



## 100V/180A N-Channel Advanced Power MOSFET

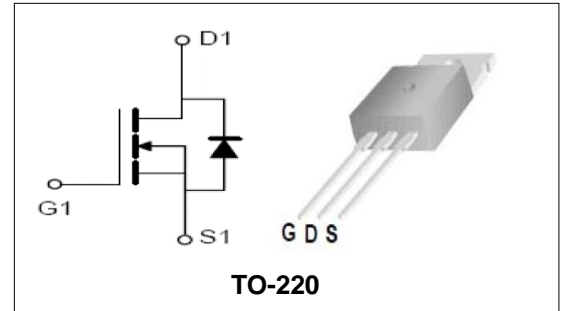
### Features

- Fast switching
- Low RDS(on) & FOM
- Low Gate Charge

### Applications

- High Frequency Switching
- Synchronous Rectification

BVDSS	100	V
ID	180	A
RDSON@VGS=10V	3.1	mΩ



### Order Information

Product	Package	Marking	Tube	Carton
PGP10N037	TO-220	PGP10N037	50PCS	5000PCS

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
<b>Common Ratings (TC=25°C Unless Otherwise Noted)</b>				
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	100	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	180	A
<b>Mounted on Large Heat Sink</b>				
$E_{AS}$	Single Pulse Avalanche Energy (Note1)	733	mJ	
$I_{DM}$	Pulse Drain Current Tested (Note2)	TC =25°C	630	A
$I_D$	Continuous Drain current(Silicon limit)	TC =25°C	180	A
	Continuous Drain current (Package limit)		130	A
$P_D$	Maximum Power Dissipation	TC =25°C	162	W
$R_{\theta Jc}$	Thermal Resistance Junction-to-Case (Note3)	0.8	°C/W	

**100V/180A N-Channel Advanced Power MOSFET**

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>(BR)DSS</sub>	Drain- Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain current	VDS=100V,VGS=0V	--	--	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
V <sub>GS(TH)</sub>	Gate Threshold Voltage	VDS=VGS,ID=250μA	2	--	4	V
R <sub>DS(ON)</sub>	Drain-Source On-State Resistance (Note4)	VGS=10V, ID=50A	--	3.1	3.7	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated) (Note5)</b>						
C <sub>iss</sub>	Input Capacitance	VDS=50V,	--	8200	--	pF
C <sub>oss</sub>	Output Capacitance	VGS=0V,	--	771	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance	F=1MHz	--	33	--	pF
Q <sub>g</sub>	Total Gate Charge	VDS=50V,	--	131	--	nC
Q <sub>gs</sub>	Gate-Source Charge	ID=20A,	--	31.5	--	nC
Q <sub>gd</sub>	Gate-Drain Charge	VGS=10V	--	22	--	nC
R <sub>G</sub>	Gate resistance	F=1MHz	--	1.5	--	Ω
<b>Switching Characteristics (Note5)</b>						
t <sub>d(on)</sub>	Turn-on Delay Time	VDS=50V,	--	89	--	nS
t <sub>r</sub>	Turn-on Rise Time	ID=20A,	--	128	--	nS
t <sub>d(off)</sub>	Turn-off Delay Time	RG=10Ω,	--	166	--	nS
t <sub>f</sub>	Turn-off Fall Time	VGS=10V	--	75	--	nS
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
V <sub>SD</sub>	Forward on voltage	IS=50A,VGS=0V	--	--	1.2	V

Note:

- Limited by T<sub>Jmax</sub>, starting T<sub>J</sub> = 25° C, R<sub>G</sub> = 25Ω, V<sub>D</sub> =50V, V<sub>G</sub>S =10V. Part not recommended for use above this value.
- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, t ≤ 10 sec.
- Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.



100V/180A N-Channel Advanced Power MOSFET

Typical Characteristics

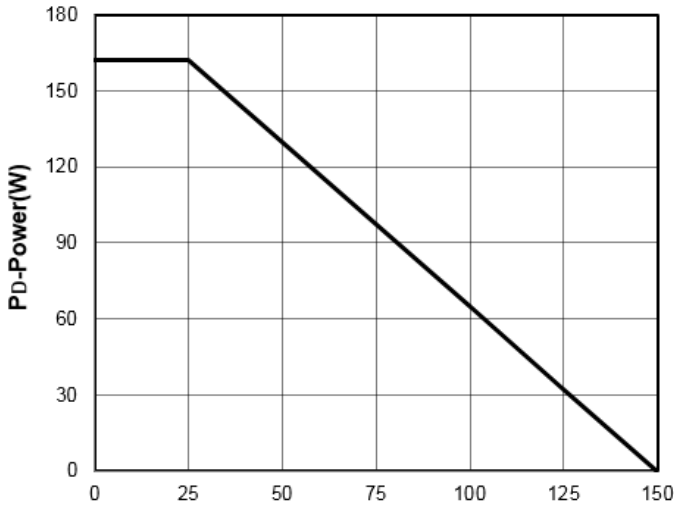


Figure1: T<sub>j</sub> Junction Temperature (°C)

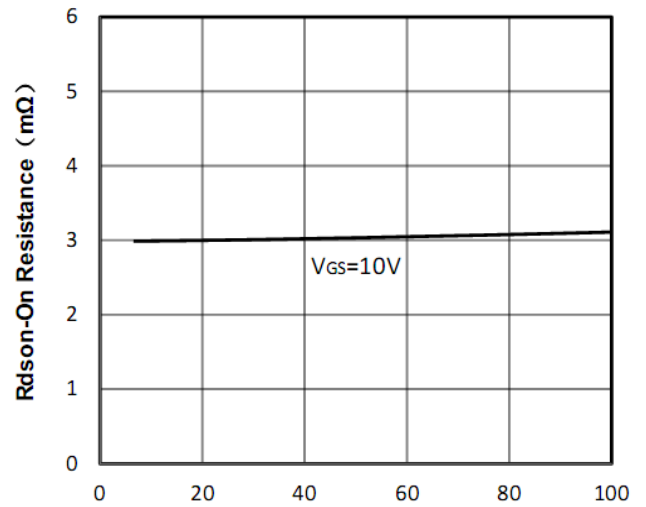


Figure2: I<sub>d</sub> Drain Current (A)

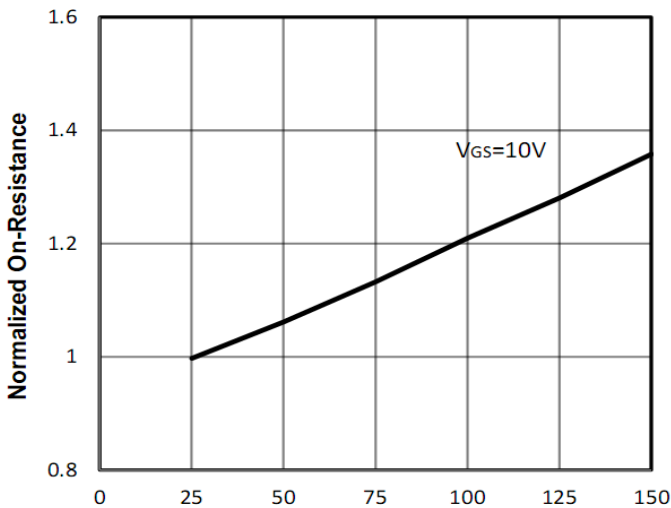


Figure3: T<sub>j</sub> Junction Temperature (°C)

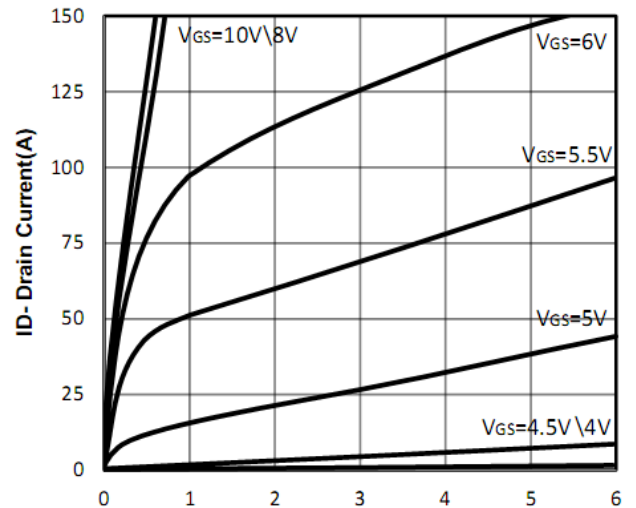


Figure4: V<sub>ds</sub> Drain-Source Voltage (V)

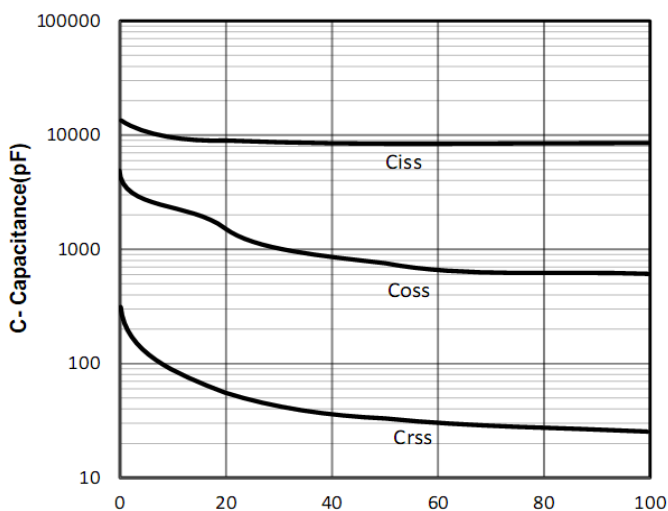


Figure5: V<sub>ds</sub> Drain-Source Voltage (V)

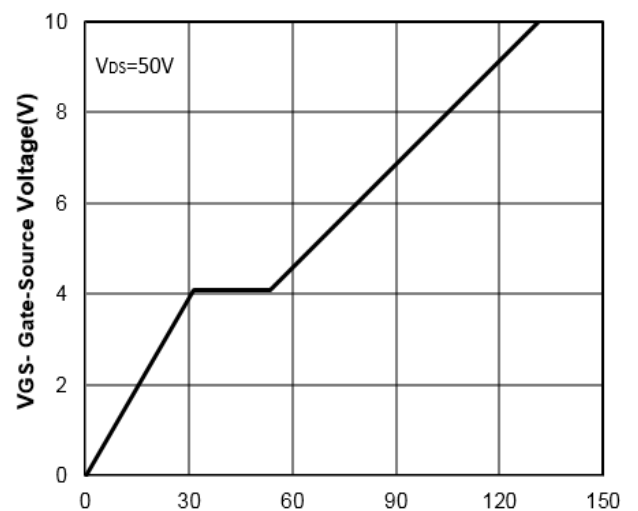


Figure6: Q<sub>g</sub> Gate Charge (nC)



100V/180A N-Channel Advanced Power MOSFET

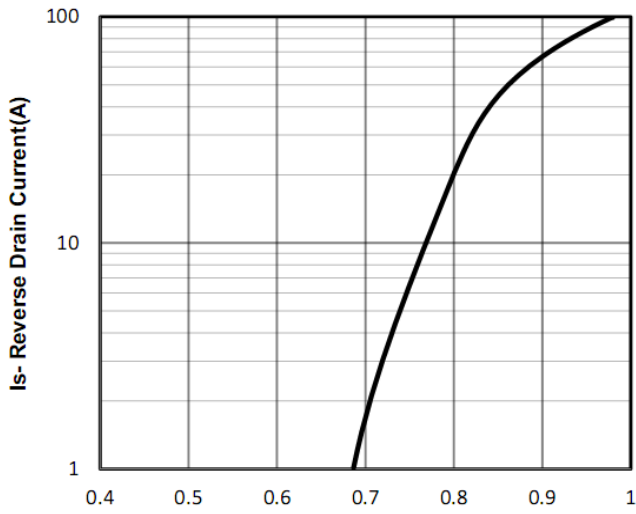


Figure7: Vsd Source-Drain Voltage (V)

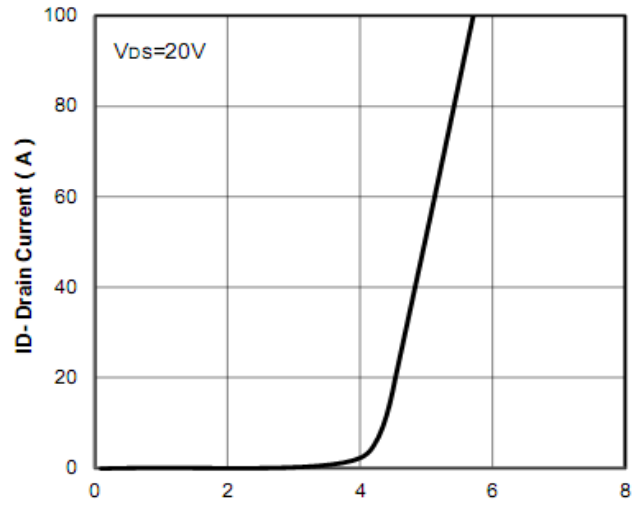


Figure8: Vgs Gate-Source Voltage (V)

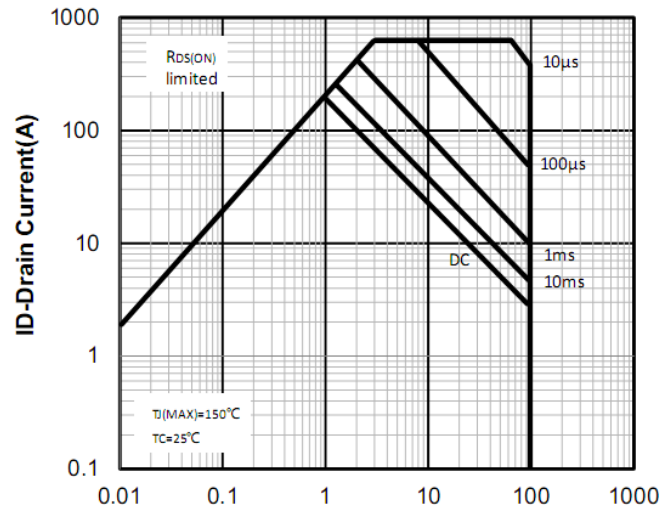


Figure9: VDS Drain -Source Voltage (V)

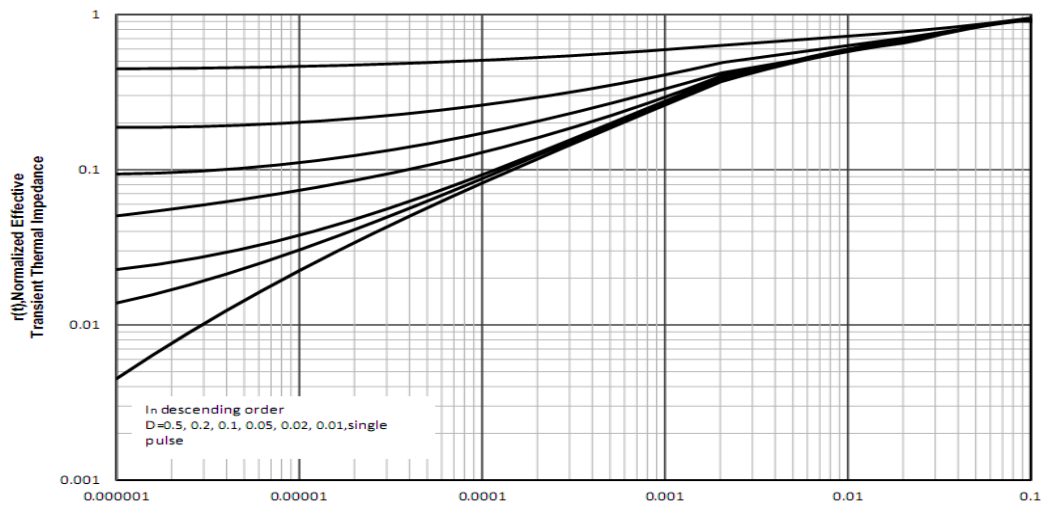


Figure10: Square Wave Pulse Duration (sec)

100V/180A N-Channel Advanced Power MOSFET

Test Circuit and Waveform:

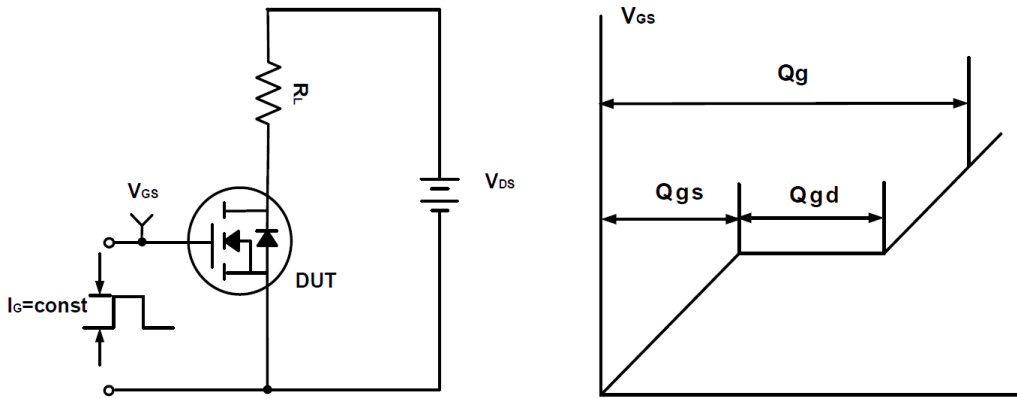


Figure A Gate Charge Test Circuit & Waveforms

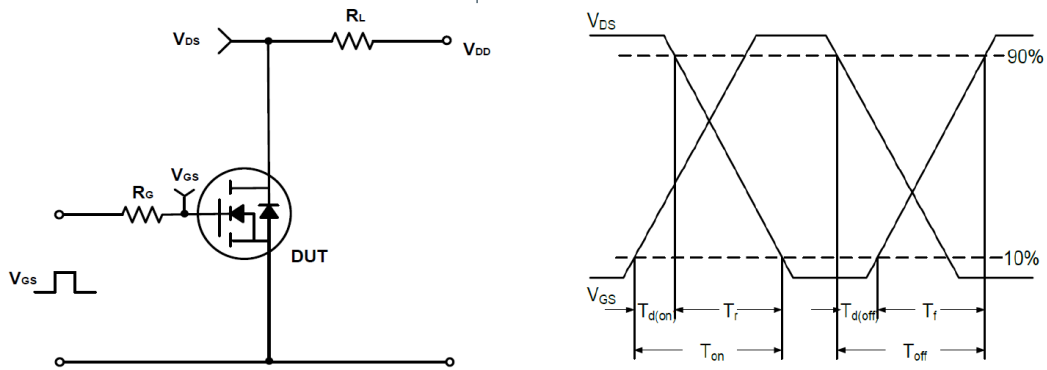


Figure B Switching Test Circuit & Waveforms

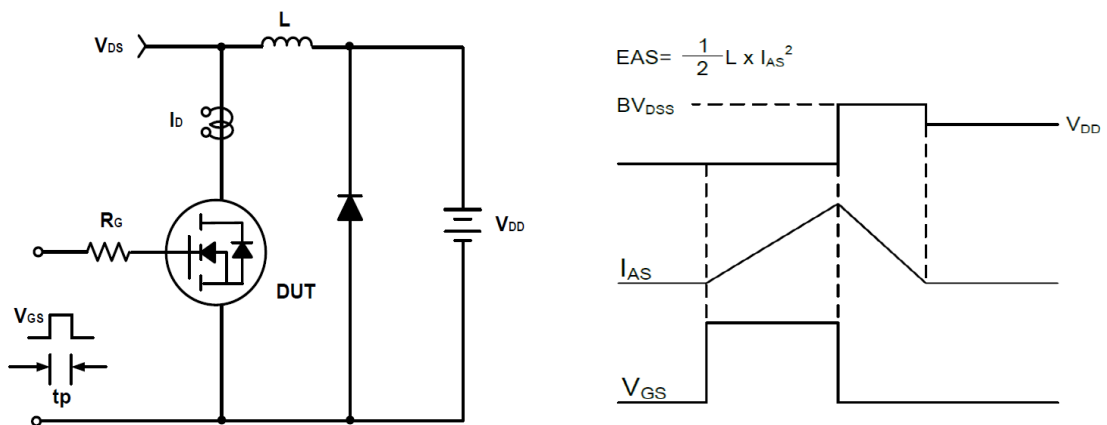
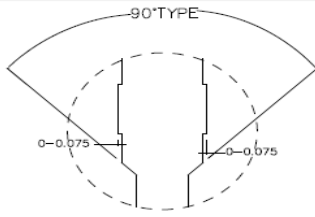


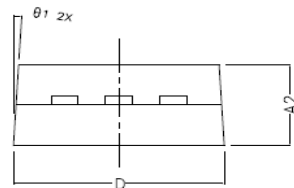
Figure C Unclamped Inductive Switching Circuit & Waveforms

## 100V/180A N-Channel Advanced Power MOSFET

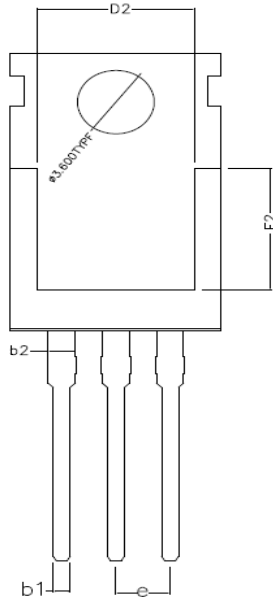
### TO-220 Package Outline Dimensions (Units: mm)



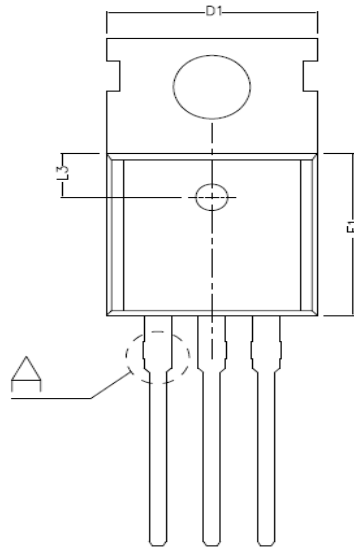
DETAIL A



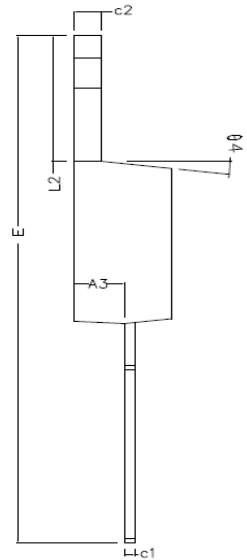
SIDE VIEW



BOTTOM VIEW



TOP VIEW



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		
theta 1	3° TYPE		
theta 2	3° TYPE		
theta 3	7° TYPE		
theta 4	7° TYPE		