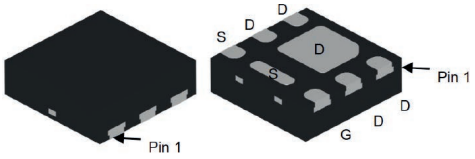
GOOD-ARK
SEMICONDUCTOR

GSFB3010

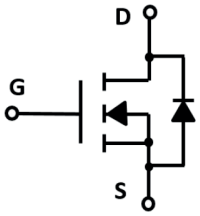
30V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	30V
$R_{DS(ON)}$	27mΩ (Max.)
I_D	10A



DFN2020-6



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 GSFB3010 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 supplies and a wide variety of other applications.

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_A=25°C)	I_D	10	A
Continuous Drain Current (T_A=70°C)		8.3	A
Pulsed Drain Current[1]	I_{DM}	42	A
Total Power Dissipation (T_A=25°C)[2]	P_D	5	W
Thermal Resistance Junction-to-Ambient[2]	$R_{\theta JA}$	25	°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=5A	-	22	27	mΩ
		V_{GS}=4.5V, I_D=5A	-	31	40	
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V, F=1MHz	-	370	-	pF
Output Capacitance	C_{oss}		-	55	-	
Reverse Transfer Capacitance	C_{rss}		-	46	-	
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=15V, I_D=5A	-	9.5	-	nC
Gate Source Charge	Q_{gs}		-	1.2	-	
Gate Drain Charge	Q_{gd}		-	1.8	-	
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V, V_{DD}=15V, I_D=5A, R_{GEN}=3Ω	-	2.0	-	nS
Turn-on Rise Time	t_r		-	2.5	-	
Turn-off Delay Time	$t_{d(off)}$		-	10	-	
Turn-off Fall Time	t_f		-	2	-	
Source-Drain Ratings and Characteristics						
Diode Forward Voltage	V_{SD}	I_S=5A, V_{GS}=0V	-	0.8	1.2	V
Maximum Body-Diode Continuous Current	I_S	-	-	-	10	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

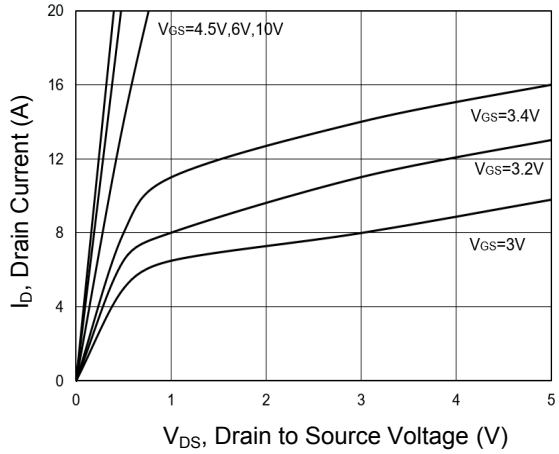


Figure 1. Output Characteristics

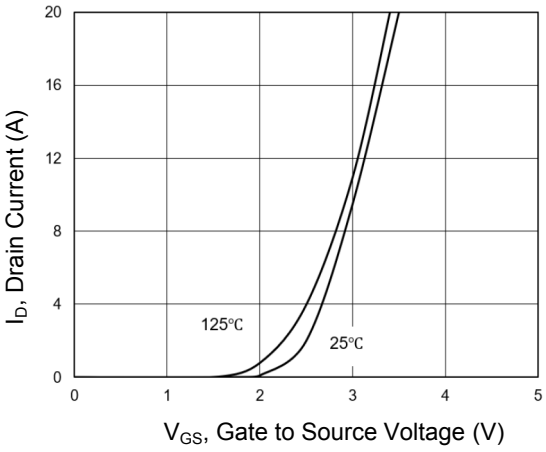


Figure 2. Transfer Characteristics

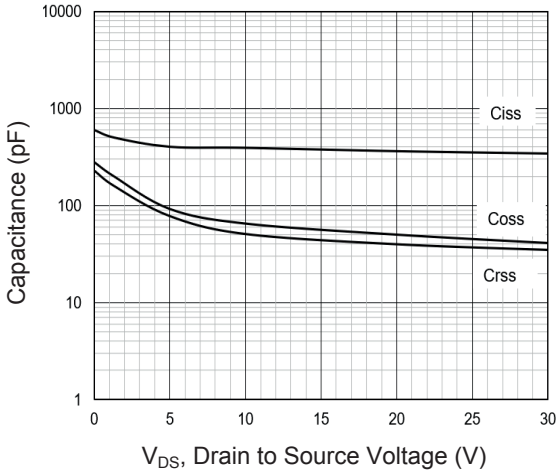


Figure 3. Capacitance Characteristics

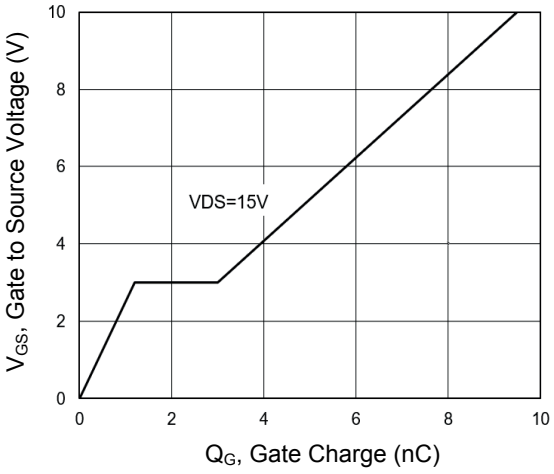


Figure 4. Gate Charge

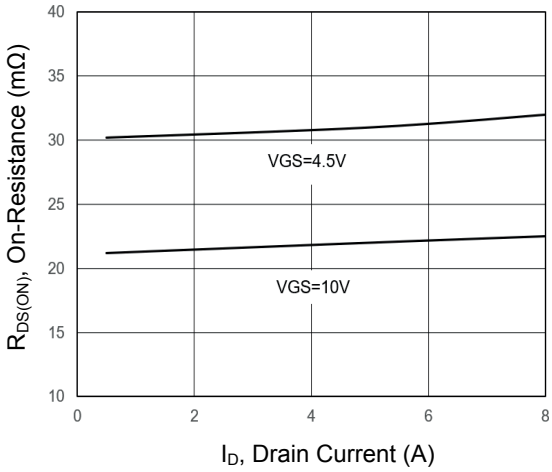


Figure 5. Drain to Source On Resistance

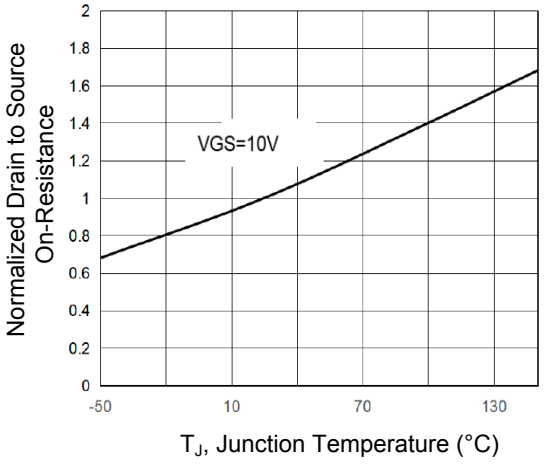


Figure 6. Normalized On-Resistance vs. T_J

Typical Performance Characteristics

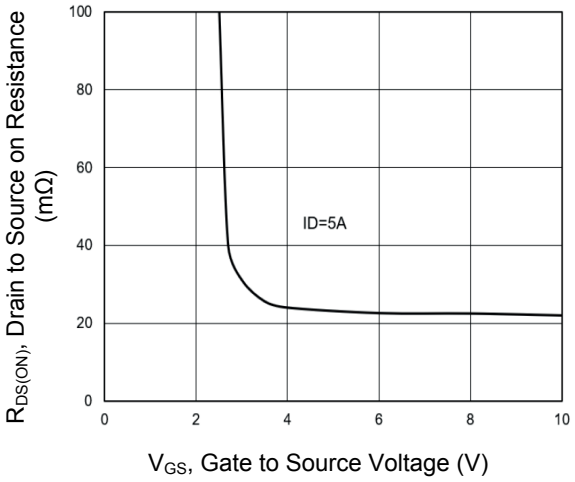


Figure 7. Typical Drain to Source On Resistance vs. Gate Voltage and Drain Current

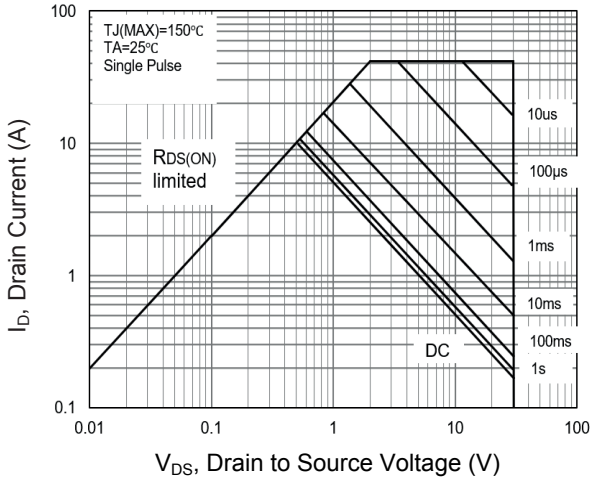


Figure 8. Safe Operation Area

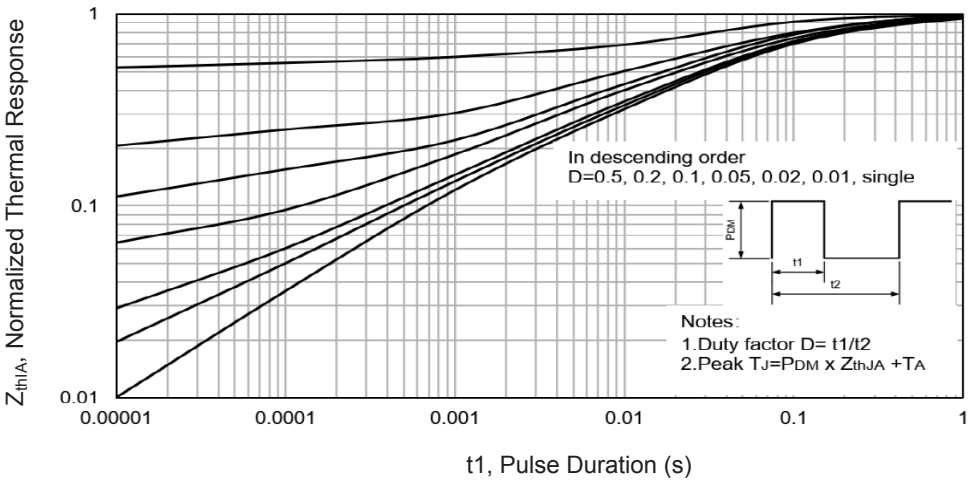
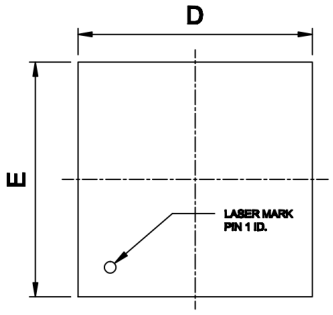
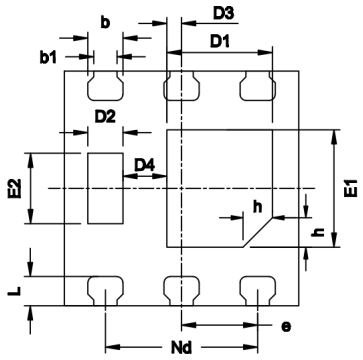


Figure 9. Maximum Effective Transient Thermal Impedance, Junction-to-Case

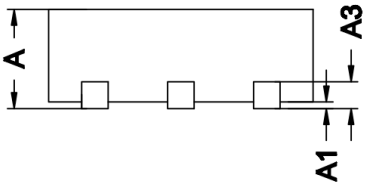
Package Outline Dimensions (DFN2020-6)



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.70	0.80	0.028	0.031
A1	0.00	0.05	0.000	0.002
A3	0.203 REF		0.008 REF	
b	0.25	0.35	0.010	0.014
b1	0.15	0.25	0.006	0.010
D	1.95	2.05	0.077	0.081
E	1.95	2.05	0.077	0.081
D1	0.85	0.95	0.033	0.037
E1	0.95	1.05	0.037	0.041
D2	0.25	0.35	0.010	0.014
E2	0.55	0.65	0.022	0.026
e	0.650 BSC		0.026 BSC	
D3	0.08	0.17	0.003	0.007
D4	0.33	0.43	0.013	0.017
L	0.20	0.30	0.008	0.012
h	0.20	0.30	0.008	0.012
Nd	1.300 BSC		0.051 BSC	

Order Information

Device	Package	Marking	Packaging	SPQ
GSFB3010	DFN2020-6	N3022ARF2	Tape & Reel	3,000pcs / Reel