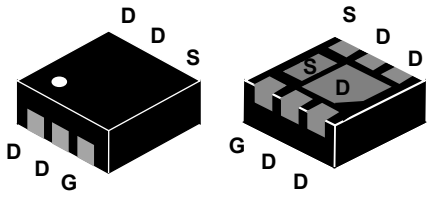
GOOD-ARK SEMICONDUCTOR

GSFB1206

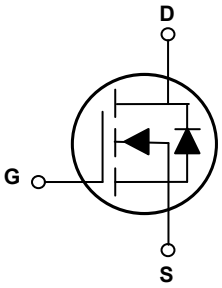
12V N-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	12V
$R_{DS(ON)}$	6.0mΩ (Max.)
I_D	17A



DFN2x2-6L



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 GSFB1206 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	12	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous (T_A=25°C)	I_D	17	A
Drain Current-Continuous (T_A=100°C)		10.1	
Drain Current-Pulsed[1]	I_{DM}	100	A
Power Dissipation (T_A=25°C)	P_D	4.17	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	30	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°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	12	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=12V, V_{GS}=0V, T_J=25°C	-	-	1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=5A	-	4.2	6.0	mΩ
		V_{GS}=2.5V, I_D=3A	-	6.0	9.0	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	0.4	0.7	1	V
Dynamic and Switching Characteristics						
Total Gate Charge[2]	Q_g	V_{DS}=10V, I_D=3A, V_{GS}=4.5V	-	32	-	nC
Gate-Source Charge[2]	Q_{gs}		-	9	-	
Gate-Drain Charge[2]	Q_{gd}		-	12	-	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD}=10V, R_G=3Ω, V_{GS}=4.5V, I_D=3A	-	0.5	-	nS
Rise Time[2]	t_r		-	1.3	-	
Turn-Off Delay Time[2]	$t_{d(off)}$		-	3.3	-	
Fall Time[2]	t_f		-	3.2	-	
Input Capacitance	C_{lss}	V_{DS}=6V, V_{GS}=0V, F=1MHz	-	1632	-	pF
Output Capacitance	C_{oss}		-	350	-	
Reverse Transfer Capacitance	C_{rss}		-	296	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	17	A
Pulsed Source Current	I_{SM}		-	-	100	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=5A, T_J=25°C	-	-	1.4	V
Reverse Recovery Time	t_{rr}	I_F=2A, di/dt=100A/us	-	25	1	A
Reverse Recovery Charge	Q_{rr}		-	10	1	A

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤300us, duty cycle≤0.5%.

Typical Electrical and Thermal Characteristic Curves

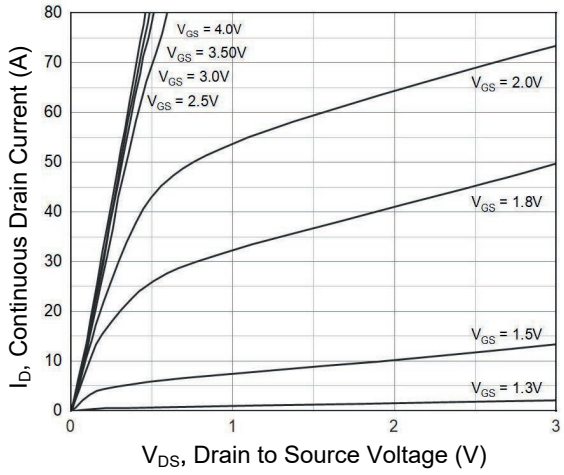


Figure 1. Output Characteristics

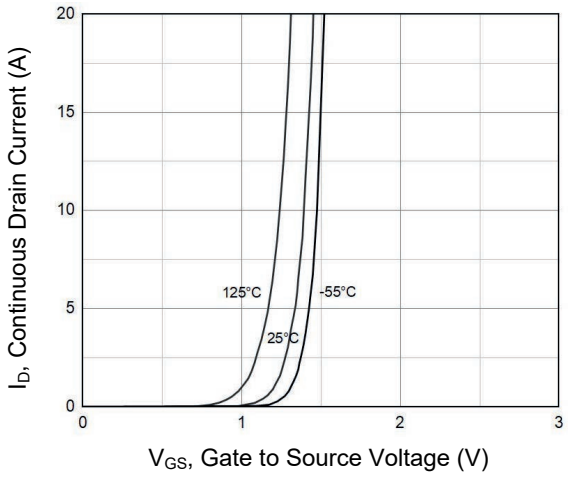


Figure 2. Transfer Characteristics

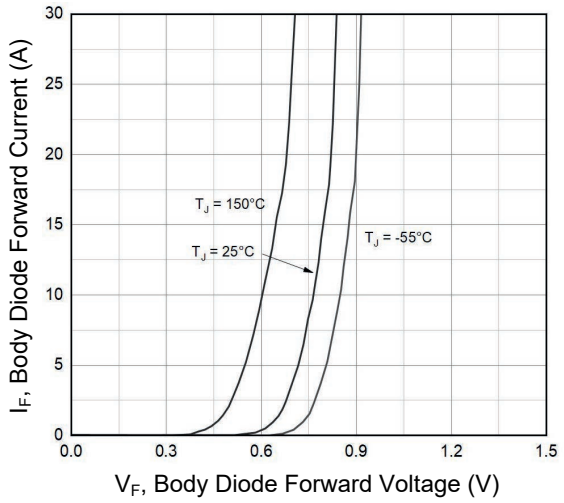


Figure 3. Body Diode Characteristics

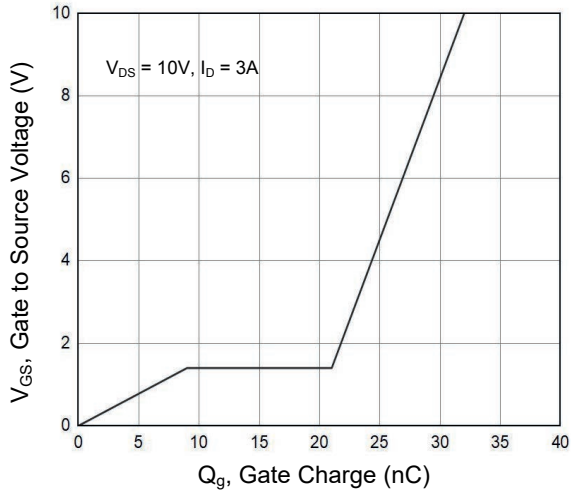


Figure 4. Gate Charge Waveform

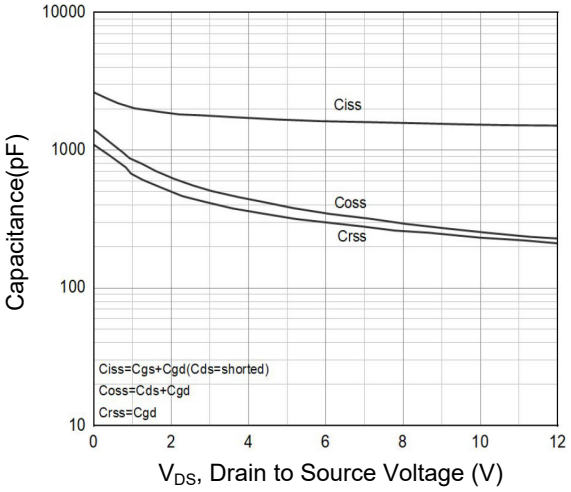


Figure 5. Capacitance Characteristics

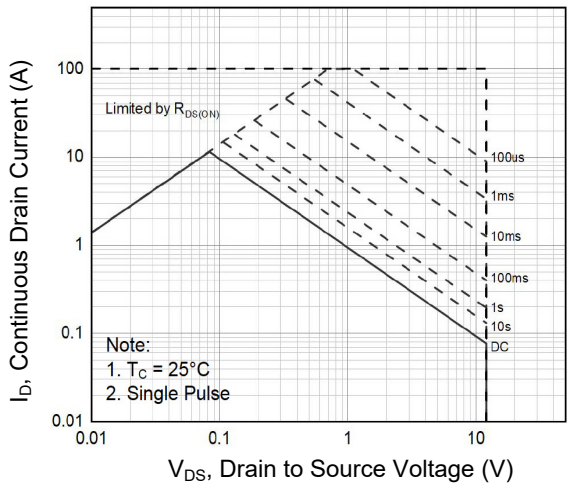
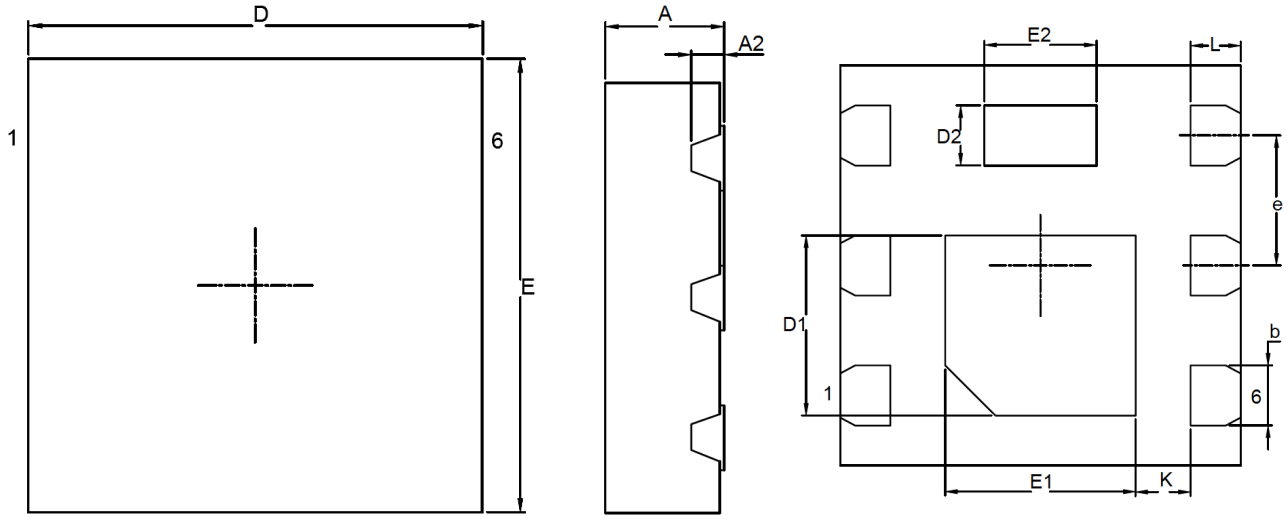


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (DFN2x2-6L)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.500	0.600	0.020	0.024
A2	0.152 REF		0.006 REF	
b	0.250	0.350	0.010	0.014
D	1.950	2.050	0.077	0.081
D1	0.800	1.050	0.031	0.041
D2	0.250	0.350	0.010	0.014
E	1.950	2.050	0.077	0.081
E1	0.800	1.000	0.031	0.039
E2	0.460	0.860	0.018	0.034
e	0.650 BSC		0.026 BSC	
L	0.250	0.350	0.010	0.014
K	0.200	-	0.008	-

Order Information

Device	Package	Marking	Packaging	SPQ
GSFB1206	DFN2x2-6L	B1206	Tape & Reel	3,000 Pcs / Reel