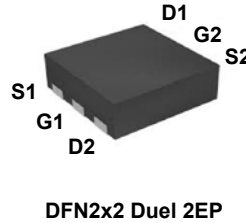
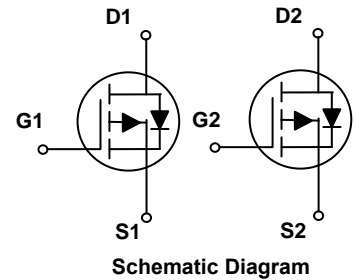


### Main Product Characteristics

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



DFN2x2 Duel 2EP



### 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 ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Drain Current–Continuous ( $T_A=25^\circ\text{C}$ )	$I_D$	-4	A
Drain Current–Continuous ( $T_A=70^\circ\text{C}$ )		-3.2	A
Drain Current–Pulsed <sup>1</sup>	$I_{DM}$	-16	A
Power Dissipation ( $T_A=25^\circ\text{C}$ )	$P_D$	1.25	W
Power Dissipation–Derate above $25^\circ\text{C}$		0.01	W/ $^\circ\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$

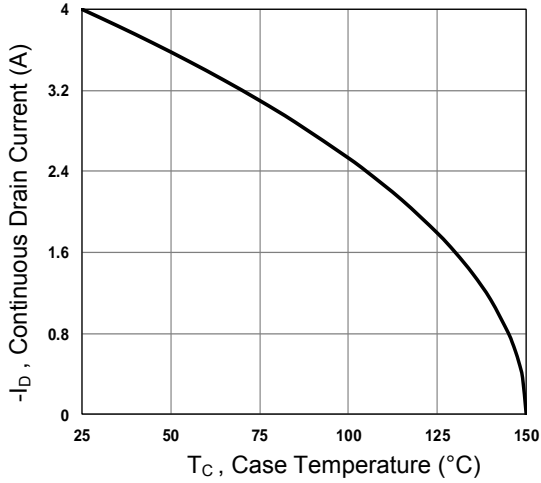
**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	-1	$\mu A$
		$V_{DS}=-16V, V_{GS}=0V, T_J=125^\circ\text{C}$	-	-	-10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 10V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-1.5A$	-	41	49	m $\Omega$
		$V_{GS}=-2.5V, I_D=-1A$	-	54	70	
		$V_{GS}=-1.8V, I_D=-0.8A$	-	76	99	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	-0.4	-0.6	-1	V
Forward Transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-1A$	-	4	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=-10V, I_D=-2A, V_{GS}=-4.5V$	-	6.4	9	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	0.9	1.5	
Gate-Drain Charge <sup>2,3</sup>	$Q_{gd}$		-	1.6	3	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=-10V, R_G=6\Omega, V_{GS}=-4.5V, I_D=-2A$	-	5	9	nS
Rise Time <sup>2,3</sup>	$t_r$		-	17.4	33	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	40.7	80	
Fall Time <sup>2,3</sup>	$t_f$		-	11.4	23	
Input Capacitance	$C_{ISS}$	$V_{DS}=-10V, V_{GS}=0V, F=1\text{MHz}$	-	540	810	pF
Output Capacitance	$C_{OSS}$		-	80	120	
Reverse Transfer Capacitance	$C_{RSS}$		-	75	115	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V, \text{Force Current}$	-	-	-4	A
Pulsed Source Current	$I_{SM}$		-	-	-8	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	-	-	-1	V

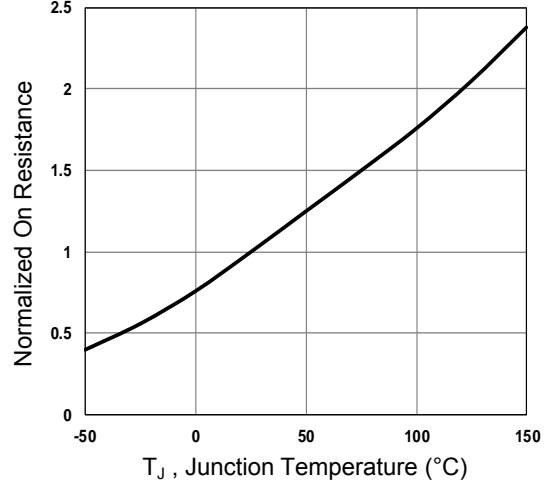
**Note :**

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

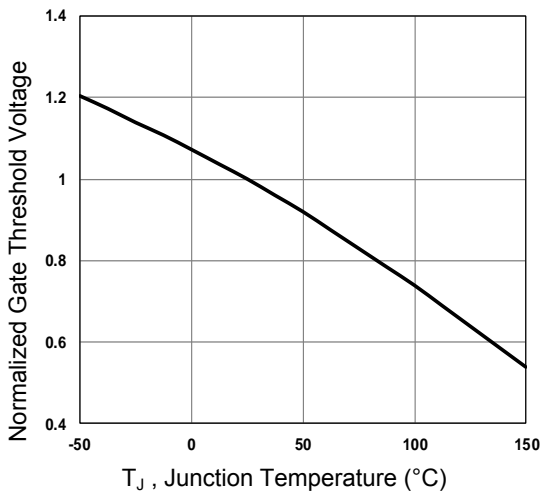
**Typical Electrical and Thermal Characteristic Curves**



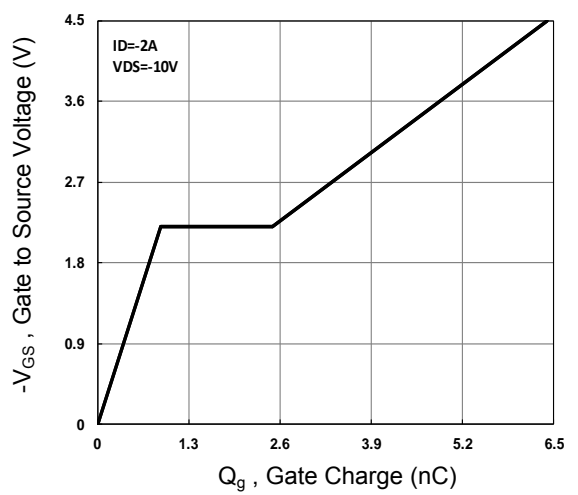
**Figure 1. Continuous Drain Current vs. T<sub>c</sub>**



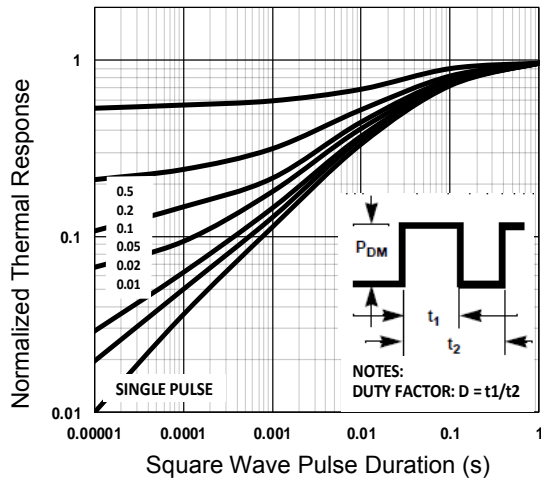
**Figure 2. Normalized R<sub>DS(ON)</sub> vs. T<sub>J</sub>**



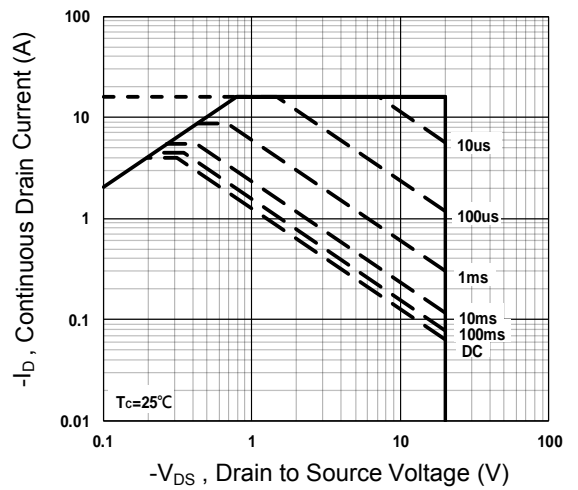
**Figure 3. Normalized V<sub>th</sub> vs. T<sub>J</sub>**



**Figure 4. Gate Charge Waveform**

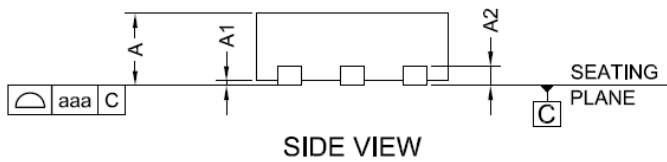
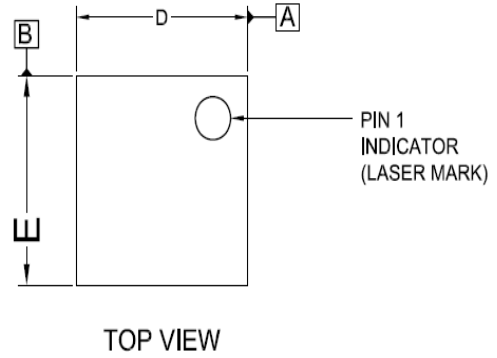
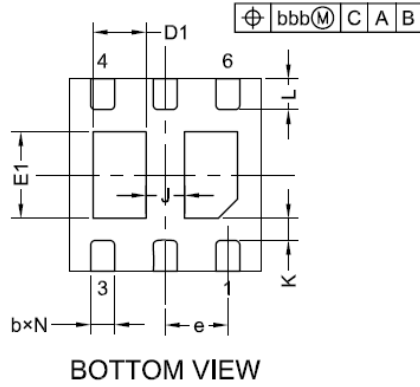


**Figure 5. Normalized Transient Impedance**



**Figure 6. Maximum Safe Operation Area**

## Package Outline Dimensions (DFN2x2 Duel 2EP)



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		