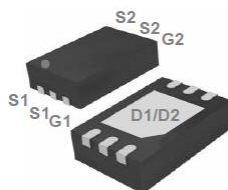
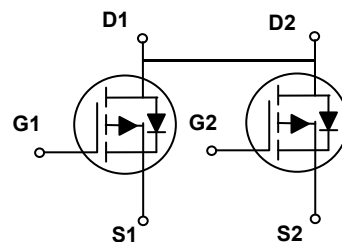


Main Product Characteristics

BV_{DSS}	-20V
$R_{DS(ON)}$	23m Ω (max.)
I_D	-6.5A



DFN2x3



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 GSFN0205 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	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous ($T_A=25^\circ\text{C}$)	I_D	-6.5	A
Drain Current-Continuous ($T_A=70^\circ\text{C}$)		-5.2	
Drain Current-Pulsed ¹	I_{DM}	-26	A
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	1.56	W
Power Dissipation-Derate above 25°C		0.0125	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	80	$^\circ\text{C/W}$
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 ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-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 ²	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-4A	-	19	23	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	25	33	
		V _{GS} =-1.8V, I _D =-2A	-	35	46	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250μA	-0.3	-0.6	-1	V
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _D =-3A	-	7	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =-10V, I _D =-4A, V _{GS} =-4.5V	-	16.1	25	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.8	3.6	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	3.8	7	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =-10V, R _G =25Ω, V _{GS} =-4.5V, I _D =-1A	-	8.2	16	nS
Rise Time ^{2,3}	t _r		-	30	57	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	71	135	
Fall Time ^{2,3}	t _f		-	20	38	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1MHz	-	1440	2100	pF
Output Capacitance	C _{oss}		-	155	230	
Reverse Transfer Capacitance	C _{rss}		-	115	170	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	-6.5	A
Pulsed Source Current ²	I _{SM}		-	-	-13	A
Diode Forward Voltage ²	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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

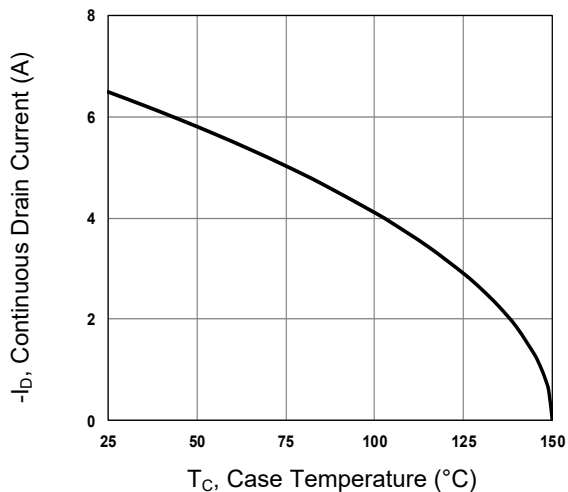


Figure 1. Continuous Drain Current vs. T_c

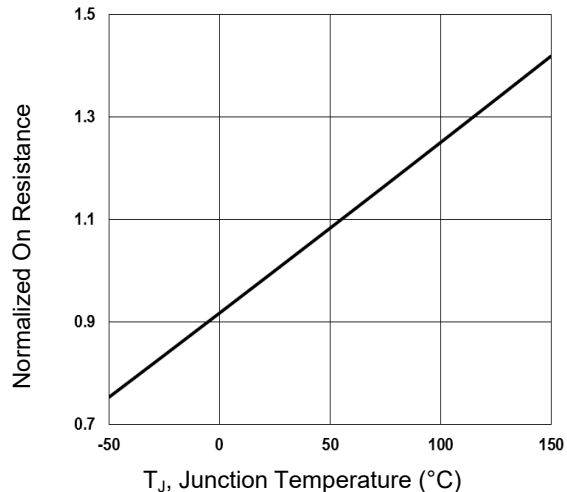


Figure 2. Normalized $R_{DS(on)}$ vs. T_j

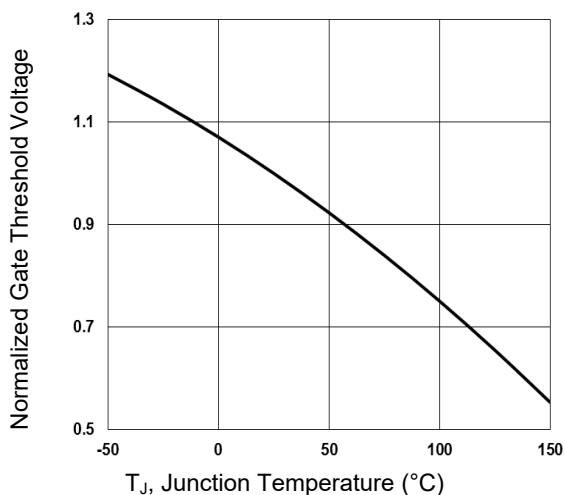


Figure 3. Normalized V_{th} vs. T_j

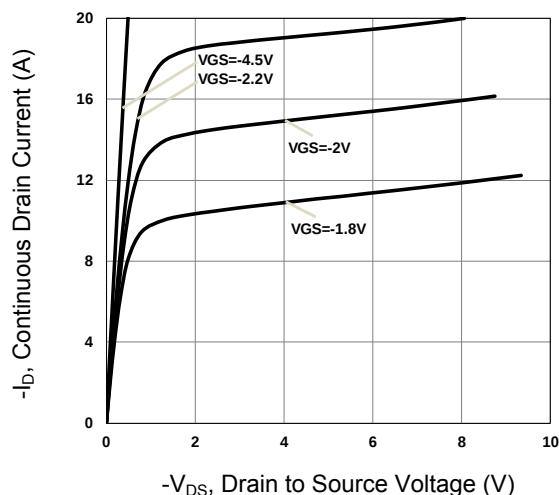


Figure 4. Typical Output Characteristics

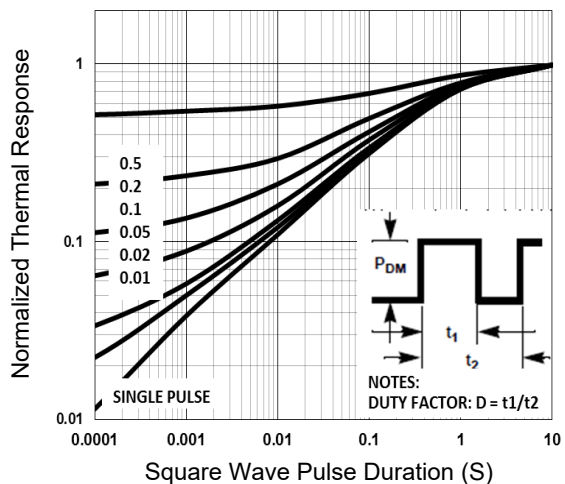


Figure 5. Normalized Transient Impedance

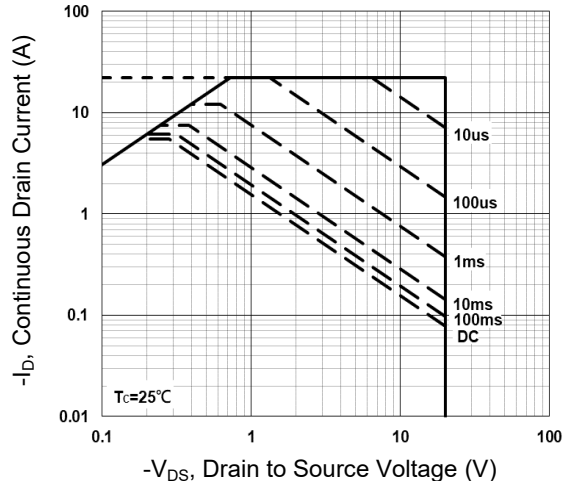


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

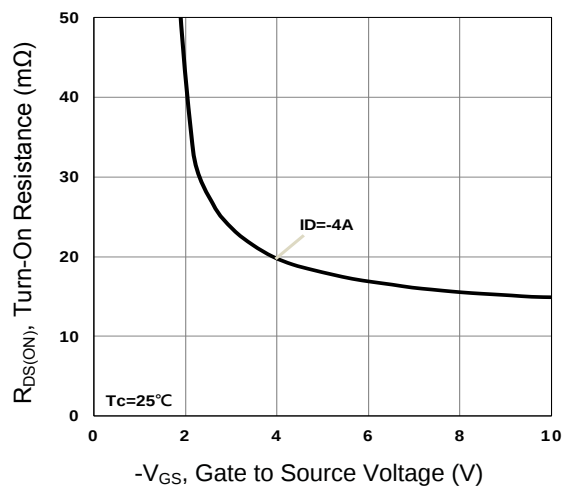


Figure 7. Turn-On Resistance vs. V_{GS}

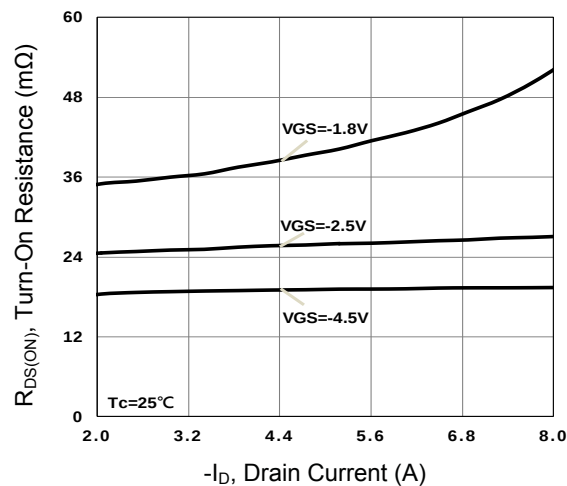


Figure 8. Turn-On Resistance vs. I_D

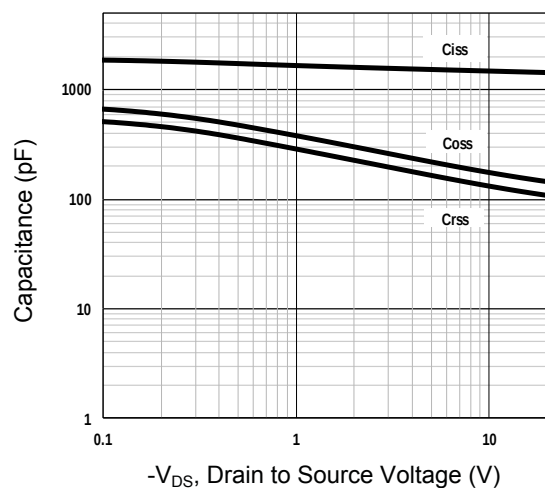


Figure 9. Capacitance Characteristics

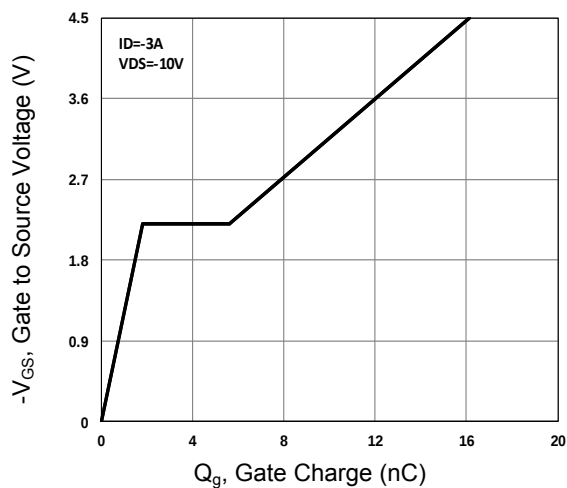
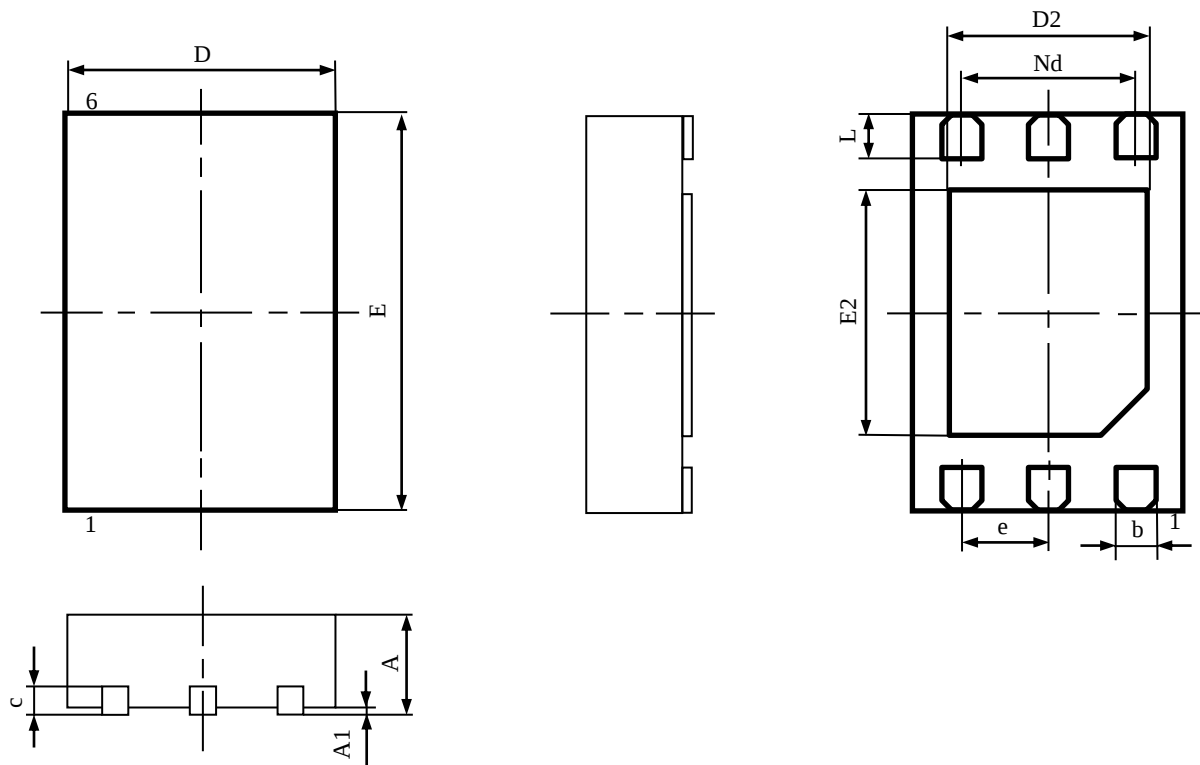


Figure 10. Gate Charge Characteristics

Package Outline Dimensions (DFN2x3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
A1	-	0.050	-	0.002
b	0.200	0.350	0.008	0.014
c	0.180	0.250	0.007	0.010
D	1.900	2.100	0.075	0.083
D2	1.400	1.600	0.055	0.063
e	0.500 BSC		0.020 BSC	
Nd	1.000 BSC		0.040 BSC	
E	2.900	3.100	0.114	0.122
E2	1.650	1.750	0.065	0.069
L	0.300	0.400	0.012	0.016

Order Information

Device	Package	Marking	Packaging	SPQ
GSFN0205	DFN2x3	B2209Q	Tape & Reel	3,000pcs / Reel