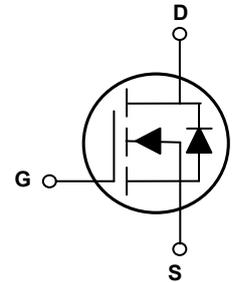
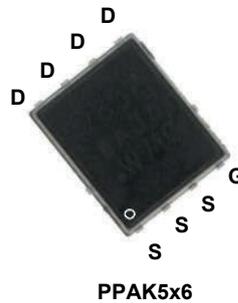


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	3.6m Ω (Max.)
I_D	80A



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 GSGP3R603 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}	30	V
Gate-to-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, @ Steady-State ($T_C=25^\circ\text{C}$)	I_D	80	A
Continuous Drain Current, @ Steady-State ($T_C=100^\circ\text{C}$)		50	A
Pulsed Drain Current ($T_C=25^\circ\text{C}$) ¹	I_{DM}	320	A
Power Dissipation ($T_C=25^\circ\text{C}$) ²	P_D	36	W
Single Pulse Avalanche Energy	E_{AS}	36	mJ
Single Pulse Current	I_{AS}	12	A
Junction-to-Ambient (PCB Mounted, Steady-State)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Junction-to-Case	$R_{\theta JC}$	3.47	$^\circ\text{C/W}$
Operating Junction and Storage Temperature Range	T_J/T_{STG}	-55 to +150	$^\circ\text{C}$
Soldering Temperature (SMD)	T_{SOLD}	260	$^\circ\text{C}$

Electrical Characteristics (T_A=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Drain-to-Source Leakage Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V, T _J =25°C	-	-	1.0	μA
		V _{DS} =30V, V _{GS} =0V, T _J =125°C	-	2.0	-	
Gate-to-Source Forward Leakage	I _{GSS}	V _{DS} =0V, V _{GS} =20V	-	-	100	nA
		V _{DS} =0V, V _{GS} =-20V	-	-	-100	
Static Drain-to-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =24A	-	3.1	3.6	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.1	-	2.5	V
Dynamic and Switching Characteristics						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =15V, f=1MHz	-	1072	-	pF
Output Capacitance	C _{oss}		-	650	-	
Reverse Transfer Capacitance	C _{rss}		-	56	-	
Total Gate Charge ^{3,4}	Q _g	I _D =24A, V _{DD} =15V, V _{GS} =4.5V	-	9.6	-	nC
Gate-to-Source Charge ^{3,4}	Q _{gs}		-	4.6	-	
Gate-to-Drain ("Miller") Charge ^{3,4}	Q _{gd}		-	3.1	-	
Gate-to-Plateau ^{3,4}	V _{plateau}		-	3.4	-	V
Turn-On Delay Time ^{3,4}	t _{d(on)}	V _{DD} =20V, V _{GS} =4.5V, R _G =5Ω, I _D =24A	-	10	-	nS
Rise Time ^{3,4}	t _r		-	42	-	
Turn-Off Delay Time ^{3,4}	t _{d(off)}		-	15	-	
Fall Time ^{3,4}	t _f		-	14	-	
Gate Resistance	R _g	f=1MHz	-	1.1	-	Ω
Source-Drain Ratings and Characteristics						
Continuous Source Current (Body Diode)	I _S	MOSFET symbol showing the integral reverse p-n junction diode.	-	-	80	A
Diode Pulse Current	I _{S, pulse}		-	-	320	A
Diode Forward Voltage	V _{SD}	I _S =15A, V _{GS} =0V	-	-	1.4	V
Reverse Recovery Time ³	T _{rr}	I _S =24A, V _{GS} =0V, V _R =30V, di/dt=100A/us	-	27	-	nS
Reverse Recovery Charge ³	Q _{rr}		-	17	-	nC

Notes

- Pulse time of 5μs.
- The dissipated power value will change with the temperature. When it is greater than 25°C, the dissipated power value will decrease by 0.55°C/W for every 1 degree of temperature increase.
- Pulse test : pulse width ≤ 300μs, duty cycle ≤ 2%.
- Basically unaffected by operating temperature.

Typical Electrical and Thermal Characteristic Curves

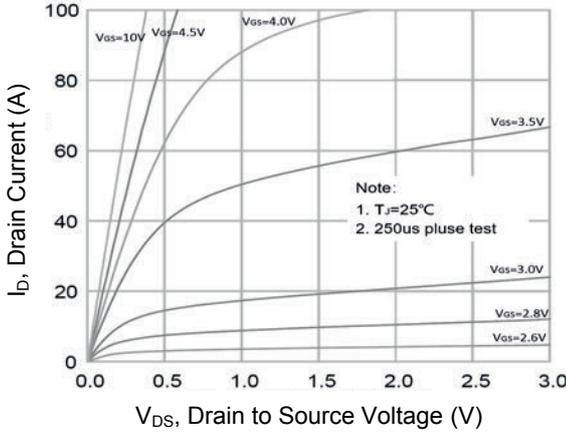


Figure 1. Typical Output Characteristics

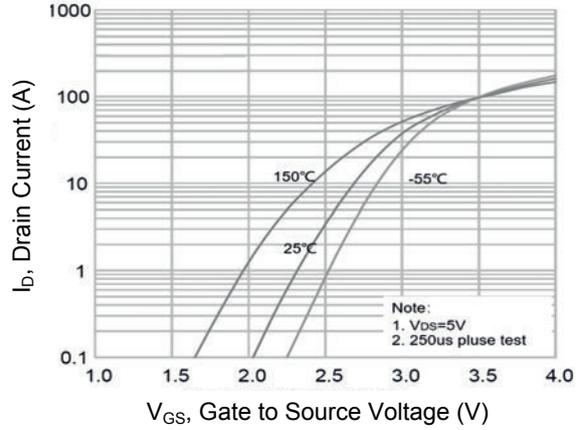


Figure 2. Transfer Characteristics

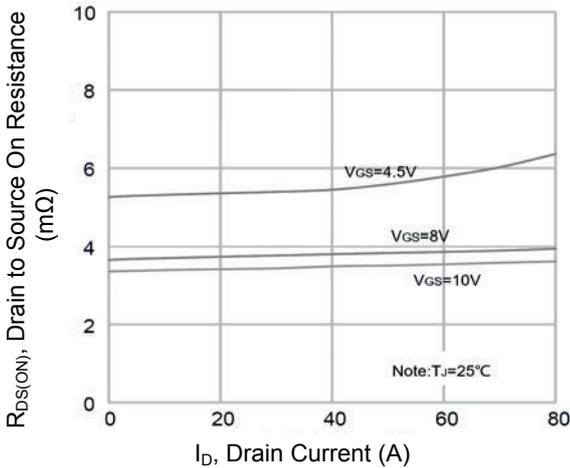


Figure 3. $R_{DS(ON)}$ Vs. Drain Current

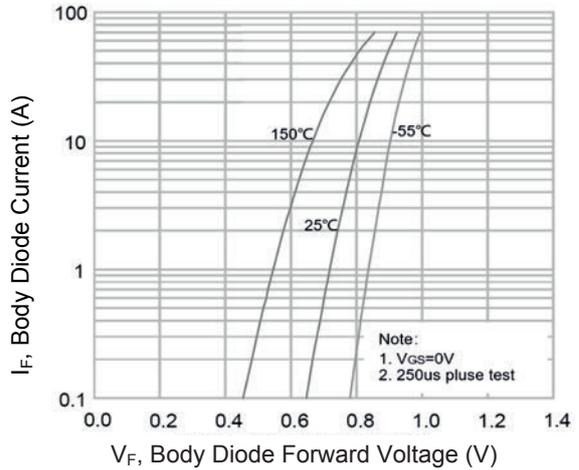


Figure 4. Body Diode Characteristics

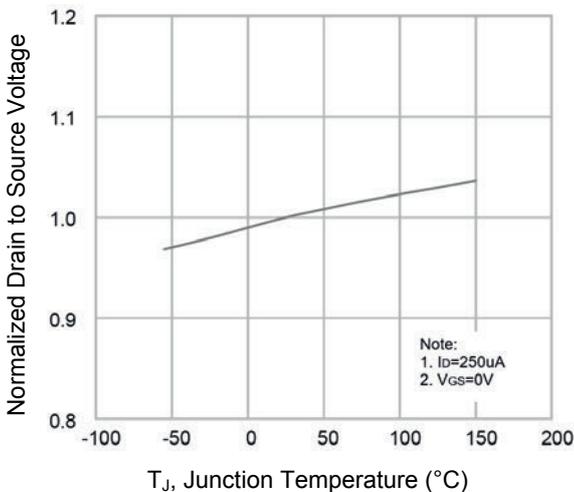


Figure 5. Normalized BV_{DSS} Vs. T_J

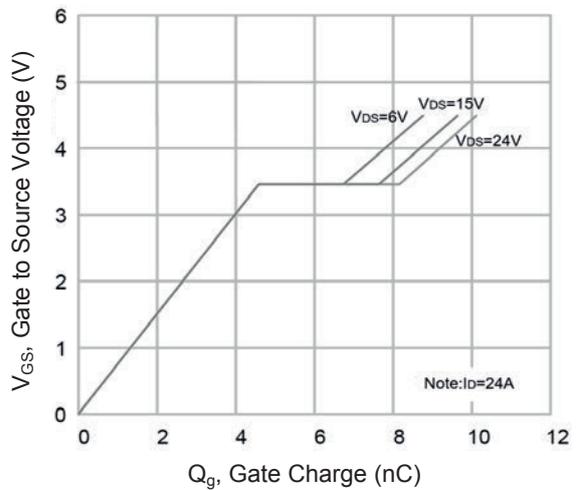


Figure 6. Gate Charge

Typical Electrical and Thermal Characteristic Curves

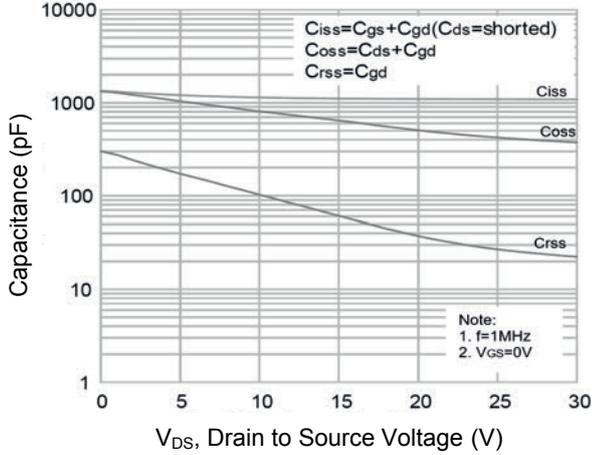


Figure 7. Capacitance Characteristics

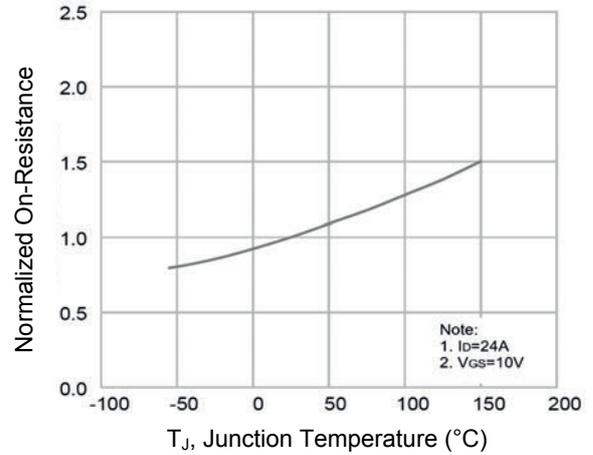


Figure 8. Normalized $R_{DS(ON)}$ Vs. T_J

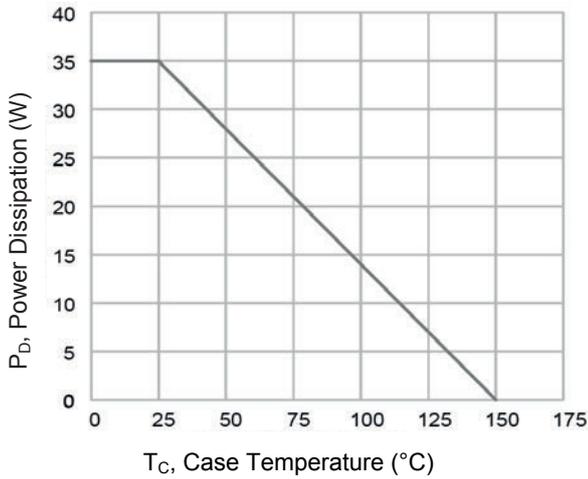


Figure 9. Power Dissipation Vs. T_C

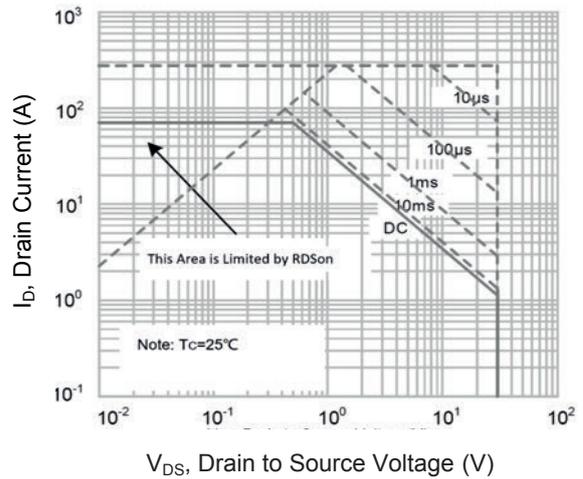
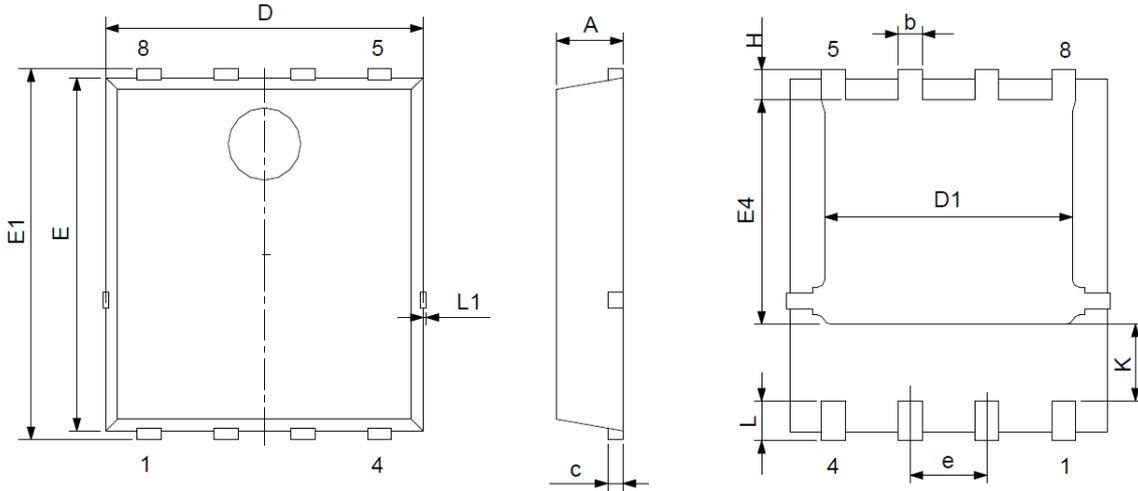


Figure 10. Safe Operation Area

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