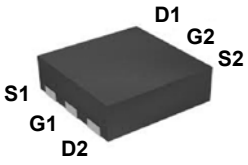
GOOD-ARK SEMICONDUCTOR

GSFB0205

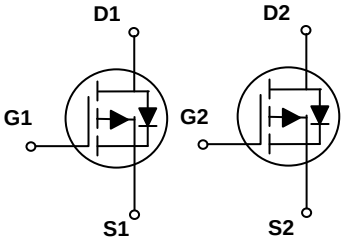
20V Dual P-Channel MOSFETs

Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	49mΩ
I_D	-4A



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 GSFB0205 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	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current–Continuous (T_A=25°C)	I_D	-4	A
Drain Current–Continuous (T_A=70°C)		-3.2	A
Drain Current–Pulsed[1]	I_{DM}	-16	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
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-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=-250μA	-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=-1.5A	-	41	49	mΩ
		V_{GS}=-2.5V, I_D=-1A	-	54	70	
		V_{GS}=-1.8V, I_D=-0.8A	-	76	99	
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	-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=-2A, V_{GS}=-4.5V	-	6.4	9	nC
Gate-Source Charge[2,3]	Q_{gs}		-	0.9	1.5	
Gate-Drain Charge[2,3]	Q_{gd}		-	1.6	3	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=-10V, R_G=6Ω V_{GS}=-4.5V, I_D=-2A	-	5	9	nS
Rise Time[2,3]	t_r		-	17.4	33	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	40.7	80	
Fall Time[2,3]	t_f		-	11.4	23	
Input Capacitance	C_{lss}	V_{DS}=-10V, V_{GS}=0V, F=1MHz	-	540	810	pF
Output Capacitance	C_{oss}		-	80	120	
Reverse Transfer Capacitance	C_{rss}		-	75	115	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	-4	A
Pulsed Source Current	I_{SM}		-	-	-8	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 Electrical and Thermal Characteristic Curves

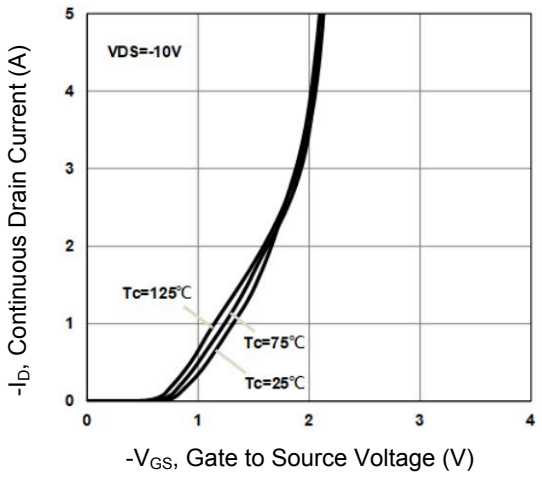


Figure 1. Transfer Characteristics

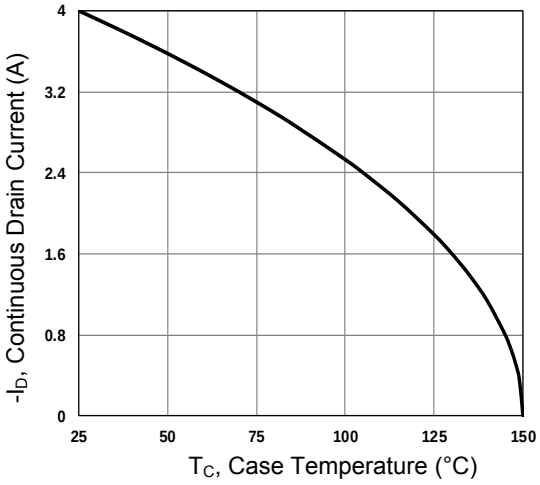


Figure 2. Continuous Drain Current vs. T_C

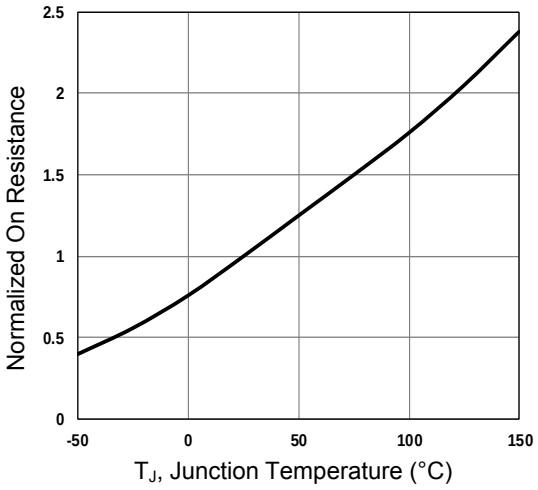


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

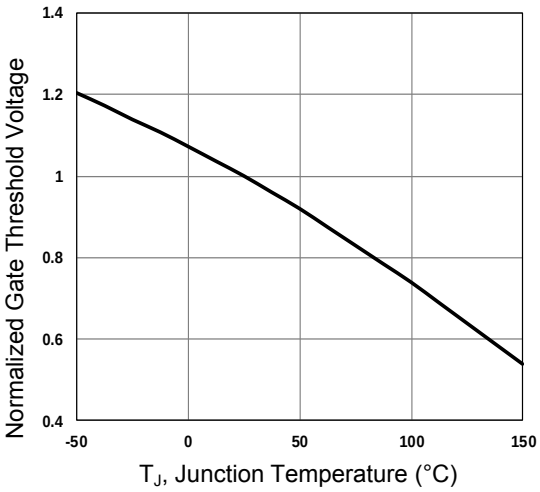


Figure 4. Normalized V_{th} vs. T_J

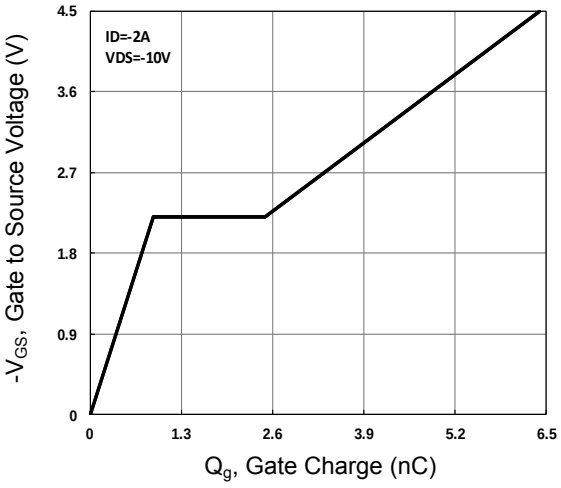


Figure 5. Gate Charge Waveform

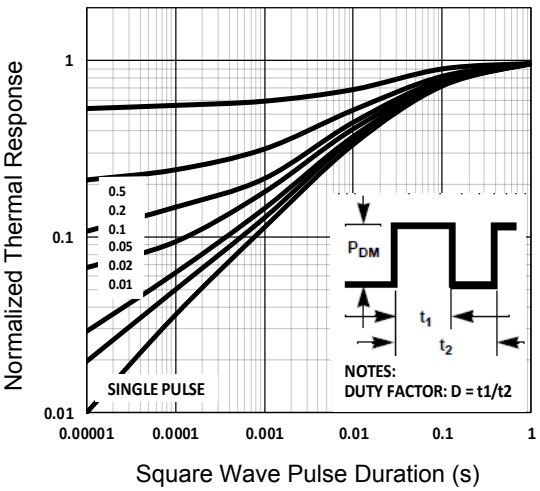


Figure 6. Normalized Transient Impedance

Typical Electrical and Thermal Characteristic Curves

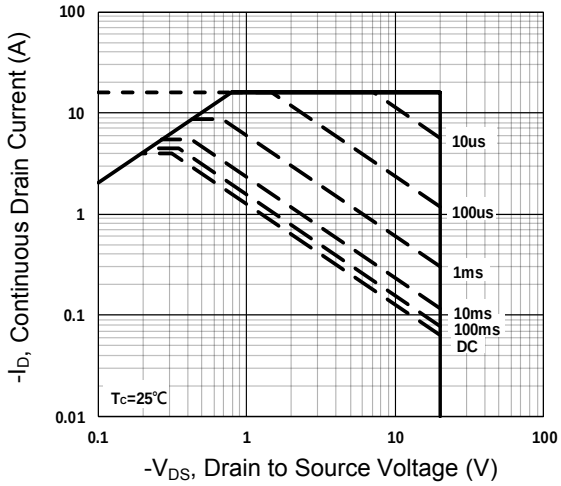
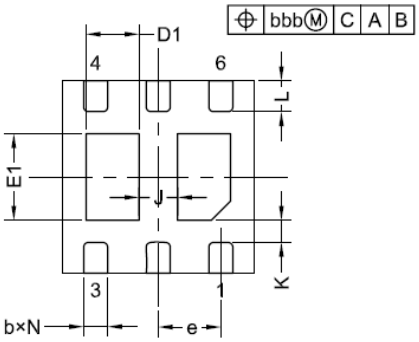
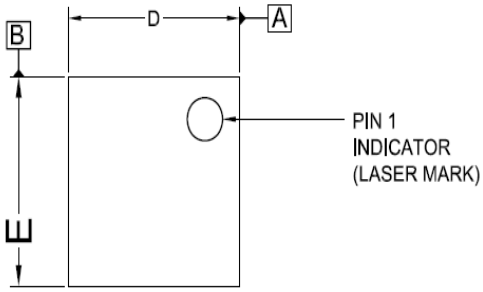


Figure 7. Maximum Safe Operation Area

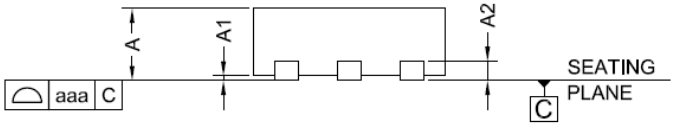
Package Outline Dimensions (DFN2x2-6L 2EP)



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	