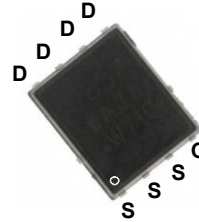
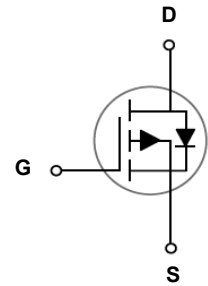


### Main Product Characteristics

$BV_{DSS}$	-20V
$R_{DS(ON)}$	2.3m $\Omega$
$I_D$	-90A



PPAK 5X6



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

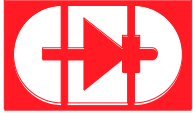


### Description

The GSFP2601 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	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous( $T_C=25^\circ\text{C}$ )	$I_D$	-90	A
Drain Current-Continuous( $T_C=100^\circ\text{C}$ )		-54	A
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	-360	A
Power Dissipation( $T_C=25^\circ\text{C}$ )	$P_D$	41.67	W
Power Dissipation-Derate Above $25^\circ\text{C}$		0.33	W/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3	$^\circ\text{C}/\text{W}$
Storage Temperature Range	$T_{STG}$	-55 To +150	$^\circ\text{C}$
Operating Junction Temperature Range	$T_J$	-55 To +150	$^\circ\text{C}$

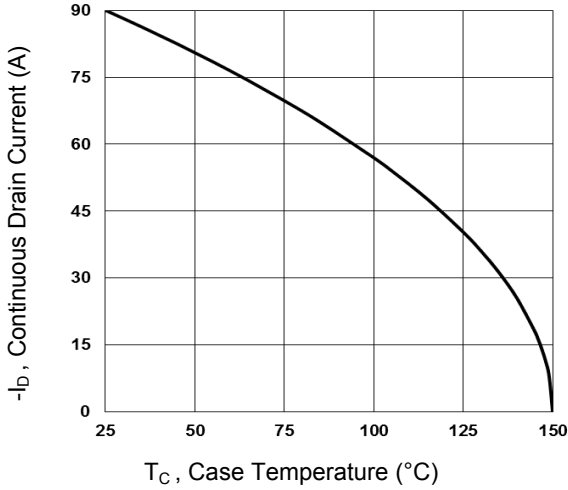

**Electrical Characteristics** ( $T_J=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20	-	-	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^\circ\text{C}$ , $I_D=-1mA$	-	-0.008	-	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V,$ $T_J=25^\circ\text{C}$	-	-	-1	$\mu A$
		$V_{DS}=-16V, V_{GS}=0V,$ $T_J=125^\circ\text{C}$	-	-	-30	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	$\pm 500$	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-20A$	-	1.8	2.3	m $\Omega$
		$V_{GS}=-4.5V, I_D=-20A$	-	2.1	2.6	
		$V_{GS}=-2.5V, I_D=-20A$	-	2.7	3.6	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS},$ $I_D=-250\mu A$	-0.4	-0.6	-1.0	V
VGS(th) Temperature Coefficient	$\Delta V_{GS}$		-	-3.44	-	mV/ $^\circ\text{C}$
Forward Transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-3A$	-	30	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=-16V, I_D=-5A,$ $V_{GS}=-4.5V$	-	149	225	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	14.4	22	
Gate-Drain Charge <sup>2,3</sup>	$Q_{gd}$		-	42.8	65	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=-15V, R_L=25\Omega$ $V_{GS}=-4.5V, I_D=-1A$	-	21.2	42	nS
Rise Time <sup>2,3</sup>	$t_r$		-	20.6	40	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	26	52	
Fall Time <sup>2,3</sup>	$t_f$		-	400	600	
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V,$ $F=1.0MHz$	-	14000	21000	PF
Output Capacitance	$C_{oss}$		-	1670	2500	
Reverse Transfer Capacitance	$C_{rss}$		-	730	1100	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$	-	2.6	-	$\Omega$
<b>Drain-Source Diode Characteristics</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	-90	A
Pulsed Source Current	$I_{SM}$		-	-	-180	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-1A,$ $T_J=25^\circ\text{C}$	-	-	-1	V

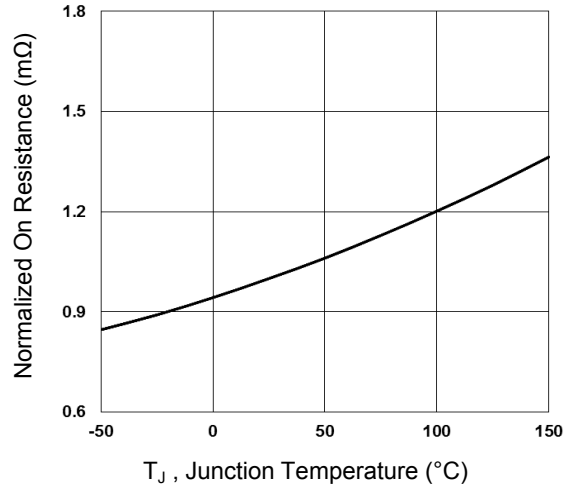
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

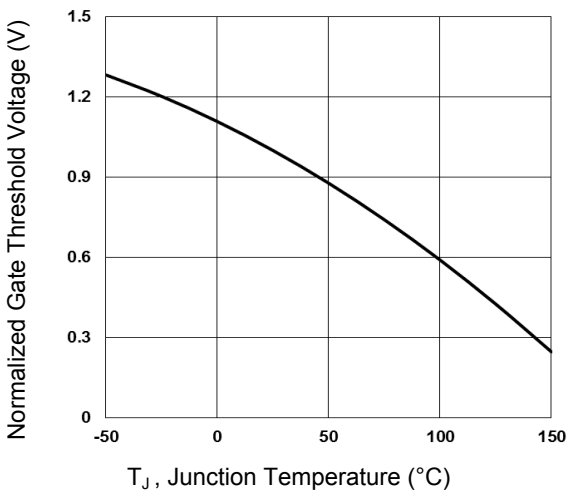
**Typical Electrical and Thermal Characteristic Curves**



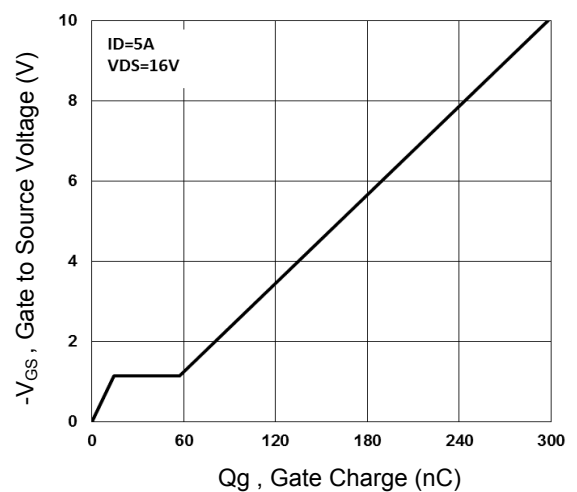
**Figure 1. Continuous Drain Current vs. T<sub>c</sub>**



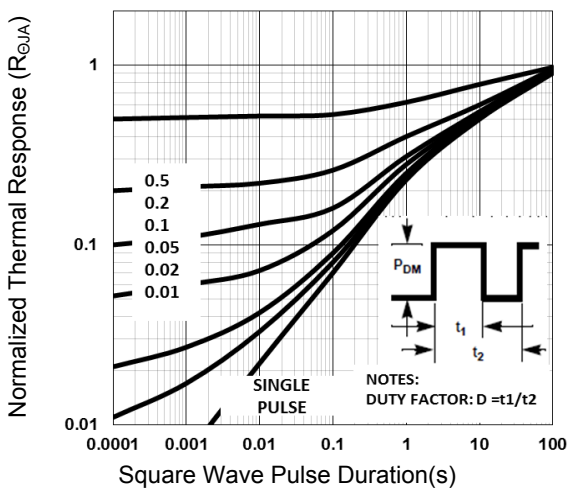
**Figure 2. Normalized R<sub>DS(on)</sub> vs. T<sub>j</sub>**



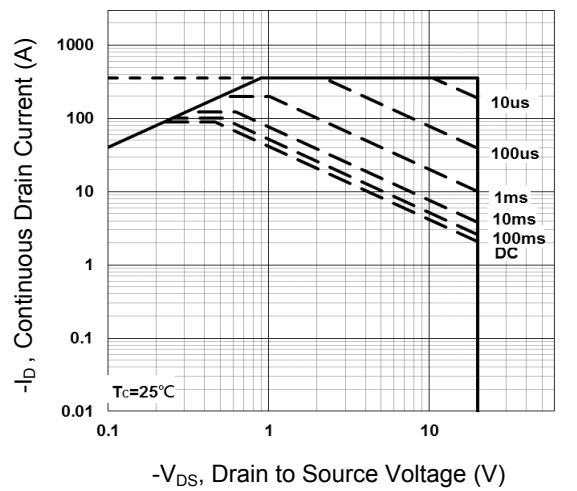
**Figure 3. Normalized V<sub>th</sub> vs. T<sub>j</sub>**



**Figure 4. Gate Charge Waveform**

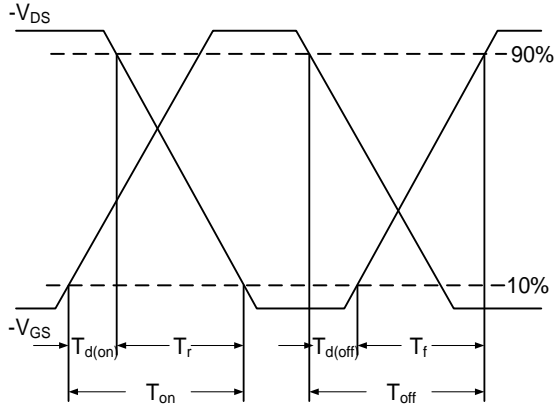


**Figure 5. Normalized Transient Response**

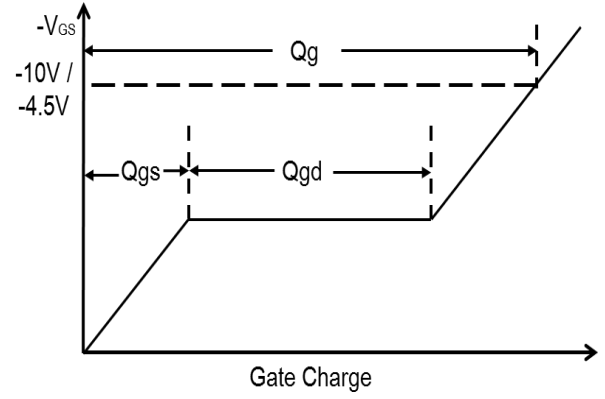


**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**

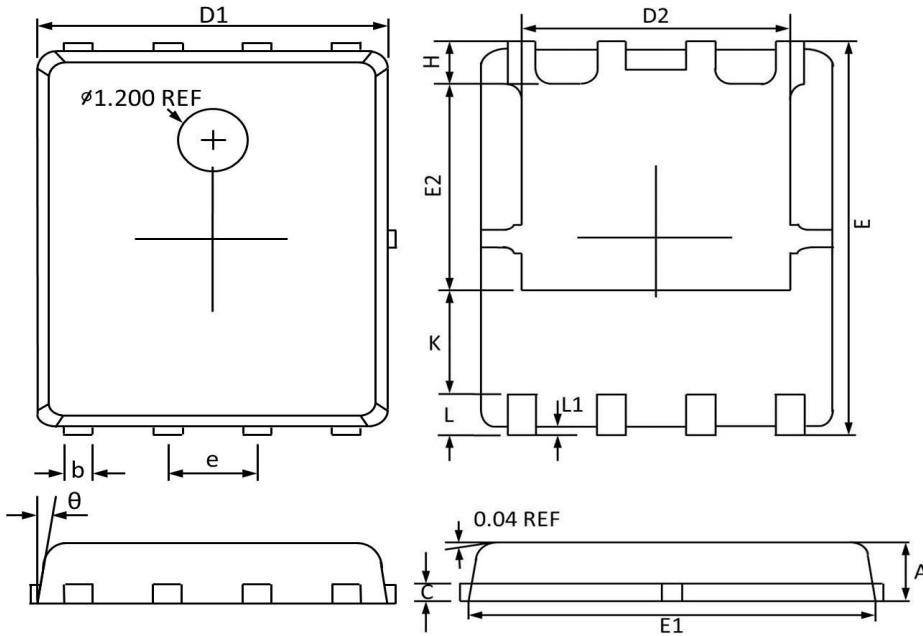


**Figure 7. Switching Time Waveform**



**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°