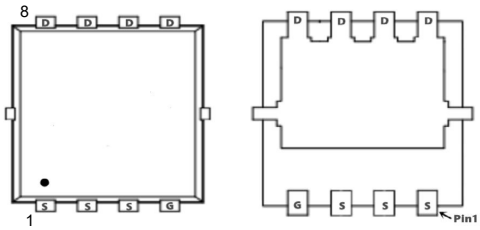
PJM100P40DN
P-Channel Enhancement Mode Power MOSFET

Features

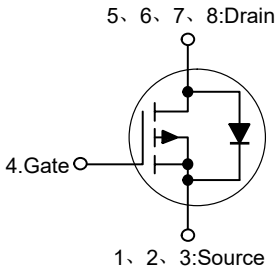
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- V_{DS}= -40V,I_D= -100A

  $R_{DS(on)}$< 5.8mΩ @V_{GS}= -10V

PDFN5x6-8L



Schematic Diagram



Applications

- Battery protection
- Load switch
- Uninterruptible power supply

Absolute Maximum Ratings

Ratings at 25℃ Case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	40	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous and V_{GS}=10V Note1	$-I_D$	100	A
Drain Current-Pulsed Note2	$-I_{DM}$	300	A
Single Pulse Avalanche Energy Note3	E_{AS}	400	mJ
Maximum Power Dissipation Note4	P_D	52.1	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance,Junction-to-Ambient Note1	$R_{\theta JA}$	25	°C/W
Thermal Resistance,Junction-to-Case Note1	$R_{\theta JC}$	1.8	°C/W

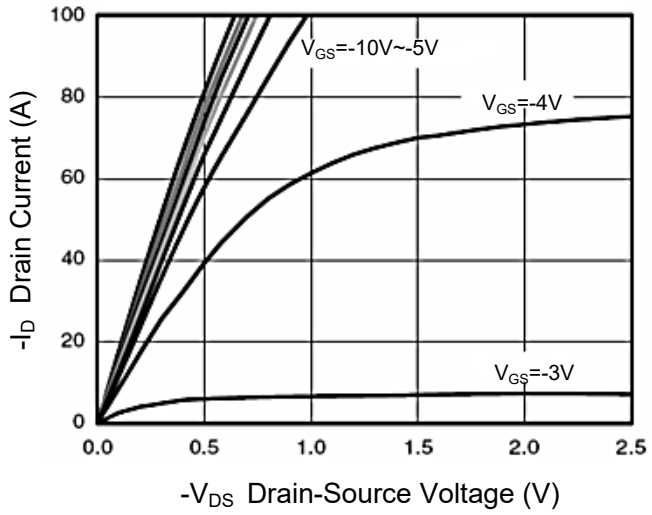
Electrical Characteristics

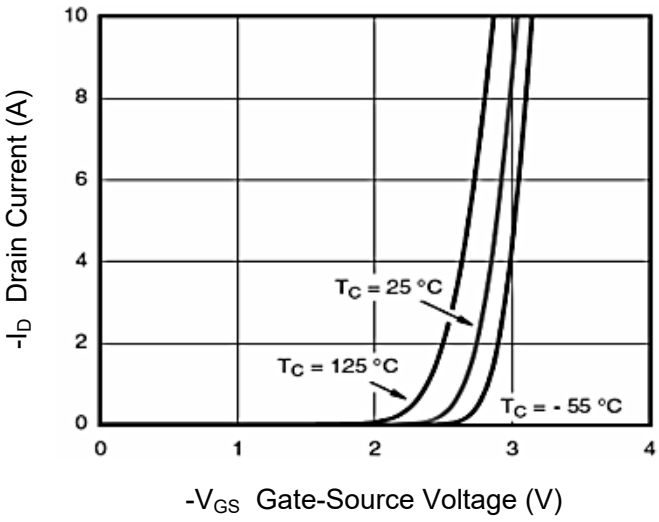
(T_C=25℃ unless otherwise specified)

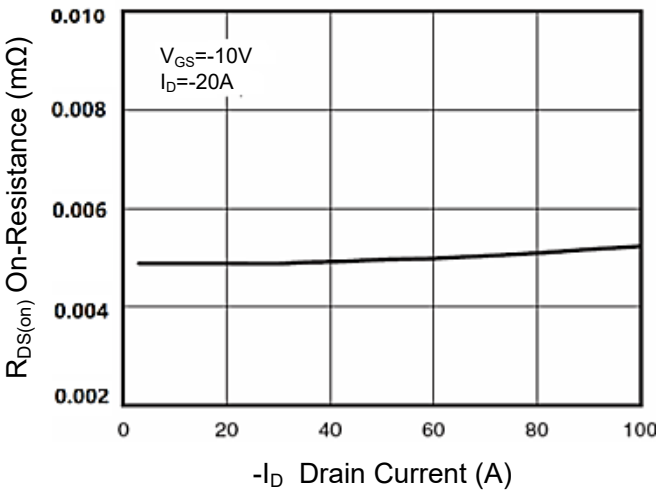
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$-V_{(BR)DSS}$	V_{GS}=0V,I_D=-250μA	40	44	--	V
Zero Gate Voltage Drain Current	$-I_{DSS}$	V_{DS}=-40V,V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
Gate Threshold Voltage Note2	$-V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	1.2	1.8	2.5	V
Drain-Source On-Resistance Note2	$R_{DS(on)}$	V_{GS}=-10V,I_D=-20A	--	4.6	5.8	mΩ
		V_{GS}=-4.5V,I_D=-10A	--	6.0	9.0	mΩ
Forward Transconductance	g_{fs}	V_{DS}=-15V , I_D=-12A	--	50	--	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-20V,V_{GS}=0V,f =1MHz	--	7000	--	pF
Output Capacitance	C_{oss}		--	950	--	pF
Reverse Transfer Capacitance	C_{rss}		--	735	--	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-20V, I_D=-12A, V_{GS}=-10V,R_G=3.0Ω	--	18	--	nS
Turn-on Rise Time	t_r		--	12	--	nS
Turn-off Delay Time	$t_{d(off)}$		--	80	--	nS
Turn-off Fall Time	t_f		--	20	--	nS
Total Gate Charge	Q_g	V_{DS}=-20V,I_D=-12A, V_{GS}=-10V	--	120	--	nC
Gate-Source Charge	Q_{gs}		--	23	--	nC
Gate-Drain Charge	Q_{gd}		--	29	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage Note2	$-V_{SD}$	V_{GS}=0V,I_S=-1A	--	--	1.2	V
Diode Forward Current Note1,5	$-I_S$		--	--	13	A

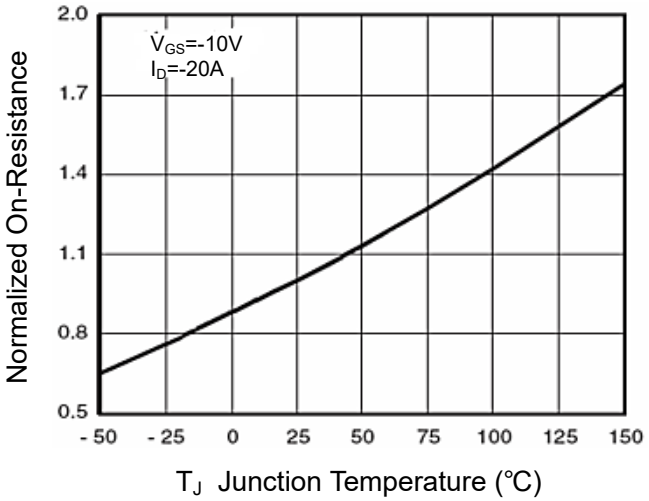
Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2.The data tested by pulsed , pulse width≤ 300us , duty cycle ≤ 2%
3.The E_{AS} data shows Max. rating . The test condition is V_{DD}=-32V,V_{GS}=-10V,L=0.1mH,I_{AS}=-50A
4.The power dissipation is limited by 150℃ junction temperature
5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

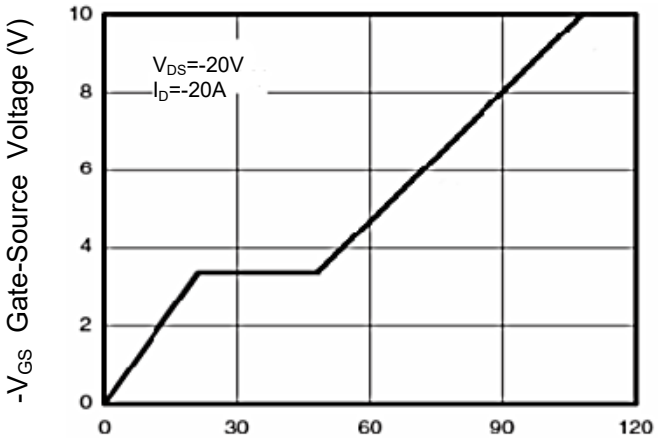
Typical Characteristic Curves

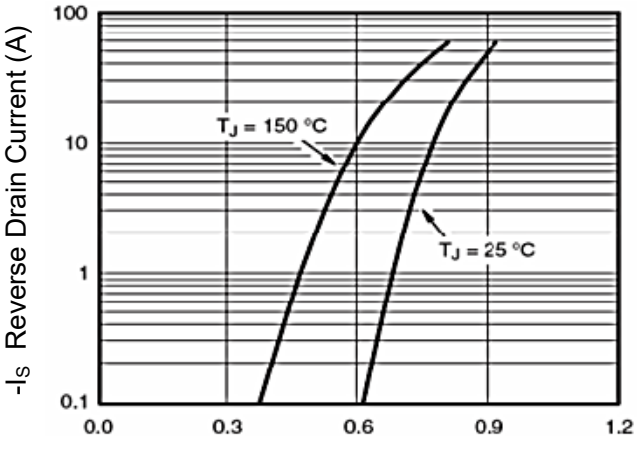


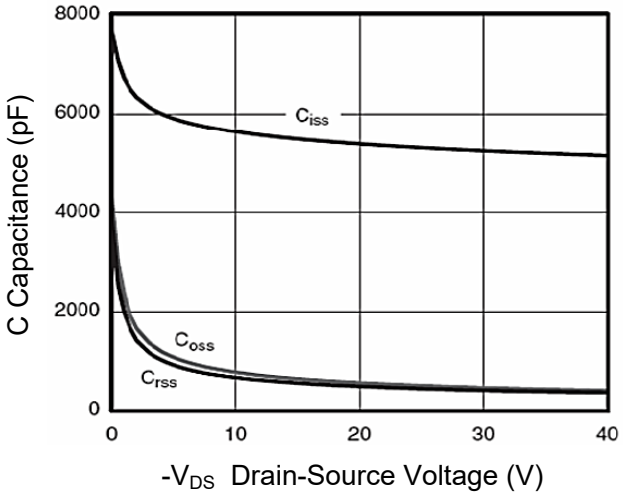


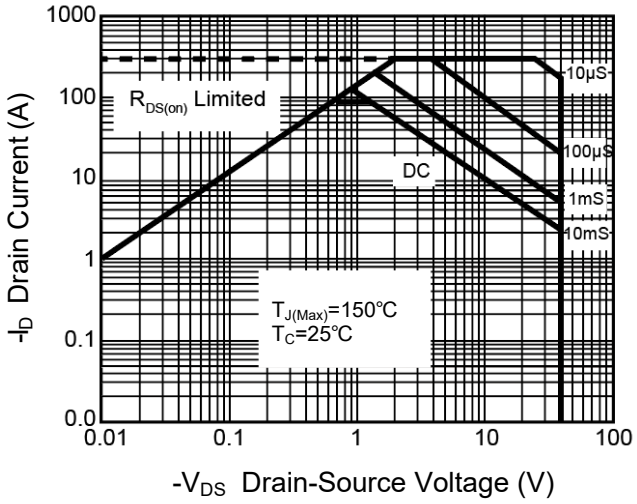


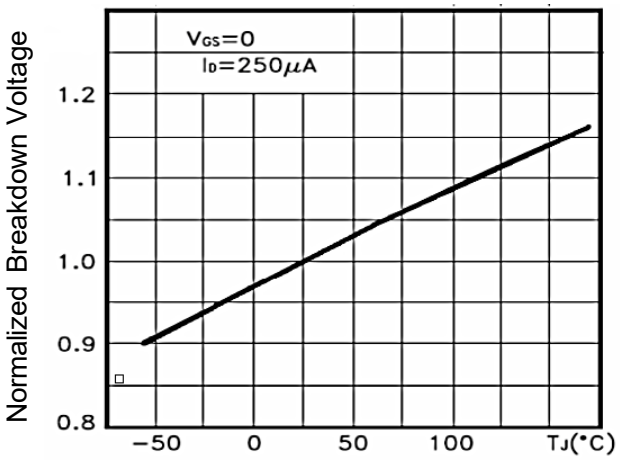


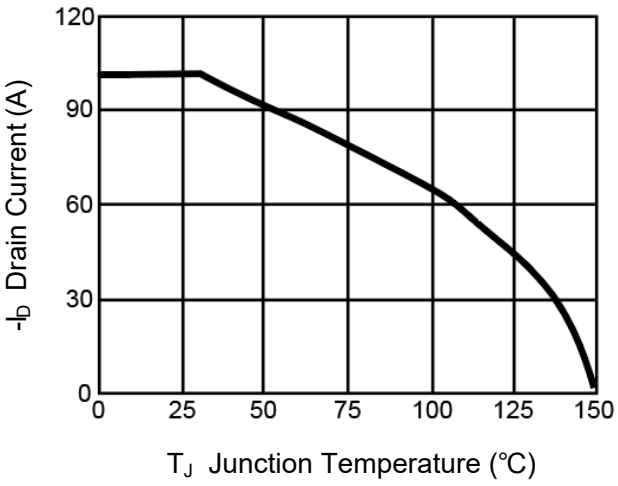


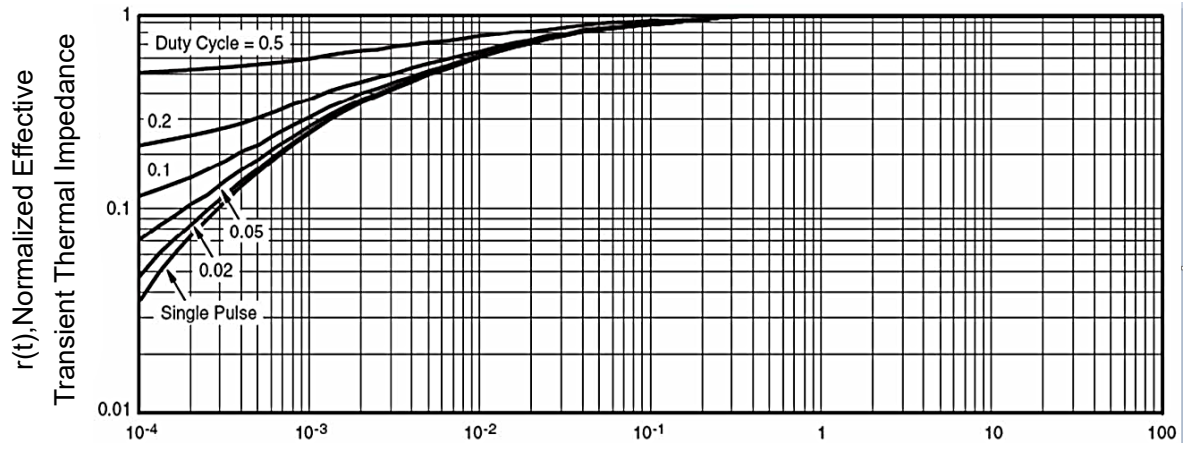



C Capacitance (pF)
8000
6000
4000
2000
0
Ciss
Coss
Crss
0
10
20
30
40
-VDS Drain-Source Voltage (V)


-ID Drain Current (A)
1000
100
10
1
0.1
0.0
RDS(on) Limited
10μS
100μS
DC
1mS
10mS
TJ(Max)=150℃
TC=25℃
0.01
0.1
1
10
100
-VDS Drain-Source Voltage (V)


Normalized Breakdown Voltage
VGS=0
ID=250μA
1.2
1.1
1.0
0.9
0.8
−50
0
50
100
TJ(°C)
TJ Junction Temperature (℃)

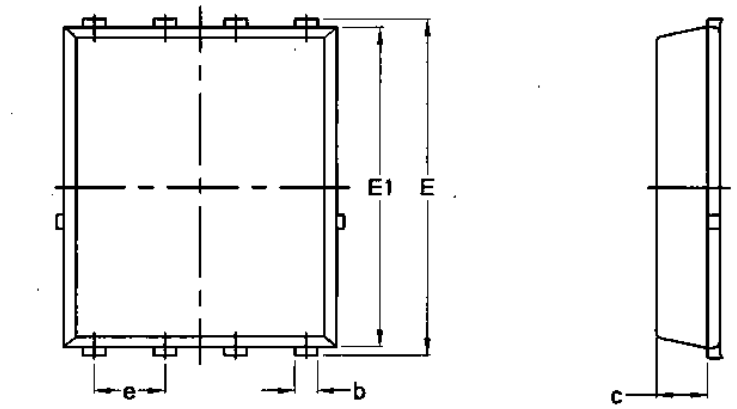

-ID Drain Current (A)
120
90
60
30
0
0
25
50
75
100
125
150
TJ Junction Temperature (℃)

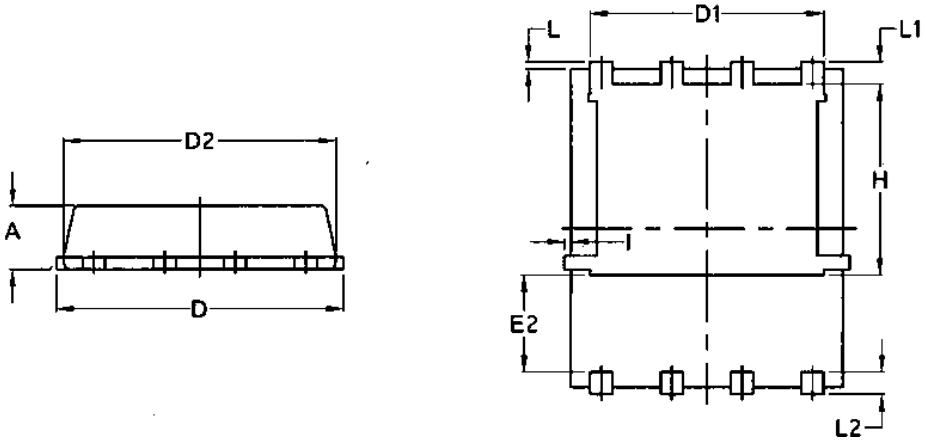

r(t),Normalized Effective
Transient Thermal Impedance
1
0.1
0.01
Duty Cycle = 0.5
0.2
0.1
0.05
0.02
Single Pulse
10-4
10-3
10-2
10-1
1
10
100
Square Wave Pluse Duration (sec)

Package Outline

PDFN5x6-8L

Dimensions in mm





Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070