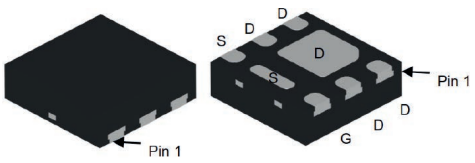
GOOD-ARK
SEMICONDUCTOR

GSN3008SF2

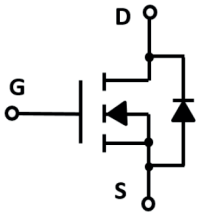
30V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	10mΩ (Max.)
I_D	12A



DFN2020-6



Schematic Diagram

Applications

- Battery management
- Power management
- Load switch

Description

The GSN3008SF2 is the N-Channel enhancement mode power field effect transistors with high cell density, trench technology. This high density process and design have been optimized switching performance and especially tai-lored to minimize on-state resistance.

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_A=25°C)	I_D	12	A
Continuous Drain Current (T_A=70°C)		9	A
Pulsed Drain Current[1]	I_{DM}	47	A
Total Power Dissipation (T_A=25°C)[2]	P_D	3.1	W
Thermal Resistance Junction-to-Ambient[2]	$R_{\theta JA}$	40	°C/W
Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V, T_C=25°C	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	-	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=10A	-	7.7	10	mΩ
		V_{GS}=4.5V, I_D=8A	-	9.7	13	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, F=1MHz	-	968	-	pF
Output Capacitance	C_{oss}		-	121	-	
Reverse Transfer Capacitance	C_{rss}		-	99	-	
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=10A	-	19.2	-	nC
Gate Source Charge	Q_{gs}		-	2.5	-	
Gate Drain Charge	Q_{gd}		-	4.2	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=15V, R_L=1.5Ω, R_{GEN}=3Ω	-	7.6	-	nS
Turn-on Rise Time	t_r		-	15.8	-	
Turn-off Delay Time	$t_{d(off)}$		-	27.6	-	
Turn-off Fall Time	t_f		-	4	-	
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=10A, V_{GS}=0V	-	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	12	A

Notes:

1. Pulse test: pulse width ≤300us, duty cycle ≤2%.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. With 2oz Copper, t ≤10s.

Typical Performance Characteristics

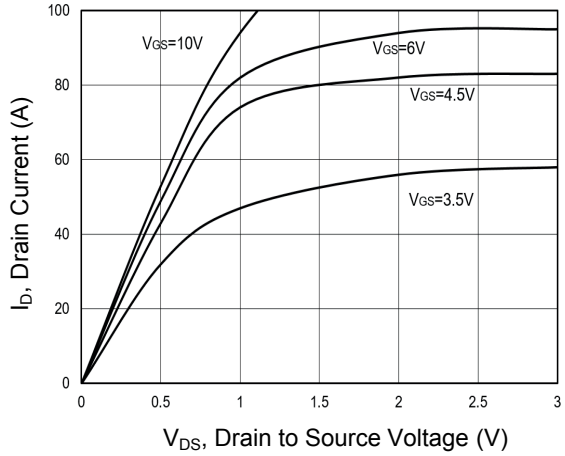


Figure 1. Output Characteristics

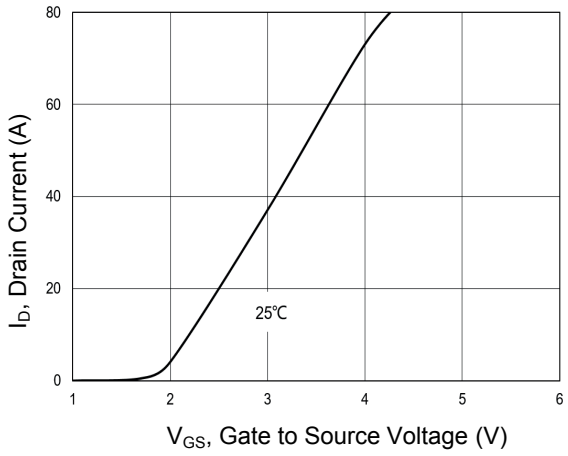


Figure 2. Transfer Characteristics

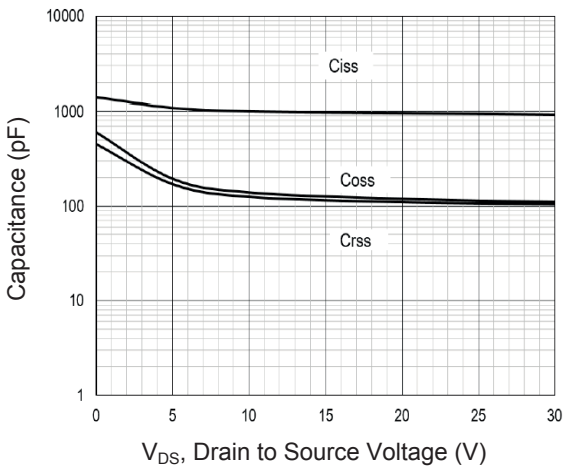


Figure 3. Capacitance Characteristics

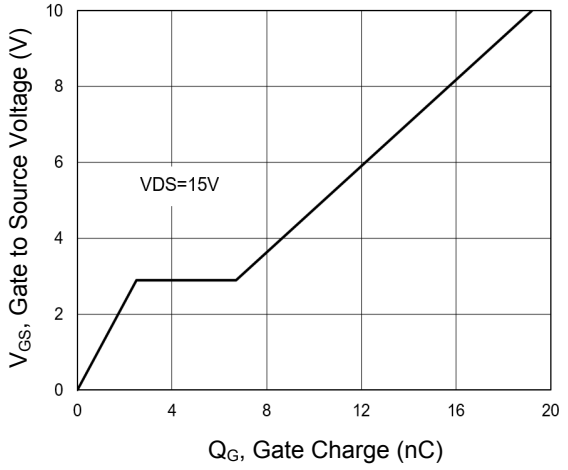


Figure 4. Gate Charge

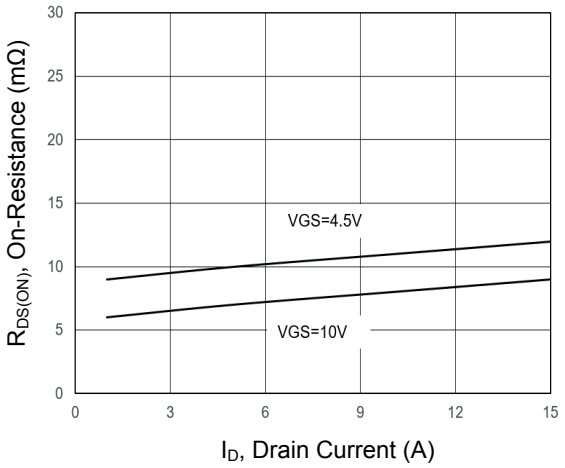


Figure 5. Drain to Source On Resistance

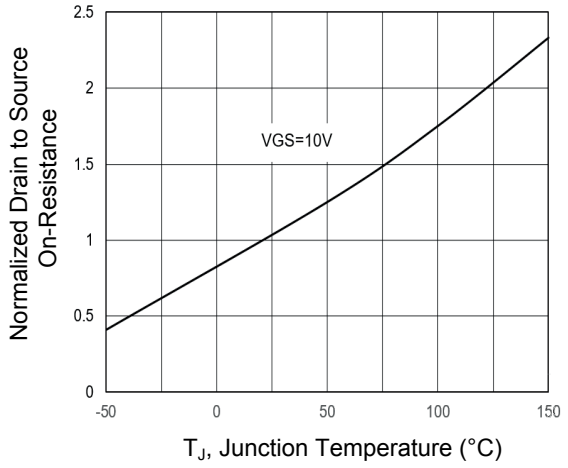


Figure 6. Normalized On-Resistance vs. T_J

Typical Performance Characteristics

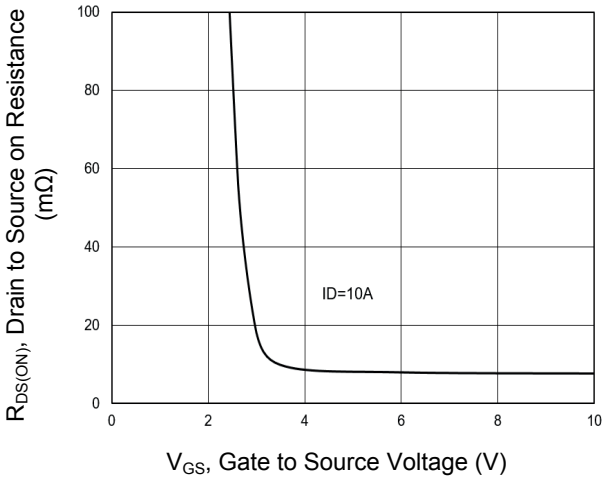


Figure 7. Typical Drain to Source ON Resistance vs. Gate Voltage and Drain Current

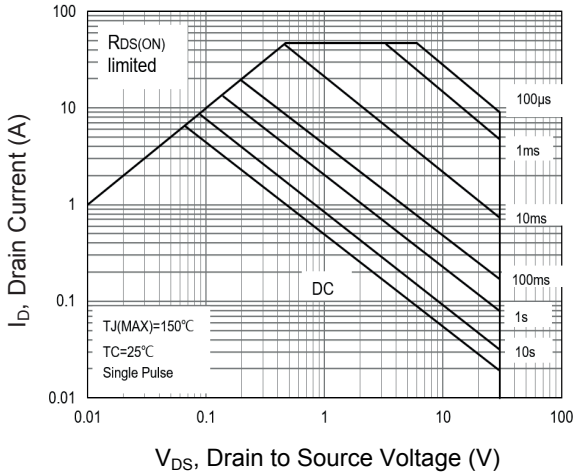


Figure 8. Safe Operation Area

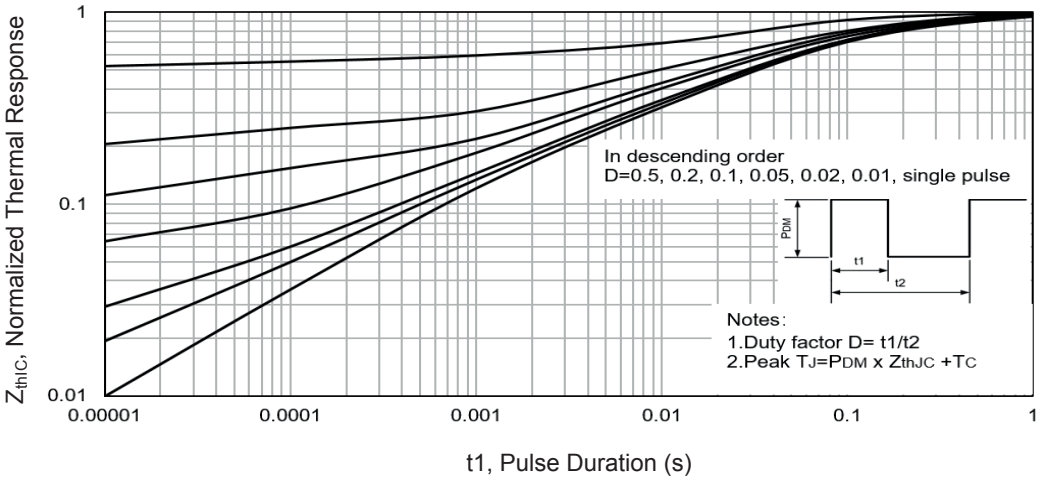
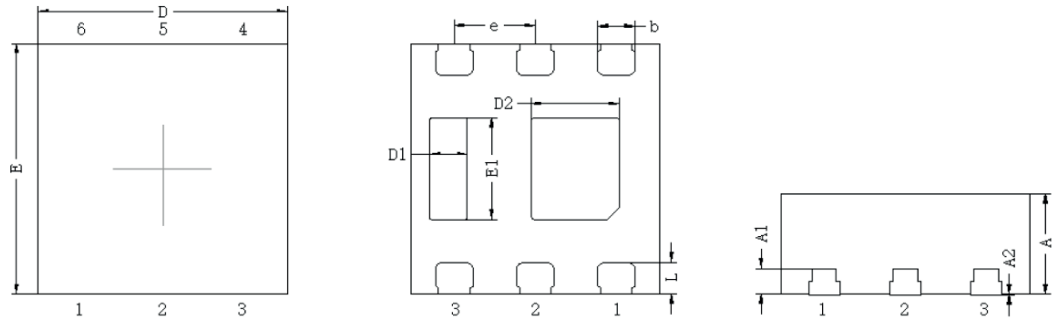


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Outline Dimensions (DFN2020-6)

Top View Bottom View Side View



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.75	0.85	0.030	0.033
A1	0.20 REF		0.008 REF	
A2	0.00	0.05	0.000	0.002
L	0.15	0.35	0.006	0.014
b	0.25	0.35	0.010	0.014
D	1.90	2.10	0.075	0.083
E	1.90	2.10	0.075	0.083
e	0.65 BSC		0.026 BSC	
D1	0.20	0.40	0.008	0.016
D2	0.61	0.81	0.024	0.032
E1	0.71	0.91	0.028	0.036

Order Information

Device	Package	Marking	Carrier	Quantity
GSN3008SF2	DFN2020-6	N3008SF2	Tape & Reel	3,000pcs / Reel