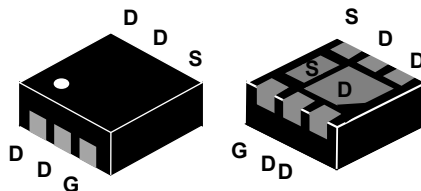
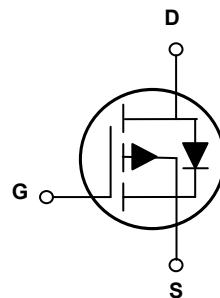


Main Product Characteristics

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
- AEC-Q101 qualified



Description

The GSFB3123AU 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	$^{\circ}\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	56.8	$^{\circ}\text{C/W}$
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 =-250uA	-30	-	-	V
BV _{DSS} Temperature Coefficient	△BV _{DSS} /△T _J	Reference to 25°C, I _D =-1mA	-	-0.03	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-27V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-24V, 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	R _{DS(ON)}	V _{GS} =-10V, I _D =-8A	-	18	23	mΩ
		V _{GS} =-4.5V, I _D =-6A	-	25	30	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1.1	-1.6	-2.9	V
V _{GS(th)} Temperature Coefficient	△V _{GS(th)}		-	4	-	mV/°C
Forward Transconductance	g _{fs}	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	-	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	3.4	-	
Gate-Drain Charge ^{3,4}	Q _{gd}		-	4.2	-	
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =-15V, R _G =6Ω, V _{GS} =-10V, I _D =-1A	-	5.8	-	nS
Rise Time ^{3,4}	t _r		-	18.8	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	46.9	-	
Fall Time ^{3,4}	t _f		-	12.3	-	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1MHz	-	1250	-	pF
Output Capacitance	C _{oss}		-	160	-	
Reverse Transfer Capacitance	C _{rss}		-	90	-	
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°C	-	-	-1	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-33A, starting T_J=25°C.
3. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

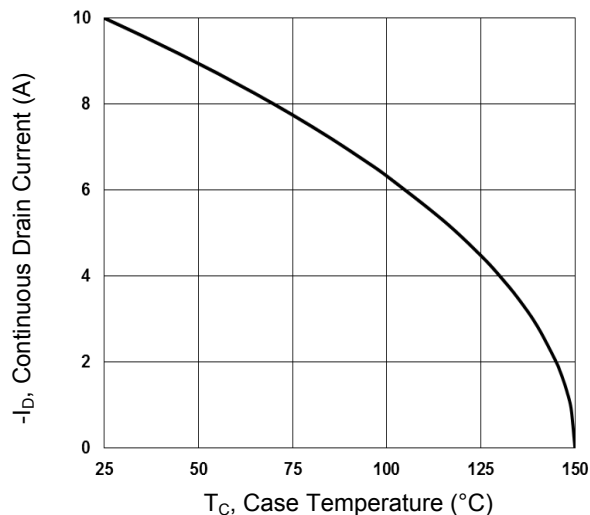


Figure 1. Continuous Drain Current vs. T_c

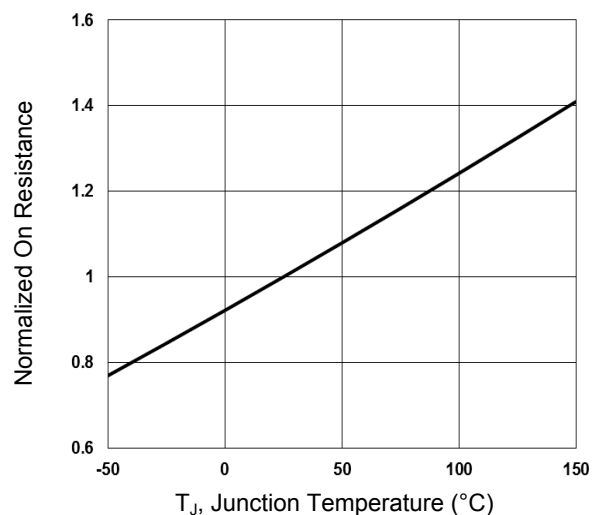


Figure 2. Normalized $R_{DS(on)}$ vs. T_J

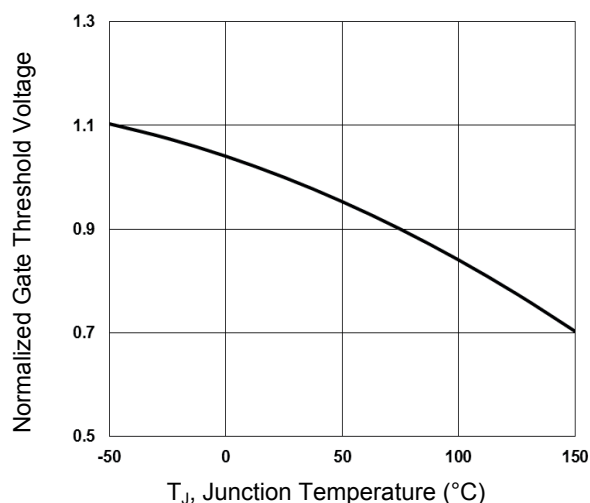


Figure 3. Normalized $V_{GS(th)}$ vs. T_J

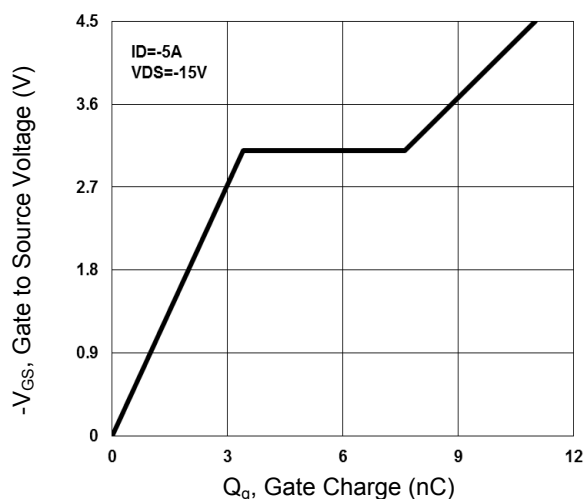


Figure 4. Gate Charge Waveform

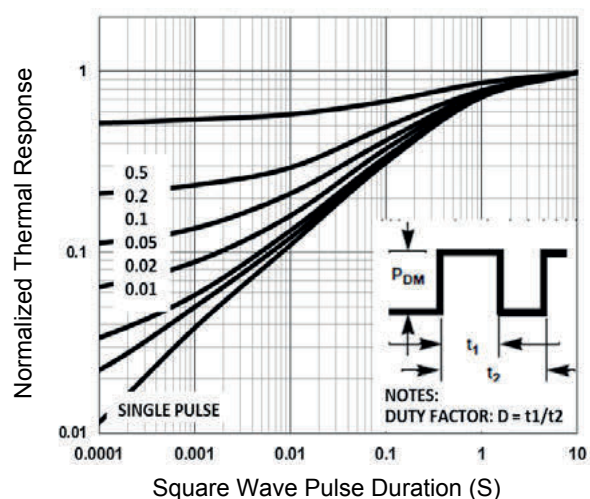


Figure 5. Normalized Transient Impedance

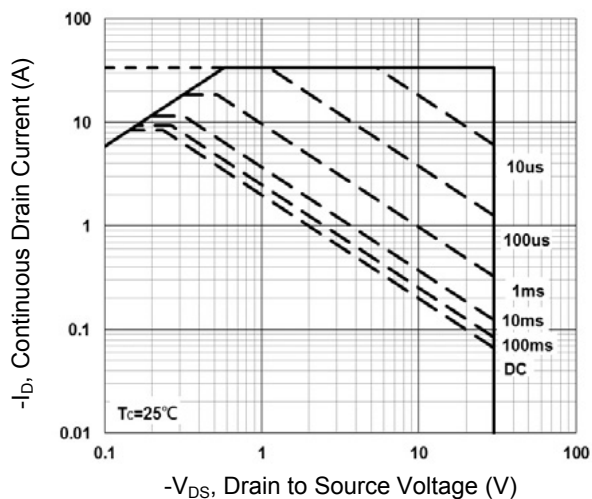
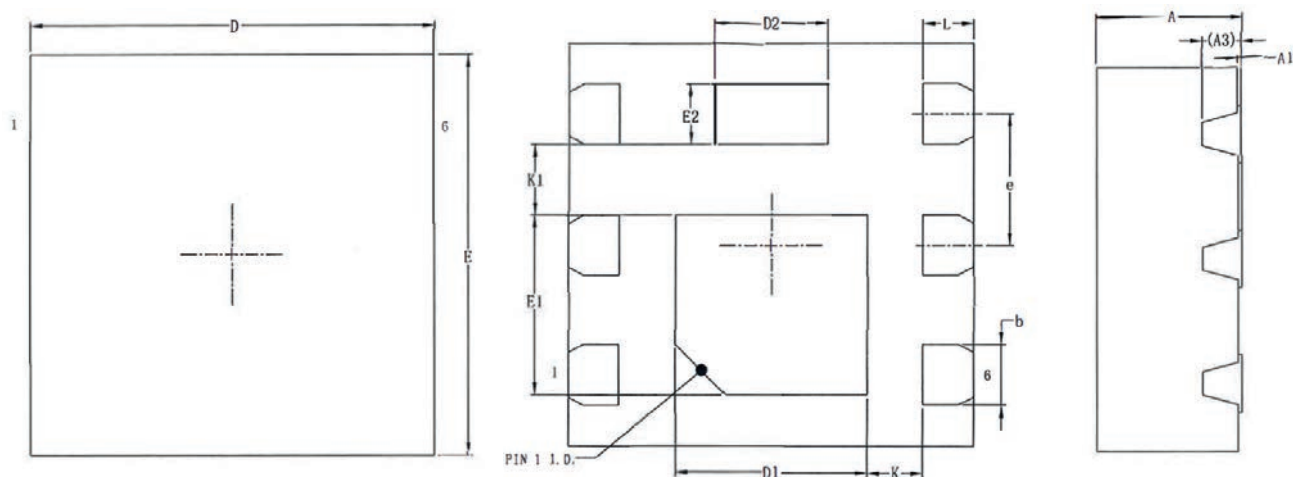


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (DFN2x2-6L 2EP)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.50	0.80	0.020	0.031
A1	0.00	0.05	0.000	0.002
A3	0.203 REF		0.008 REF	
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
D1	0.85	1.05	0.033	0.041
D2	0.46	0.66	0.018	0.026
E	1.90	2.10	0.075	0.083
E1	0.80	1.00	0.031	0.039
E2	0.20	0.40	0.008	0.016
e	0.65 BSC		0.026 BSC	
L	0.20	0.30	0.008	0.012
K	0.275 REF		0.011 REF	
K1	0.350 REF		0.014 REF	

Order Information

Device	Package	Marking	Quantity	Carrier
GSFB3123AU	DFN2x2-6L 2EP	BXYA	3,000pcs / Reel	Tape & Reel