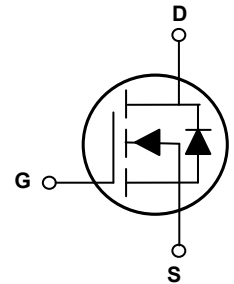
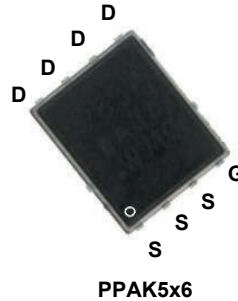


## Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	8.6m $\Omega$ (Max.)
$I_D$	94A



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 GSGP8R610L 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 ( $T_C=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-to-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current, @ Steady-State ( $T_C=25^\circ\text{C}$ ) <sup>1</sup>	$I_D$	94	A
Continuous Drain Current, @ Steady-State ( $T_C=100^\circ\text{C}$ )		59	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	376	A
Power Dissipation ( $T_C=25^\circ\text{C}$ )	$P_D$	136	W
Linear Derating Factor ( $T_C=25^\circ\text{C}$ )		1.09	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	240	mJ
Junction-to-Case	$R_{\theta JC}$	0.92	$^\circ\text{C}/\text{W}$
Junction-to-Ambient (PCB Mounted, Steady-State) <sup>4</sup>	$R_{\theta JA}$	62.0	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range	$T_J/T_{STG}$	-55 to +150	$^\circ\text{C}$

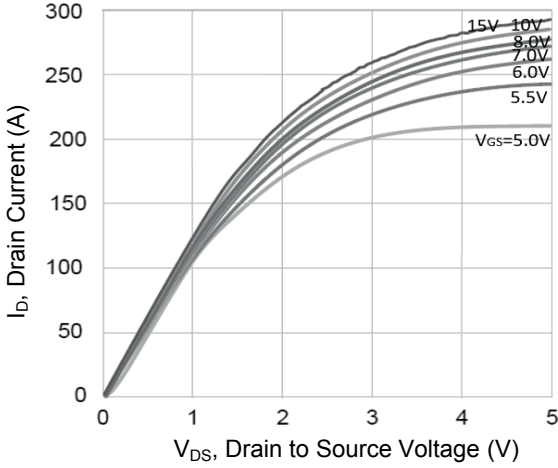
**Electrical Characteristics** ( $T_C=25^\circ\text{C}$  unless otherwise specified)

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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=40A$	-	7.0	8.6	m $\Omega$
		$V_{GS}=4.5V, I_D=40A$	-	9.3	12	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.8	2.6	V
<b>Dynamic and Switching Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=50V, f=1MHz$	-	3632	-	$\mu F$
Output Capacitance	$C_{oss}$		-	410	-	
Reverse Transfer Capacitance	$C_{rss}$		-	8.9	-	
Total Gate Charge	$Q_g$	$I_D=39A, V_{DS}=80V, V_{GS}=10V$	-	56	-	nC
Gate-to-Source Charge	$Q_{gs}$		-	17	-	
Gate-to-Drain ("Miller") Charge	$Q_{gd}$		-	8.5	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, I_D=39A, R_{GEN}=4.7\Omega$	-	14.5	-	nS
Rise Time	$t_r$		-	30	-	
Turn-Off Delay Time	$t_{d(off)}$		-	58	-	
Fall Time	$t_f$		-	15	-	
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.	-	-	94	A
Pulsed Source Current (Body Diode)	$I_{SM}$		-	-	376	A
Diode Forward Voltage	$V_{SD}$	$I_S=78A, V_{GS}=0V$	-	1	1.2	V
Reverse Recovery Time	$T_{rr}$	$T_J=25^\circ C, I_S=I_F=12A, di/dt=100A/\mu s$	-	65	-	nS
Reverse Recovery Charge	$Q_{rr}$		-	0.09	-	$\mu C$

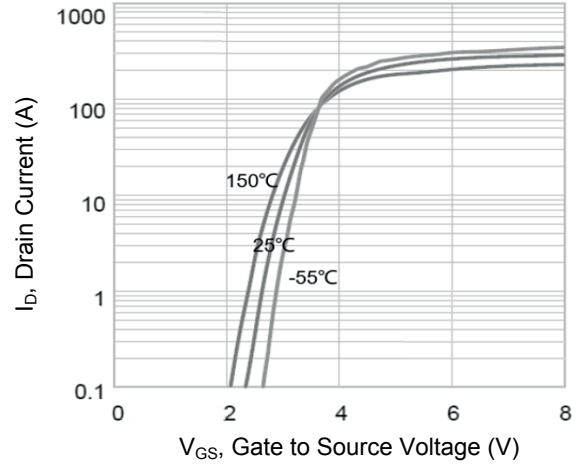
Notes:

1. Pulse test: Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Repetitive rating; pulse width limited by max. junction temperature.
3.  $L=0.5mH, V_{DD}=80V, I_{AS}=31A, R_G=25\Omega, T_J=25^\circ C$ .
4. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

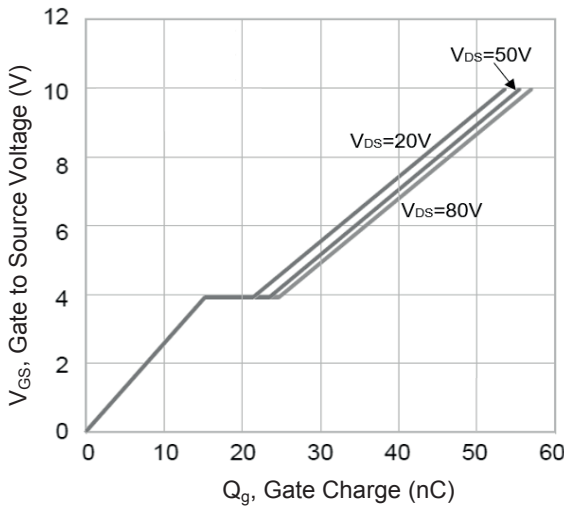
### Typical Electrical and Thermal Characteristic Curves



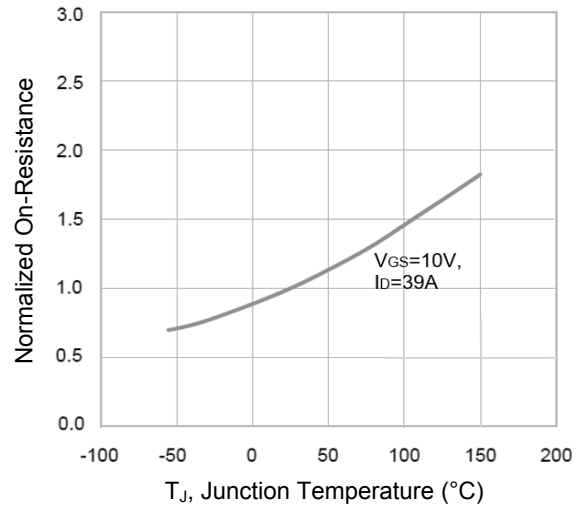
**Figure 1. Output Characteristics**



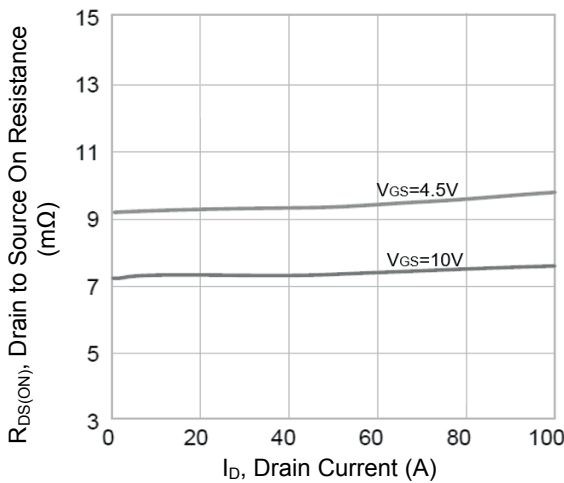
**Figure 2. Transfer Characteristics**



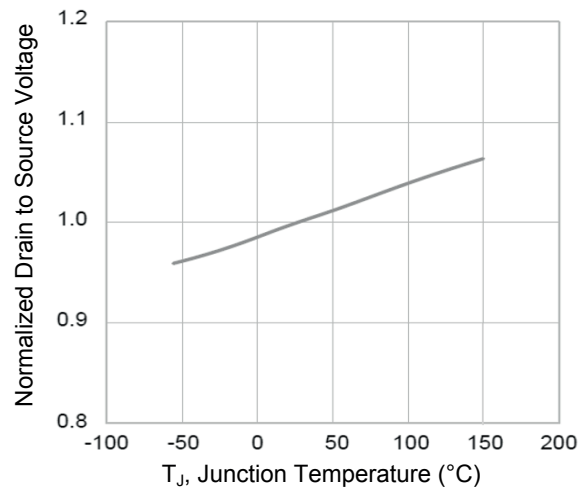
**Figure 3. Gate Charge**



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

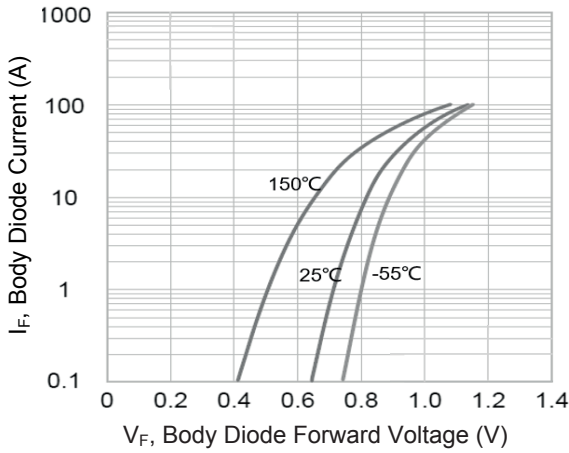


**Figure 5.  $R_{DS(ON)}$  vs. Drain Current**

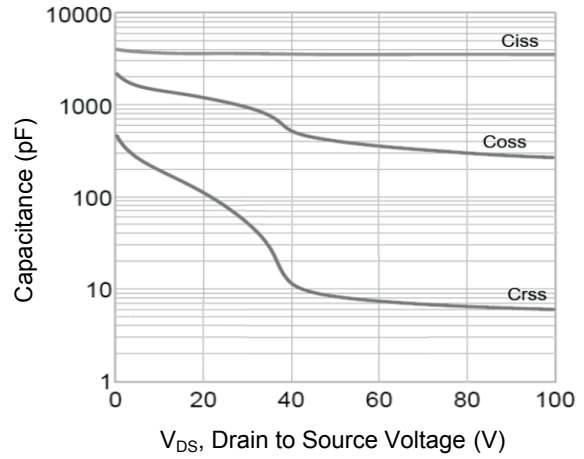


**Figure 6. Normalized  $BV_{DSS}$  vs.  $T_J$**

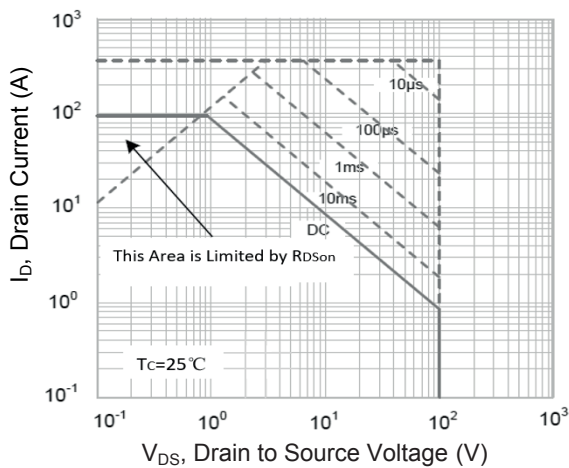
### Typical Electrical and Thermal Characteristic Curves



**Figure 7. Body Diode Characteristics**

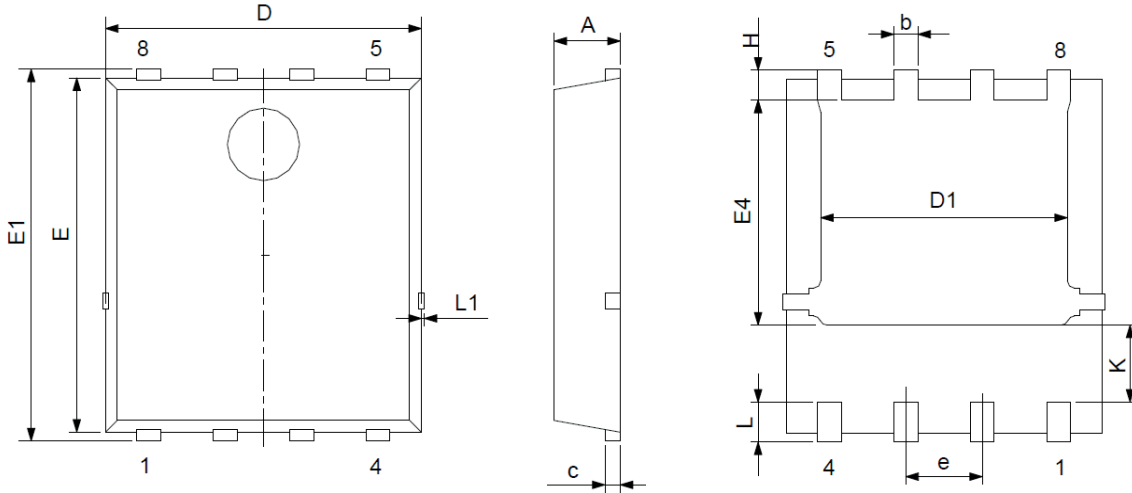


**Figure 8. Capacitance Characteristics**



**Figure 9. 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	0.189	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	Carrier	Quantity
GSGP8R610L	PPAK5x6	P8R610L	Tape & Reel	5,000 Pcs / Reel

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)