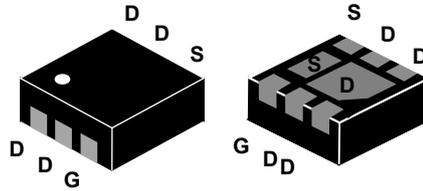
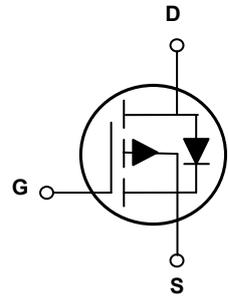


Main Product Characteristics

BV_{DSS}	-30V
$R_{DS(ON)}$	23m Ω (Max.)
I_D	-10A



DFN2x2-6L 2EP



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 GSFB3123 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}	-30	V
Gate-Source Voltage	V_{GS}	± 25	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	-10	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-8	
Drain Current-Pulsed ¹	I_{DM}	-40	A
Single Pulse Avalanche Energy ²	E_{AS}	54	mJ
Single Pulse Avalanche Current ²	I_{AS}	-33	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	2.2	W
Power Dissipation-Derate above 25°C		0.018	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	56.8	$^\circ\text{C}/\text{W}$
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}	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=-1\text{mA}$	-	-0.03	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-27V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-24V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-8A$	-	18	23	m Ω
		$V_{GS}=-4.5V, I_D=-6A$	-	25	30	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.6	-2.9	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	4	-	$\text{mV}/^\circ\text{C}$
Forward Transconductance	gfs	$V_{DS}=-10V, I_D=-8A$	-	6.8	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=-15V, I_D=-5A, V_{GS}=-4.5V$	-	11	17	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	3.4	6	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	4.2	8	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=-15V, R_G=6\Omega, V_{GS}=-10V, I_D=-1A$	-	5.8	11	nS
Rise Time ^{3,4}	t_r		-	18.8	36	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	46.9	90	
Fall Time ^{3,4}	t_f		-	12.3	23	
Input Capacitance	C_{iss}	$V_{DS}=-15V, V_{GS}=0V, F=1\text{MHz}$	-	1250	2500	pF
Output Capacitance	C_{oss}		-	160	320	
Reverse Transfer Capacitance	C_{rss}		-	90	180	
Source-Drain Ratings and Characteristics						
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. $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}, I_{AS}=-33A$, starting $T_J=25^\circ\text{C}$.
3. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

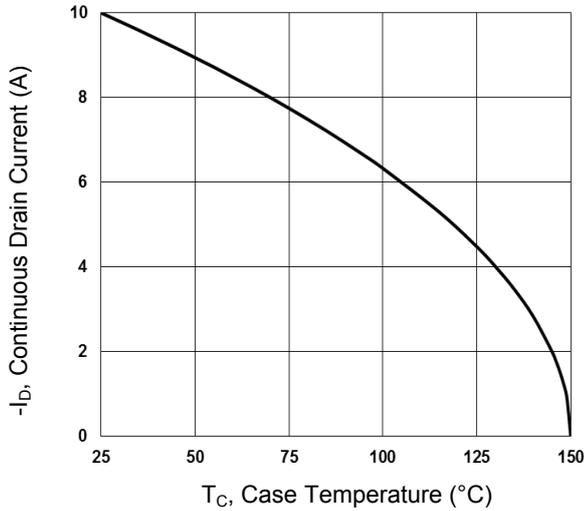


Figure 1. Continuous Drain Current vs. T_c

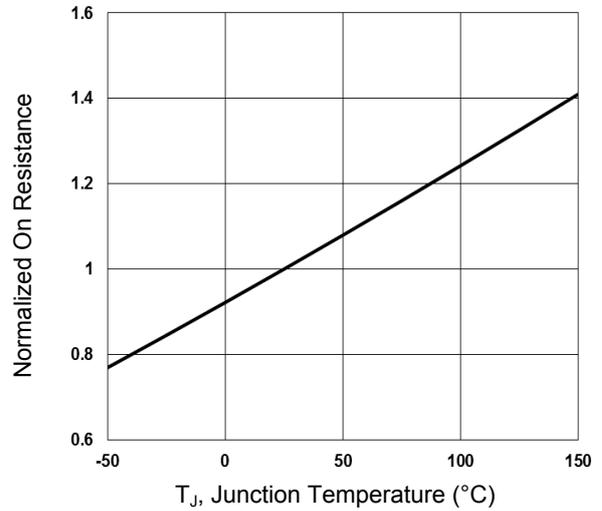


Figure 2. Normalized R_{DSON} vs. T_j

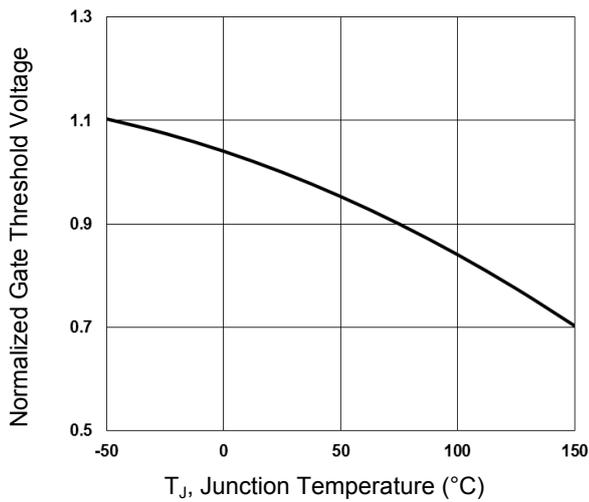


Figure 3. Normalized $V_{GS(th)}$ vs. T_j

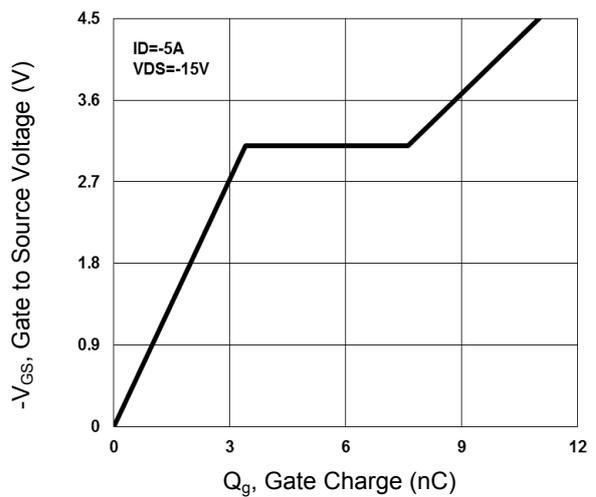


Figure 4. Gate Charge Waveform

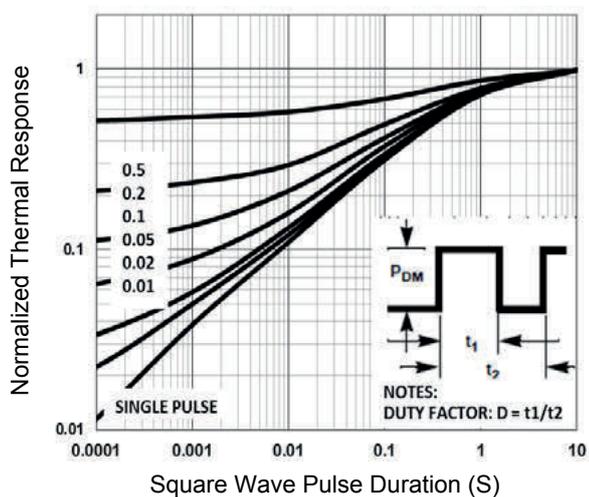


Figure 5. Normalized Transient Impedance

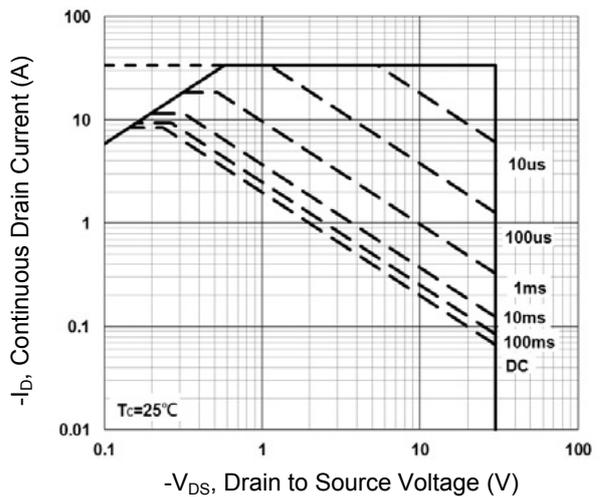
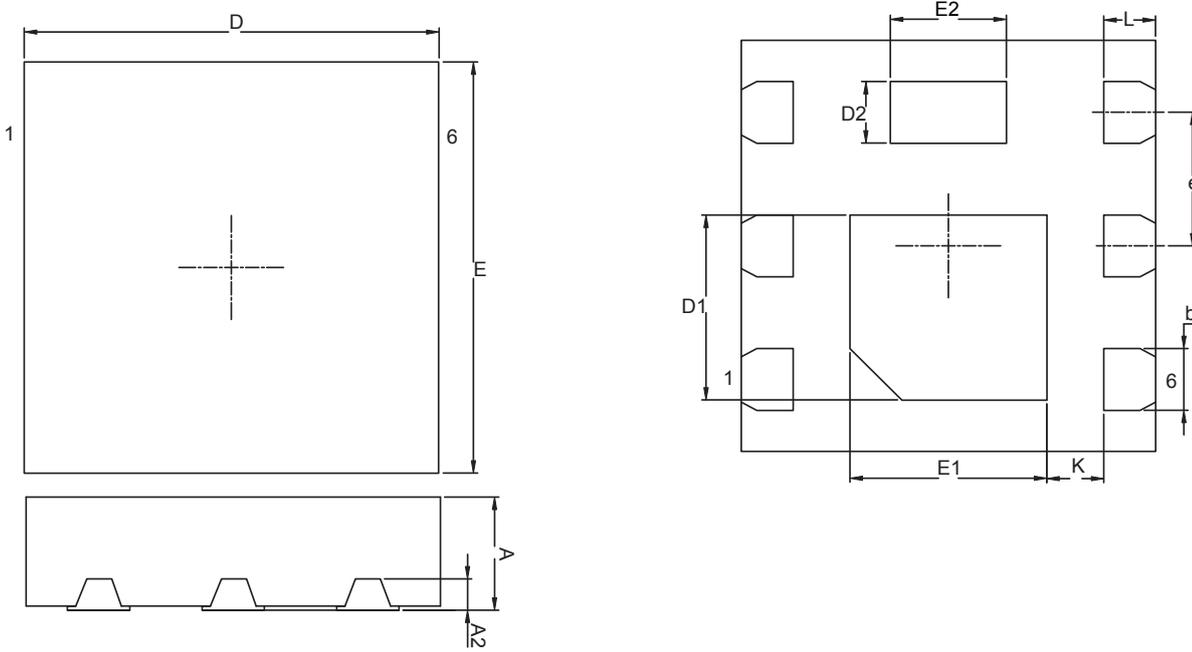


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (DFN2x2-6L 2EP)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.70	0.80	0.028	0.031
A2	0.152 REF		0.006 REF	
b	0.25	0.35	0.010	0.014
D	1.95	2.05	0.077	0.081
D1	0.80	1.05	0.031	0.041
D2	0.25	0.35	0.014	0.010
E	1.95	2.05	0.077	0.081
E1	0.80	1.00	0.031	0.039
E2	0.46	0.66	0.018	0.026
e	0.650 BSC		0.026 BSC	
L	0.25	0.35	0.010	0.014
K	0.200 MIN		0.008 MIN	

Order Information

Device	Package	Marking	Quantity	Carrier
GSFB3123	DFN2x2-6L 2EP	BXY	3,000pcs / Reel	Tape & Reel