PGP10N042

100V/120A N-Channel Advanced Power MOSFET

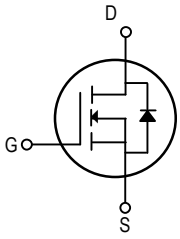
Features

- Fast switching
- Low $R_{DS(on)}$ & FOM
- Low Gate Charge

V_{DS}	100	V
$R_{DS(ON)TYP}$	3.9	mΩ
I_D	120	A

Application

- High Freuency Switching
- Synchronous Rectification





TO-220

Order Information

Product	Package	Marking	Tube	Carton
PGP10N042	TO-220	PGP10N042	50PCS	5000PCS

Absolute Maximum Ratings（TC =25℃）

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current ,T_C = 25°C	I_D	120	A
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]	I_D pulse	480	A
Single Pulse Avalanche Energy[2]	E_{AS}	280	mJ
Power Dissipation(TC=25℃)	P_D	156	W
Operating Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~+150	℃

Thermal Characteristics

PARAMETER	SYMBOL	Value	UNIT
Thermal Resistance Junction-case	Rth_{JC}	0.8	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	65	℃/W

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Electronic Characteristics T_J=25℃ unless otherwise specified

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	100	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	2	3	4	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D= 50A	--	3.9	4.5	mΩ
Drain-Source Leakage Current	I_{DSS}	V_{DS}=80V,V_{GS}=0	--	--	1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20,V_{DS}=0V	--	--	±100	nA
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 50V f = 1.0MHz	--	4701	--	pF
Output Capacitance	Coss		--	1506	--	
Reverse transfer Capacitance	Crss		--	73.36	--	
Turn -Off Delay Time	Td(off)	V_{DD}=50V, I_D =50A V_{GS}=10V, R_G=3Ω	--	14.3	--	ns
Turn-on delay time	Td(on)		--	20.8	--	
Rise time	Tr		--	57.7	--	
Fall time	Tf		--	31.9	--	
Total Gate Charge	Qg	I_D =20A, V_{DS} = 15V V_{GS} = 10V	--	74.5	--	nC
Gate-to-Source Charge	Qgs		--	14.2	--	
Gate-to-Drain Charge Qgd			--	22.5	--	
Continuous Diode Forward Current	I_S	--	--	--	111	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=20.0A V_{GS} =0V	--	--	1.2	V

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.
2. V_{DD} = 50V, V_{GS} = 10V,Rg=25Ω
3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

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Typical Characteristics

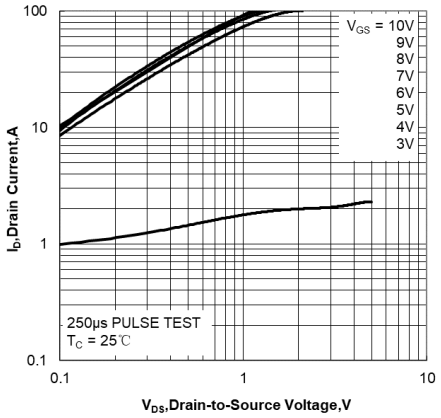


Figure 1. Output Characteristics

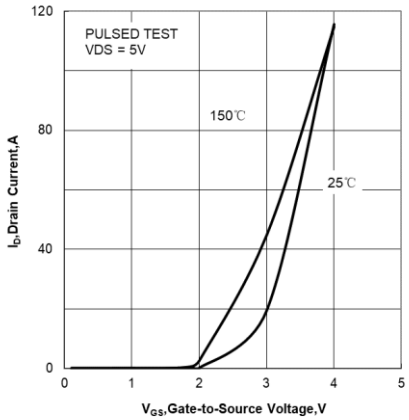


Figure 2. Transfer Characteristics

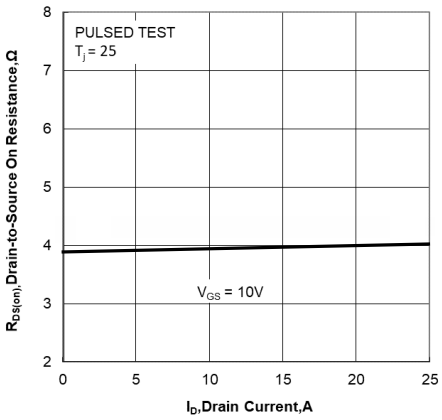


Figure 3. Drain-to-Source On Resistance vs Drain Current

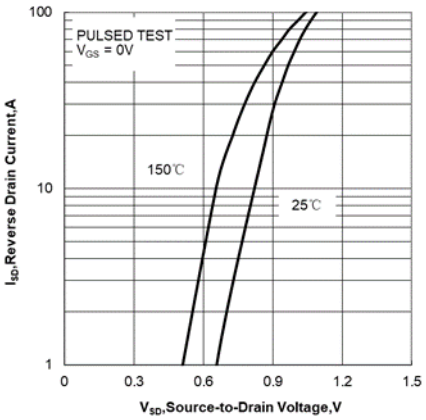


Figure 4. Body Diode Forward Voltage vs Source Current and Temperature

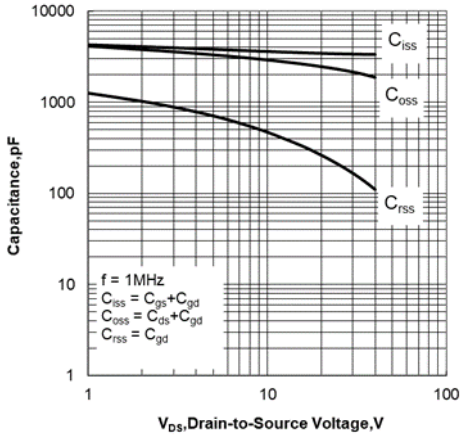


Figure 5. Capacitance Characteristics

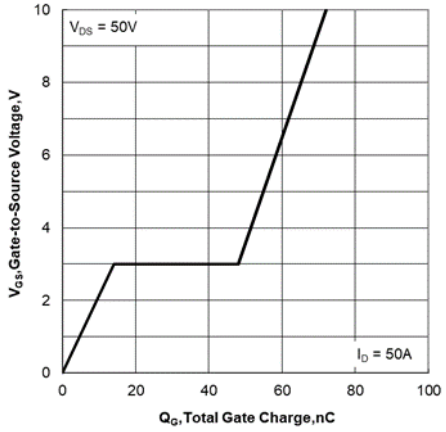


Figure 6. Gate Charge Characteristics

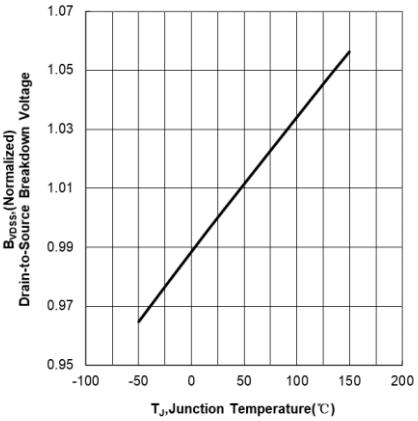


Figure 7. Normalized Breakdown Voltage vs Junction Temperature

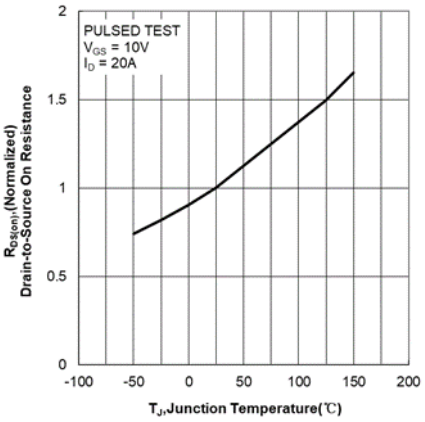


Figure 8. Normalized On Resistance vs Junction Temperature

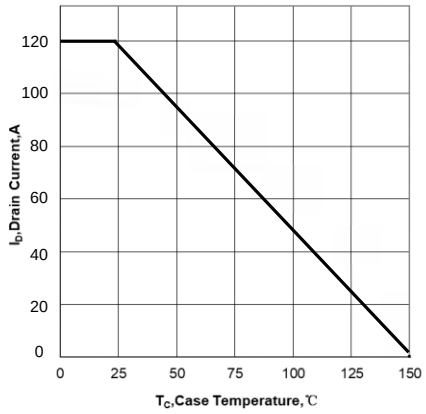


Figure 9. Maximum Continuous Drain Current vs Case Temperature

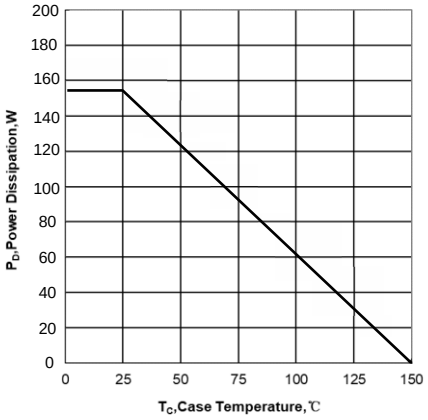


Figure 10. Maximum Power Dissipation vs Case Temperature

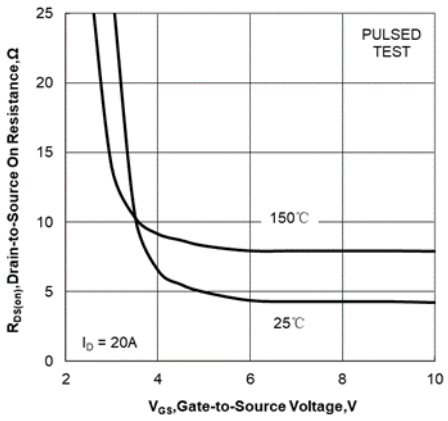


Figure11. Drain-to-Source On Resistance vs Gate Voltage and Drain Current

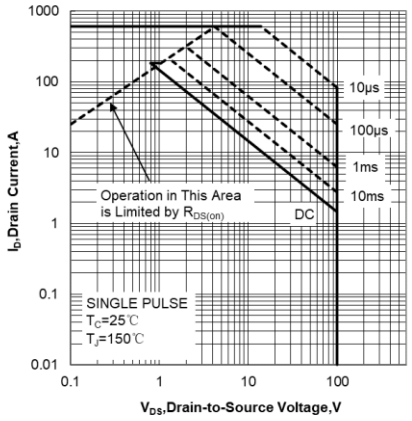


Figure 12. Maximum Safe Operating Area

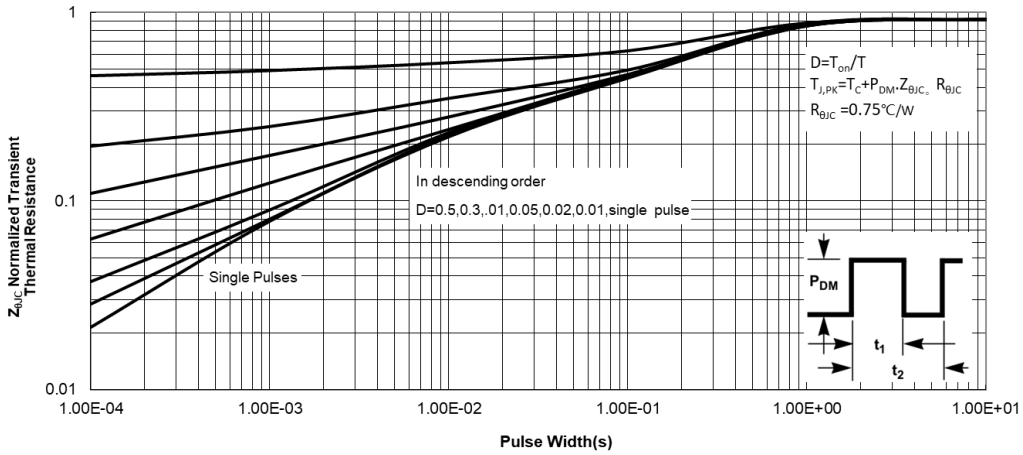


Figure 13. Maximum Effective Transient Thermal Impedance, Junction-to-Case

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Test circui

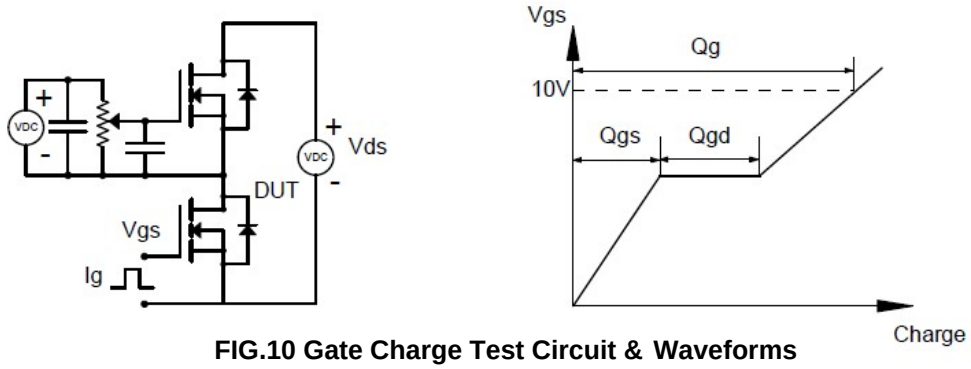


FIG.10 Gate Charge Test Circuit & Waveforms

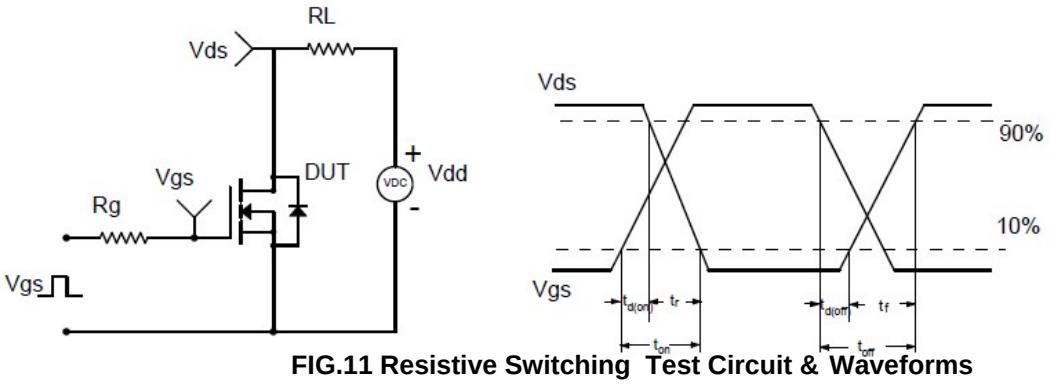


FIG.11 Resistive Switching Test Circuit & Waveforms

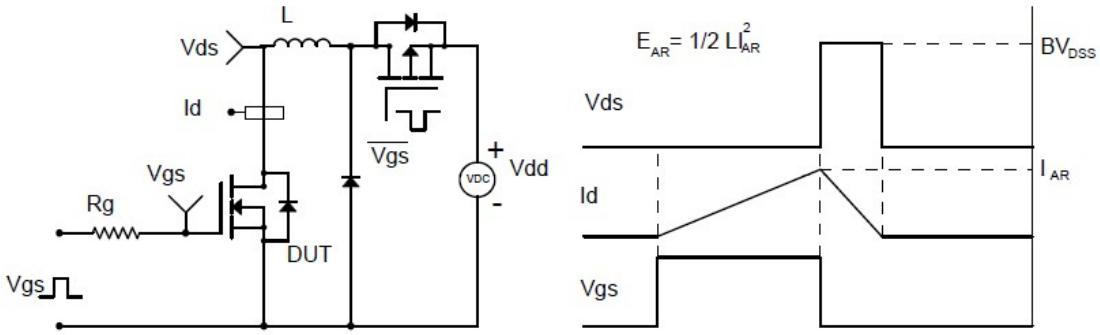


FIG.12 Unclamped Inductive Switching(UIS) Test Circuit & Waveforms

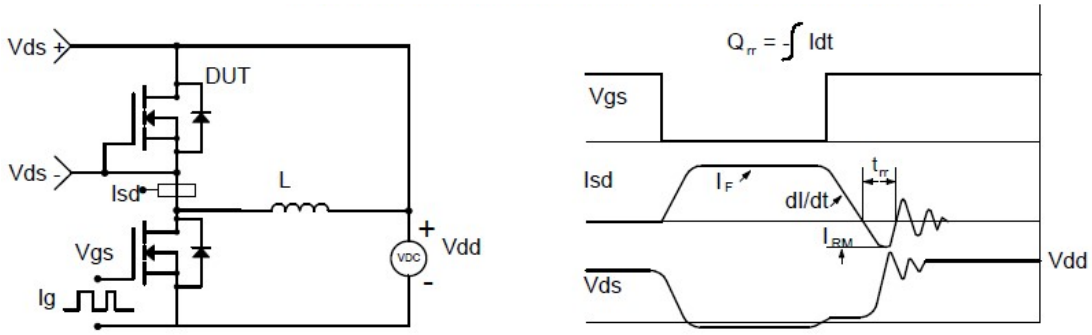
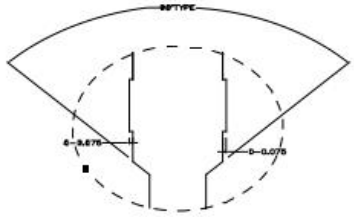


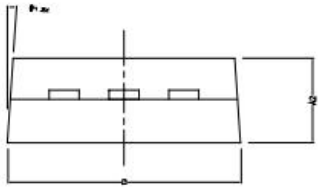
FIG.13 Diode Recovery Test Circuit & Waveforms

100V/120A N-Channel Advanced Power MOSFET

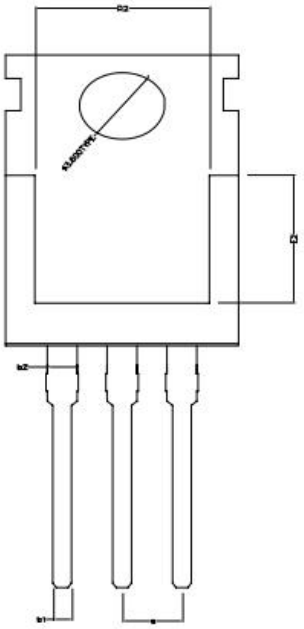
TO-220 Package Outline Dimensions (Units: mm)



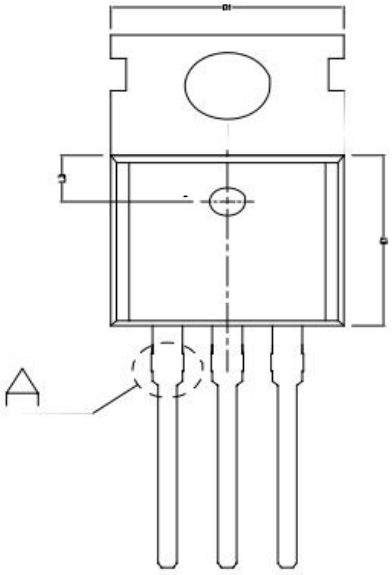
DETAIL A



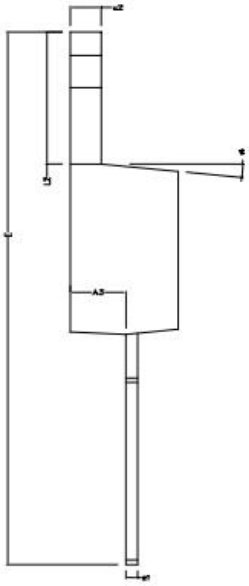
SIDE VIEW



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	
θ1		3° TYPE	
θ2		3° TYPE	
θ3		7° TYPE	
θ4		7° TYPE	