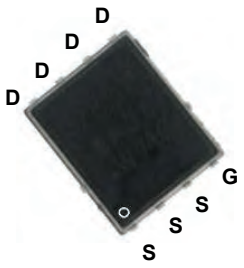
GOOD-ARK SEMICONDUCTOR

GSGP8R6P06

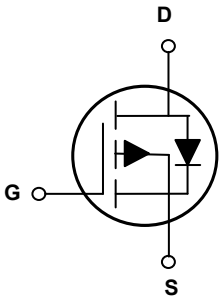
60V P-Channel MOSFET

Main Product Characteristics

$V_{(BR)DSS}$	-60V
$R_{DS(ON)}$	8.6mΩ (Max.)
I_D	-81A



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 GSGP8R6P06 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°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_C=25°C), V_{GS}=10V[1]	I_D	-81	A
Drain Current-Continuous (T_C=100°C), V_{GS}=10V[1]		-50	A
Drain Current-Pulsed[2]	I_{DM}	-324	A
Maximum Power Dissipation (T_C=25°C)[3]	P_D	120	W
Single Pulse Avalanche Energy (L=0.5mH)	E_{AS}	272	mJ
Single Pulse Avalanche Current (L=0.5mH)	I_{AS}	-33	A
Thermal Resistance, Junction-to-Ambient (t ≤ 10s)[4]	$R_{\theta JA}$	60	°C/W
Maximum Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.96	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

Electrical Characteristics (T_A=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	-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°C	-	-	-50	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=-250uA	-2.2	-3.0	-3.8	V
Drain Static-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-20A	-	6.8	8.6	mΩ
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	V_{DD}=-30V, I_D=-20A, V_{GS}=-10V	-	80	-	nC
Gate-Source Charge	Q_{gs}		-	17.4	-	
Gate-Drain Charge	Q_{gd}		-	16.6	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-30V, R_G=3Ω, I_L=20A, V_{GS}=-10V	-	4.4	-	nS
Rise Time	t_r		-	2.9	-	
Turn-Off Delay Time	$t_{d(off)}$		-	16.2	-	
Fall Time	t_f		-	5.8	-	
Input Capacitance	C_{iss}	V_{DS}=-30V, V_{GS}=0V, F=1MHz	-	3821	-	pF
Output Capacitance	C_{oss}		-	1020	-	
Reverse Transfer Capacitance	C_{rss}		-	55	-	
Gate Resistance	R_g	F=1MHz	-	7.8	-	Ω
Drain-Source Ratings and Characteristics						
Maximum Body-Diode Continuous Current	I_S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	-81	A
Maximum Body-Diode Pulse Current	I_{SM}		-	-	-162	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-10A, T_J=25°C	-	-0.9	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-20A, di/dt=100A/μs, T_J=25°C	-	65	-	nS
Reverse Recovery Charge	Q_{rr}		-	120	-	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 in^2 FR-4 board with 2oz. copper, in a still air environment with T_A=25°C

Typical Electrical and Thermal Characteristic Curves

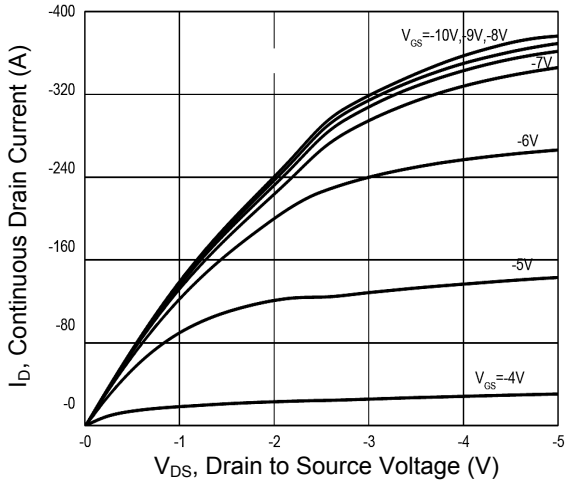


Figure 1. Output Characteristics

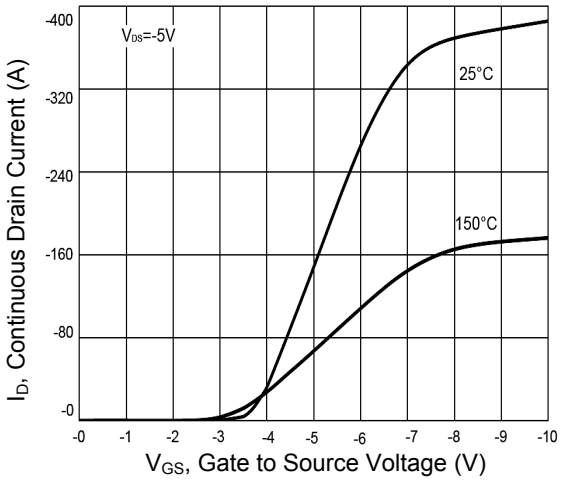


Figure 2. Transfer Characteristics

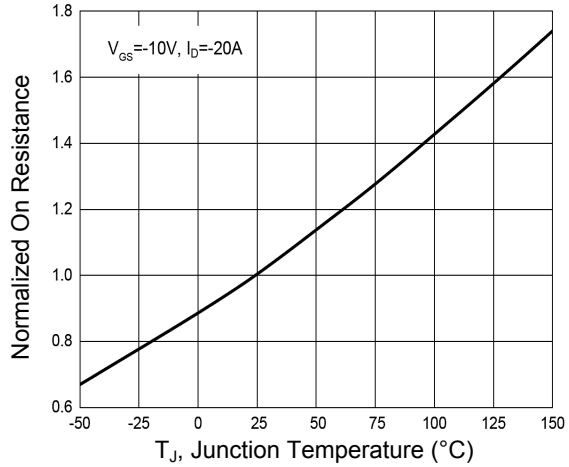


Figure 3. Normalized $R_{DS(ON)}$ vs. T_J

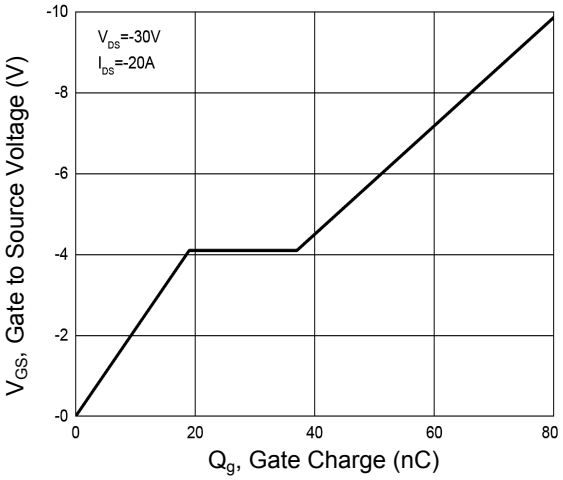


Figure 4. Gate Charge Waveform

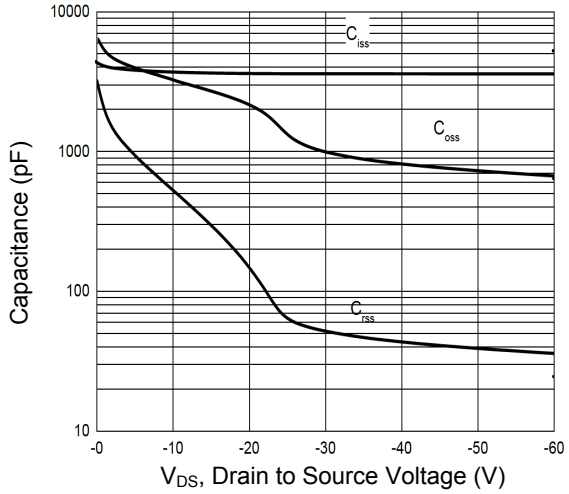


Figure 5. Capacitance Characteristics

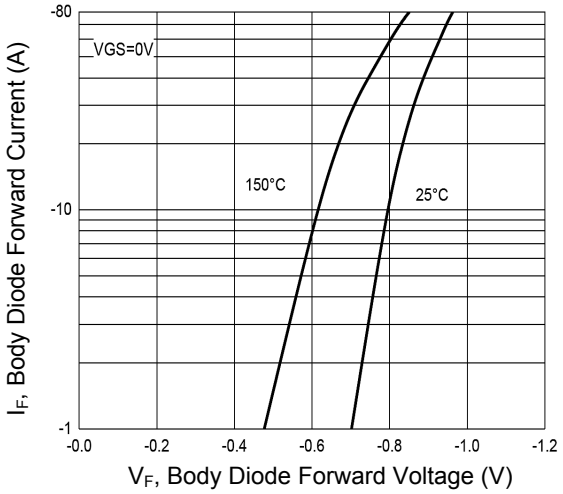
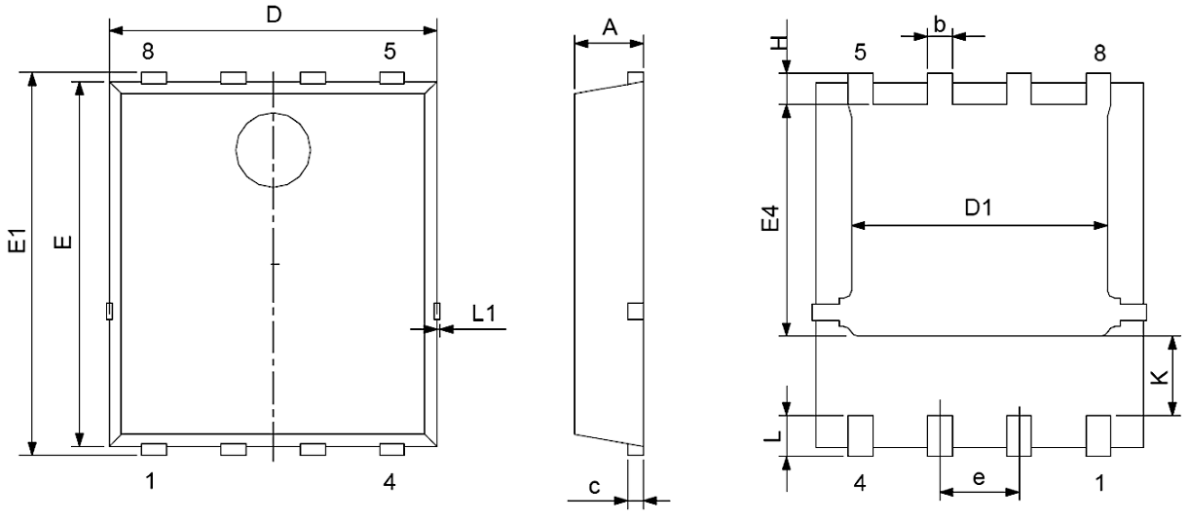


Figure 6. Body Diode Characteristics

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	0.189	0.213
E	5.660	6.060	0.223	0.239
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

Order Information

Device	Package	Marking	Packaging	SPQ
GSGP8R6P06	PPAK5x6	P8R6P06	Tape & Reel	5,000 Pcs / Reel