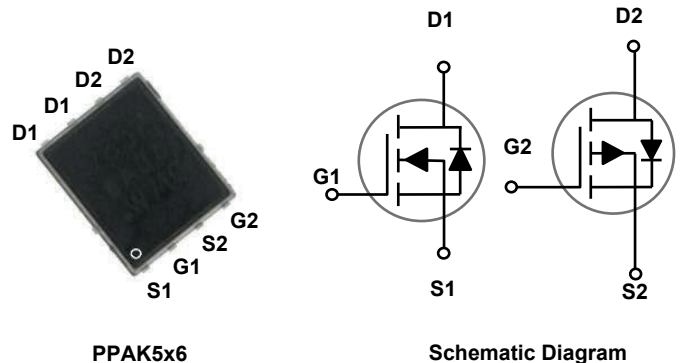


Main Product Characteristics

Polarity	N-Ch	P-Ch
$V_{(BR)DSS}$	40V	-40V
$R_{DS(ON)}$	18m Ω (Max.)	39m Ω (Max.)
I_D	20A	-21A



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 GSFP4918 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 supplies and a wide variety of other applications.

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

Parameter	Symbol	Max.		Unit
		N-Channel	P-Channel	
Drain-Source Voltage	V_{DS}	40	-40	V
Gate-to-Source Voltage	V_{GS}	± 20	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	20	-21	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		13.6	-14	A
Pulsed Drain Current ($T_C=25^\circ\text{C}$) ¹	I_{DM}	80	-84	A
Power Dissipation ($T_C=25^\circ\text{C}$) ²	P_D	21	22	W
Single Pulse Avalanche Energy	E_{AS}	43	68	mJ
Single Pulse Avalanche Current	I_{AS}	13	-16	A
Thermal Resistance, Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	62	62	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7.14	6.82	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +175	-55 to +175	$^\circ\text{C}$
Soldering Temperature (SMD)	T_{sold}	260	260	$^\circ\text{C}$

N-Channel Electrical Characteristics (T_J=25°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 =250μA	40	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} =32V, V _{GS} =0V, T _J =125°C	-	-	10	μA
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 =10A	-	14	18	mΩ
		V _{GS} =4.5V, I _D =6A	-	28	28	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	1.6	2.7	V
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =1A	-	4.5	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =32V, I _D =3A, V _{GS} =10V	-	10.8	-	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.6	-	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	3.3	-	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =15V, R _G =3.3Ω, V _{GS} =10V, I _D =1A	-	3.8	-	nS
Rise Time ^{2,3}	t _r		-	10.5	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	22.2	-	
Fall Time ^{2,3}	t _f		-	6.6	-	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, F=1MHz	-	800	-	pF
Output Capacitance	C _{oss}		-	71	-	
Reverse Transfer Capacitance	C _{rss}		-	110	-	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.6	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	20	A
Pulsed Source Current	I _{SM}		-	-	80	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A, T _J =25°C	-	-	1.4	V
Reverse Recovery Time	t _{rr}	V _R =30V, I _S =8A, di/dt=100A/μs, T _J =25°C	-	33	-	nS
Reverse Recovery Charge	Q _{rr}		-	12	-	nC

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_G=25Ω, starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.

P-Channel Electrical Characteristics (T_J=25°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 =-250uA	-40	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA	-	-0.04	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-40V, V _{GS} =0V, T _J =25°C	-	-	-1	uA
		V _{DS} =-32V, V _{GS} =0V, T _J =125°C	-	-	-10	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-10V, I _D =-10A	-	32	39	mΩ
		V _{GS} =-4.5V, I _D =-8A	-	45	56	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.6	-2.6	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	3	-	mV/°C
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =-20V, V _{GS} =-10V, I _D =-10A	-	19.3	-	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	2.5	-	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	5.6	-	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =-20V, V _{GS} =-10V, R _G =3Ω, I _D =-10A	-	13	-	nS
Rise Time ^{2,3}	t _r		-	16	-	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	120	-	
Fall Time ^{2,3}	t _f		-	86	-	
Input Capacitance	C _{iss}	V _{DS} =-20V, V _{GS} =0V, F=1MHz	-	1050	-	pF
Output Capacitance	C _{oss}		-	64	-	
Reverse Transfer Capacitance	C _{rss}		-	48	-	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	-	4.6	-	Ω
Drain-Source Ratings and Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	-21	A
Pulsed Source Current	I _{SM}		-	-	-84	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =-10A, T _J =25°C	-	-	-1.4	V

Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. V_{DD}=-20V, V_{GS}=-10V, L=0.5mH, starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.

N-Channel Typical Electrical and Thermal Characteristic Curves

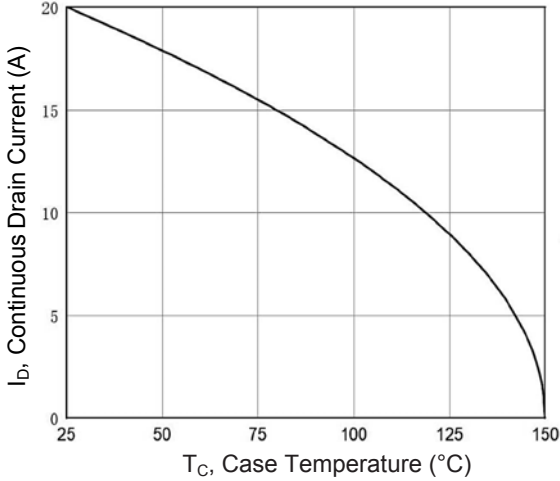


Figure 1. Continuous Drain Current vs. T_C

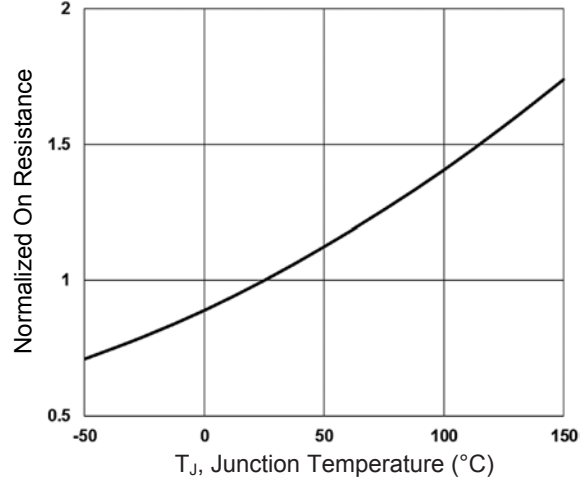


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

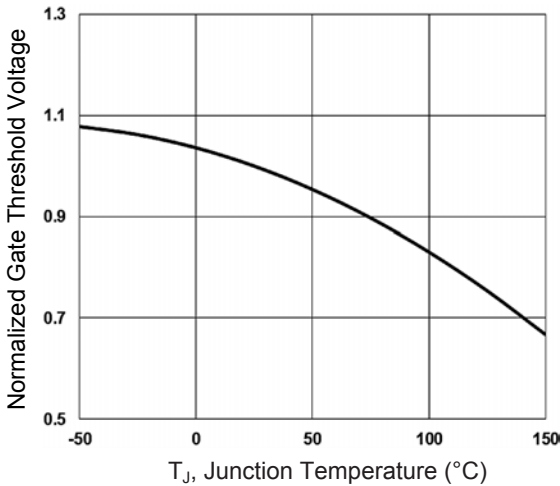


Figure 3. Normalized V_{th} vs. T_J

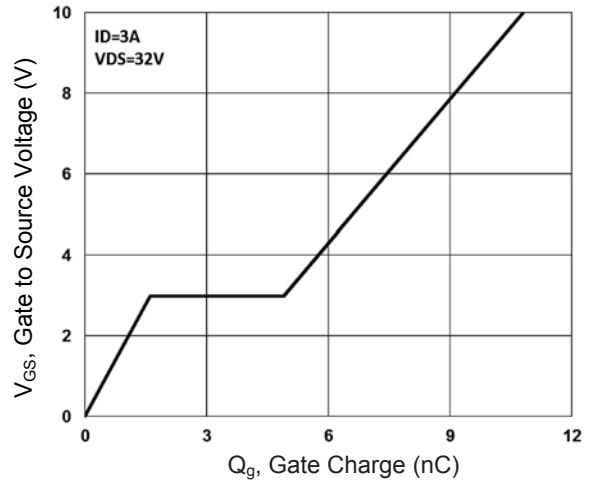


Figure 4. Gate Charge Waveform

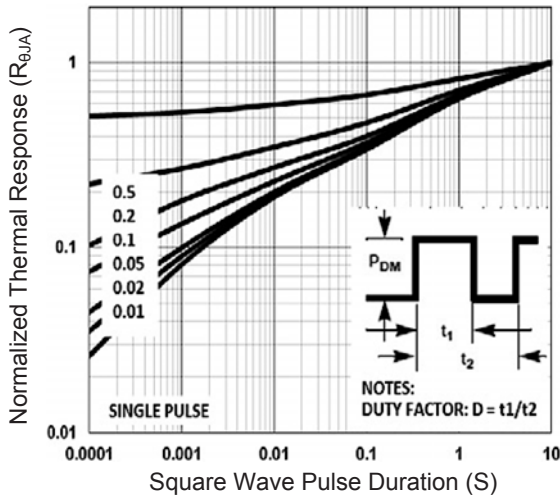


Figure 5. Normalized Transient Impedance

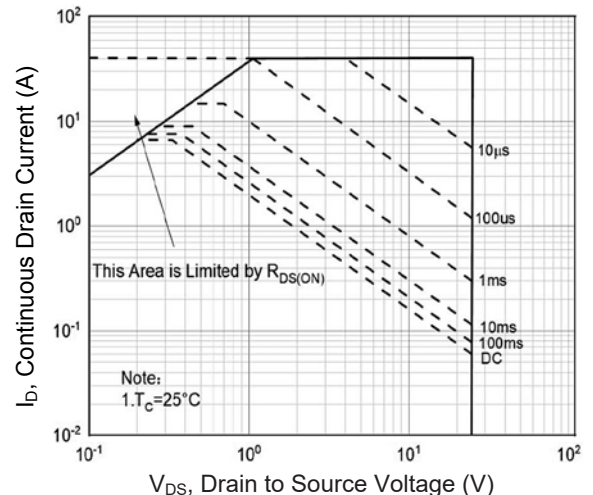


Figure 6. Maximum Safe Operation Area

P-Channel Typical Electrical and Thermal Characteristic Curves

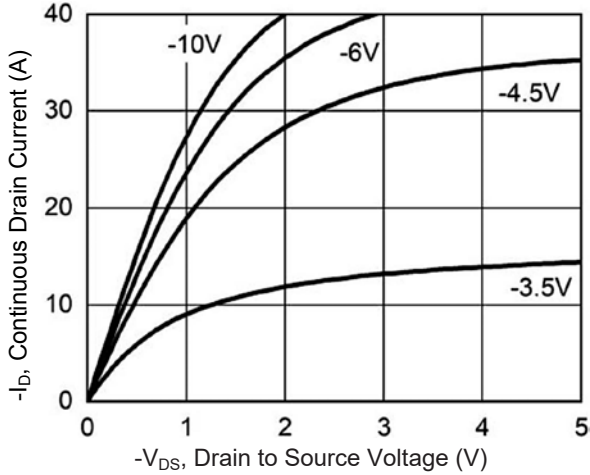


Figure 1. Output Characteristics

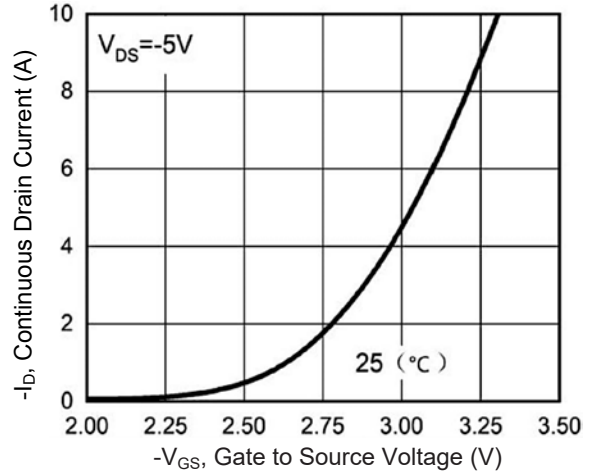


Figure 2. Transfer Characteristics

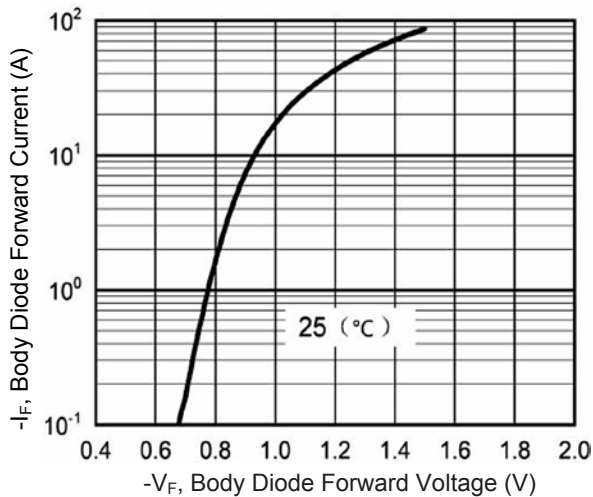


Figure 3. Body Diode Characteristics

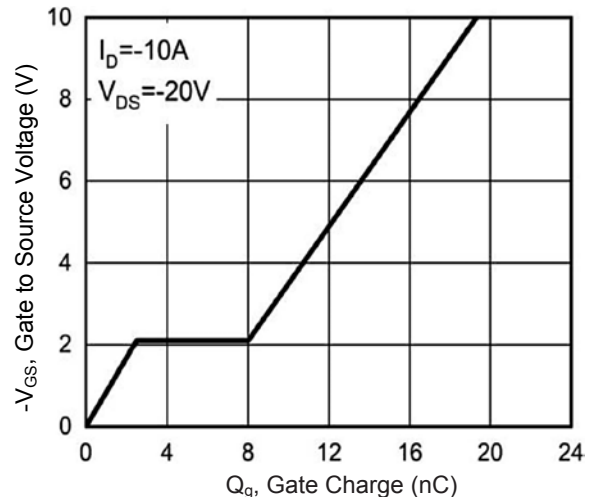


Figure 4. Gate Charge Waveform

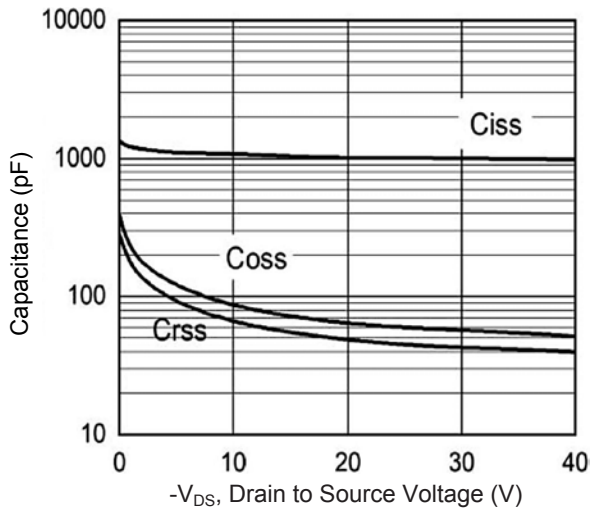


Figure 5. Capacitance Characteristics

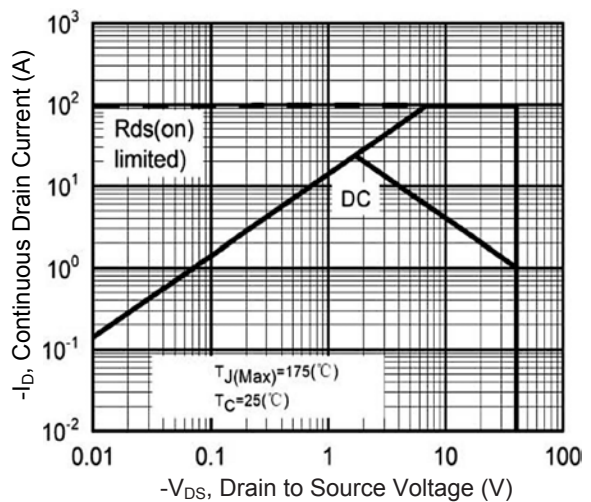
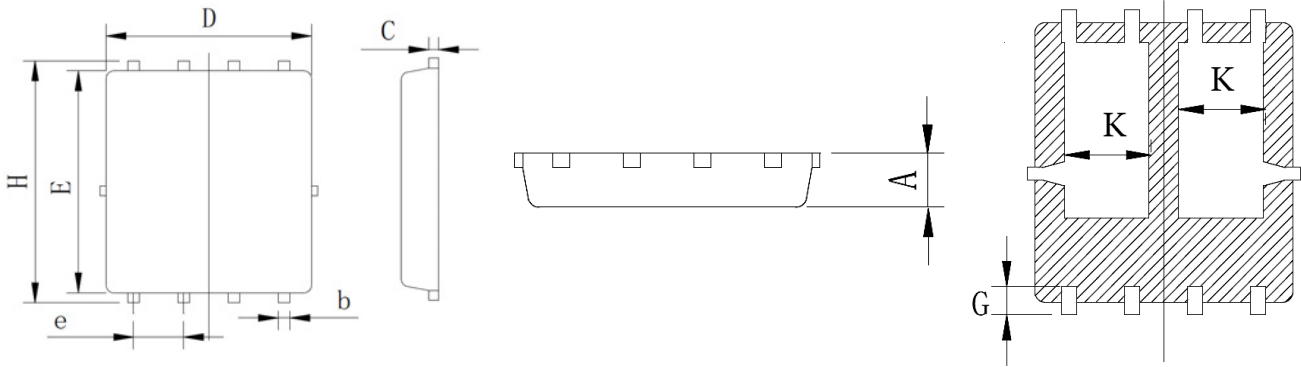


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.000	0.031	0.039
b	0.250	0.490	0.010	0.019
C	0.254 REF		0.010 REF	
D	4.900	5.400	0.193	0.213
E	5.700	5.900	0.224	0.232
e	1.270 BSC		0.050 BSC	
H	5.950	6.200	0.234	0.244
G	0.600 REF		0.024 REF	
K	1.600 REF		0.063 REF	

Order Information

Device	Package	Marking	Carrier	Quantity
GSFP4918	PPAK5x6	P4918	Tape & Reel	5,000 Pcs / Reel