

85V/120A N-Channel MOSFET

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
85V	5.2m Ω @10V	120A

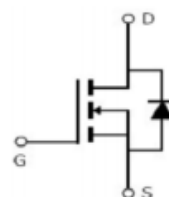
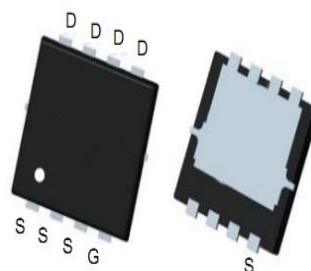
Features

- N-channel, normal level
- Very low on-resistance $R_{DS(on)}$

Application

- Industrial power supplies
- Boost converters
- Rectifier
- Telecom
- Battery management system

PDFN5X6-8L



Schematic diagram

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)
M08N052JS	PDFN5X6-8L	PGN08N052	5,000

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{(BR)DSS}	Drain-Source Breakdown Voltage		85	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	120	A
Mounted on Large Heat Sink				
E _{AS}	Single Pulse Avalanche Energy (Note1)		342	mJ
I _{DM}	Pulse Drain Current Tested (Sillicon Limit) (Note2)	TC =25°C	480	A
I _D	Continuous Drain current	TC =25°C	120	A
P _D	Maximum Power Dissipation	TC =25°C	125	W
R _{θJc}	Thermal Resistance Junction-to-Case (Note3)		1	°C/W

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Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain- Source Breakdown Voltage	V _{GS} =0V ID=250μA	85	--	--	V
I _{DSS}	Zero Gate Voltage Drain current	V _{DS} =85V,V _{GS} =0V	--	--	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,ID=250μA	2	3	4	V
R _{DS(ON)}	Drain-Source On-State Resistance (Note4)	V _{GS} =10V, ID=50A	--	3.9	5.2	mΩ
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated) (Note5)						
C _{iss}	Input Capacitance	V _{DS} =40V, V _{GS} =0V, F=1MHz	--	4310	--	pF
C _{oss}	Output Capacitance		--	694	--	pF
C _{rss}	Reverse Transfer Capacitance		--	27.5	--	pF
Q _g	Total Gate Charge	V _{DS} =40V, ID=50A, V _{GS} =10V	--	70.8	--	nC
Q _{gs}	Gate-Source Charge		--	12	--	nC
Q _{gd}	Gate-Drain Charge		--	35	--	nC
Switching Characteristics (Note5)						
t _{d(on)}	Turn-on Delay Time	V _{DD} =40V, ID=50A, V _{GS} =10V RG=4.7Ω	--	28	--	nS
t _r	Turn-on Rise Time		--	60	--	nS
t _{d(off)}	Turn-off Delay Time		--	26	--	nS
t _f	Turn-off Fall Time		--	35	--	nS
Source- Drain Diode Characteristics@ T _J = 25°C (unless otherwise stated)						
V _{SD}	Forward on voltage	I _S =50A,V _{GS} =0V	--	--	1.2	V
t _{rr}	Reverse Recovery Time	I _S =50A,V _{GS} =0V, dI/dt=100A/us	--	52	--	nS
Q _{rr}	Reverse Recovery Charge		--	73	--	nC

Note:

1. Limited by TJmax, starting TJ = 25° C, RG =25Ω, VD =42.5V, VGS =10V. Part not recommended for use above this value.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. Surface Mounted on FR4 Board, t ≤ 10 sec.
4. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
5. Guranteed by design, not subject to production testing.

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Typical Characteristics

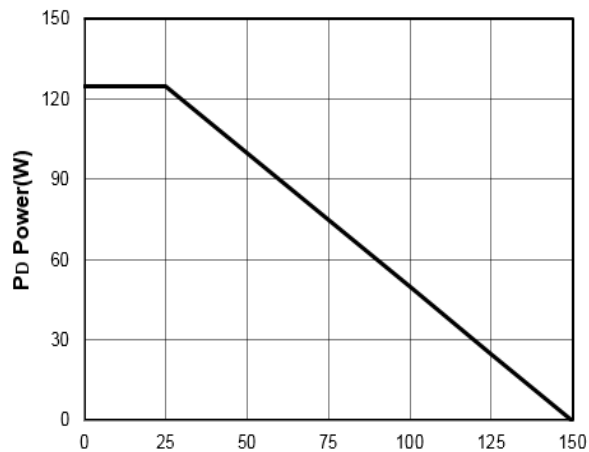


Figure1: TJ Junction Temperature (°C)

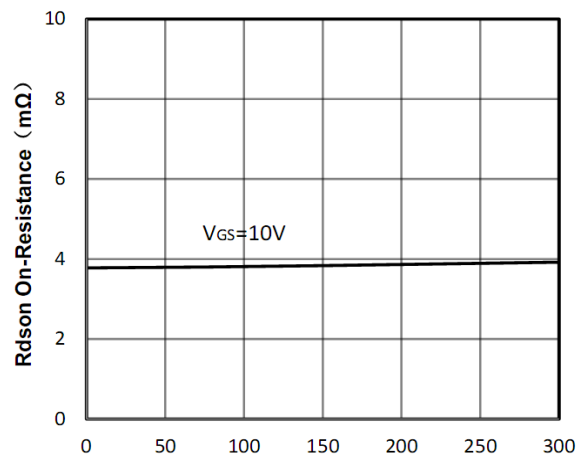


Figure2: ID Drain Current (A)

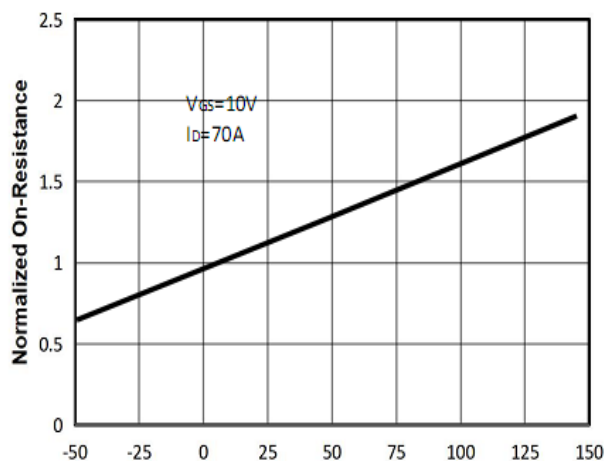


Figure3: TJ Junction Temperature (°C)

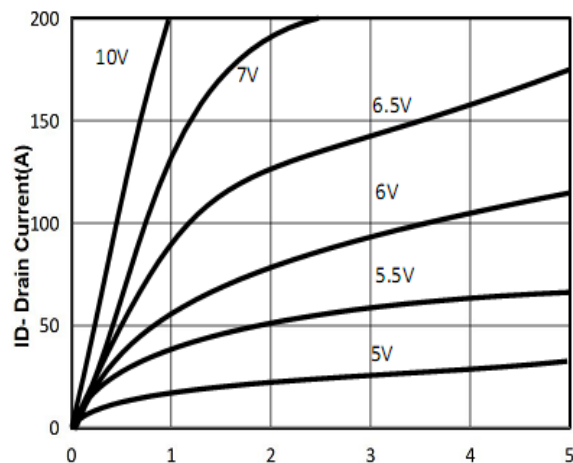


Figure4: VDS Drain-Source Voltage (V)

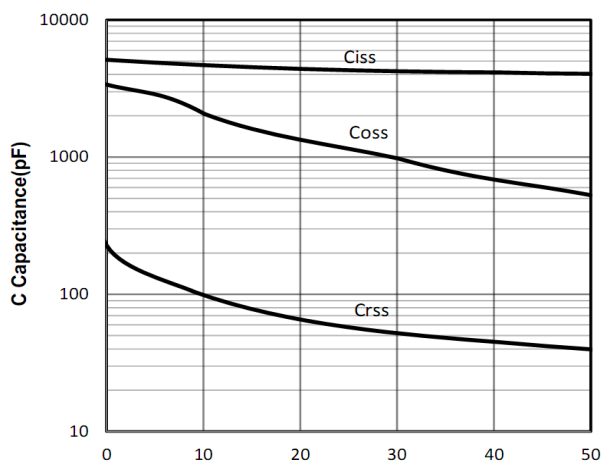


Figure5: VDS Drain-Source Voltage (V)

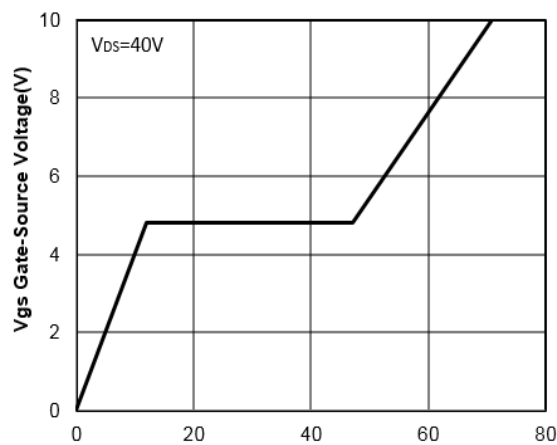


Figure6: Qg Gate Charge (nC)

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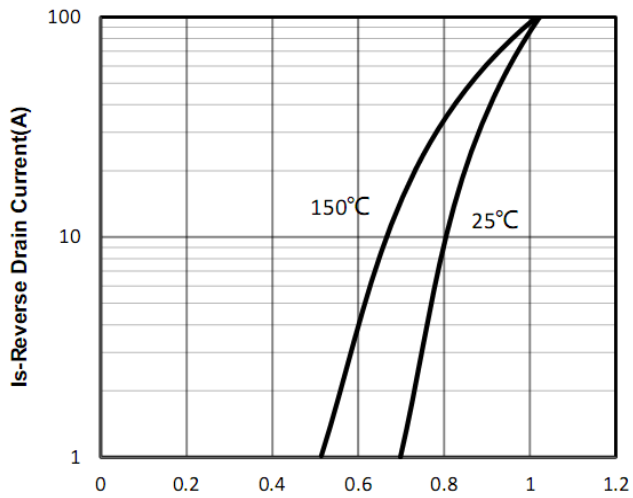


Figure7: Vsd Source-Drain Voltage (V)

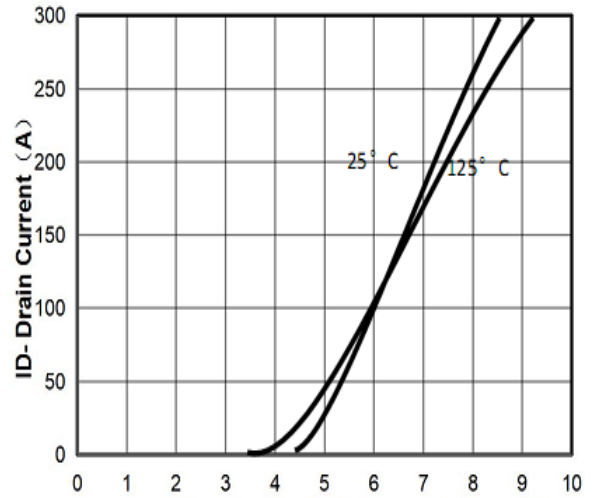


Figure8: Vgs Gate-Source Voltage (V)

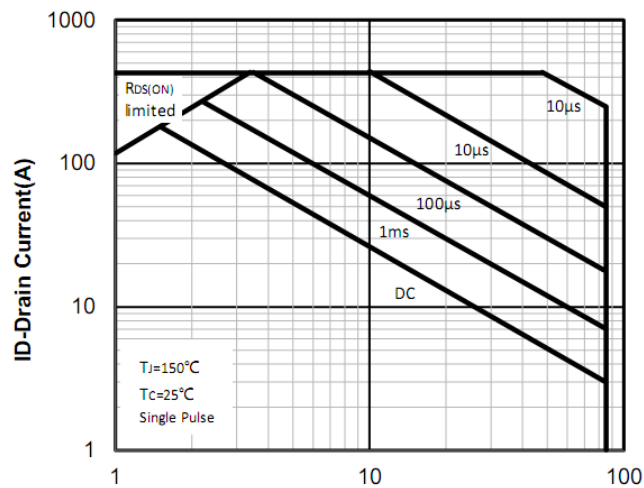


Figure9: Vds Drain-Source Voltage (V)

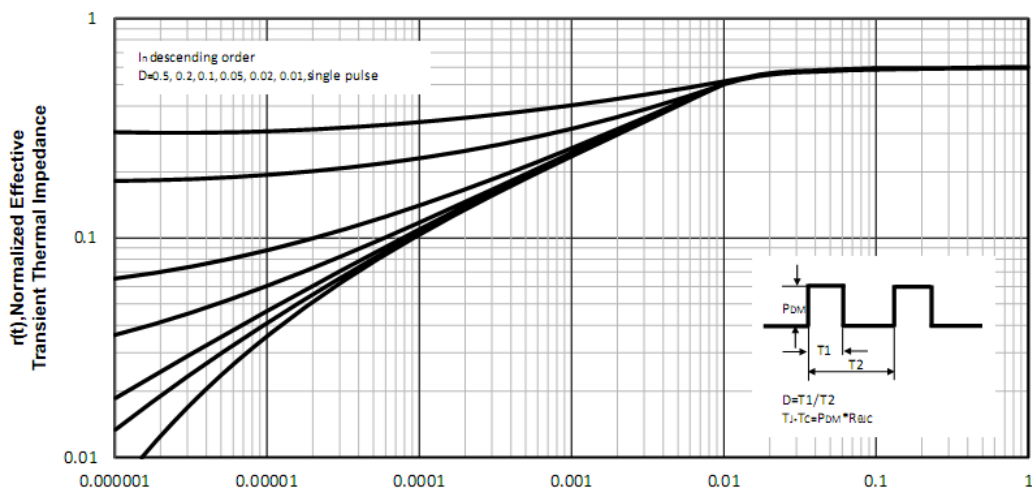


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

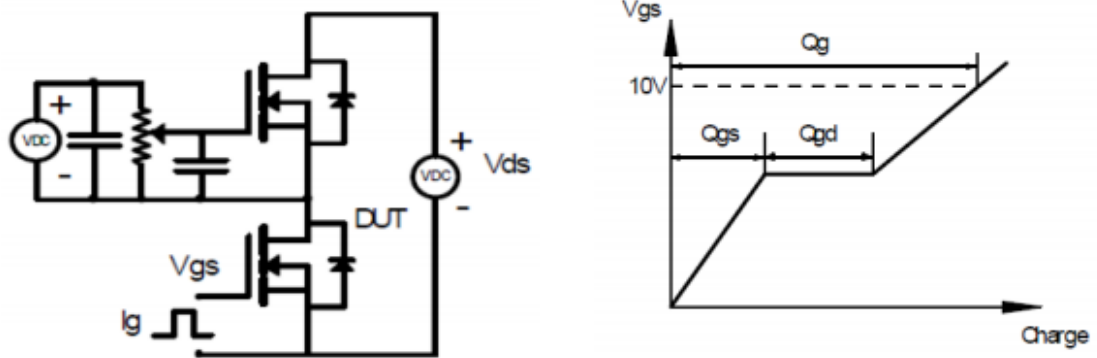


Figure A Gate Charge Test Circuit & Waveforms

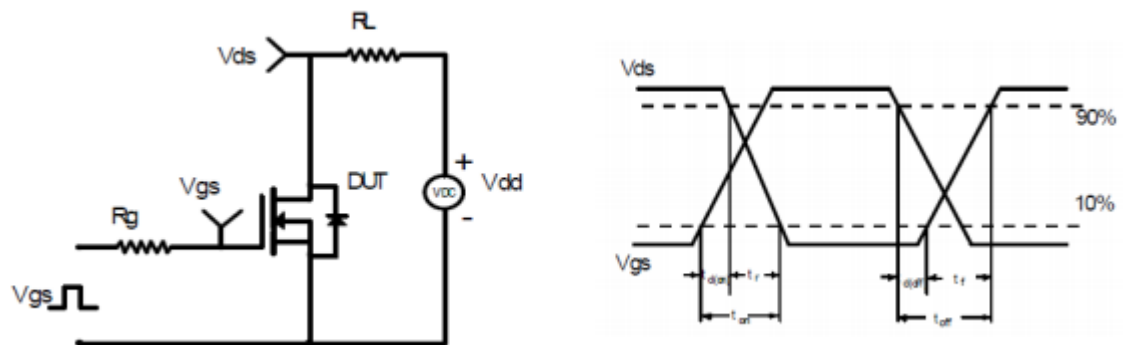


Figure B Switching Test Circuit & Waveforms

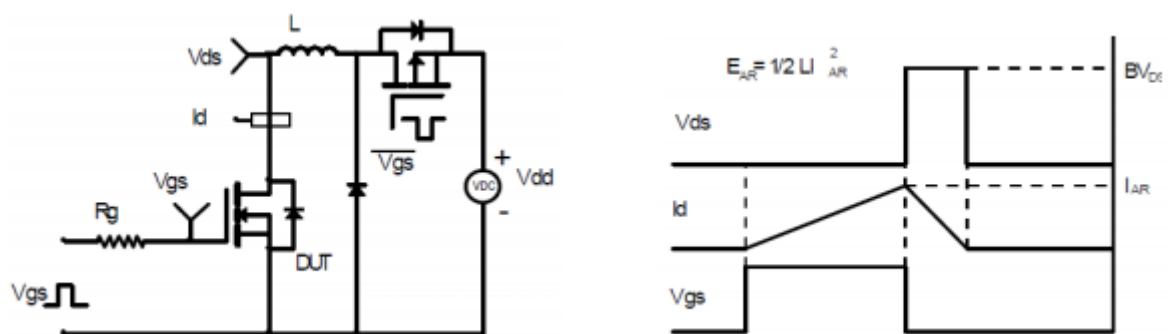
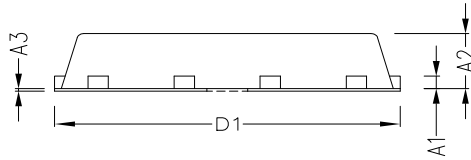
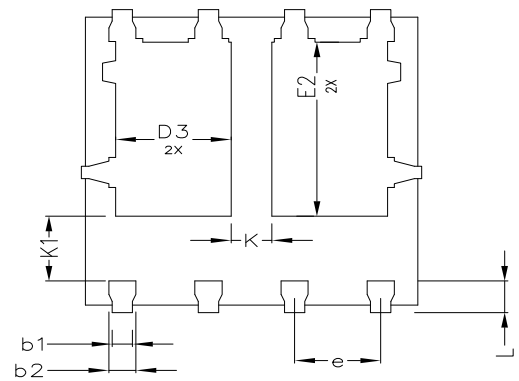
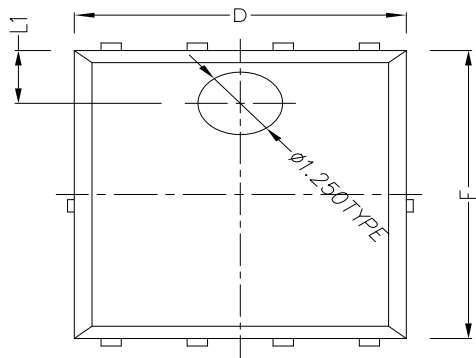
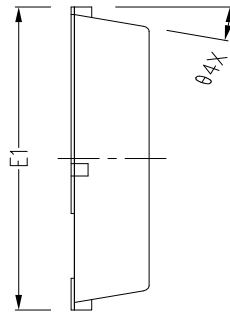
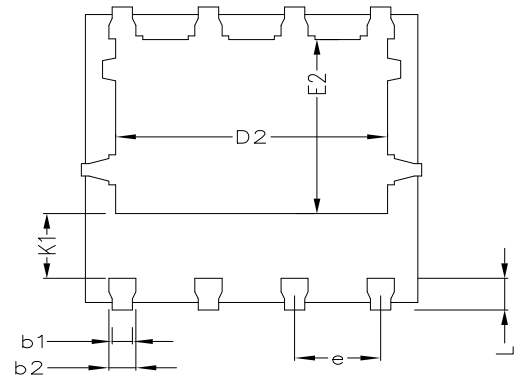


Figure C Unclamped Inductive Switching Circuit & Waveforms

85V/120A N-Channel MOSFET
PDFN5X6 Package Outline Dimensions (Units: mm)

SIDE VIEW

**BOTTOM VIEW
OPTION 1**

TOP VIEW

SIDE VIEW

**BOTTOM VIEW
OPTION 2**

COMMON DIMENSIONS (UNITS OF MEASURE IS mm)			
	MIN	NORMAL	MAX
A1	0.254 BSC		
A2	1.000	1.100	1.200
A3	0.005	-	0.020
b1	0.250	0.300	0.350
b2	0.350	0.400	0.450
D	4.800	4.900	5.000
D1	5.000	5.100	5.200
D2	3.910	4.010	4.110
D3	1.605	1.705	1.805
E	5.650	5.750	5.850
E1	5.950	6.050	6.150
E2	3.375	3.475	3.575
e	1.270 TYPE		
L	0.530	0.630	0.730
L1	1.00 REF		
K	0.600 REF		
K1	1.235 REF		