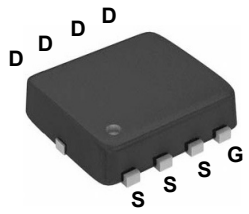
GSFN1016

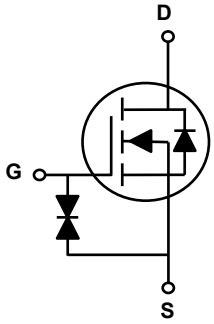
100V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	40mΩ
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 GSFN1016 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
Power Dissipation (T_C=25°C)	P_D	29.5	W
Power Dissipation-Derate above 25°C		0.24	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance Junction to Case	$R_{\theta JC}$	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°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	100	-	-	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, T_J=85°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±20	μA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=10A	-	34	40	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	2.5	-	4.0	V
Dynamic and Switching Characteristics						
Total Gate Charge[2]	Q_g	V_{DS}=50V, I_D=8A, V_{GS}=10V	-	5.6	12	nC
Gate-Source Charge[2]	Q_{gs}		-	1.2	2.5	
Gate-Drain Charge[2]	Q_{gd}		-	1.7	3.5	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD}=50V, R_G=6Ω, V_{GS}=10V, I_D=8A	-	4.5	10	nS
Rise Time[2]	t_r		-	8	16	
Turn-Off Delay Time[2]	$t_{d(off)}$		-	12	24	
Fall Time[2]	t_f		-	10	20	
Input Capacitance[2]	C_{lss}	V_{DS}=50V, V_{GS}=0V, F=1MHz	-	295	600	pF
Output Capacitance[2]	C_{oss}		-	84	170	
Reverse Transfer Capacitance[2]	C_{rss}		-	6	12	
Gate Resistance[2]	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	0.4	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	V_G=V_D=0V, Force Current	-	-	16	A
Pulsed Source Current	I_{SM}		-	-	32	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=1A, T_J=25°C	-	-	1	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

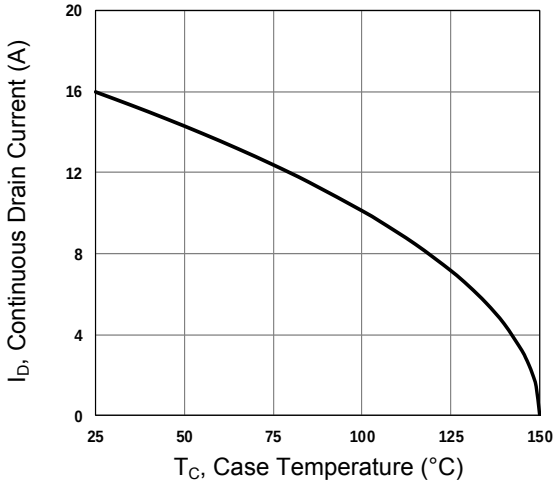


Figure 1. Continuous Drain Current vs. T_C

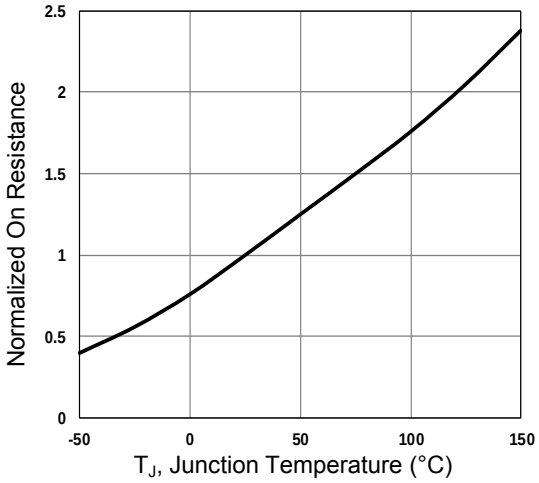


Figure 2. Normalized R_{DSON} vs. T_J

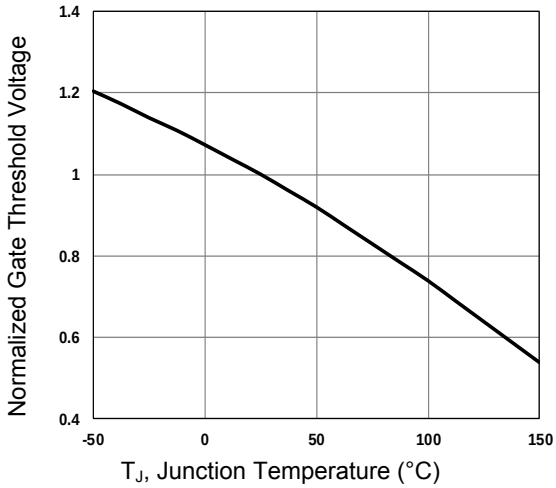


Figure 3. Normalized V_{th} vs. T_J

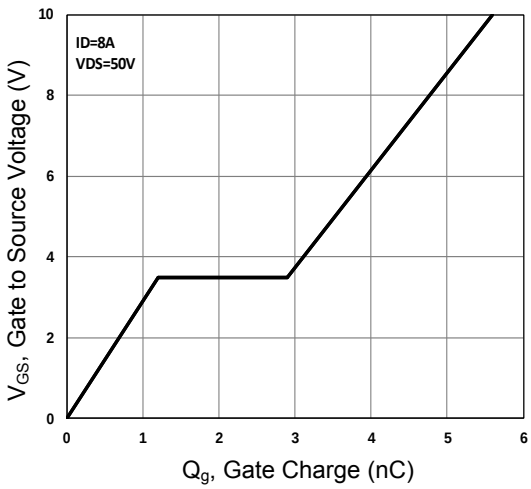


Figure 4. Gate Charge Waveform

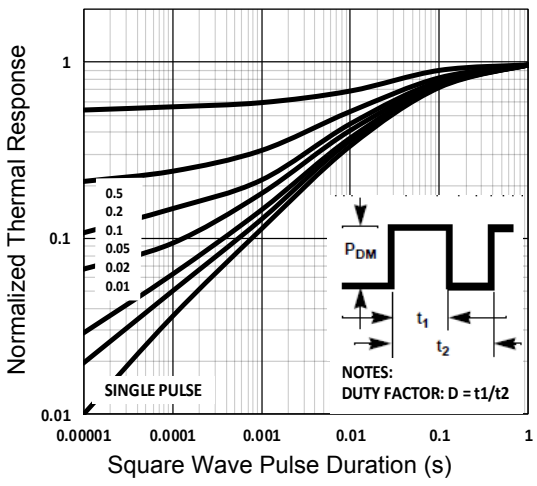


Figure 5. Normalized Transient Impedance

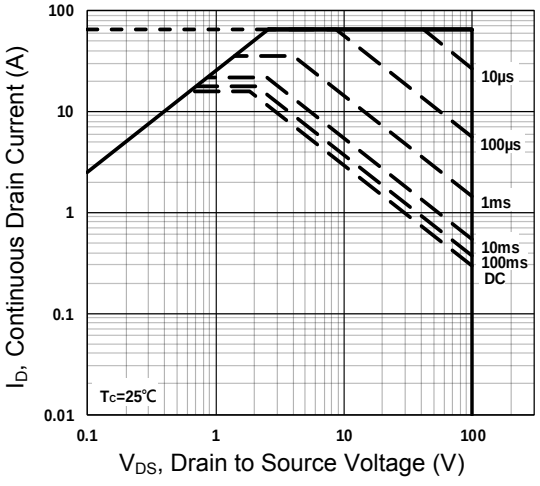
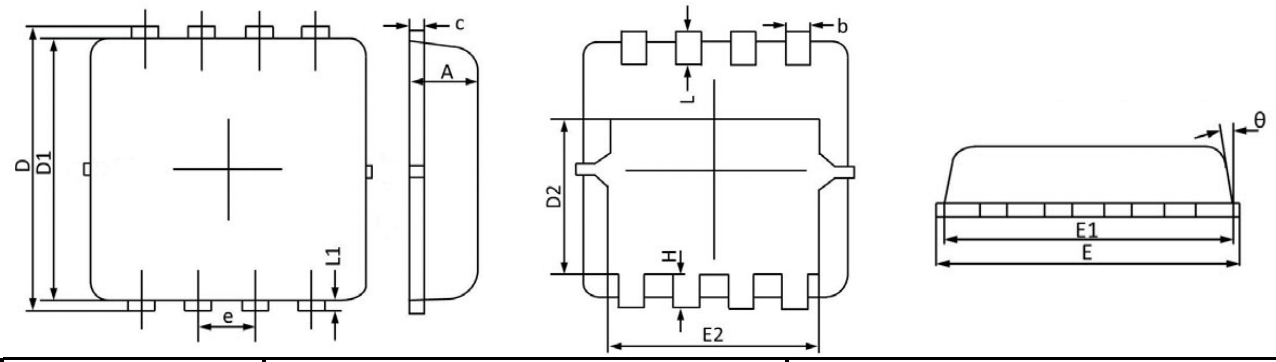


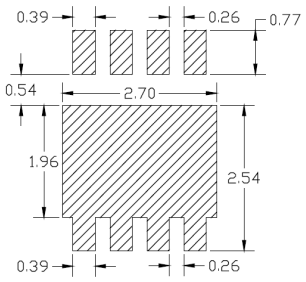
Figure 6. Maximum Safe Operation Area

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 Layoout



unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
GSFN1016	PPAK3x3	09F0BHZ	Tape & Reel	3,000 Pcs / Reel