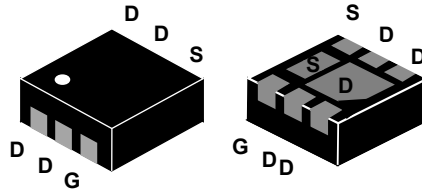
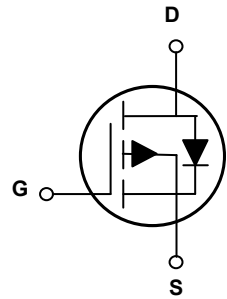


Main Product Characteristics

$V_{(BR)DSS}$	-40V
$R_{DS(ON)}$	43m 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 GSFB4043 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	-10	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-6.8	A
Drain Current-Pulsed ¹	I_{DM}	-40	A
Maximum Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	14	W
Single Pulse Avalanche Energy (L=0.5mH)	E_{AS}	64	mJ
Single Pulse Avalanche Current (L=0.5mH)	I_{AS}	16	A
Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	$R_{\theta JC}$	8.92	$^\circ\text{C}/\text{W}$
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}	$V_{GS}=0V, I_D=-250\mu A$	-40	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=-1\text{mA}$	-	-0.04	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-40V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	-1	μA
		$V_{DS}=-32V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	-10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-4A$	-	34	43	$\text{m}\Omega$
		$V_{GS}=-4.5V, I_D=-3A$	-	45	60	$\text{m}\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.1	-1.6	-2.7	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	3	-	$\text{mV}/^\circ\text{C}$
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q_g	$V_{DS}=-20V, V_{GS}=-10V, I_D=-8A$	-	19.7	-	nC
Gate-Source Charge ^{2,3}	Q_{gs}		-	2.7	-	
Gate-Drain Charge ^{2,3}	Q_{gd}		-	5.6	-	
Turn-On Delay Time ^{2,3}	$t_{d(on)}$	$V_{DD}=-20V, V_{GS}=-10V, R_G=3\Omega, I_D=-6A$	-	13	-	nS
Rise Time ^{2,3}	t_r		-	16	-	
Turn-Off Delay Time ^{2,3}	$t_{d(off)}$		-	150	-	
Fall Time ^{2,3}	t_f		-	66	-	
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, F=1\text{MHz}$	-	1030	-	pF
Output Capacitance	C_{oss}		-	64	-	
Reverse Transfer Capacitance	C_{rss}		-	49	-	
Forward Transconductance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1.0\text{MHz}$	-	4.7	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	-10	A
Pulsed Source Current	I_{SM}		-	-	-40	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-2A, T_J=25^\circ\text{C}$	-	-	-1.2	V
Reverse Recovery Time	T_{rr}	$I_F=-6A, di/dt=-100A/s$	-	33	-	nS
Reverse Recovery Charge	Q_{rr}		-	35	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width $\leq 300 \mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

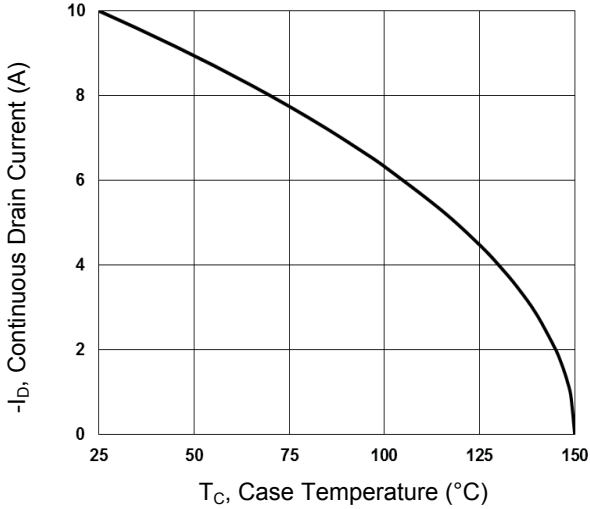


Figure 1. Continuous Drain Current vs. T_c

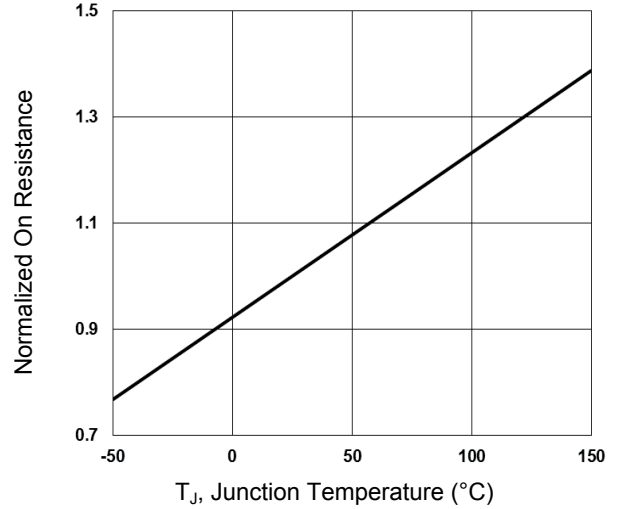


Figure 2. Normalized R_{DSON} vs. T_j

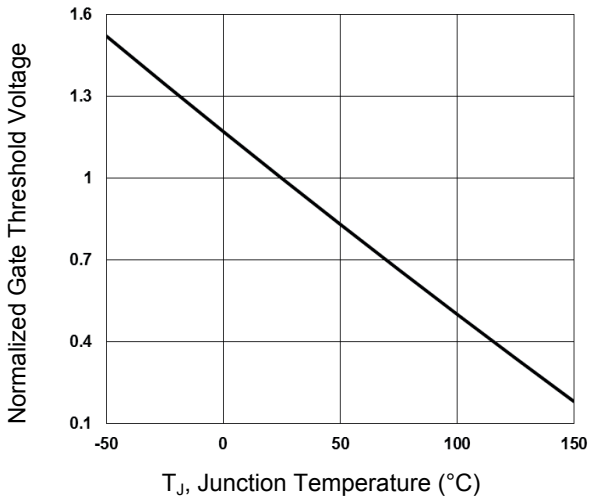


Figure 3. Normalized V_{th} vs. T_j

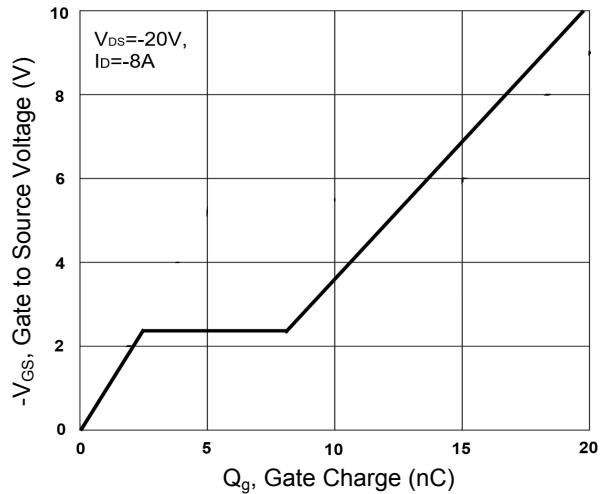


Figure 4. Gate Charge Waveform

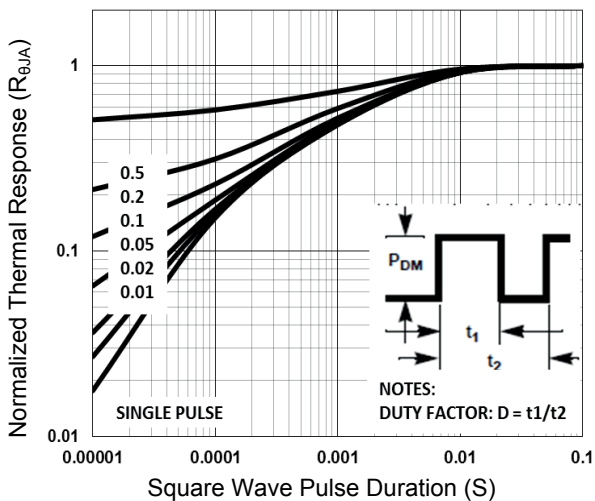


Figure 5. Normalized Transient Impedance

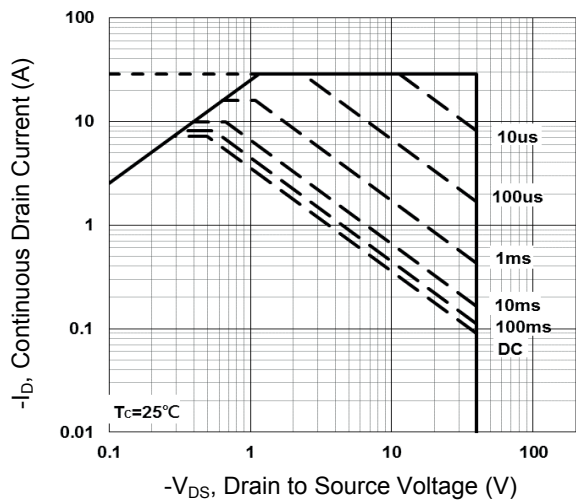
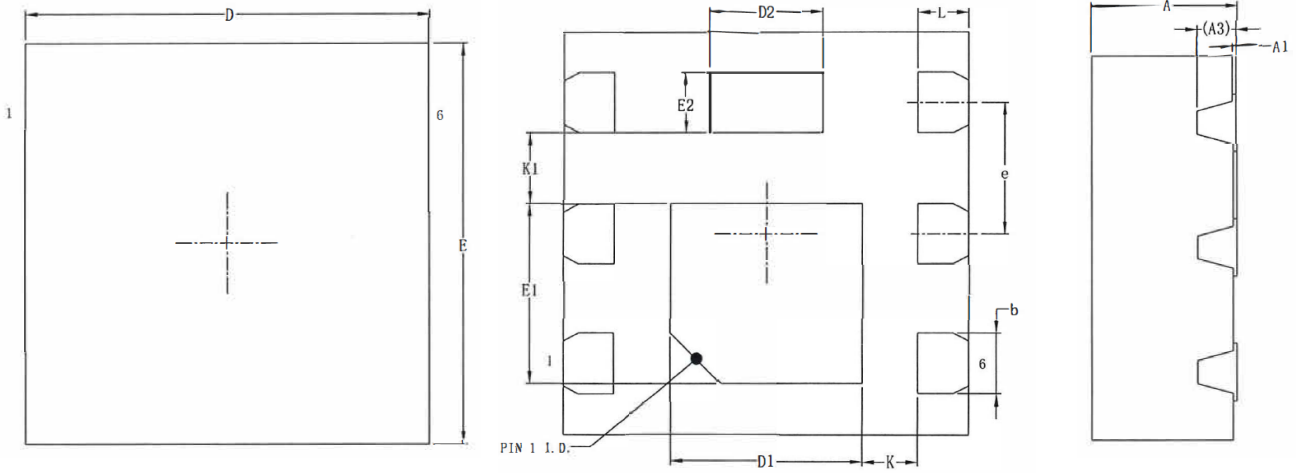


Figure 6. Maximum Safe Operation Area

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
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	0.25	0.30	0.010	0.012
K	0.275 REF		0.011 REF	
K1	0.350 REF		0.014 REF	

Order Information

Device	Package	Marking	Quantity	Carrier
GSFB4043	DFN2x2-6L 2EP	B4043	3,000pcs / Reel	Tape & Reel