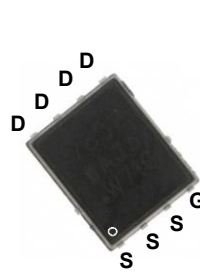
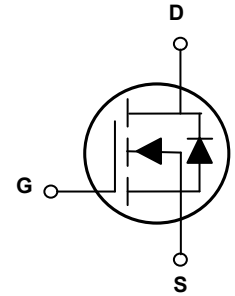


### Main Product Characteristics

$BV_{DSS}$	100V
$R_{DS(ON)}$	5.8m $\Omega$
$I_D$	70A



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 GSFP1070 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	$V_{GS}$	+20/-12	V
Drain Current-Continuous ( $T_C=25^\circ\text{C}$ )	$I_D$	70	A
Drain Current-Continuous ( $T_C=100^\circ\text{C}$ )		44	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	280	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	320	mJ
Single Pulse Avalanche Current <sup>2</sup>	$I_{AS}$	80	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	142	W
Power Dissipation-De-rate above 25 $^\circ\text{C}$		1.14	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.88	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-50 To +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-50 To +150	$^\circ\text{C}$

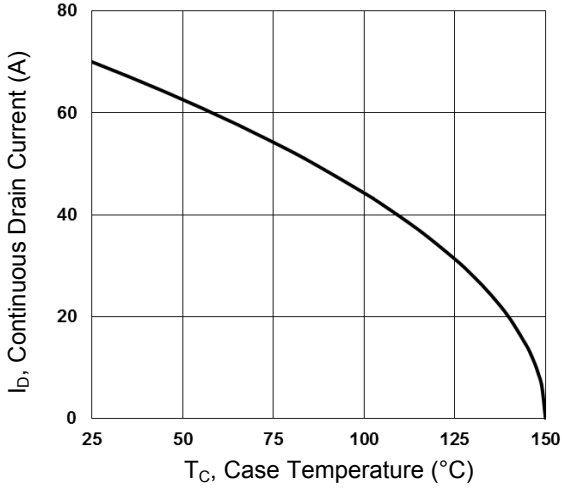
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	-	-	1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V, T_J=85^{\circ}\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=20V, V_{DS}=0V$	-	-	100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	4.8	5.8	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$	-	7	9	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.6	2.5	V
Forward Transconductance	$g_{fs}$	$V_{DS}=10V, I_D=5A$	-	8	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>3,4</sup>	$Q_g$	$V_{DS}=80V, I_D=10A, V_{GS}=10V$	-	58.2	100	nC
Gate-Source Charge <sup>3,4</sup>	$Q_{gs}$		-	9.2	18	
Gate-Drain Charge <sup>3,4</sup>	$Q_{gd}$		-	20.8	30	
Turn-On Delay Time <sup>3,4</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=6\Omega, V_{GS}=10V, I_D=1A$	-	24	48	nS
Rise Time <sup>3,4</sup>	$t_r$		-	19.8	39	
Turn-Off Delay Time <sup>3,4</sup>	$t_{d(off)}$		-	46	92	
Fall Time <sup>3,4</sup>	$t_f$		-	26	52	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	-	4570	9100	pF
Output Capacitance	$C_{oss}$		-	1180	2300	
Reverse Transfer Capacitance	$C_{rss}$		-	49	98	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	-	2	4	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	70	A
Pulsed Source Current	$I_{SM}$		-	-	140	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	-	-	1	V

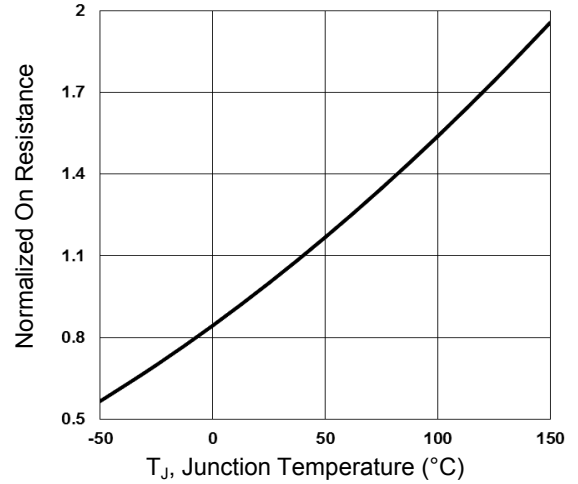
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2.  $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=80A, R_G=25\Omega,$  starting  $T_J=25^{\circ}\text{C}$ .
3. Pulse test: pulse width  $\leq 300\mu s,$  duty cycle  $\leq 2\%$ .
4. Essentially independent of operation temperature.

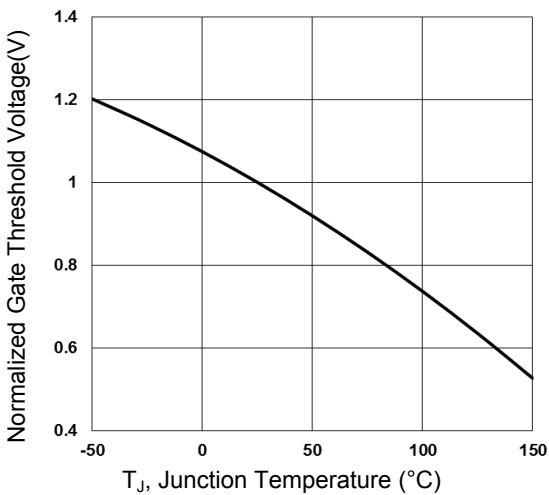
**Typical Electrical and Thermal Characteristic Curves**



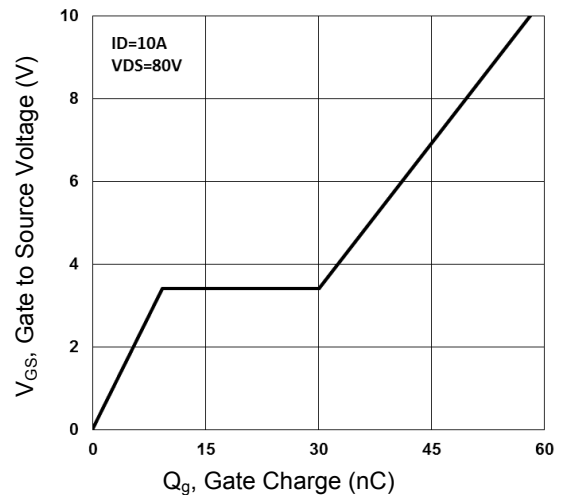
**Figure 1. Continuous Drain Current vs. T<sub>C</sub>**



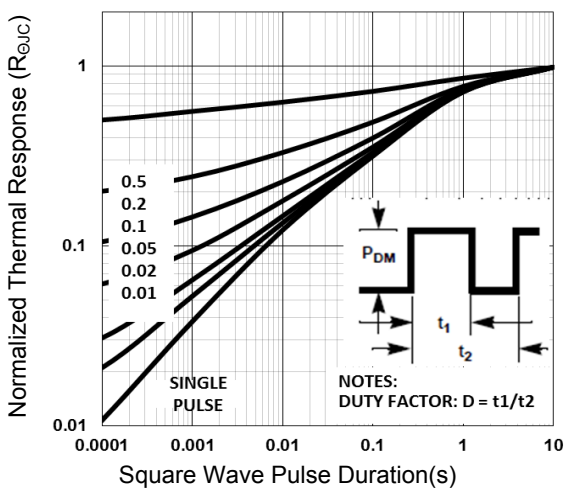
**Figure 2. Normalized R<sub>DS(on)</sub> vs. T<sub>J</sub>**



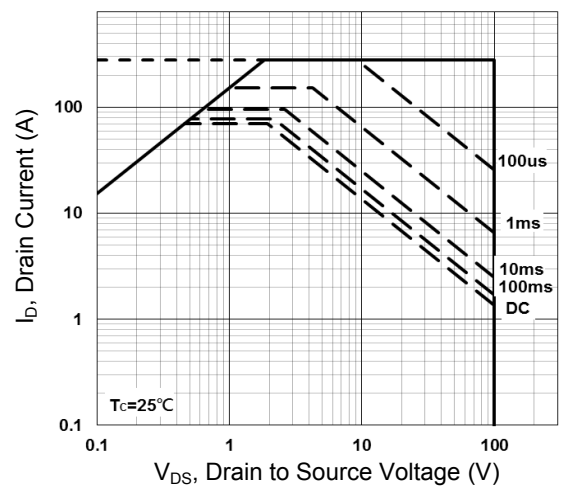
**Figure 3. Normalized V<sub>th</sub> vs. T<sub>J</sub>**



**Figure 4. Gate Charge Characteristics**

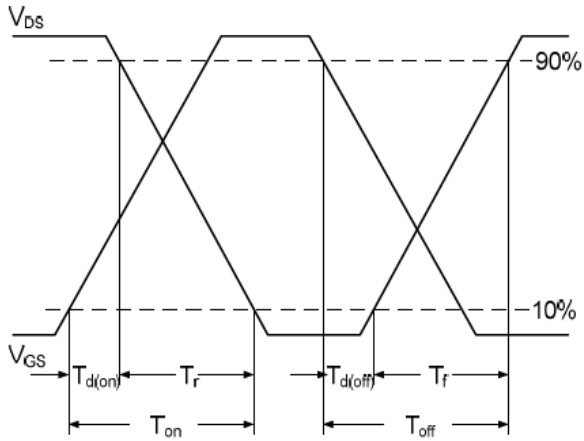


**Figure 5. Normalized Transient Impedance**

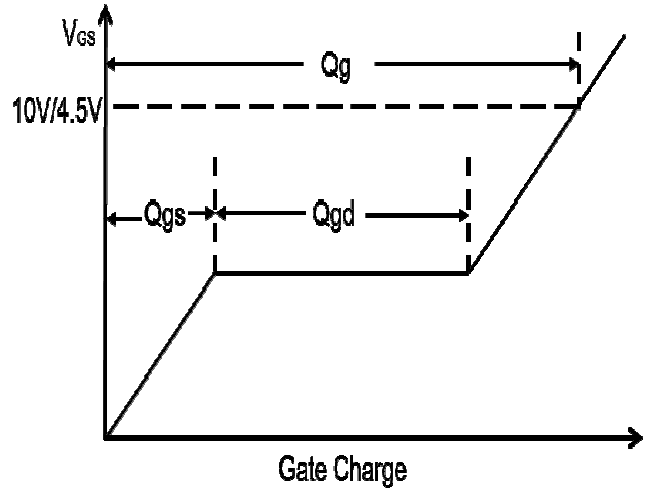


**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

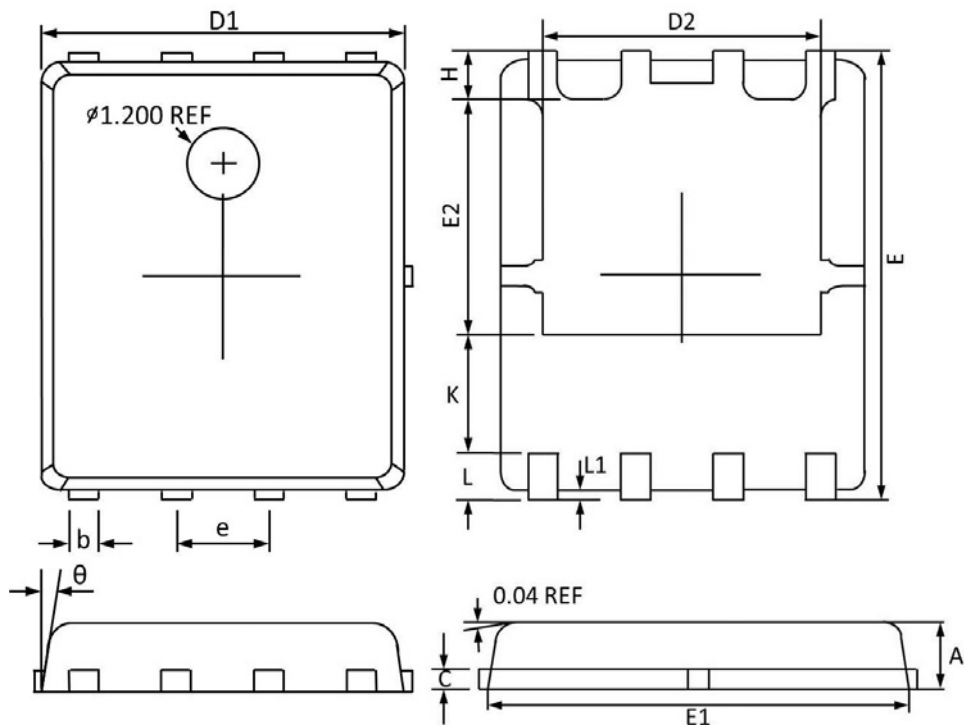


**Figure 7. Switching Time Waveform**



**Figure 8. 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°