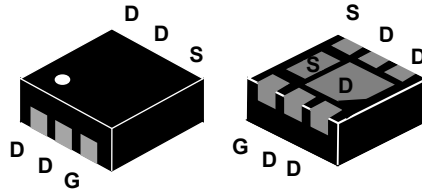
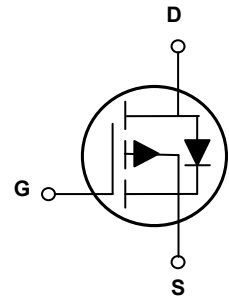


Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	21m Ω (Max.)
I_D	-10A



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 GSFB2121 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}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	-10	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-7	
Drain Current-Pulsed ¹	I_{DM}	-40	A
Single Pulse Avalanche Energy ²	E_{AS}	20	mJ
Single Pulse Avalanche Current ²	I_{AS}	-8.8	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	1.9	W
Power Dissipation-Derate above 25 $^\circ\text{C}$		0.015	
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	66	$^\circ\text{C}/\text{W}$
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 ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=-1mA$	-	-0.01	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-20V, V_{GS}=0V,$ $T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-16V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	± 100	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-5A$	-	16	21	$m\Omega$
		$V_{GS}=-2.5V, I_D=-4A$	-	21	29	$m\Omega$
		$V_{GS}=-1.8V, I_D=-3A$	-	30	41	$m\Omega$
Forward Transconductance	g_{fs}	$V_{DS}=-10V, I_S=-5A$	-	15	-	S
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.5	-0.7	-1	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	3	-	$mV/^\circ\text{C}$
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=-10V, I_D=-5A$ $V_{GS}=-4.5V$	-	15	-	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	2.6	-	
Gate-to-Drain Charge ^{2,3}	Q_{gd}		-	4.3	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=-10V, R_G=3\Omega$ $V_{GS}=-4.5V, I_D=-5A$	-	9	-	nS
Rise Time ^{2,3}	t_r		-	28	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	24	-	
Fall Time ^{2,3}	t_f		-	7	-	
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V,$ $F=1MHz$	-	1980	-	pF
Output Capacitance	C_{oss}		-	242	-	
Reverse Transfer Capacitance	C_{rss}		-	126	-	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	-10	A
Pulsed Source Current	I_{SM}		-	-	-40	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-1A$ $T_J=25^\circ\text{C}$	-	-	-1	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=-20V, V_{GS}=-10V, L=0.5mH, R_G=25\Omega$, starting $T_J=25^\circ\text{C}$.
3. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristic Curves

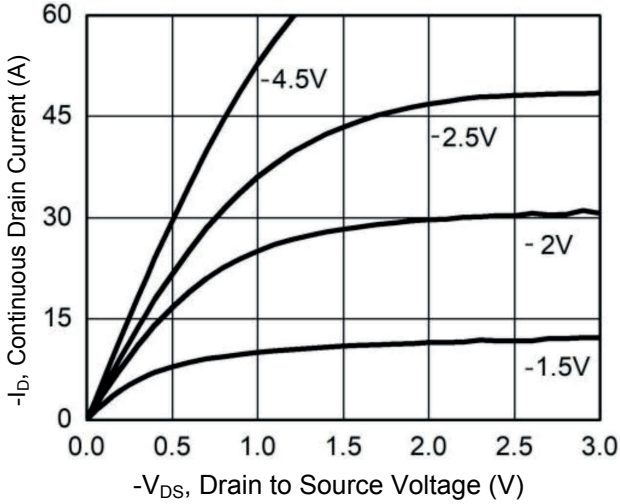


Figure 1. Output Characteristics

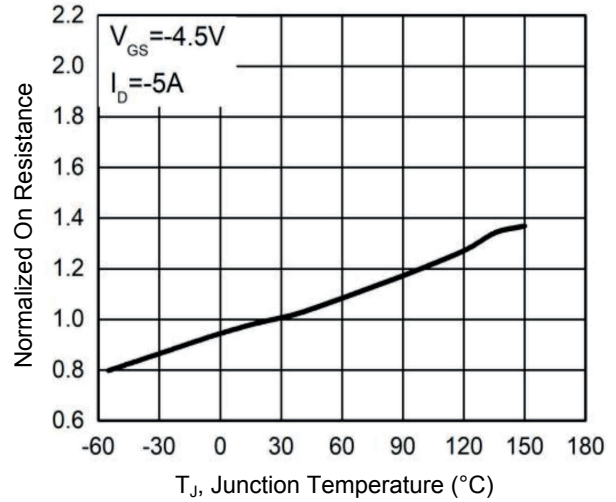


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

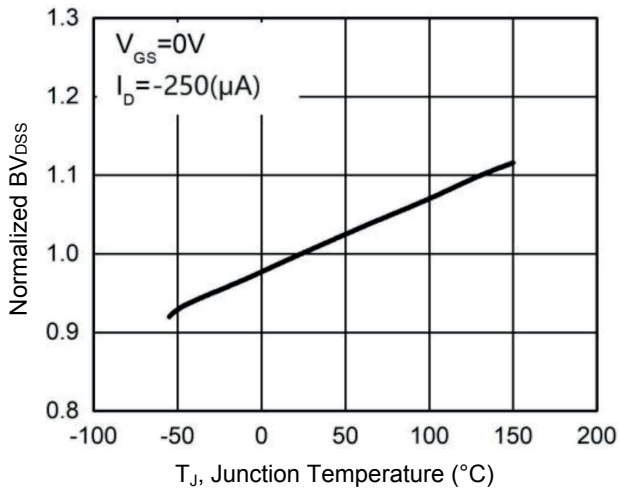


Figure 3. Normalized BV_{DS} vs. T_J

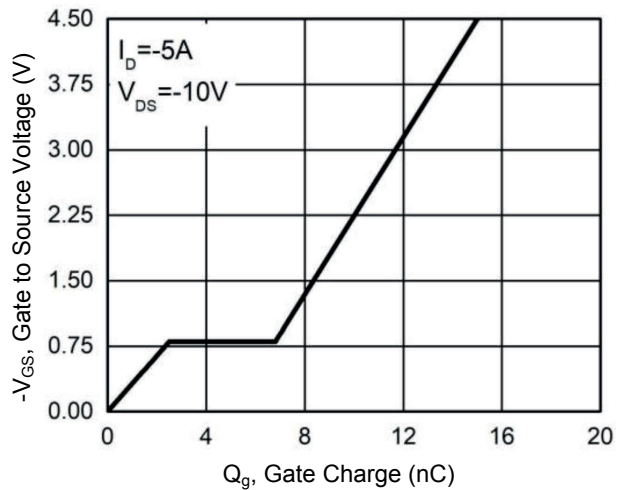


Figure 4. Gate Charge Waveform

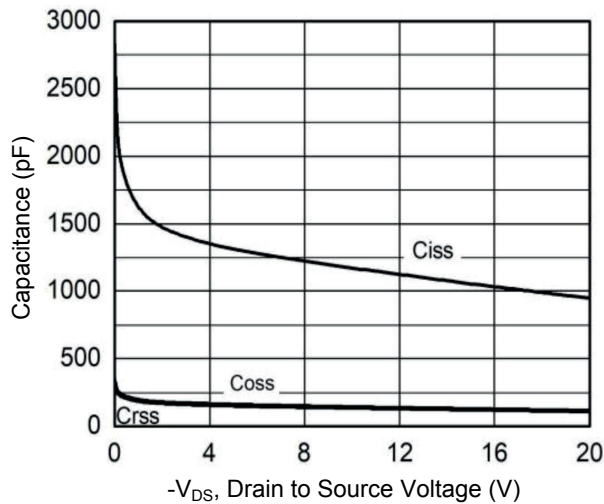


Figure 5. Capacitance Characteristics

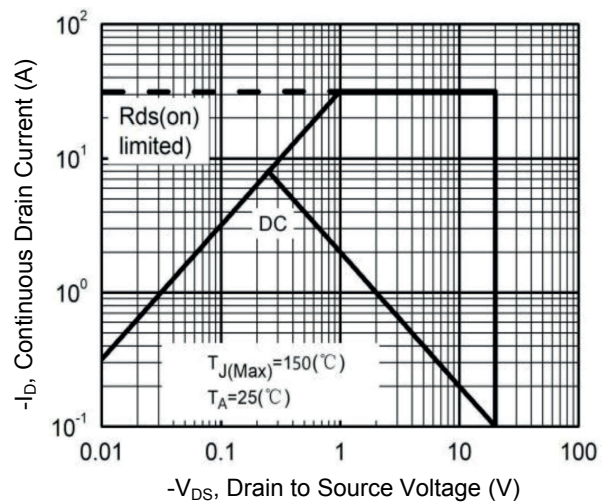
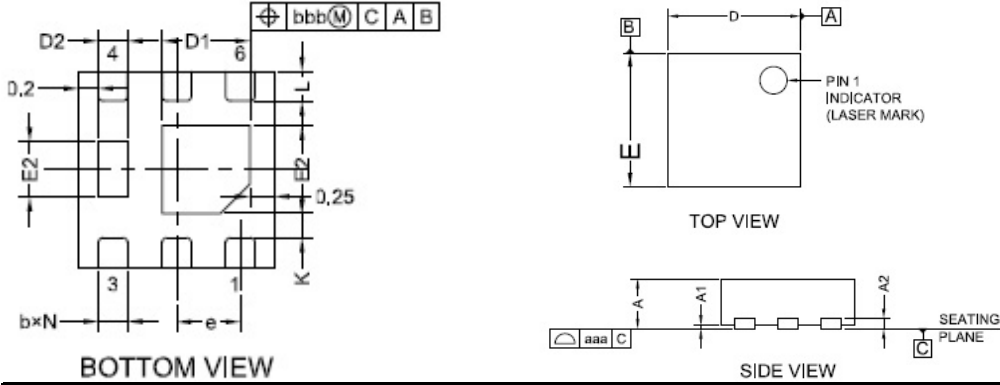


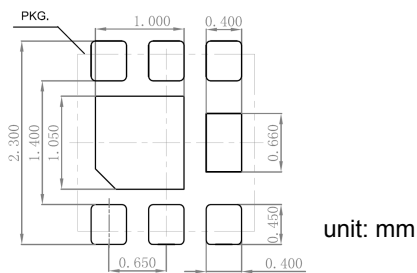
Figure 6. Maximum Safe Operation Area

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
A1	0.000	0.005	0.000	0.000
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	1.000	0.031	0.039
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	0.660	0.018	0.026
e	0.650 BSC		0.026 BSC	
L	0.250	0.350	0.010	0.014
J	0.400 BSC		0.016 BSC	
K	0.200 MIN		0.008 MIN	
N	6.000		0.236	
aaa	0.080		0.003	
bbb	0.100		0.004	

Recommended Pad Layout



Order Information

Device	Package	Marking	Packaging	SPQ
GSFB2121	DFN2x2-6L	B2121	Tape & Reel	3,000pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com