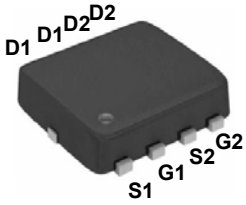
GOOD-ARK SEMICONDUCTOR

GSFN0207

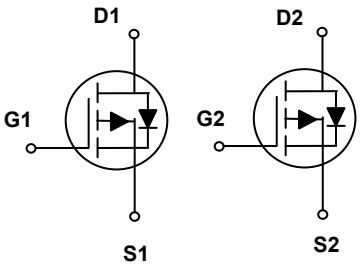
20V Dual P-Channel MOSFETs

Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	33mΩ (Max.)
I_D	-7.5A



PPAK3x3



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

RoHS Compliant

Description

The GSFN0207 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	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous (T_C=25°C)	I_D	-7.5	A
Drain Current–Continuous (T_C=100°C)		-4.5	A
Drain Current-Pulsed[1]	I_{DM}	-30	A
Power Dissipation (T_C=25°C)	P_D	25	W
Power Dissipation – Derate above 25°C		0.2	W/°C
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	62	°C/W
Max. Thermal Resistance Junction to Case	$R_{\theta JC}$	5	°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
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250uA	-20	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=-1mA	-	-0.02	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V, T_J=25°C	-	-	-1	uA
		V_{DS}=-16V, V_{GS}=0V, T_J=125°C	-	-	-10	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±10V, V_{DS}=0V	-	-	±100	nA
On Characteristics						
Static Drain-Source On-Resistance[2]	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-4A	-	28	33	mΩ
		V_{GS}=-2.5V, I_D=-3A	-	37	45	mΩ
		V_{GS}=-1.8V, I_D=-2A	-	49	65	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-0.3	-0.6	-1	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	2	-	mV/°C
Forward Transconductance	gfs	V_{DS}=-10V, I_D=-3A	-	8.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[3]	Q_g	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-4A	-	16.1	25	nC
Gate-Source Charge[3]	Q_{gs}		-	1.8	3.6	
Gate-Drain Charge[3]	Q_{gd}		-	3.8	7	
Turn-On Delay Time[3]	$t_{d(on)}$	V_{DD}=-10V, V_{GS}=-4.5V, R_G=25Ω, I_D=1A	-	8.2	16	nS
Rise Time[3]	t_r		-	30	57	
Turn-Off Delay Time[3]	$t_{d(off)}$		-	71	135	
Fall Time[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	-	-	-7.5	A
Pulsed Source Current[2]	I_{SM}		-	-	-15	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. Pulsed tested: pulse width ≦ 300us, duty cycle ≦ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

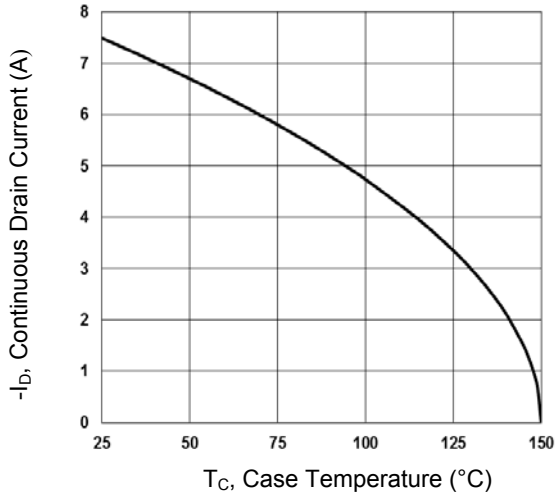


Figure 1. Continuous Drain Current vs. T_C

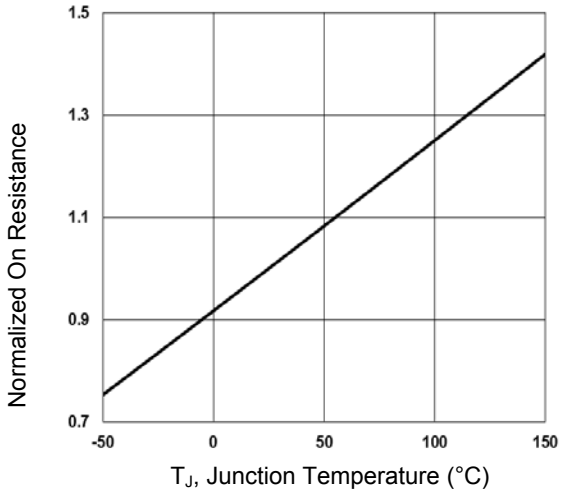


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

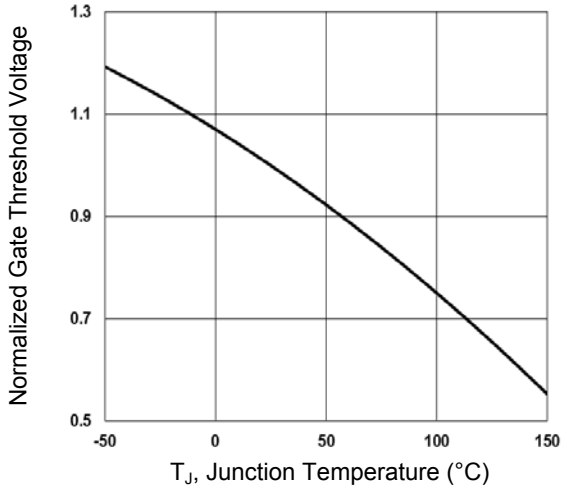


Figure 3. Normalized V_{th} vs. T_J

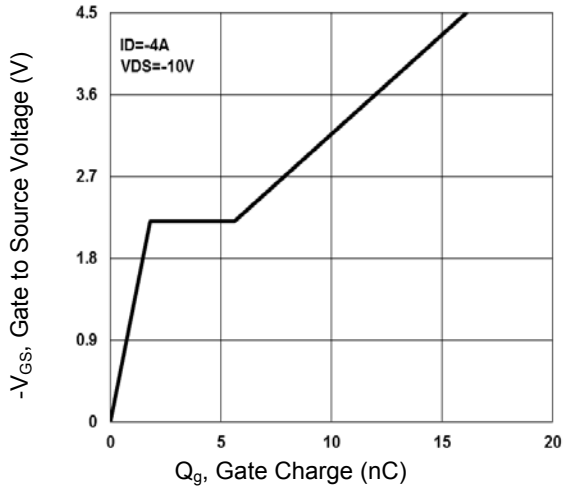


Figure 4. Gate Charge Waveform

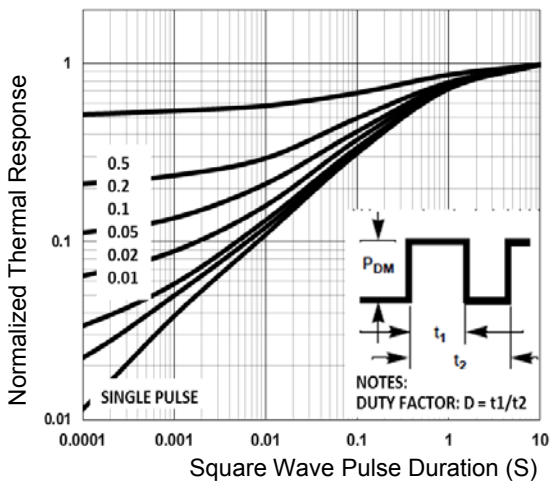


Figure 5. Normalized Transient Response

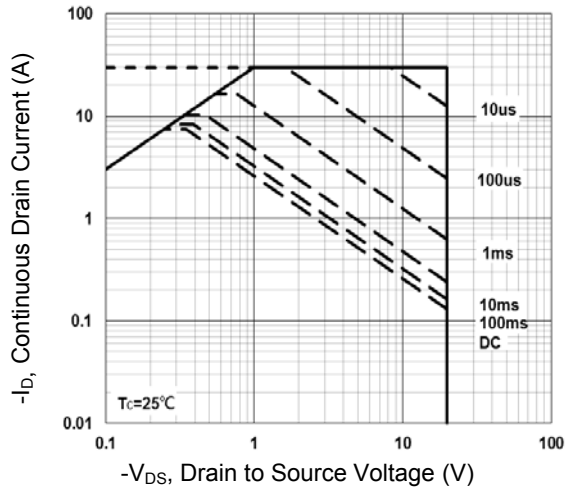


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

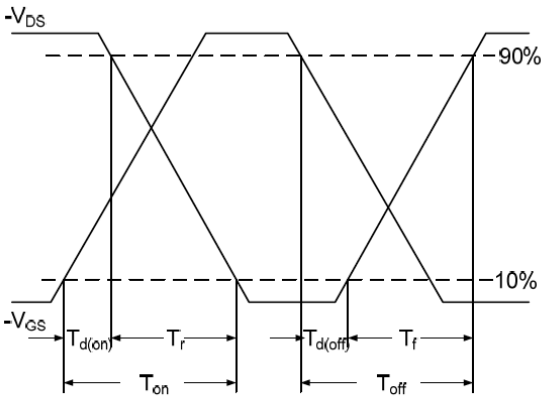


Figure 7. Switching Time Waveform

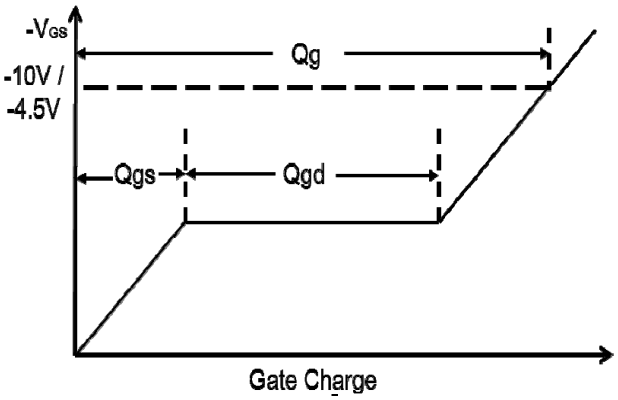
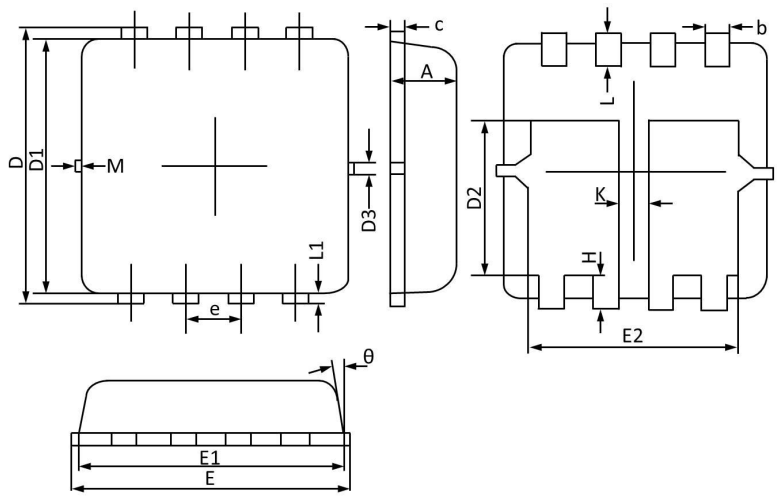


Figure 8. Gate Charge Waveform

Package Outline Dimensions (PPAK3X3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.670	0.880	0.026	0.035
b	0.250	0.350	0.010	0.014
c	0.100	0.250	0.004	0.010
D	3.150	3.550	0.124	0.140
D1	3.000	3.300	0.118	0.130
D2	1.500	2.000	0.059	0.079
D3	0.130	0.200	0.005	0.008
E	3.100	3.500	0.122	0.138
E1	3.000	3.200	0.118	0.126
E2	2.350	2.600	0.093	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.130 REF		0.005 REF	
K	0.300 REF		0.012 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFN0207	PPAK3x3	DC2209V	Tape & Reel	3,000 Pcs / Reel