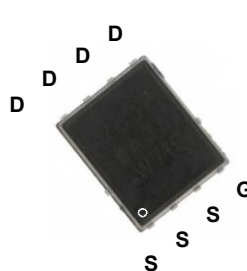
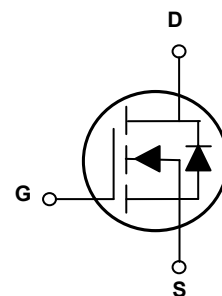


Main Product Characteristics

BV_{DSS}	65V
$R_{DS(ON)}$	8.4mΩ
I_D	60A



PPAK5x6



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 GSFP0660 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 ($T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	65	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous ($T_C=25^{\circ}C$)	I_D	60	A
Drain Current-Continuous ($T_C=100^{\circ}C$)		38	A
Drain Current-Pulsed ¹	I_{DM}	240	A
Single Pulse Avalanche Energy ²	E_{AS}	68.5	mJ
Single Pulse Avalanche Current ²	I_{AS}	37	A
Power Dissipation ($T_C=25^{\circ}C$)	P_D	67	W
Power Dissipation-Derate Above 25°C		0.54	W/°C
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.86	°C/W
Storage Temperature Range	T_{STG}	-55 To +150	°C
Operating Junction Temperature Range	T_J	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	65	-	-	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	μA
		$V_{DS}=48V, V_{GS}=0V, T_J=85^{\circ}\text{C}$	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics						
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V, I_D=15A$	-	7	8.4	m Ω
		$V_{GS}=4.5V, I_D=12A$	-	10.5	13.6	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.6	2.5	V
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=3A$	-	6	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3,4}	Q_g	$V_{DS}=30V, I_D=10A, V_{GS}=15V$	-	16.6	33	nC
Gate-Source Charge ^{3,4}	Q_{gs}		-	1.8	3.6	
Gate-Drain Charge ^{3,4}	Q_{gd}		-	6.5	13.1	
Turn-On Delay Time ^{3,4}	$t_{d(on)}$	$V_{DD}=30V, R_G=3.3\Omega, V_{GS}=10V, I_D=1A$	-	10	20	nS
Rise Time ^{3,4}	t_r		-	13.5	27	
Turn-Off Delay Time ^{3,4}	$t_{d(off)}$		-	28	56	
Fall Time ^{3,4}	t_f		-	20	40	
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, F=1\text{MHz}$	-	810	1210	pF
Output Capacitance	C_{oss}		-	320	480	
Reverse Transfer Capacitance	C_{rss}		-	22	35	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	0.9	-	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	-	-	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}	$V_R=30V, I_S=10A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	-	30	-	nS
Reverse Recovery Charge	Q_{rr}		-	24	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=37A, R_G=25\Omega, \text{starting } T_J=25^{\circ}\text{C}$.
3. Pulse test: pulse width $\leq 300\mu s, \text{duty cycle } \leq 2\%$.
4. Essentially independent of operation temperature.

Typical Electrical and Thermal Characteristic Curves

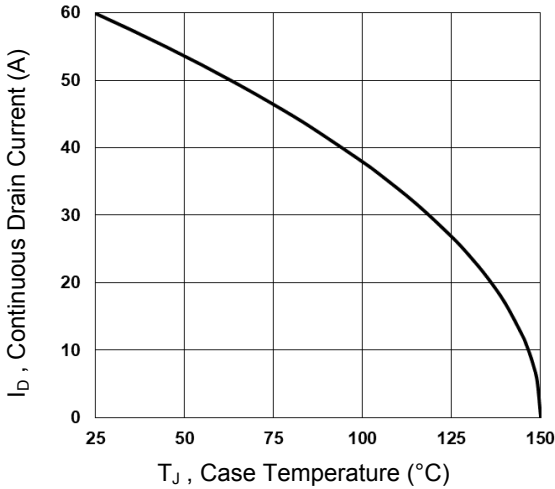


Fig.1 Continuous Drain Current vs. T_c

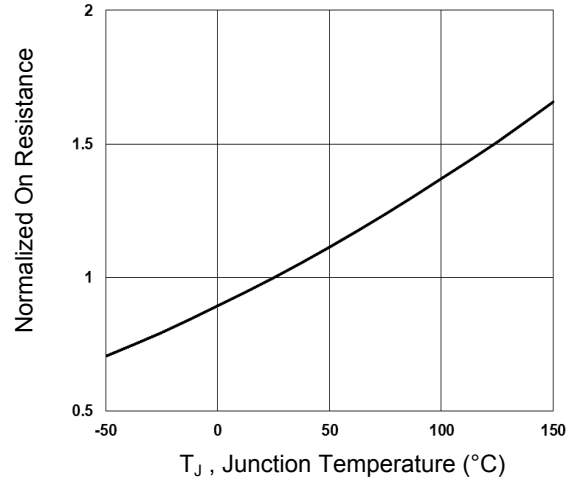


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

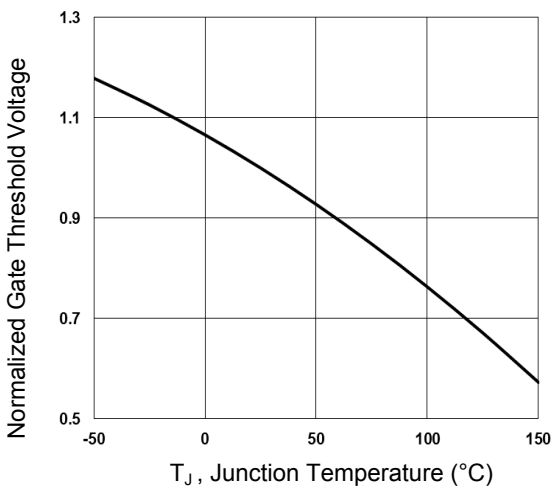


Fig.3 Normalized V_{th} vs. T_J

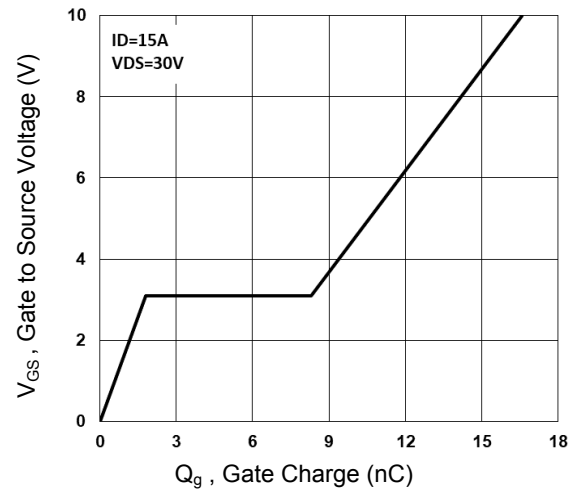


Fig.4 Gate Charge Characteristics

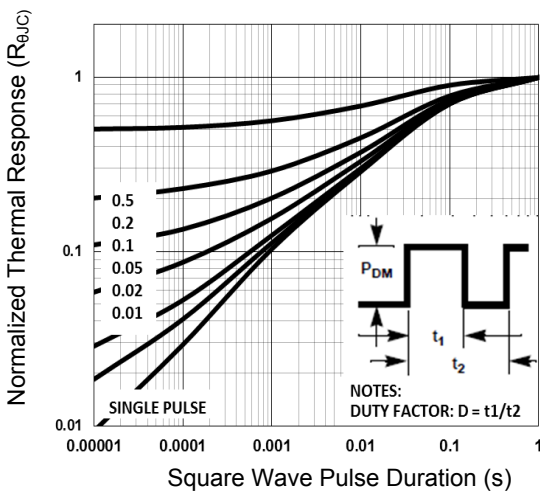


Fig.5 Normalized Transient Impedance

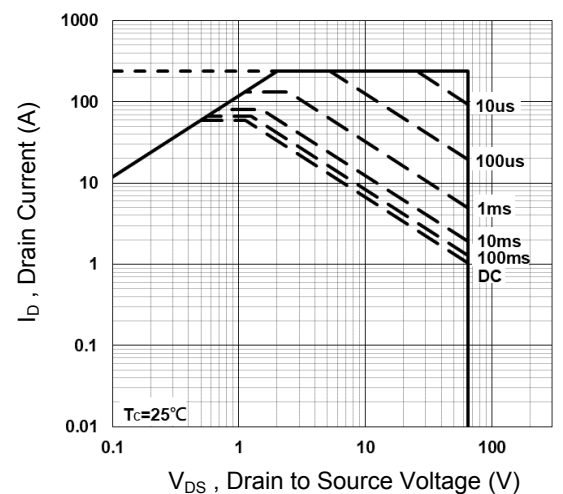


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

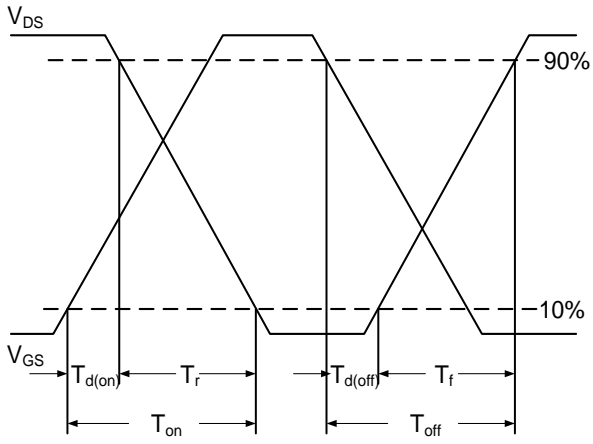


Fig.7 Switching Time Waveform

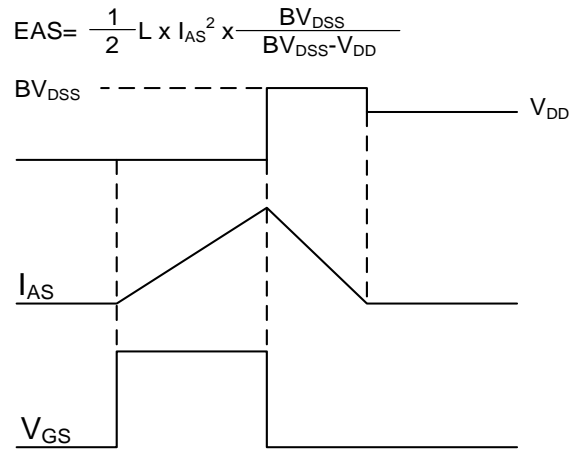
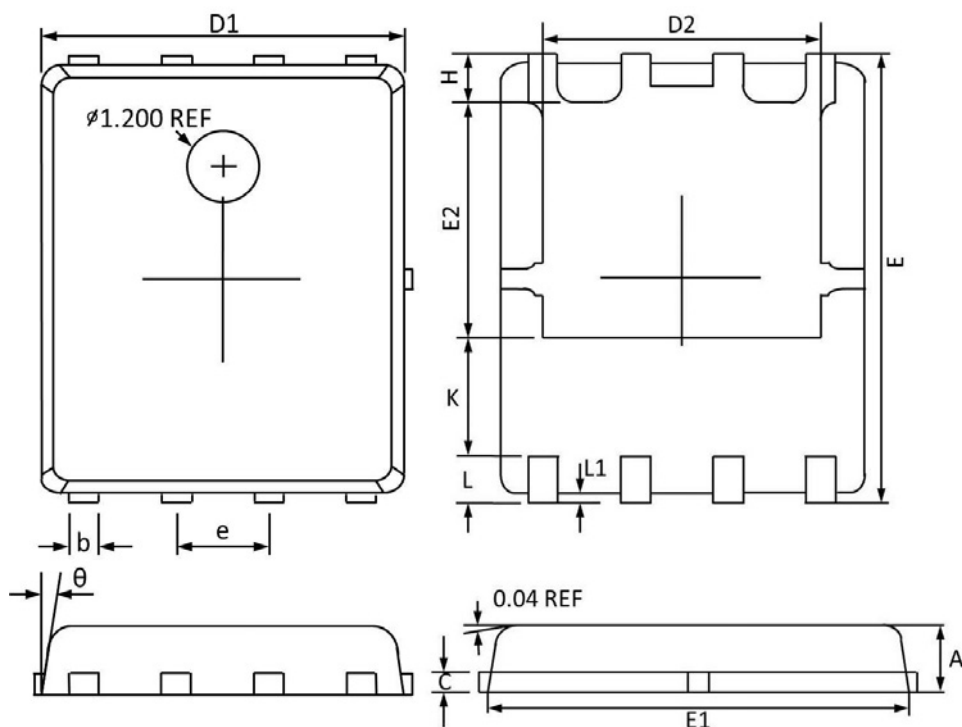


Fig.8 EAS Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

Package Outline Dimensions

PPAK5x6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.100	0.800	0.043	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.100	4.800	0.201	0.189
D2	4.100	3.610	0.161	0.142
E	6.200	5.900	0.244	0.232
E1	5.900	5.700	0.232	0.224
E2	3.780	3.350	0.149	0.132
e	1.27BSC		0.05BSC	
H	0.700	0.410	0.028	0.016
K	1.500	1.100	0.059	0.043
L	0.710	0.510	0.028	0.020
L1	0.200	0.060	0.008	0.002
θ	12°	0°	12°	0°