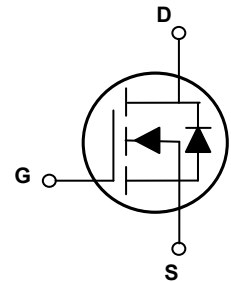
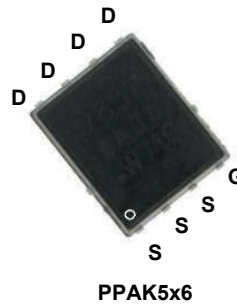


## Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	7.0m $\Omega$ (Max)
$I_D$	90A



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 GSGP7R010 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-to-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =25°C) <sup>1</sup>	I <sub>D</sub>	90	A
Continuous Drain Current, @ Steady-State (T <sub>C</sub> =100°C)		58	A
Pulsed Drain Current <sup>2</sup>	I <sub>DM</sub>	360	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	120	W
Linear Derating Factor (T <sub>C</sub> =25°C)		0.95	W/°C
Single Pulse Avalanche Energy <sup>3</sup>	E <sub>AS</sub>	272	mJ
Junction-to-Case	R <sub>θJC</sub>	1.04	°C/W
Junction-to-Ambient (PCB Mounted, Steady-State) <sup>4</sup>	R <sub>θJA</sub>	50	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> /T <sub>STG</sub>	-55 to +150	°C

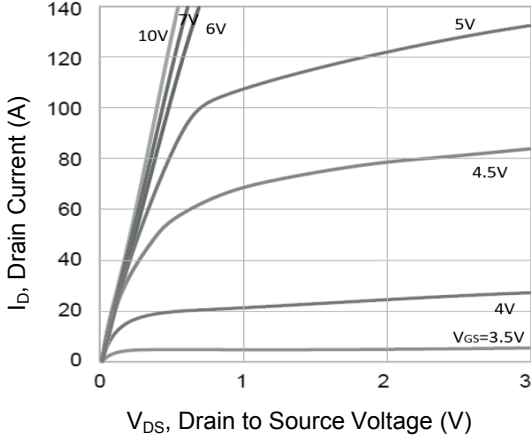
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On / Off Characteristics</b>						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Drain-to-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
		$T_J=125^\circ C$	-	-	20	
Gate-to-Source Forward Leakage	$I_{GSS}$	$V_{GS}=20V$	-	-	100	nA
		$V_{GS}=-20V$	-	-	-100	
Static Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=50A$	-	6.2	7.0	m $\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.1	2.8	3.9	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=50V, f=1MHz$	-	3460	-	pF
Output Capacitance	$C_{oss}$		-	456	-	
Reverse Transfer Capacitance	$C_{rss}$		-	14	-	
Total Gate Charge	$Q_g$	$I_D=25A, V_{DS}=50V, V_{GS}=10V$	-	50	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	23	-	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	7.7	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, I_D=25A, R_{GEN}=1.6\Omega$	-	24.2	-	nS
Rise Time	$t_r$		-	66.4	-	
Turn-Off Delay Time	$t_{d(off)}$		-	40.3	-	
Fall Time	$t_f$		-	12.6	-	
Gate Resistance	$R_g$	$f=1MHz$	-	1.9	-	$\Omega$
<b>Source-Drain Ratings and Characteristics</b>						
Continuous Source Current (Body Diode)	$I_S$	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	90	A
Pulsed Source Current (Body Diode)	$I_{SM}$		-	-	360	A
Diode Forward Voltage	$V_{SD}$	$I_S=50A, V_{GS}=0V$	-	1	1.2	V
Reverse Recovery Time	$T_{rr}$	$T_J=25^\circ C, I_F=25A, di/dt=100A/\mu s$	-	60.2	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	0.13	-	$\mu C$

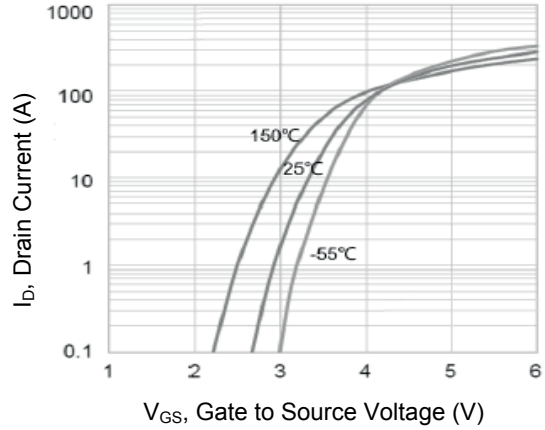
Notes

1. Pulse test: Pulse width  $\leq 300 \mu s$ , duty cycle  $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $L=0.5mH, V_{DD}=80V, I_{AS}=33.2A, T_J=25^\circ C$ .
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

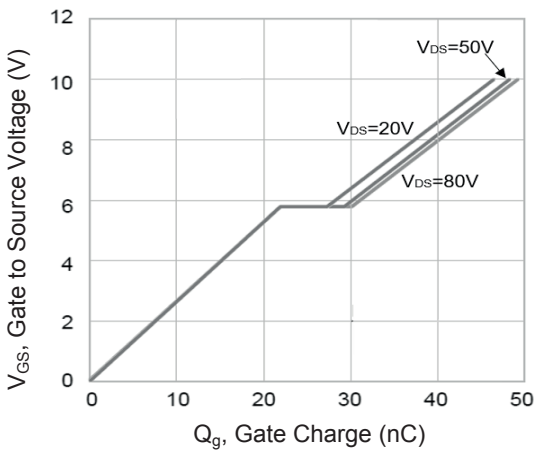
**Typical Electrical and Thermal Characteristic Curves**



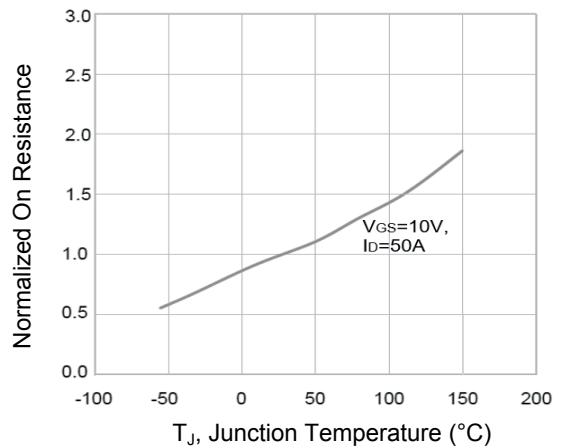
**Figure 1. Output Characteristics**



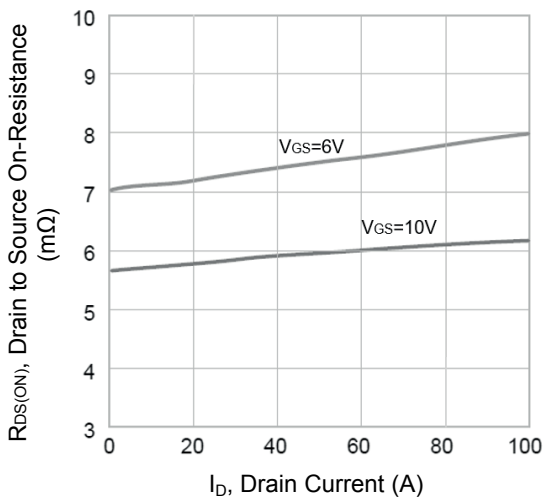
**Figure 2. Transfer Characteristics**



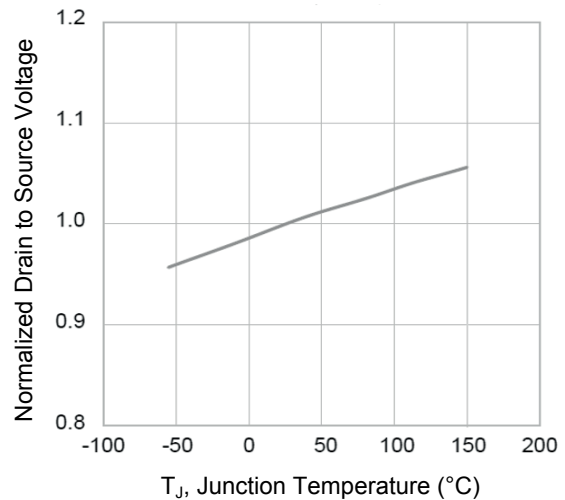
**Figure 3. Gate Charge**



**Figure 4. Normalized  $R_{DS(ON)}$  vs.  $T_J$**

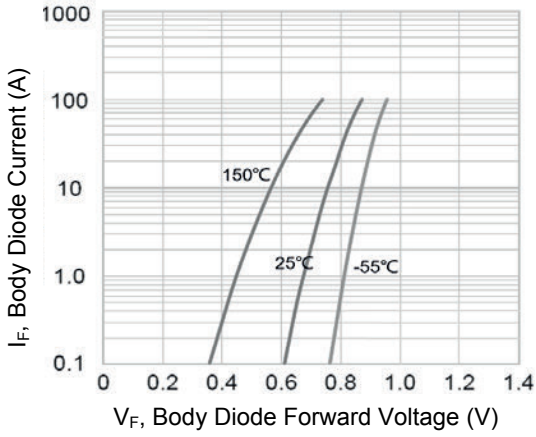


**Figure 5.  $R_{DS(ON)}$  vs. Drain Current**

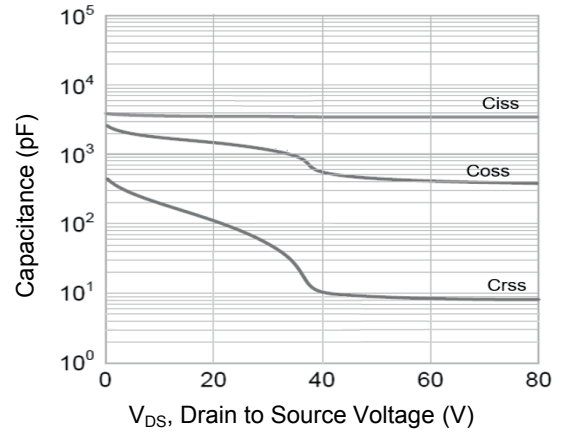


**Figure 6. Normalized  $BV_{DSS}$  vs.  $T_J$**

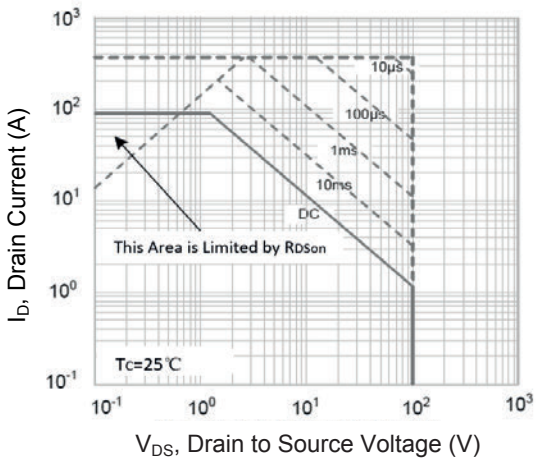
**Typical Electrical and Thermal Characteristic Curves**



**Figure 7. Body Diode Characteristics**

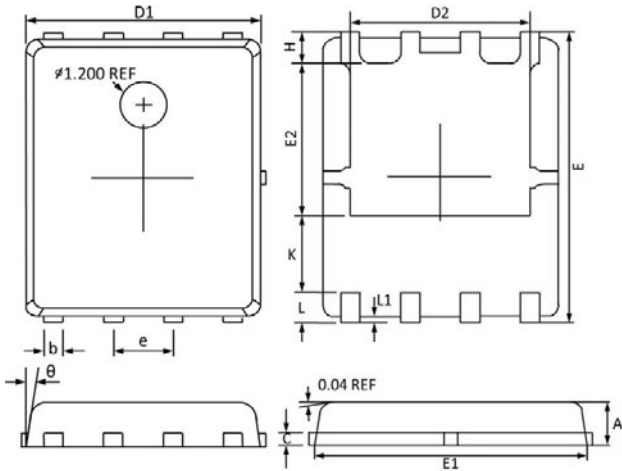


**Figure 8. Transfer Characteristics**



**Figure 9. Safe Operation Area**

**Package Outline Dimensions (PPAK5x6)**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.800	1.100	0.031	0.043
b	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.100	0.189	0.201
D2	3.610	4.100	0.142	0.161
E	5.900	6.200	0.232	0.244
E1	5.700	5.900	0.224	0.232
E2	3.350	3.780	0.132	0.149
e	1.27BSC		0.05BSC	
H	0.410	0.700	0.016	0.028
K	1.100	1.500	0.043	0.059
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
$\theta$	0°	12°	0°	12°