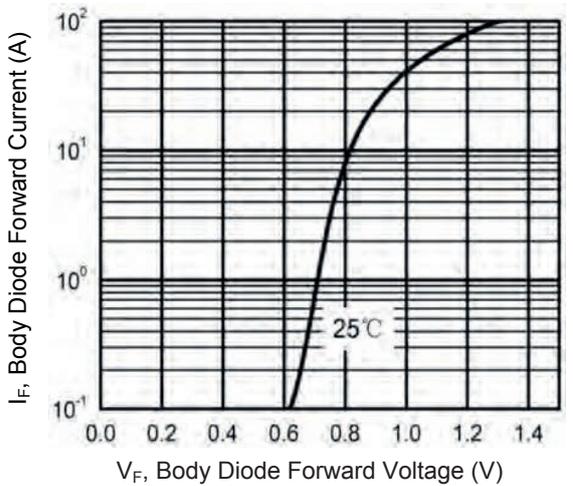
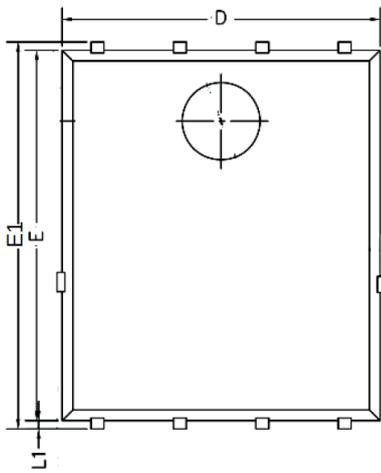
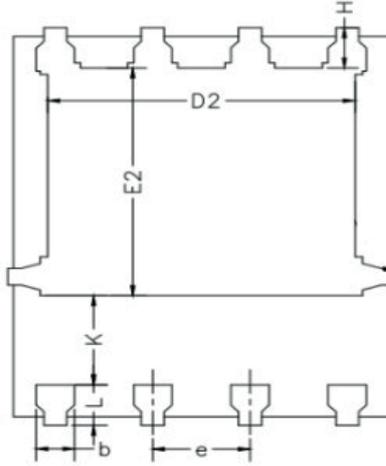


Figure 6. Body Diode Characteristics

Package Outline Dimensions (PPAK5x6)



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
GSFP4006	PPAK5x6	P4X06	Tape & Reel	5,000 Pcs / Reel