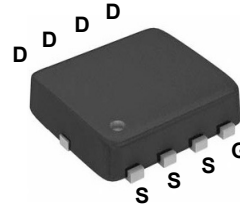
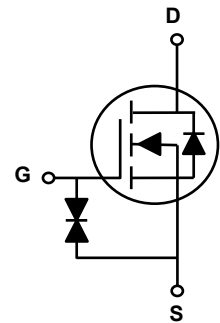


Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	38m Ω
I_D	16A



PPAK 3x3



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 GSFN09F0B 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_C=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V _{DS}	100	V
Gate-Source Voltage	V _{GS}	±20	V
Drain Current - Continuous (T _C =25°C)	I _D	16	A
Drain Current - Continuous (T _C =100°C)		10	
Drain Current-Pulsed ¹	I _{DM}	64	A
Single Pulse Avalanche Energy ²	E _{AS}	20	mJ
Single Pulse Avalanche Current ²	I _{AS}	20	A
Power Dissipation (T _C =25°C)	P _D	29.5	W
Power Dissipation-Derate above 25°C		0.24	
Thermal Resistance, Junction-to-Ambient	R _{θJA}	62	°C/W
Thermal Resistance Junction to Case	R _{θJC}	4.24	°C/W
Operating Junction Temperature Range	T _J	-55 To +150	°C
Storage Temperature Range	T _{STG}	-55 To +150	°C

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On/Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 20	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	-	32	38	m Ω
		$V_{GS}=4.5V, I_D=8A$	-	46	60	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
Dynamic and Switching Characteristics						
Total Gate Charge ³	Q_g	$V_{DS}=50V, I_D=7A, V_{GS}=10V$	-	7	-	nC
			-	4	-	
			-	0.7	-	
Gate-Source Charge ³	Q_{gs}	$V_{DS}=50V, I_D=7A, V_{GS}=4.5V$	-	2	-	nC
Gate-Drain Charge ³	Q_{gd}		-	2	-	
Turn-On Delay Time ³	$t_{d(on)}$	$V_{DD}=50V, R_G=6\Omega, V_{GS}=10V, I_D=7A$	-	6	-	nS
Rise Time ³	t_r		-	10	-	
Turn-Off Delay Time ³	$t_{d(off)}$		-	20	-	
Fall Time ³	t_f		-	13	-	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	-	360	-	pF
Output Capacitance	C_{oss}		-	80	-	
Reverse Transfer Capacitance	C_{rss}		-	6	-	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	0.4	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V,$	-	-	16	A
Pulsed Source Current	I_{SM}	Force Current	-	-	32	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	T_{rr}	$V_R=50V, I_S=10A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	-	40	-	ns
Reverse Recovery Charge	Q_{rr}		-	50	-	nC

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=50V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=20A, R_G=25\Omega,$ starting $T_J=25^\circ\text{C}$.
3. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

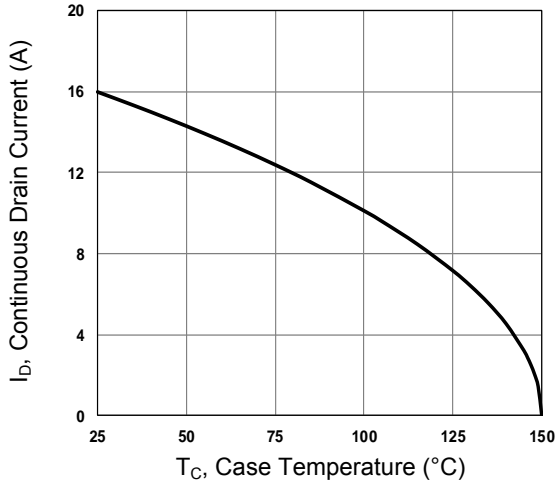


Figure 1. Continuous Drain Current vs. T_C

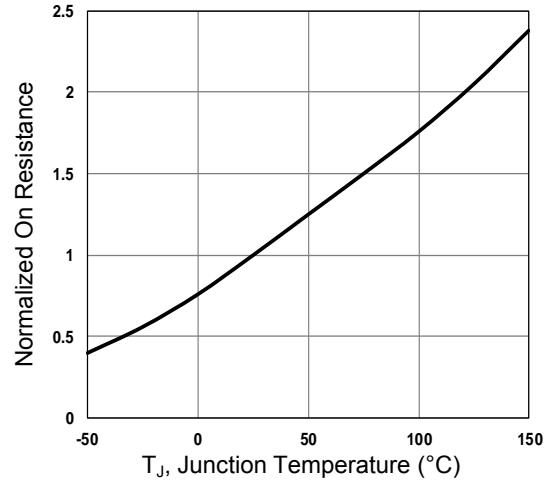


Figure 2. Normalized R_{DSON} vs. T_J

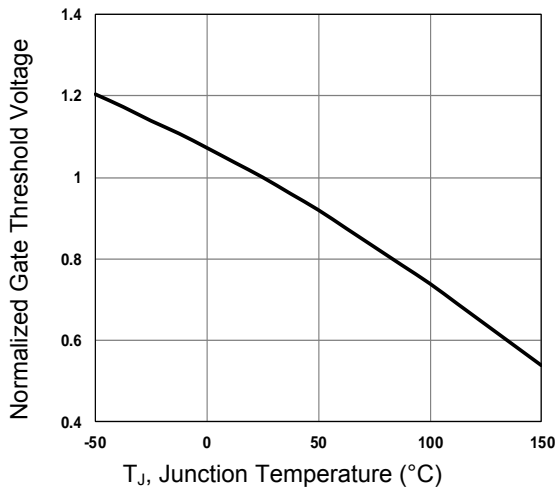


Figure 3. Normalized V_{th} vs. T_J

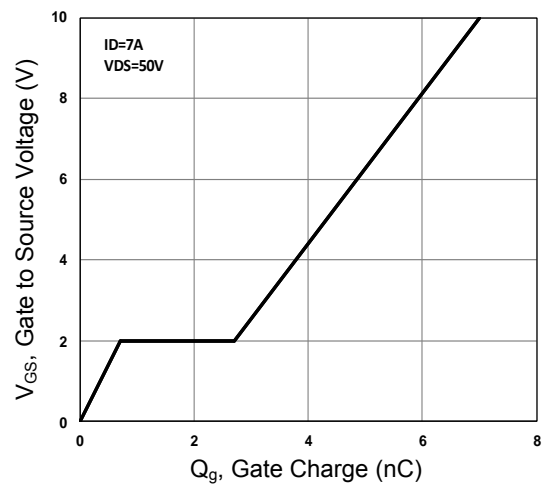


Figure 4. Gate Charge Waveform

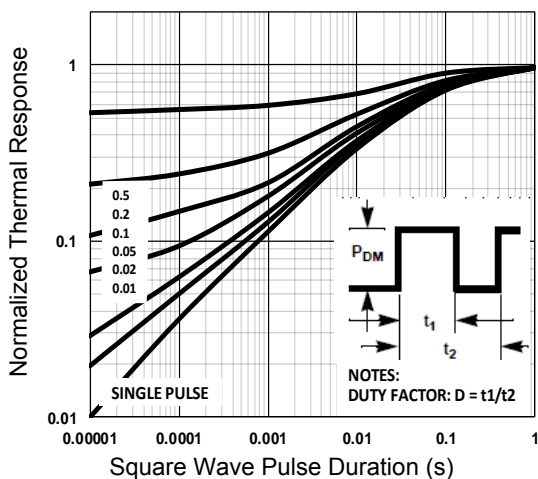


Figure 5. Normalized Transient Impedance

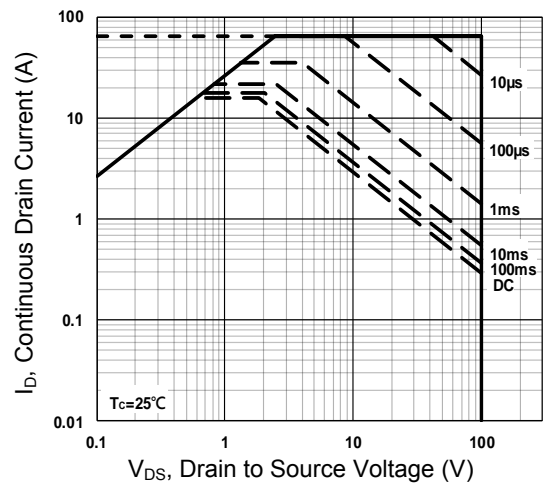
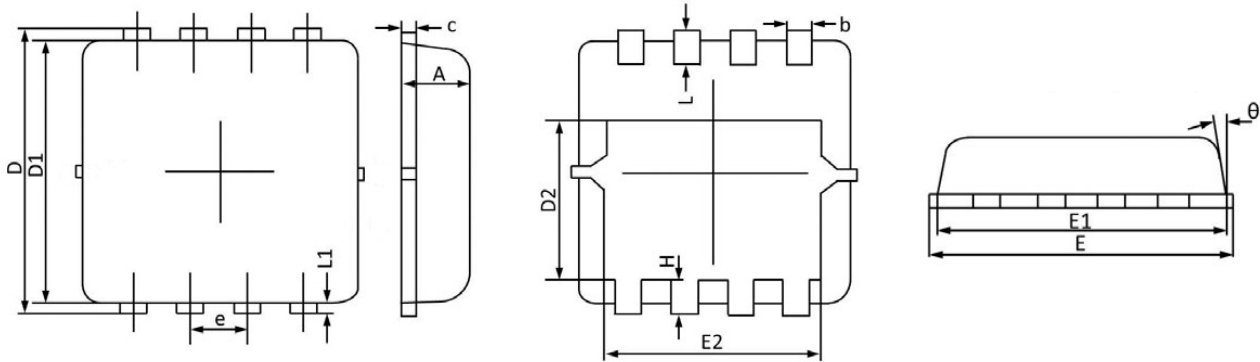


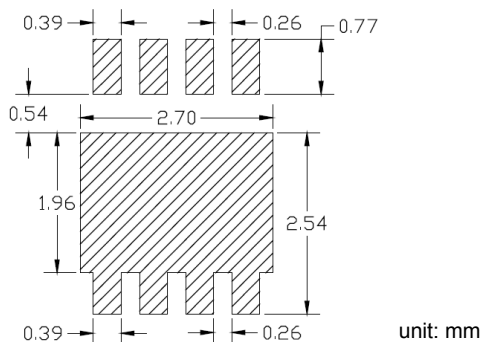
Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (PPAK3x3)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Max.	Min.	Max.	Min.
A	0.900	0.700	0.035	0.028
b	0.350	0.250	0.014	0.010
c	0.250	0.100	0.010	0.004
D	3.500	3.050	0.138	0.120
D1	3.200	2.900	0.126	0.114
D2	1.950	1.350	0.077	0.053
E	3.400	3.000	0.134	0.118
E1	3.300	2.900	0.130	0.114
E2	2.600	2.350	0.102	0.093
e	0.65BSC		0.026BSC	
H	0.750	0.300	0.030	0.012
L	0.600	0.300	0.024	0.012
L1	0.200	0.060	0.008	0.002
θ	14°	6°	14°	6°

Recommended Pad Layout



Order Information

Device	Package	Marking	Carrier	Quantity
GSFN09F0B	PPAK3x3	09F0BZ	Tape & Reel	3,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com