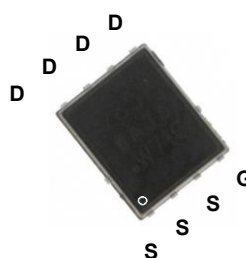
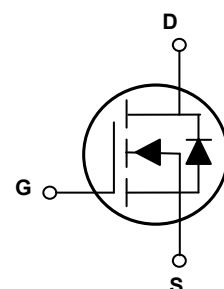


### Main Product Characteristics

$BV_{DSS}$	100V
$R_{DS(ON)}$	10.3m $\Omega$
$I_D$	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 GSFP1060 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	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current-Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	60	A
Drain Current-Continuous ( $T_C=100^\circ\text{C}$ )		38	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	240	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	115	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	48	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	98	W
Power Dissipation-Derate Above 25 $^\circ\text{C}$		0.79	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.27	$^\circ\text{C}/\text{W}$
Storage Temperature Range	$T_{STG}$	-50 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-50 To +150	$^\circ\text{C}$

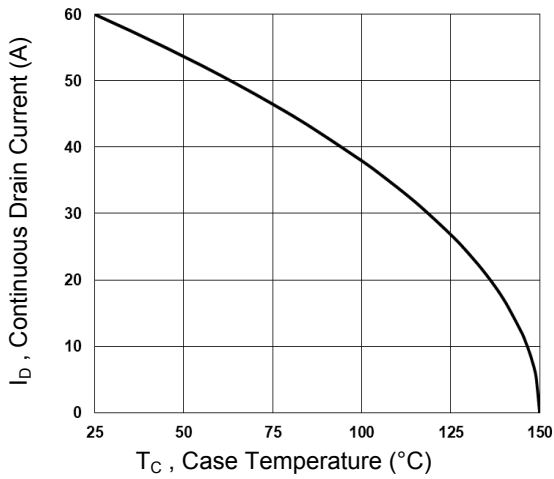
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	-	-	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	-	-	1	μA
		V <sub>DS</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C	-	-	10	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =25A	-	8.5	10.3	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	-	11.5	15	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2	1.6	2.5	V
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =2A	-	10	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	Q <sub>g</sub>	V <sub>DS</sub> =50V, I <sub>D</sub> =10A, V <sub>GS</sub> =10V	-	26.1	39	nC
Gate-Source Charge <sup>3,4</sup>	Q <sub>gs</sub>		-	6.5	10	
Gate-Drain Charge <sup>3,4</sup>	Q <sub>gd</sub>		-	5.3	8	
Turn-On Delay Time <sup>3,4</sup>	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, R <sub>G</sub> =6Ω, V <sub>GS</sub> =10V, I <sub>D</sub> =10A	-	14.2	28	nS
Rise Time <sup>3,4</sup>	t <sub>r</sub>		-	20.8	42	
Turn-Off Delay Time <sup>3,4</sup>	t <sub>d(off)</sub>		-	42	84	
Fall Time <sup>3,4</sup>	t <sub>f</sub>		-	30	60	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, F=1MHz	-	1450	2145	pF
Output Capacitance	C <sub>oss</sub>		-	215	322	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	8	20	
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	-	1.04	-	Ω
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	-	-	60	A
Pulsed Source Current	I <sub>SM</sub>		-	-	120	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =1A, T <sub>J</sub> =25°C	-	-	1	V
Reverse Recovery Time <sup>3</sup>	T <sub>rr</sub>	V <sub>R</sub> =100V, I <sub>S</sub> =10A, di/dt=100A/μs, T <sub>J</sub> =25°C	-	155	-	nS
Reverse Recovery Charge <sup>3</sup>	Q <sub>rr</sub>		-	230	-	nC

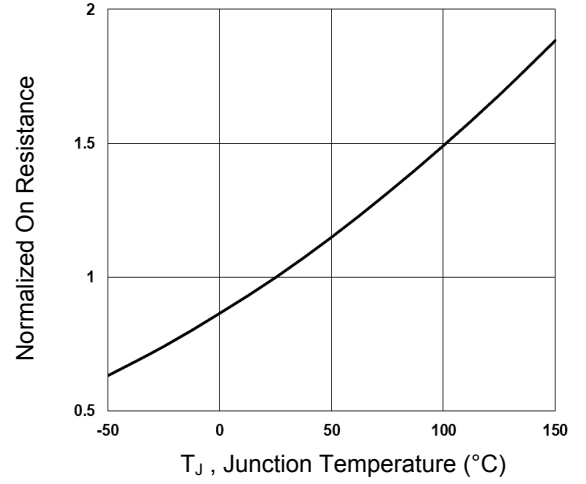
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V<sub>DD</sub>=50V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=48A, R<sub>G</sub>=25Ω, starting T<sub>J</sub>=25°C.
3. Pluse test: pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operation temperature.

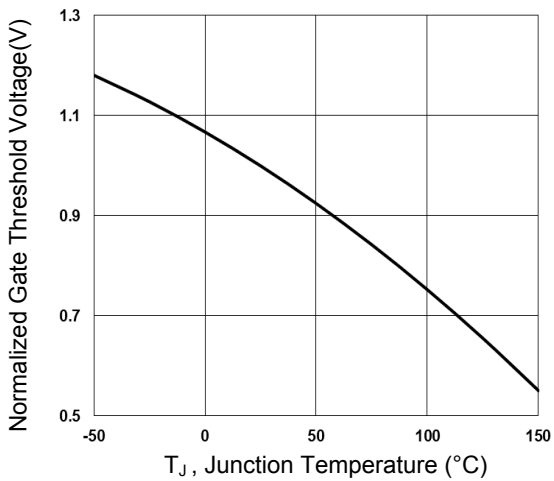
### Typical Electrical and Thermal Characteristic Curves



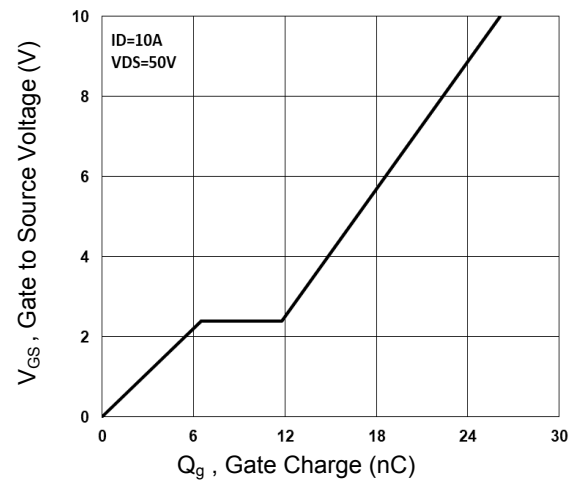
**Fig.1** Continuous Drain Current vs.  $T_C$



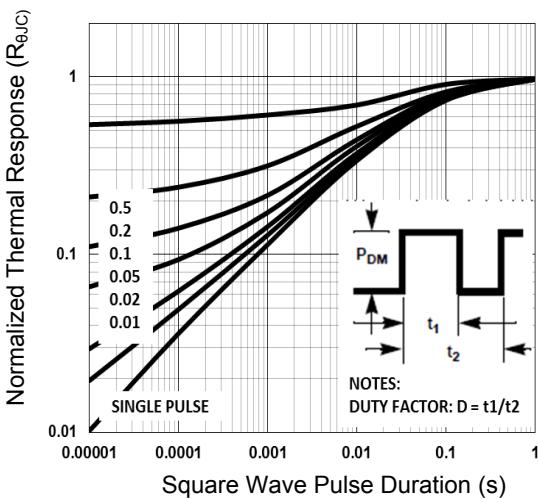
**Fig.2** Normalized  $R_{DS(ON)}$  vs.  $T_J$



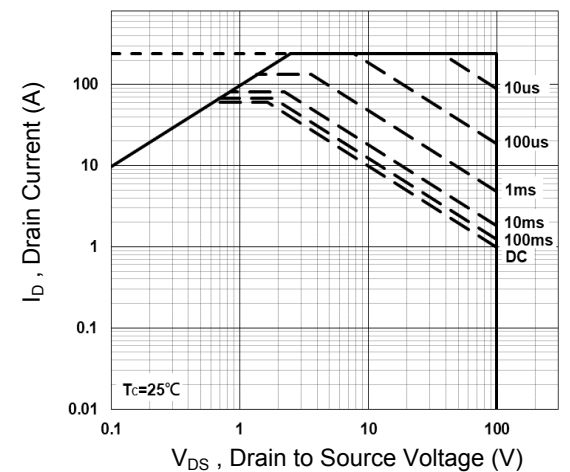
**Fig.3** Normalized  $V_{th}$  vs.  $T_J$



**Fig.4** Gate Charge Characteristics

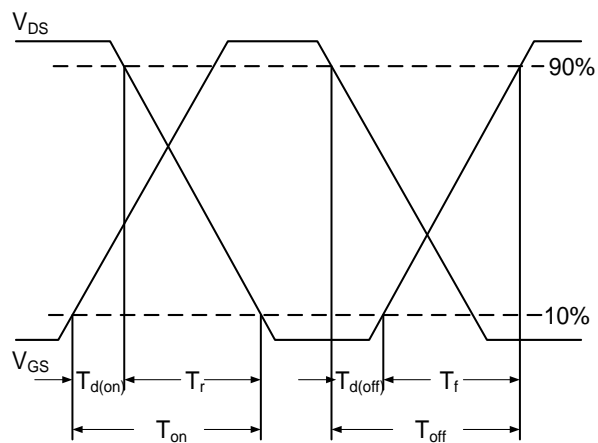


**Fig.5** Normalized Transient Impedance

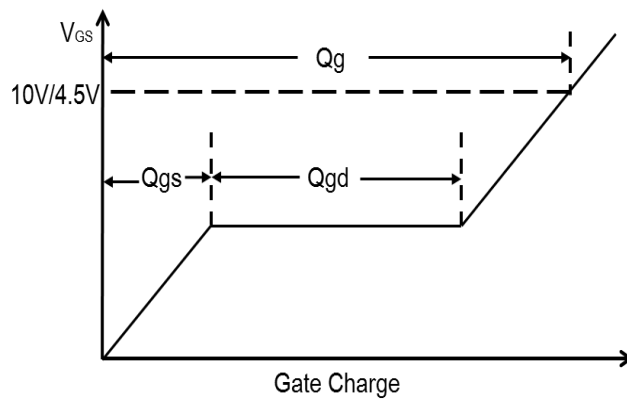


**Fig.6** Maximum Safe Operation Area

**Typical Electrical and Thermal Characteristic Curves**



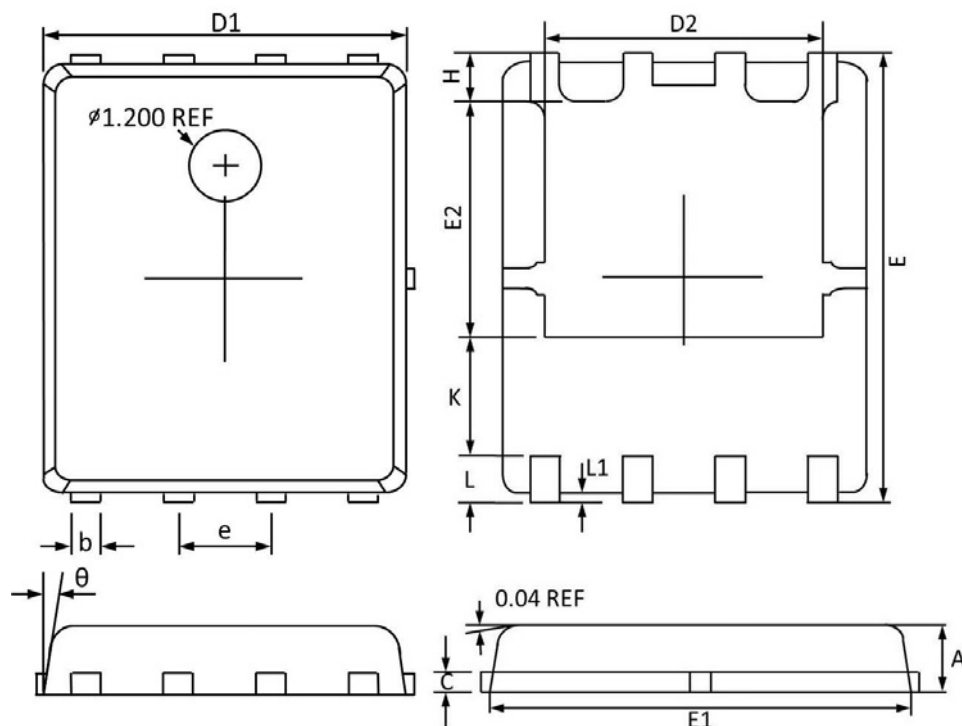
**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

## 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
$\theta$	12°	0°	12°	0°