PGP20N112

200V/100A N-Channel Power MOSFET

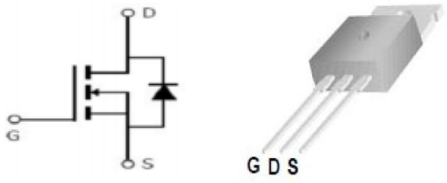
Features

- Ultra Low Gate Charge cause lower driving requirements
- 100% Avalanche Tested

BVDSS	200	V
ID	100	A
RDSON@VGS=10V	8.8	mΩ

Applications

- Motor control and drive
- Battery management
- Uninterrupible Power Supplies



TO-220

Order Information

Product	Package	Marking	Tube	Carton
PGP20N112	TO-220	PGP20N112	50PCS	5000PCS

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		200	V
V_{GS}	Gate-Source Voltage		±20	V
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	TC =25°C	100	A
Mounted on Large Heat Sink				
E_{AS}	Single Pulse Avalanche Energy (Note1)		870	mJ
I_{DM}	Pulse Drain Current Tested (Silicon Limit) (Note2)	TC =25°C	400	A
I_D	Continuous Drain current	TC =25°C	100	A
P_D	Maximum Power Dissipation	TC =25°C	250	W
$R_{\theta Jc}$	Thermal Resistance Junction−to−Case		0.5	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	200	--	--	V
I_{DSS}	Zero Gate Voltage Drain current	VDS=200V,VGS=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	VDS=VGS,ID=250μA	2	--	4	V
$R_{DS(ON)}$	Drain-Source On-State Resistance (Note3)	VGS=10V, ID=50A	--	8.8	11	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4)						
C_{iss}	Input Capacitance	VDS=100V, VGS=0V, F=1MHz	--	4819	--	pF
C_{oss}	Output Capacitance		--	405	--	pF
C_{rss}	Reverse Transfer Capacitance		--	23	--	pF
Q_g	Total Gate Charge	VDS=100V, ID=50A, VGS=10V	--	69	--	nC
Q_{gs}	Gate-Source Charge		--	25	--	nC
Q_{gd}	Gate-Drain Charge		--	16	--	nC
R_g	Gate Resistance	F=1MHz	--	4.2	--	Ω
Switching Characteristics (Note4)						
$t_{d(on)}$	Turn-on Delay Time	VDS=100V, ID=50A, R_G=2.7Ω VGS=10V	--	16	--	nS
t_r	Turn-on Rise Time		--	82	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	55	--	nS
t_f	Turn-off Fall Time		--	84	--	nS
Source- Drain Diode Characteristics@ TJ = 25°C (unless otherwise stated)						
V_{SD}	Forward on voltage	ISD=50A,VGS=0V	--	--	1.4	V
t_{rr}	Reverse Recovery Time	VGS=0V,IS=50A, di/dt=100A/us	--	129	--	ns
Q_{rr}	Reverse Recovery Charge		--	752	--	nC

Note:

1. Limited by TJmax, starting TJ = 25° C, RG = 25Ω, VD =50V, VGS =10V. Part not recommended for use above this value.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guranteed by design, not subject to production testing.

200V/100A N-Channel Power MOSFET

Typical Characteristics

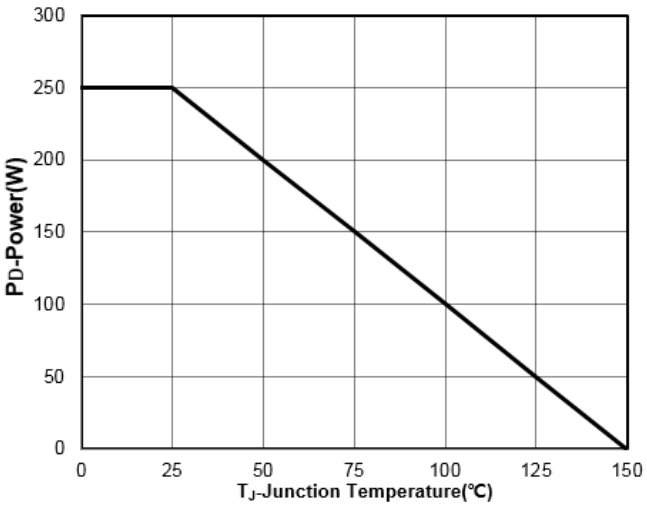


Figure1：Power De-rating

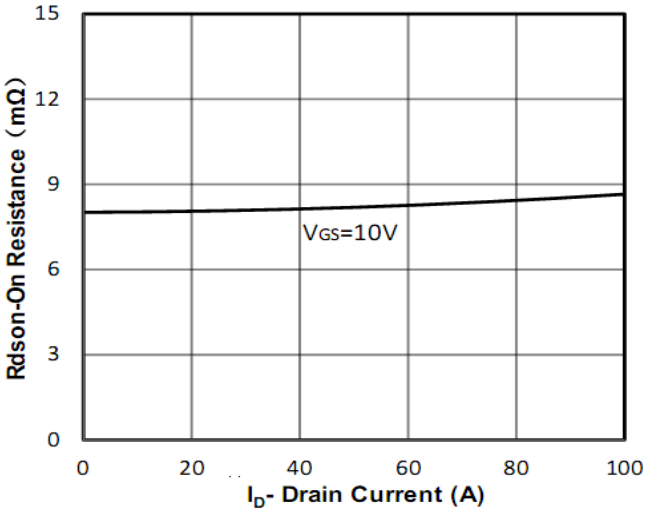


Figure2：Rdson- Drain Current

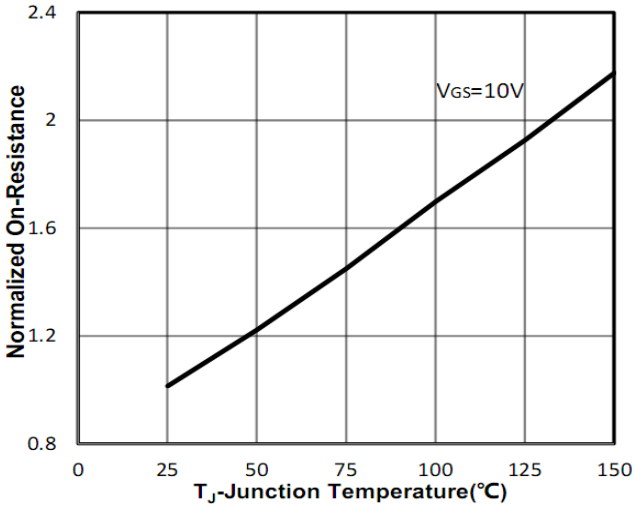


Figure3：Rdson-Junction Temperature

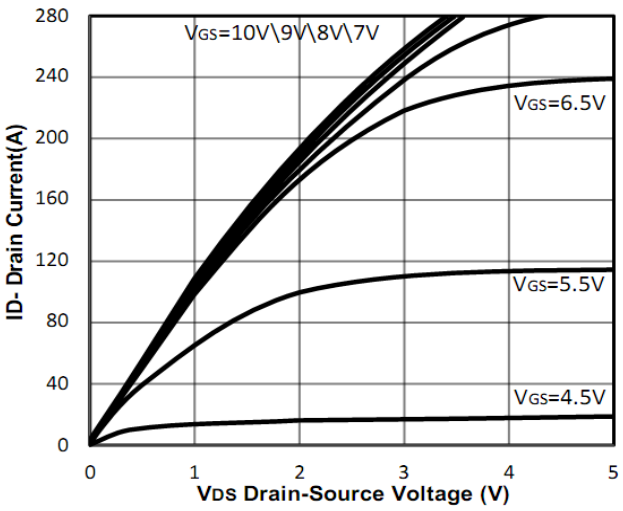


Figure4： Output Characteristics

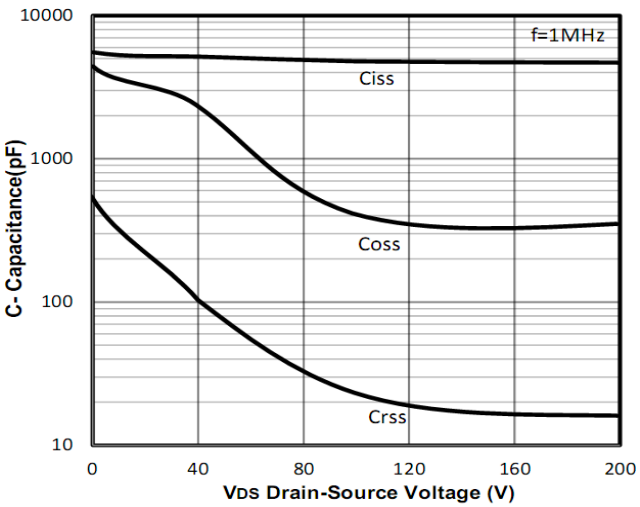


Figure5：Capacitance vs VDS

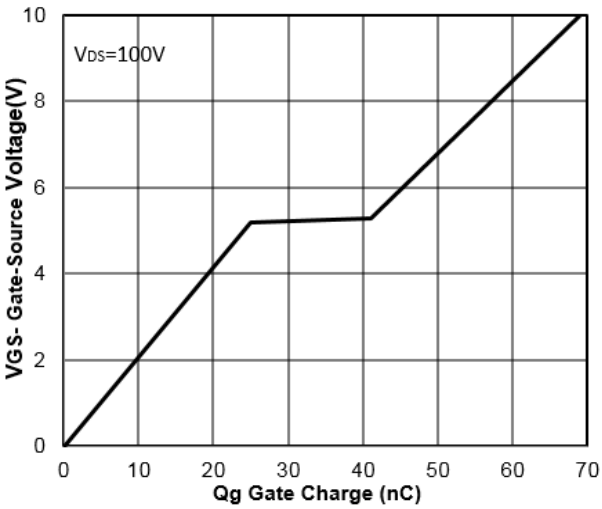


Figure6：Gate Charge

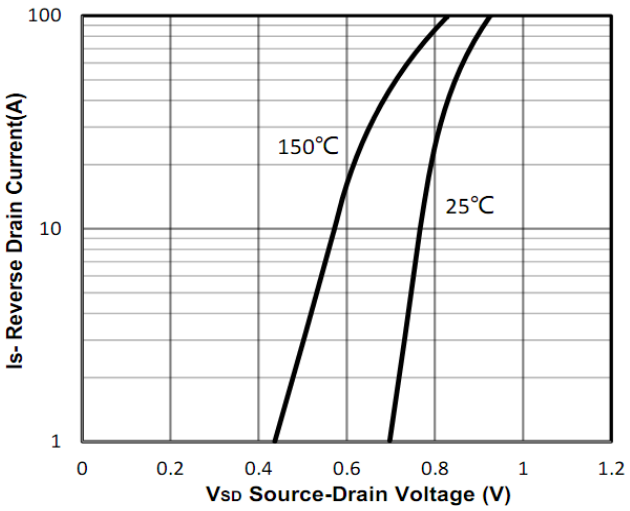


Figure7：Source- Drain Diode Forward

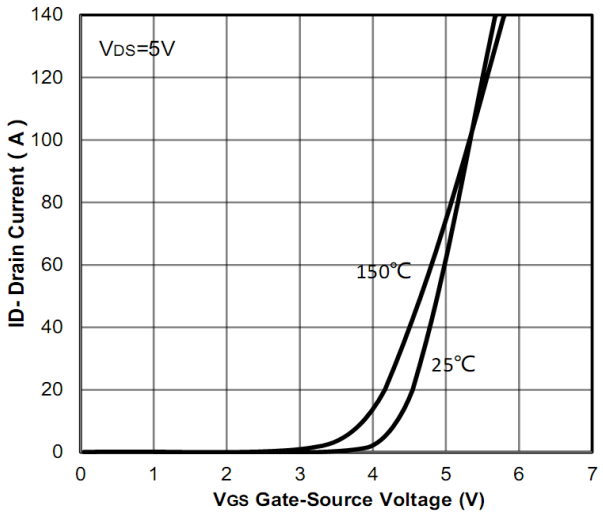


Figure8：Transfer Characteristics

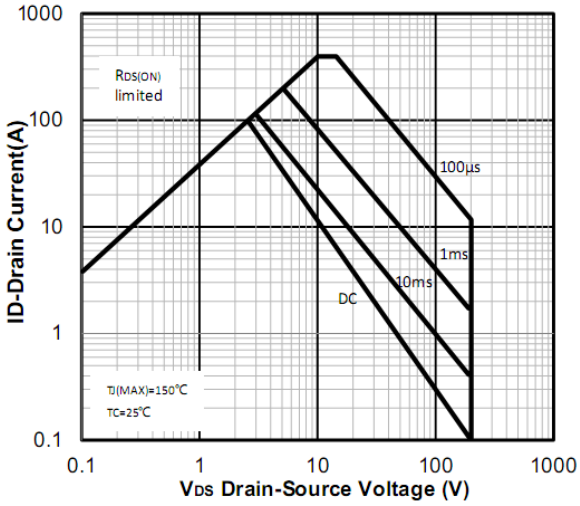


Figure9：Safe Operation Area

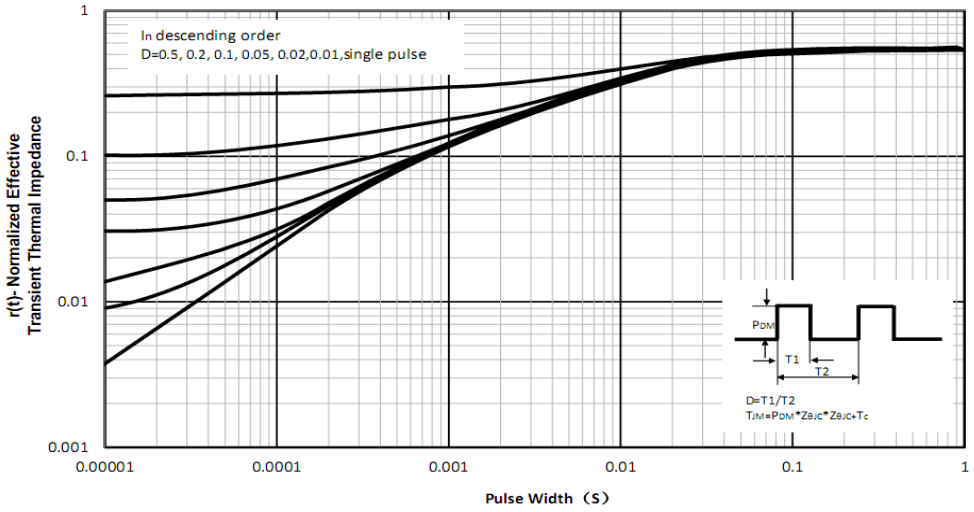


Figure10：Normalized Maximum Transient Thermal Impedance

Test Circuit and Waveform:

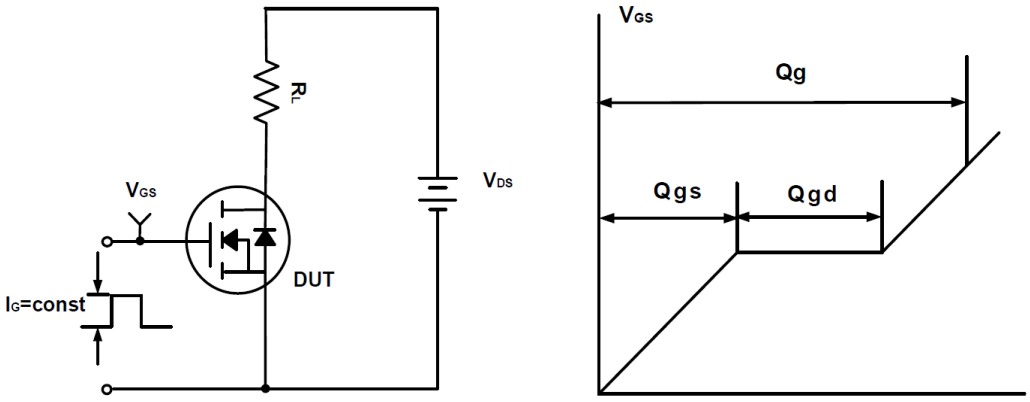


Figure A Gate Charge Test Circuit &Waveforms

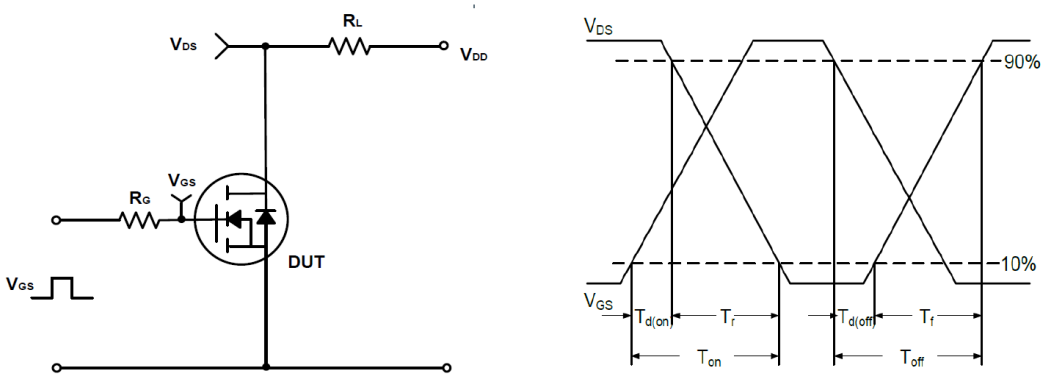


Figure B Switching Test Circuit & Waveforms

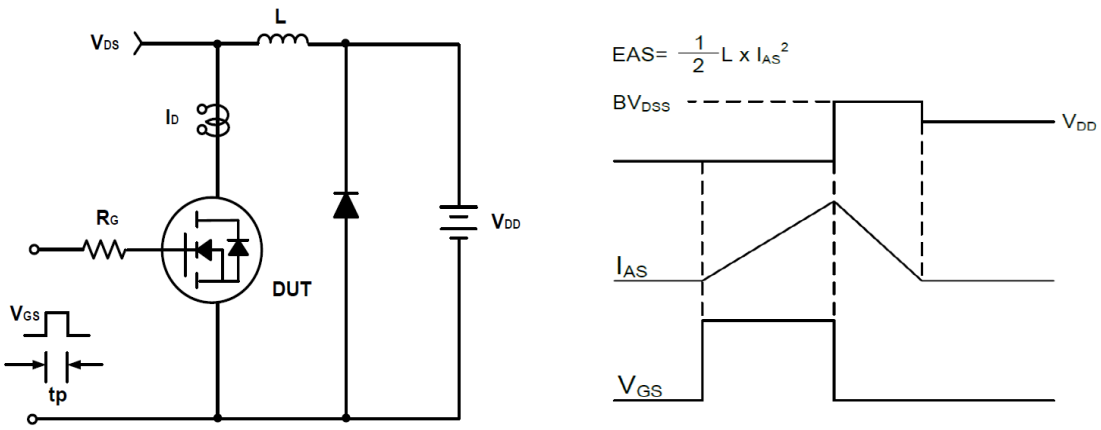
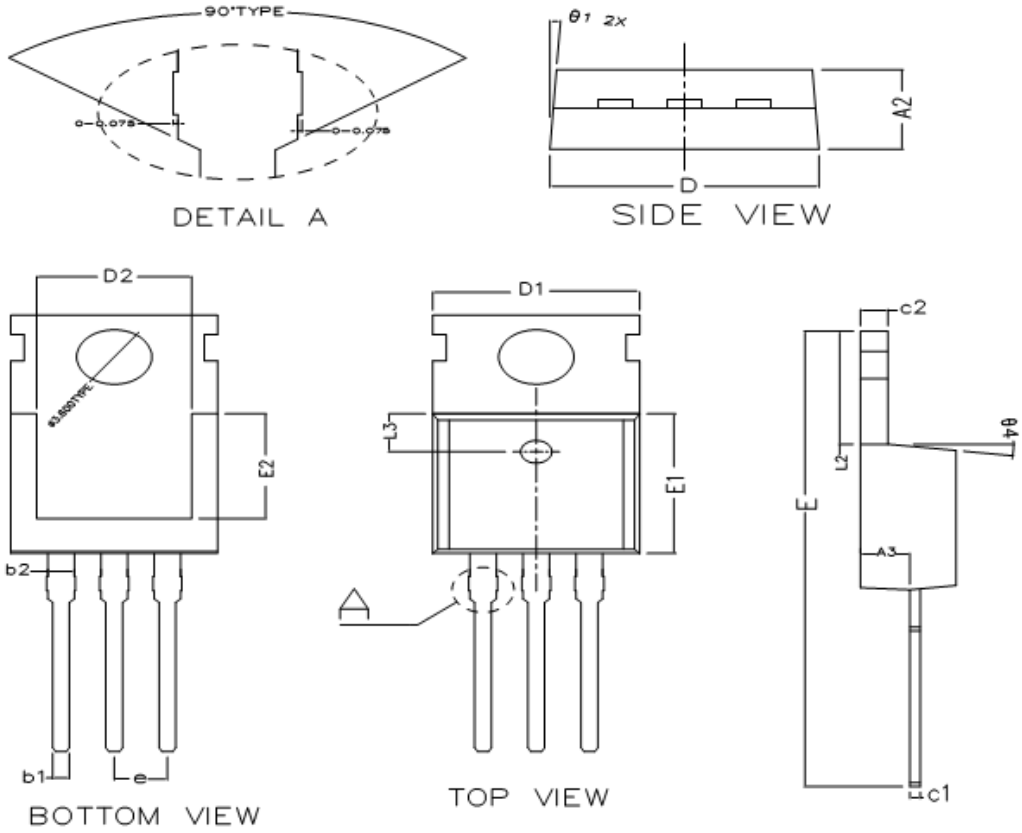


Figure C Unclamped Inductive Switching Circuit & Waveforms

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TO-220 Package Outline Dimensions (Units: mm)



COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A2	4.470	4.570	4.670
A3	2.300	2.350	2.400
b1	0.750	0.800	0.850
b2		1.27 TYPE	
c1	0.450	0.500	0.550
c2	1.250	1.300	1.380
D	9.900	10.000	10.100
D1		10.000TYPE	
D2		8.000TYPE	
E	28.660	28.860	29.060
E1	9.000	9.100	9.200
E2		7.000TYPE	
e		2.540TYPE	
L2	6.350	6.500	6.650
L3		2.50TYPE	
θ1		3° TYPE	
θ2		3° TYPE	
θ3		7° TYPE	
θ4		7° TYPE	