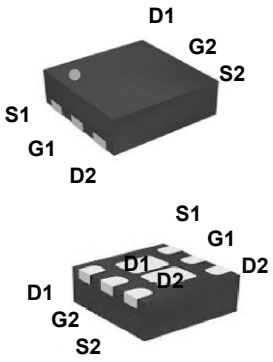
GOOD-ARK SEMICONDUCTOR

GSFB2214S

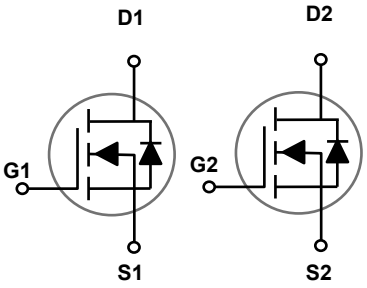
20V Dual N-Channel MOSFETs

Main Product Characteristics

BV_{DSS}	20V
$R_{DS(ON)}$	22mΩ
I_D	6A



DFN2x2 Dual 2EP



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for notebook, load switch, networking and hand-held devices
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery

Description

The GSFB2214S 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 supply and a wide variety of other applications.

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous (T_A=25°C)	I_D	6	A
Drain Current-Continuous (T_A=70°C)		4.8	
Drain Current-Pulsed[1]	I_{DM}	24	A
Power Dissipation (T_A=25°C)	P_D	1.25	W
Power Dissipation-Derate above 25°C		0.01	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	100	°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=250uA	20	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=20V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=16V, V_{GS}=0V, T_J=125°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=2A	-	18	22	mΩ
		V_{GS}=2.5V, I_D=1.5A	-	23	30	
		V_{GS}=1.8V, I_D=1A	-	31	40	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250uA	0.4	0.6	1	V
Forward Transconductance	g_{fs}	V_{DS}=10V, I_D=1A	-	4	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=10V, I_D=3A V_{GS}=4.5V	-	5.3	8	nC
Gate-Source Charge[2,3]	Q_{gs}		-	0.5	2	
Gate-Drain Charge[2,3]	Q_{gd}		-	1.8	3	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=10V, R_G=6Ω V_{GS}=4.5V, I_D=3A	-	4.1	6.2	nS
Rise Time[2,3]	t_r		-	11.6	18	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	23.9	36	
Fall Time[2,3]	t_f		-	7.6	12	
Input Capacitance	C_{lss}	V_{DS}=10V, V_{GS}=0V, F=1MHz	-	490	750	pF
Output Capacitance	C_{oss}		-	90	140	
Reverse Transfer Capacitance	C_{rss}		-	70	120	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	6	A
Pulsed Source Current	I_{SM}		-	-	12	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A, T_J=25°C	-	-	1	V

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤300us,duty cycle≤2%.
3. Essentially independent of operating temperature.

Typical Characteristic Curves

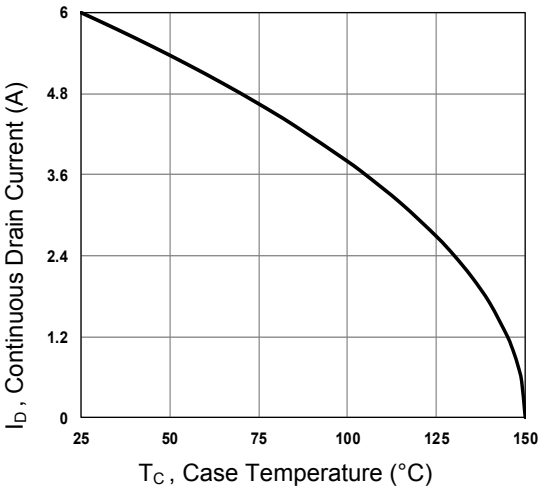


Figure 1. Continuous Drain Current vs. T_C

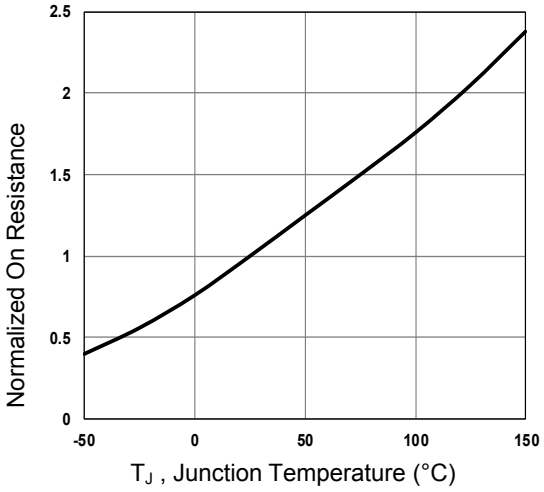


Figure 2. Normalized R_{DSON} vs. T_J

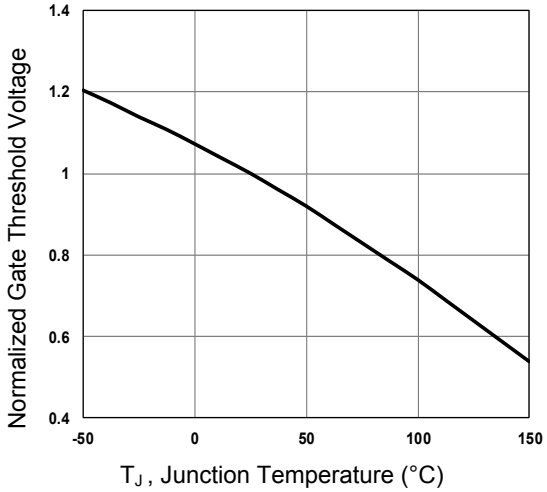


Figure 3. Normalized V_{th} vs. T_J

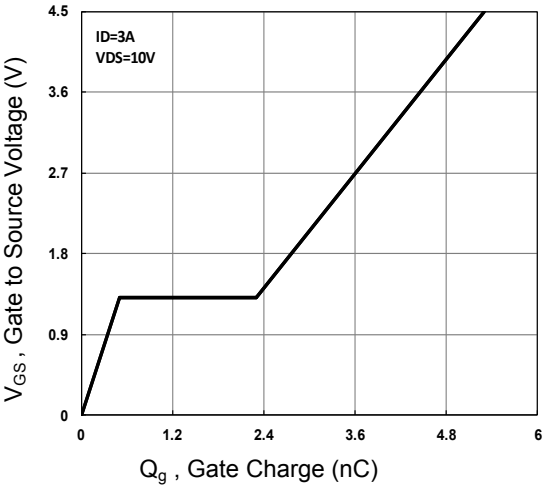


Figure 4. Gate Charge Waveform

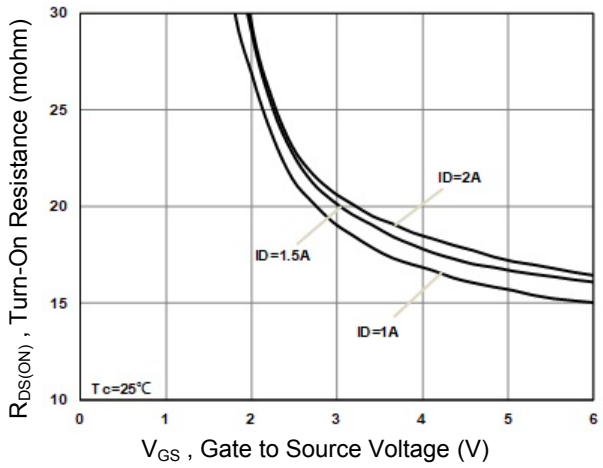


Figure 5. Turn-On Resistance vs. V_{GS}

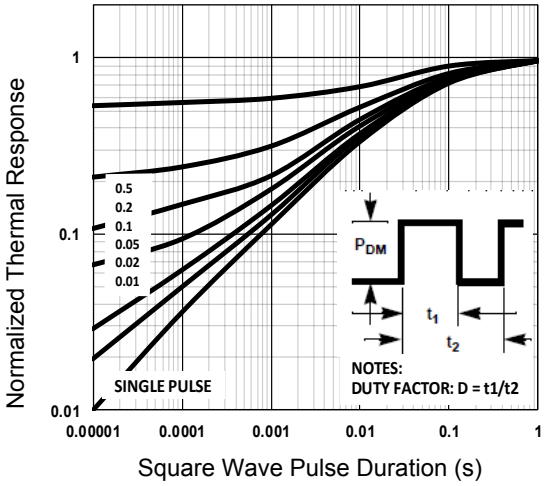


Figure 6. Normalized Transient Impedance

Typical Characteristic Curves

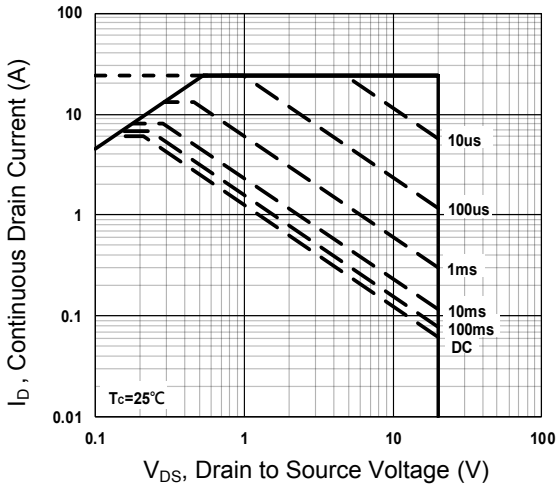
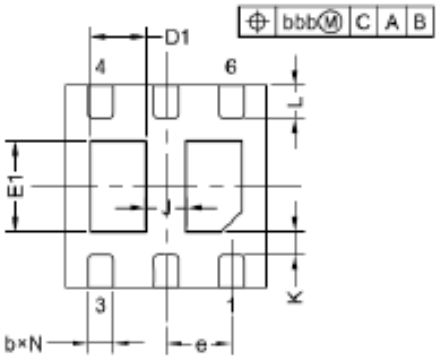
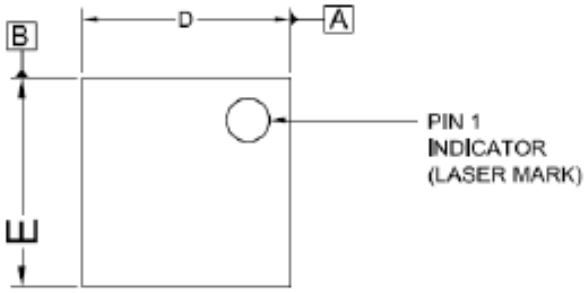


Figure 7. Maximum Safe Operation Area

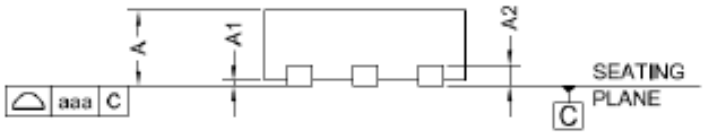
Package Outline Dimensions DFN 2x2 Dual 2EP



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e		0.65BSC	
L	0.27	0.32	0.37
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	