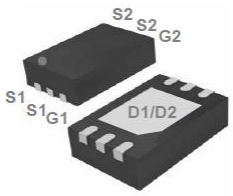
GOOD-ARK SEMICONDUCTOR

GSFN0205

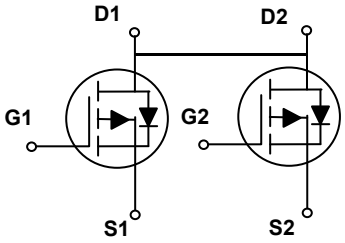
20V Dual P-Channel MOSFET

Main Product Characteristics

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



DFN2X3 Dual



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°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°C)	I_D	-6.5	A
Drain Current-Continuous (T_A=70°C)		-5.2	
Drain Current-Pulsed[1]	I_{DM}	-26	A
Power Dissipation (T_A=25°C)	P_D	1.56	W
Power Dissipation-Derate above 25°C		0.0125	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	80	°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=-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	gfs	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 ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

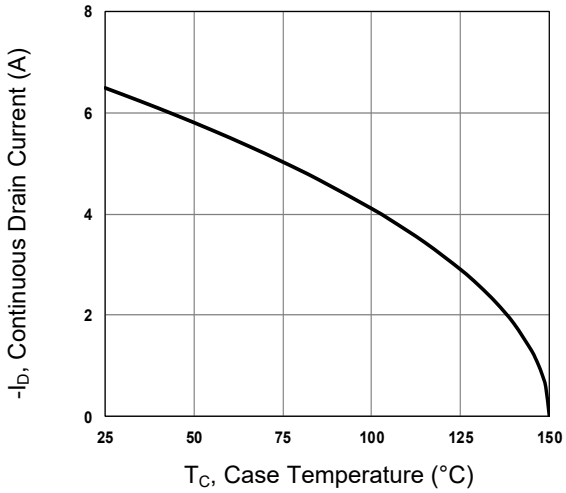


Figure 1. Continuous Drain Current vs. T_C

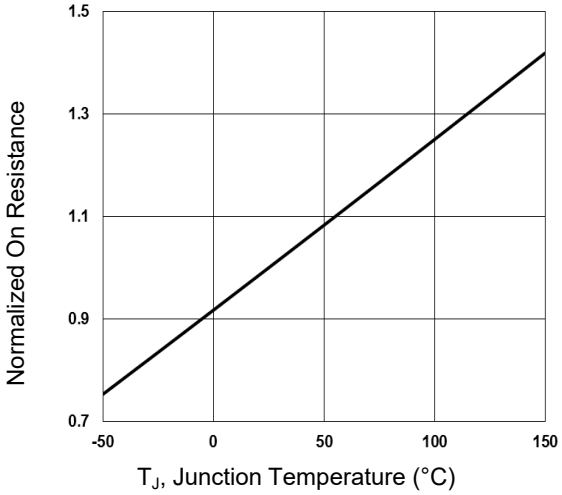


Figure 2. Normalized R_{DSON} vs. T_J

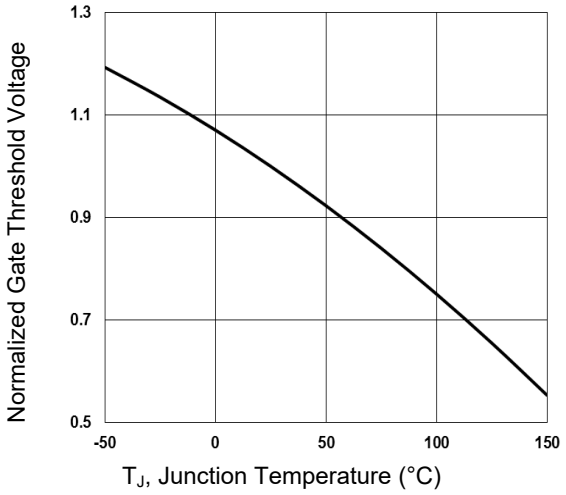


Figure 3. Normalized V_{th} vs. T_J

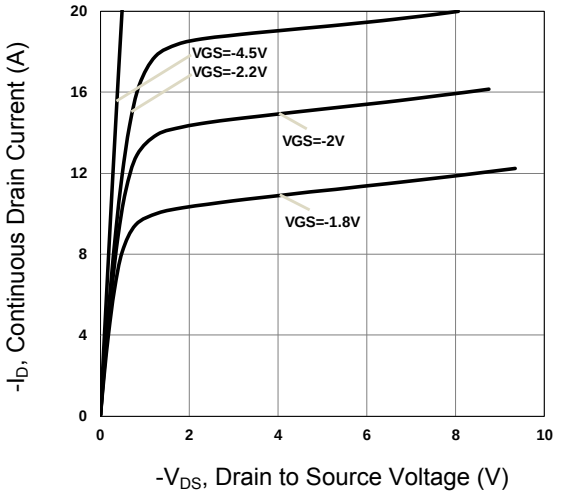


Figure 4. Typical Output Characteristics

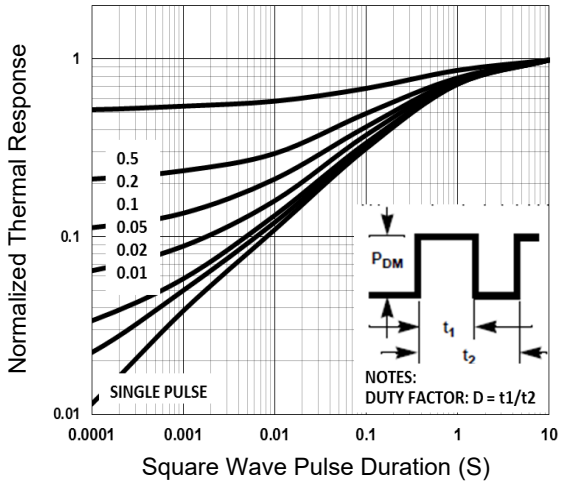


Figure 5. Normalized Transient Impedance

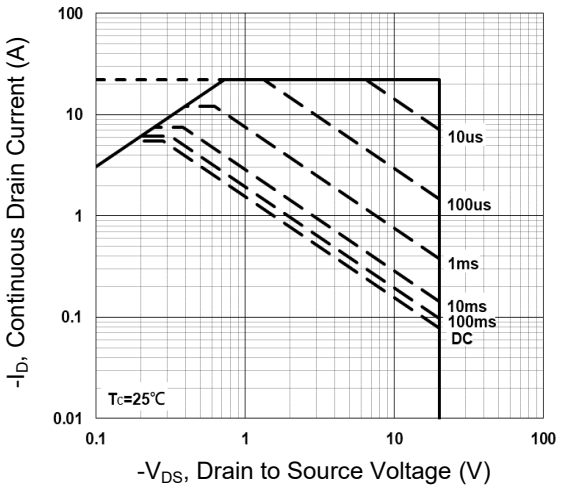


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

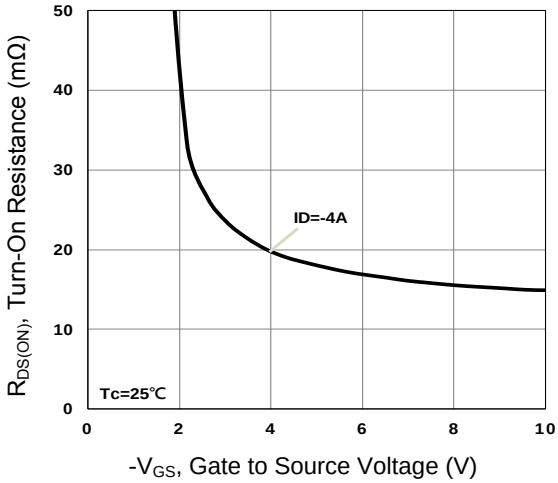


Figure 7. Turn-On Resistance vs. V_{GS}

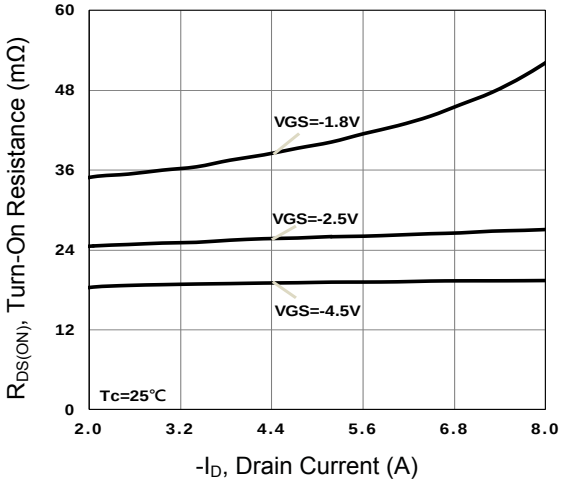


Figure 8. Turn-On Resistance vs. I_D

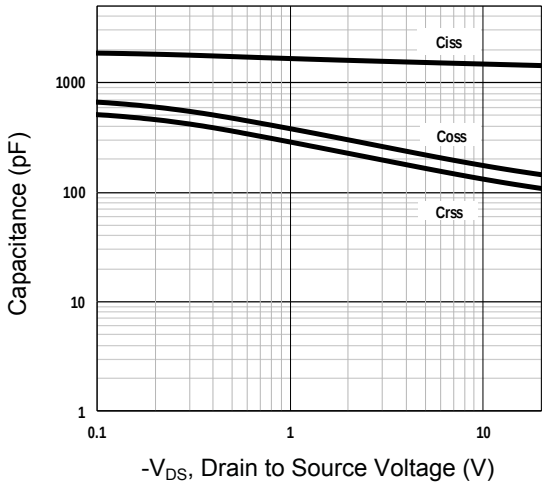


Figure 9. Capacitance Characteristics

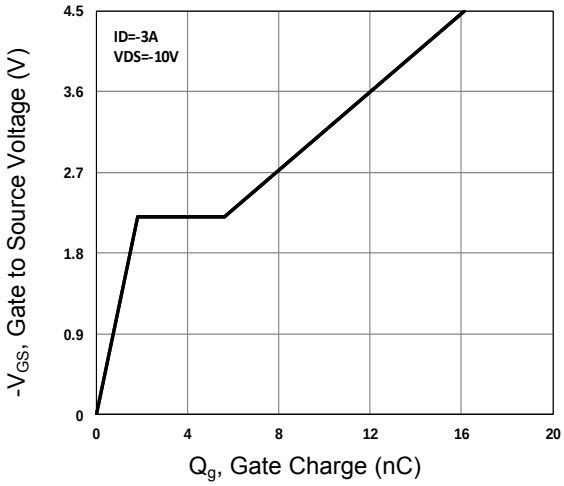
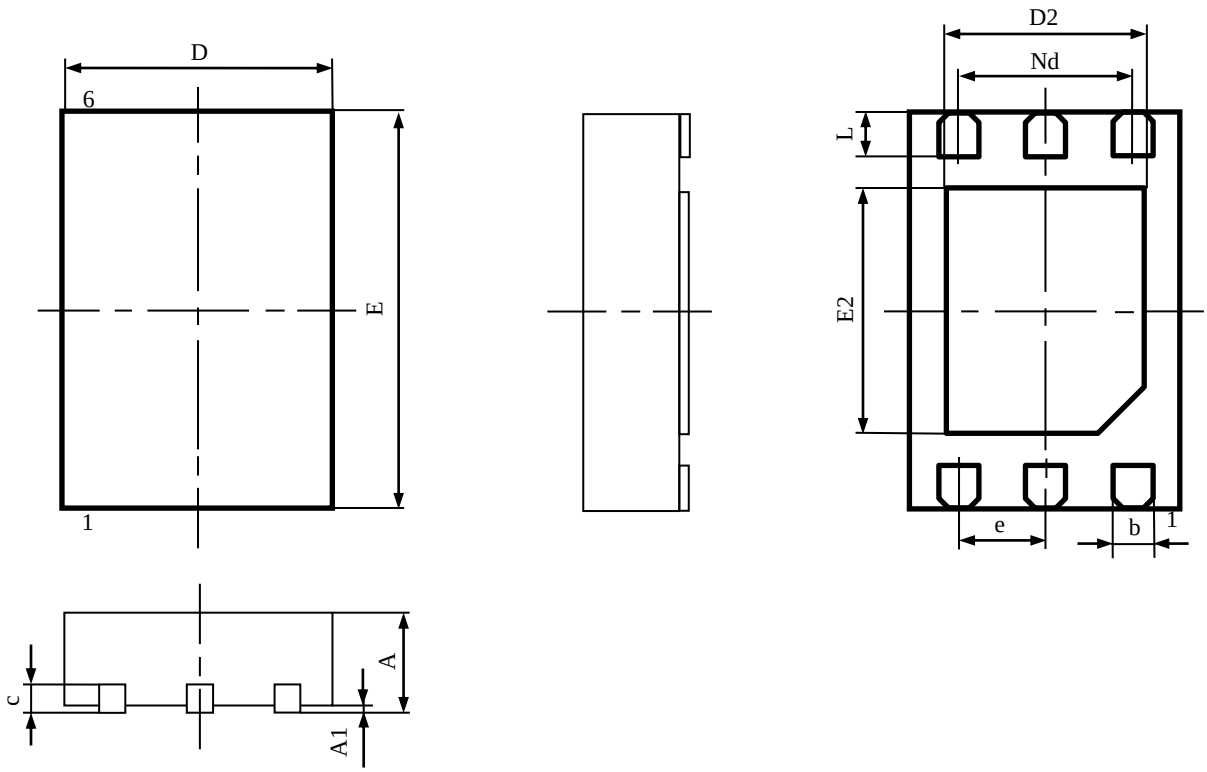


Figure 10. Gate Charge Characteristics

Package Outline Dimensions (DFN2x3 Dual)



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	Carrier	Quantity
GSFN0205	DFN2x3 Dual	B2209Q	Tape & Reel	3,000pcs / Reel