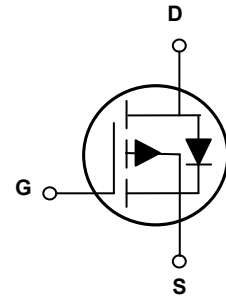
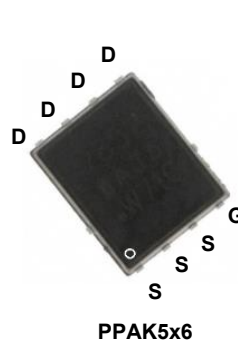


Main Product Characteristics

BV_{DSS}	-60V
$R_{DS(ON)}$	19m Ω (Max)
I_D	-70A



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 GSGP6019 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 ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Parameter	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $T_C=25^\circ\text{C}$, $V_{GS}=10\text{V}^1$	I_D	-70	A
Continuous Drain Current, $T_C=100^\circ\text{C}$, $V_{GS}=10\text{V}^1$		-55	A
Pulsed Drain Current ²	I_{DM}	-280	A
Pulsed Source Current (Body Diode) ²	I_{SM}	-280	A
Maximum Power Dissipation ($T_C=25^\circ\text{C}$) ³	P_D	70	W
Single Pulse Avalanche Energy ($L=0.3\text{mH}$)	E_{AS}	300	mJ
Single Pulse Avalanche Current ($L=0.3\text{mH}$)	I_{AS}	44	A
Junction-to-Ambient ($t \leq 10\text{s}$) ⁴	$R_{\theta JA}$	60	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	1.79	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	μA
		$V_{DS}=-60V, V_{GS}=0V$ $T_J=125^\circ\text{C}$	-	-	-50	
Gate-to-Source Forward Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain-to-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-20A$	-	14	19	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	-	10	29	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-	-3	V
Dynamic and Switching Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=-25V$ $F=1\text{MHz}$	-	4800	-	μF
Output Capacitance	C_{oss}		-	286	-	
Reverse Transfer Capacitance	C_{rss}		-	270	-	
Total Gate Charge	Q_g	$I_D=-30A, V_{DD}=-40V,$ $V_{GS}=-10V$	-	111	-	nC
Gate-to-Source Charge	Q_{gs}		-	16.3	-	
Gate-to-Drain Charge	Q_{gd}		-	22.2	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DD}=-30V,$ $I_D=-20A, R_G=3\Omega,$ $R_L=1.5\Omega$	-	8	-	nS
Rise Time	t_r		-	26	-	
Turn-Off Delay Time	$t_{d(off)}$		-	104	-	
Fall Time	t_f		-	141	-	
Gate Resistance	R_g	$F=1\text{MHz}$	-	5.6	-	Ω
Source-Drain Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse-p-n junction diode.	-	-70	-	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-280	-	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=-10A,$ $T_J=25^\circ\text{C}$	-	-0.74	-1.2	V
Reverse Recovery Time	t_{rr}	$T_J=25^\circ\text{C}, I_F=-20A,$ $di/dt=100A/\mu s$	-	22.1	-	ns
Reverse Recovery Charge	Q_{rr}		-	21.2	-	nc

Notes

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. The power dissipation P_D is based on max. junction temperature, using junction-to-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$.

Typical Electrical and Thermal Characteristic Curves

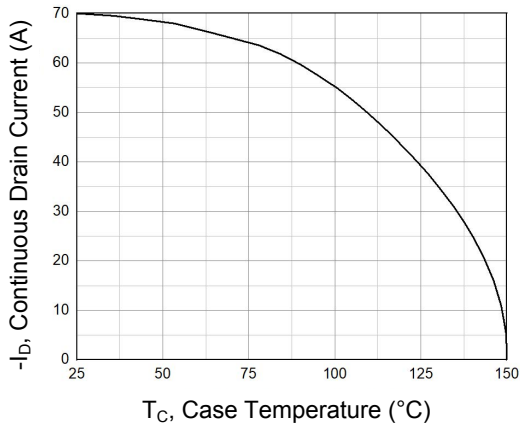


Figure 1. Continuous Drain Current vs. T_C

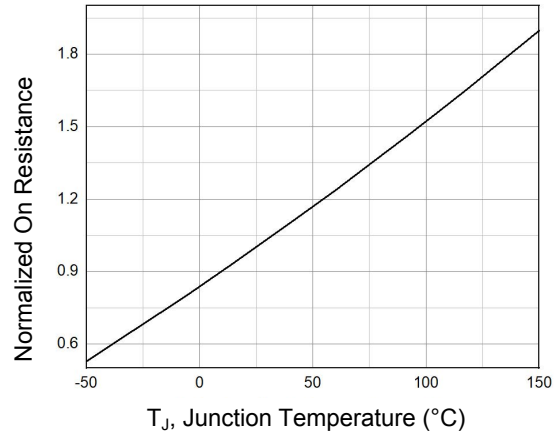


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

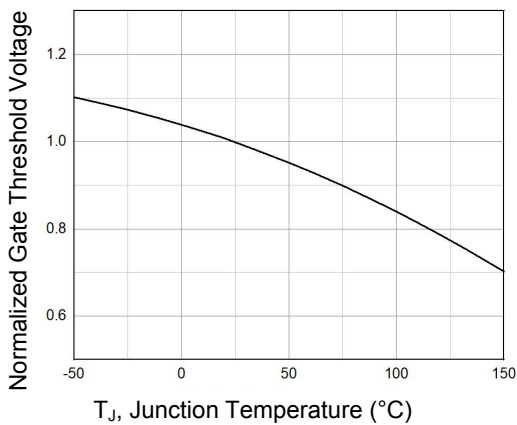


Figure 3. Normalized V_{th} vs. T_J

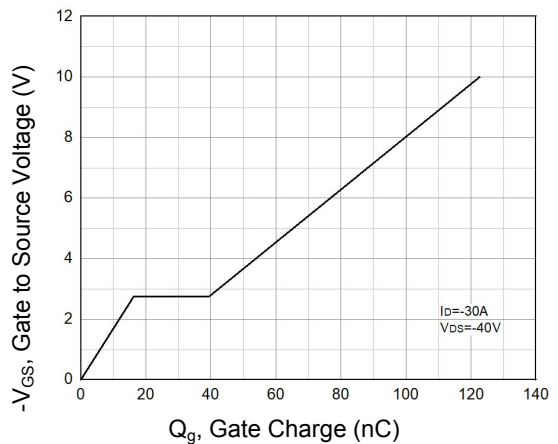


Figure 4. Gate Charge Waveform

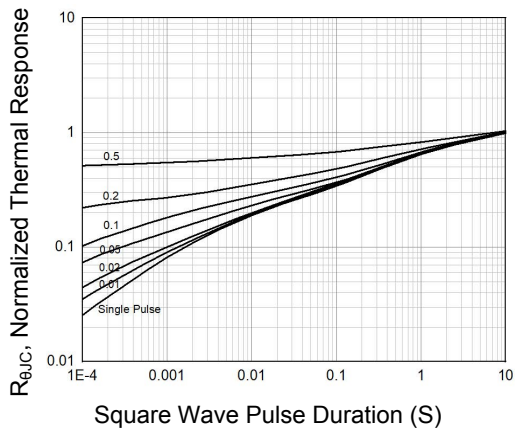


Figure 5. Normalized Transient Impedance

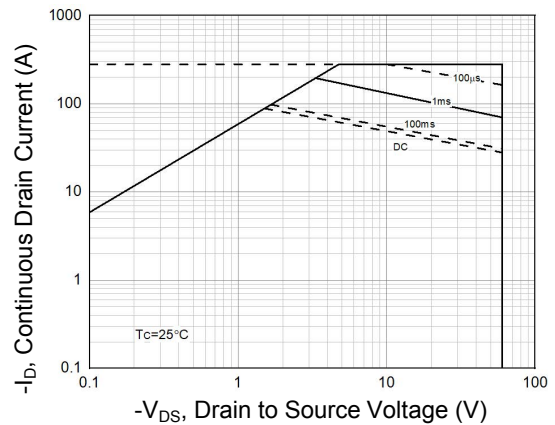
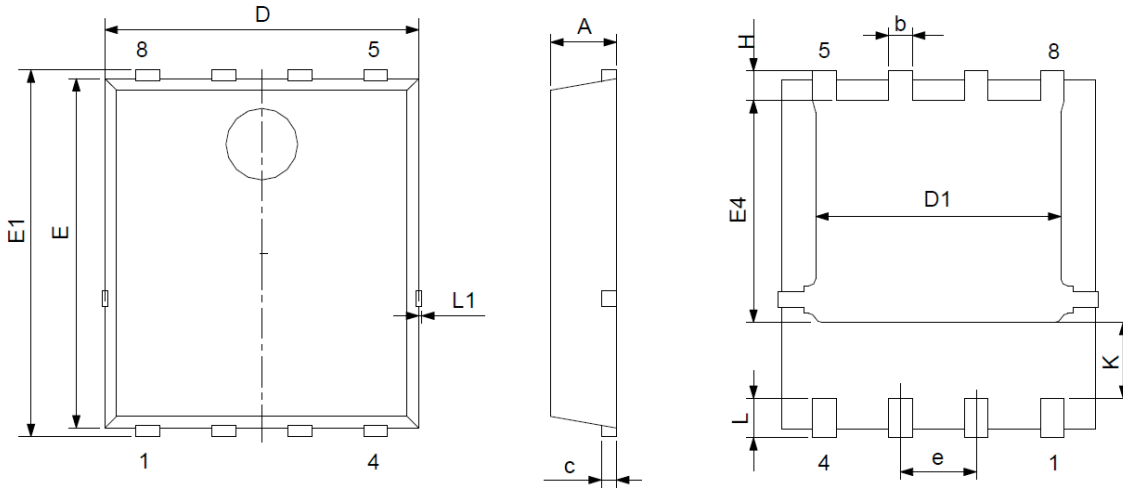


Figure 6. Maximum Safe Operation Area

Package Outline Dimensions (PPAK5x6)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
c	0.154	0.354	0.006	0.014
D	4.800	5.400	0.190	0.213
E	5.660	6.060	0.223	0.240
D1	3.760	4.300	0.148	0.169
E1	5.900	6.350	0.232	0.250
b	0.300	0.550	0.012	0.022
k	1.100	1.500	0.043	0.059
e	1.070	1.370	0.042	0.054
E4	3.340	3.920	0.131	0.154
L	0.300	0.710	0.012	0.028
L1	-	0.120	-	0.005
H	0.400	0.710	0.016	0.028