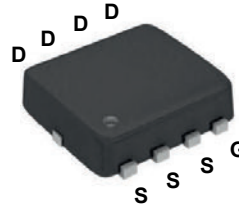
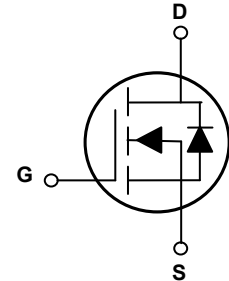


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	10m Ω (max.)
I_D	50A



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



Description

The GSFN3110 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}	30	V
Gate-to-Source Voltage	V_{GS}	±20	V
Continuous Drain Current, T _C =25°C	I_D	50	A
Continuous Drain Current, T _C =70°C		36	A
Pulsed Drain Current ¹	I_{DM}	200	A
Power Dissipation (T _C =25°C)	P_D	35	W
Power Dissipation - Derate Above 25°C		0.28	W/°C
Single Pulse Avalanche Energy ²	E_{AS}	13	mJ
Single Pulse Avalanche Current ²	I_{AS}	16	A
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.58	°C/W
Operating Junction and Storage Temperature Range	T_J/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	V _{(BR)DSS}	V _{GS} =0V, I _D =250uA	30	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =1mA	-	0.04	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =30V, V _{GS} =0V, T _J =125°C	-	-	10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance ³	R _{DS(ON)}	V _{GS} =10V, I _D =11A	-	7.5	10	mΩ
		V _{GS} =4.5V, I _D =7A	-	11.0	16	mΩ
Gate Resistance	R _G	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.8	5.6	Ω
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.1	1.8	2.5	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	-4	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =3A	-	6	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q _g	V _{DS} =15V, I _D =5A V _{GS} =4.5V	-	8.6	14	nC
Gate-Source Charge ^{3,4}	Q _{gs}		-	2.3	5	
Gate-to-Drain Charge ^{3,4}	Q _{gd}		-	3	6	
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =15V, R _G =6Ω V _{GS} =10V, I _D =1A	-	3.8	7	nS
Rise Time ^{3,4}	t _r		-	10	19	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	22	42	
Fall Time ^{3,4}	t _f		-	6.6	13	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1MHz	-	880	1700	pF
Output Capacitance	C _{oss}		-	89	125	
Reverse Transfer Capacitance	C _{rss}		-	68	90	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	50	A
Pulsed Source Current ³	I _{SM}		-	-	200	A
Diode Forward Voltage ³	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. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=16A, R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
3. The data tested by pulsed, pulse width $\leq 300\mu S$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

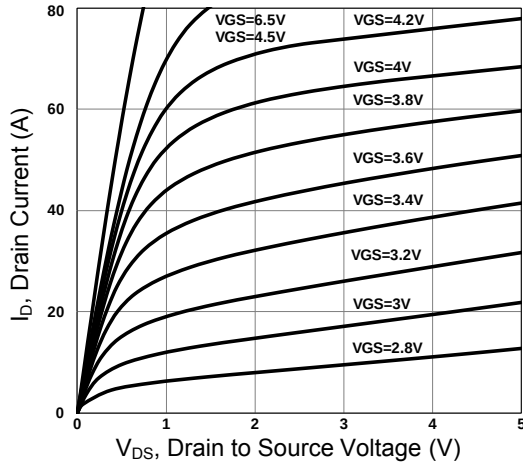


Figure 1. Output Characteristics

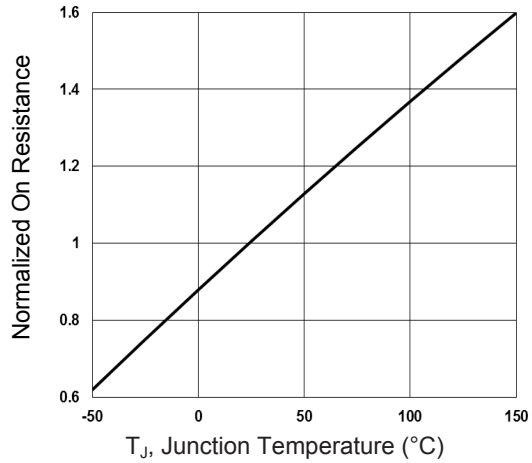


Figure 2. Normalized $R_{DS(ON)}$ Vs. T_J

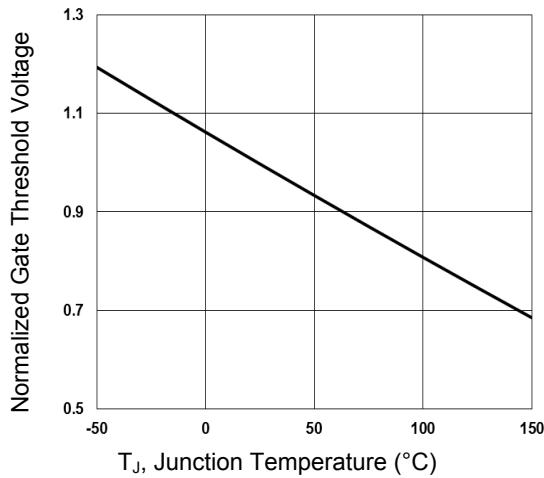


Figure 3. Normalized V_{th} Vs. T_J

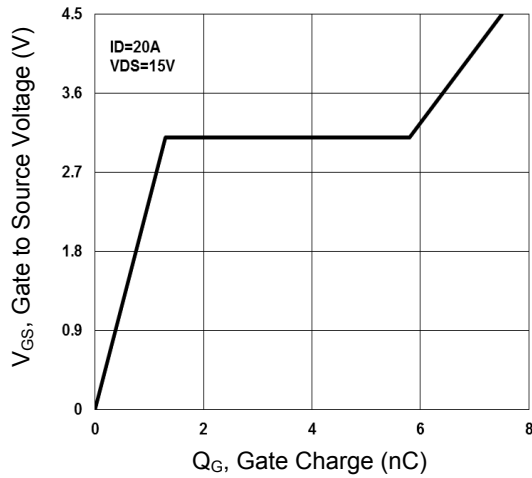


Figure 4. Gate Charge Characteristics

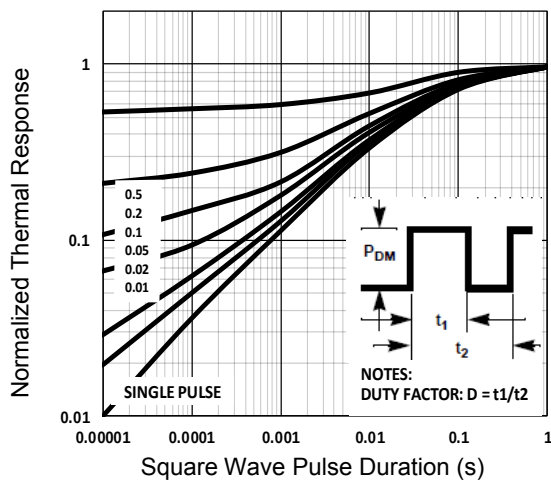


Figure 5. Normalized Transient Impedance

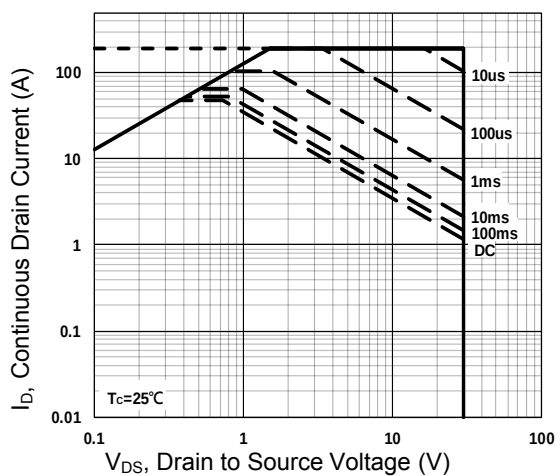


Figure 6. Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

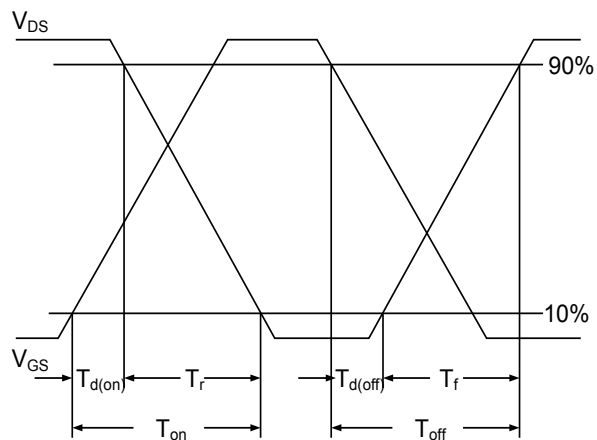


Figure 7. Switching Time Waveform

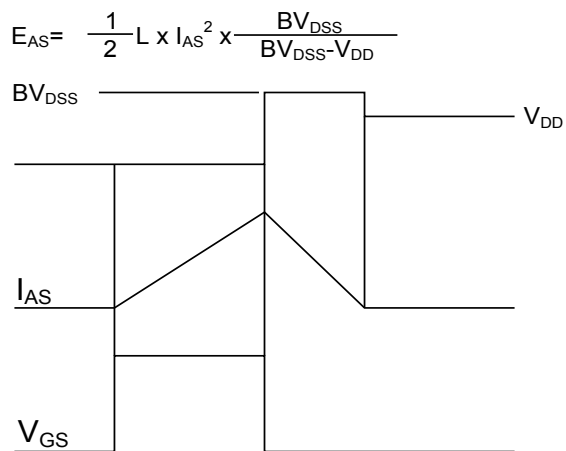
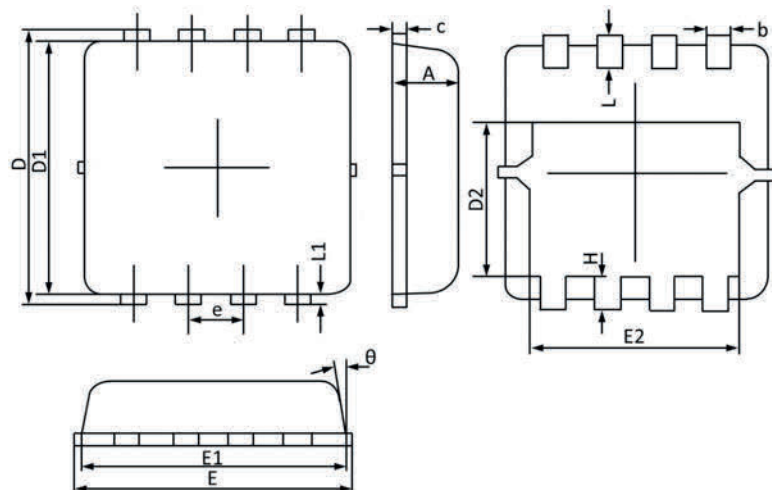


Figure 8. EAS Waveform

Package Outline Dimensions (PPAK3x3)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.70	0.90	0.028	0.035
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.05	3.50	0.120	0.138
D1	2.90	3.20	0.114	0.126
D2	1.35	1.95	0.053	0.077
E	3.00	3.40	0.118	0.134
E1	2.90	3.30	0.114	0.130
E2	2.35	2.60	0.093	0.102
e	0.65 BSC		0.026 BSC	
H	0.30	0.75	0.012	0.030
L	0.30	0.60	0.012	0.024
L1	0.06	0.20	0.002	0.008
θ	6°	14°	6°	14°