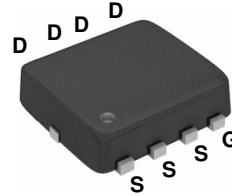
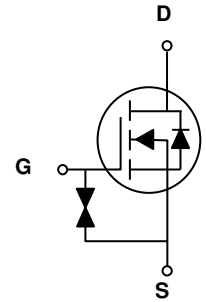


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	5.5m Ω
I_D	60A



PPAK3X3



Schematic Diagram

Features and Benefits

- Advanced MOSFET processtechnology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery
- With ESD diode protection



Description

The GSFN0360 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 supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous($T_C=25^\circ\text{C}$)	I_D	60	A
Drain Current-Continuous($T_C=100^\circ\text{C}$)		38	
Drain Current-Pulsed ¹	I_{DM}	240	A
Single Pulse Avalanche Energy ²	E_{AS}	88	mJ
Single Pulse Avalanche Current ²	I_{AS}	42	A
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	45	W
Power Dissipation-Derate above 25 $^\circ\text{C}$		0.36	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.8	$^\circ\text{C/W}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$

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}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C , $I_D=1mA$	-	0.04	-	$V/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V,$ $T_J=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=24V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 10	μA
Drain-Source On-State Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	4.5	5.5	m Ω
		$V_{GS}=4.5V, I_D=10A$	-	6	7.8	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.5	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-4	-	$mV/^\circ\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=10A$	-	15	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=15V, I_D=20A,$ $V_{GS}=4.5V$	-	11	18	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	2.6	4.3	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	4.9	7.9	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=15V, R_G=3.3\Omega,$ $V_{GS}=10V, I_D=15A$	-	7.5	14	nS
Rise Time ^{3,4}	t_r		-	14.5	28	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	35.2	67	
Fall Time ^{3,4}	t_f		-	9.6	18	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $F=1MHz$	-	1210	1800	pF
Output Capacitance	C_{oss}		-	190	280	
Reverse Transfer Capacitance	C_{rss}		-	100	150	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$	-	2.5	5	Ω
Drain-Source Diode Characteristics						
Continuous Source Current	I_S	$V_G=V_D=0V,$ Force Current	-	-	60	A
Pulsed Source Current ³	I_{SM}		-	-	120	A
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V, I_S=1A,$ $T_J=25^\circ\text{C}$	-	-	1	V
Reverse Recovery Time	t_{rr}	$V_R=30V, I_S=10A,$ $di/dt=100A/\mu s,$ $T_J=25^\circ\text{C}$	-	80	-	nS
Reverse Recovery Charge	Q_{rr}		-	265	-	nC

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=42A, R_G=25\Omega,$ 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

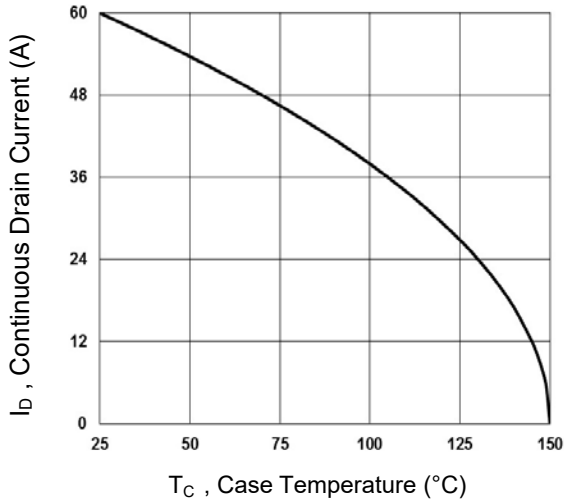


Fig.1 Continuous Drain Current vs. T_C

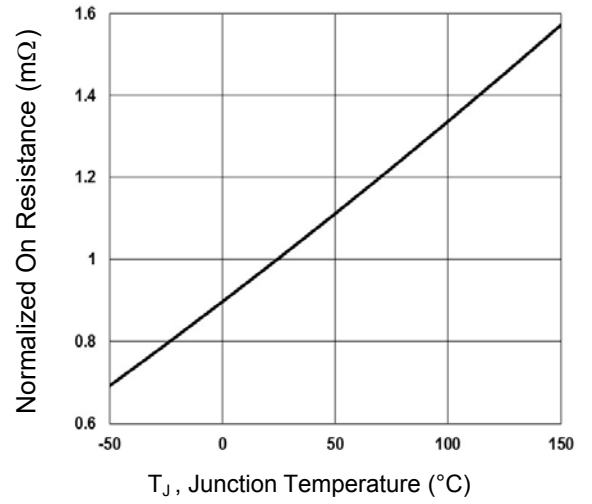


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

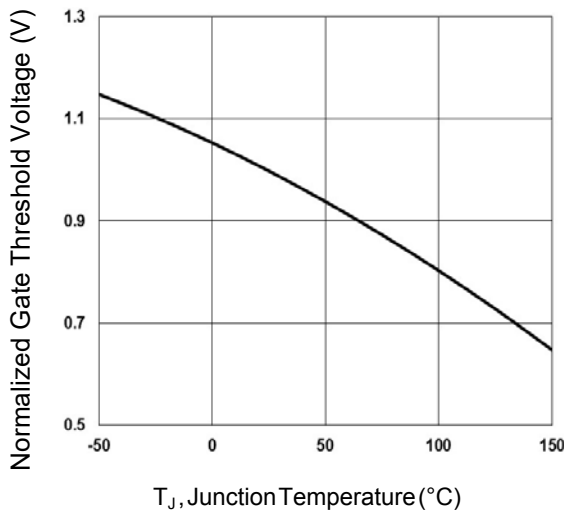


Fig.3 Normalized V_{th} vs. T_J

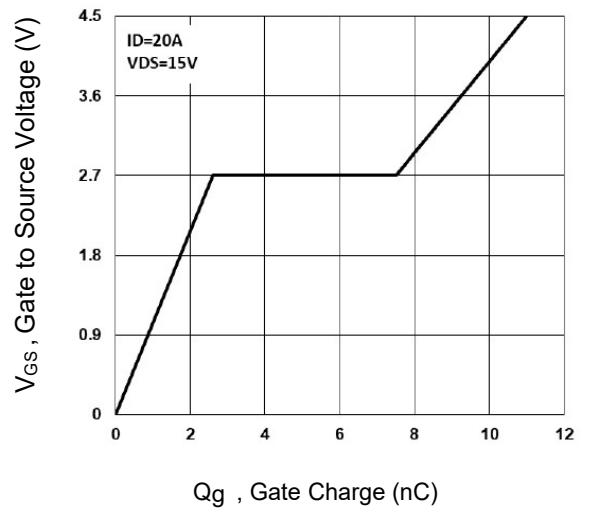


Fig.4 Gate Charge Waveform

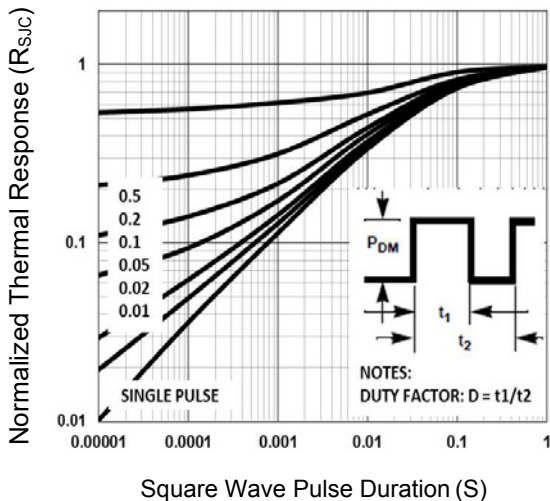


Fig.5 Normalized Transient Impedance

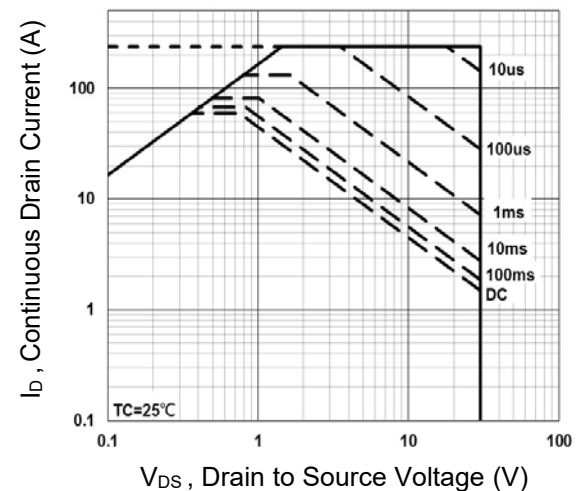


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

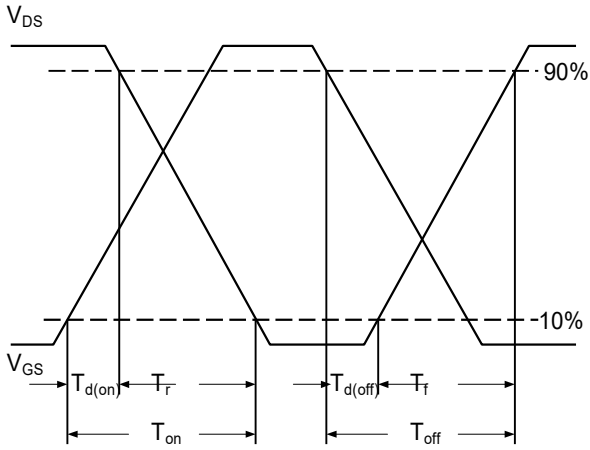


Fig.7 Switching Time Waveform

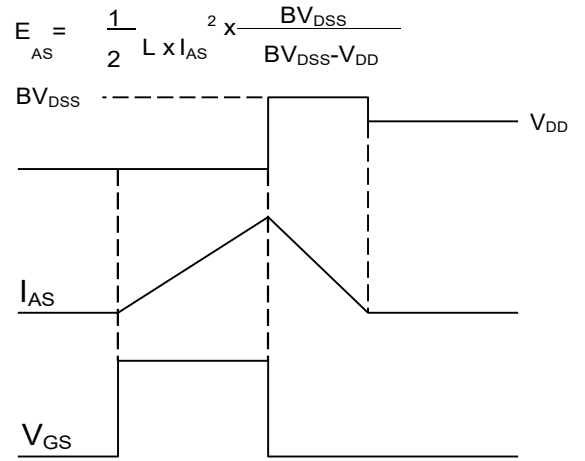
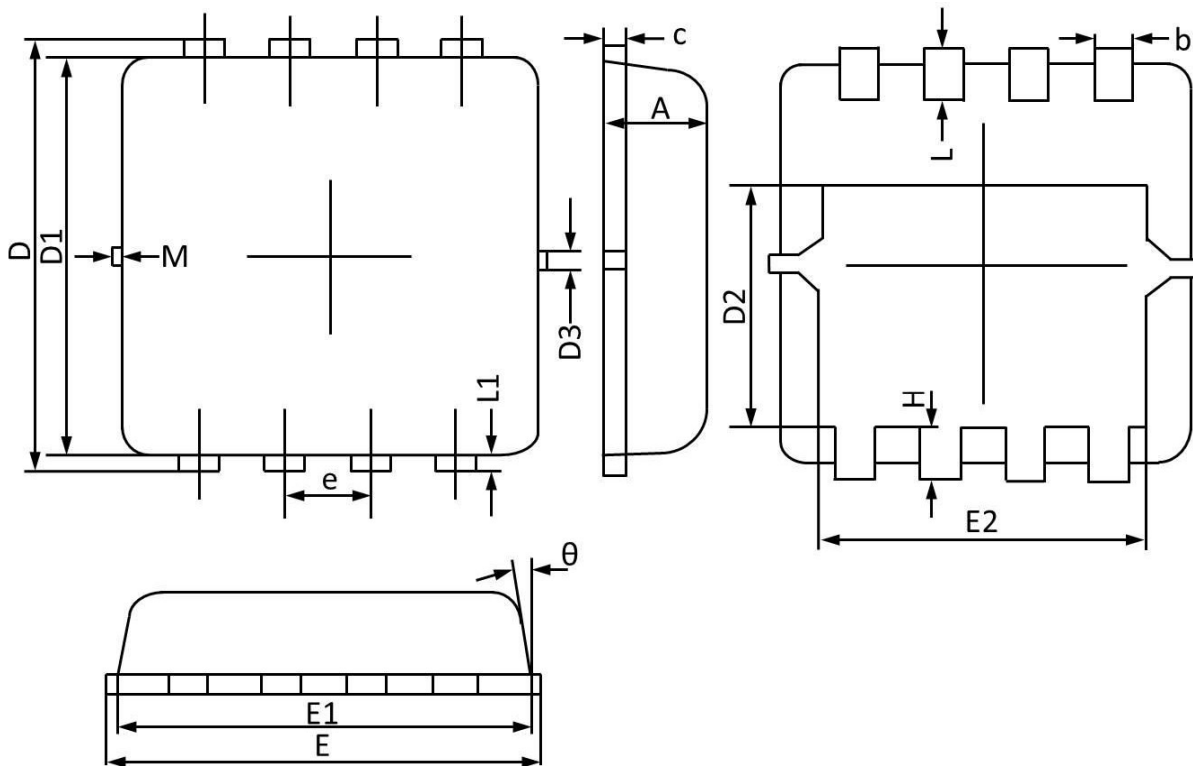


Fig. 8 E_{AS} Waveform

Package Outline Dimensions

PPAK3X3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
θ	0°	12°	0°	12°
	0.150 REF		0.006 REF	