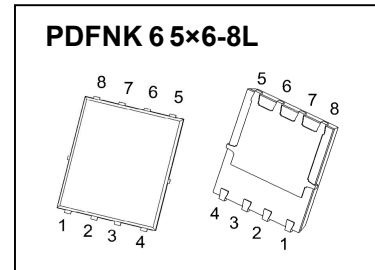


**CJAC20N03 N-Channel Power MOSFET**

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
30V	8.5mΩ@10V	20A
	12mΩ@4.5V	



**DESCRIPTION**

The CJAC20N03 uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications

**FEATURES**

- Battery switch
- Load switch
- High density cell design for ultra low  $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high  $E_{AS}$
- Excellent package for good heat dissipation
- Special process technology for high ESD capability

**APPLICATIONS**

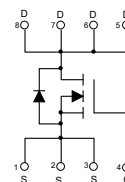
- SMPS and general purpose applications
- Hard switched and high frequency circuits
- Uninterruptible Power Supply

**MARKING**



CJAC20N03 = Part No.  
 Solid dot=Pin1 indicator  
 XX=Date Code

**EQUIVALENT CIRCUIT**



**MAXIMUM RATINGS (  $T_a=25^\circ\text{C}$  unless otherwise noted )**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	20	A
Pulsed Drain Current	$I_{DM}$	100	A
Single Pulsed Avalanche Energy	$E_{AS}^{(1)}$	70	mJ
Power Dissipation	$P_D$	3.0	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	41.67	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 ~+150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10s)	$T_L$	260	$^\circ\text{C}$

(1).EAS condition:  $V_{DD}=15V, L=0.14mH, R_G=25\Omega$ , Starting  $T_J = 25^\circ\text{C}$   
 (2).Mounted on a glass epoxy board of 25.4 mm x 25.4 mm x 0.8 mmt

# MOSFET ELECTRICAL CHARACTERISTICS

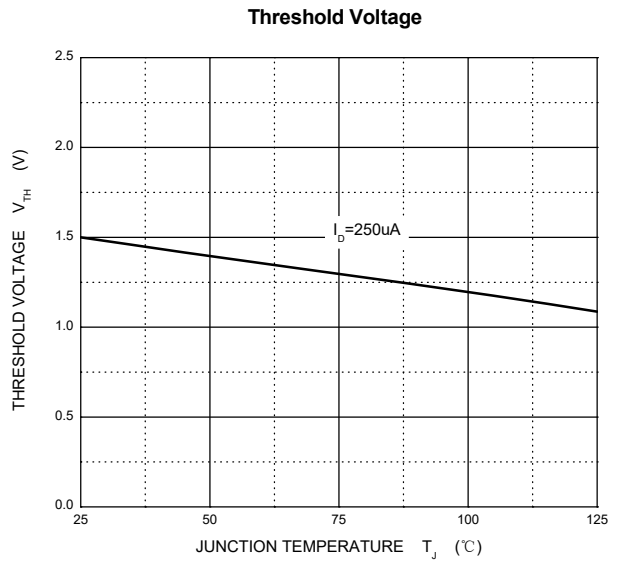
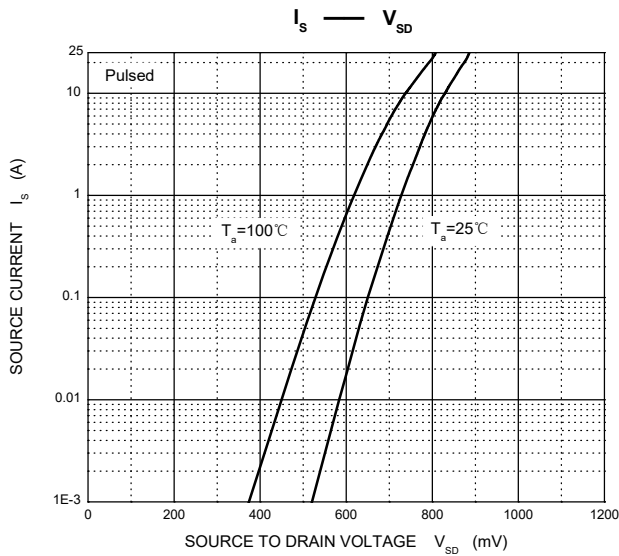
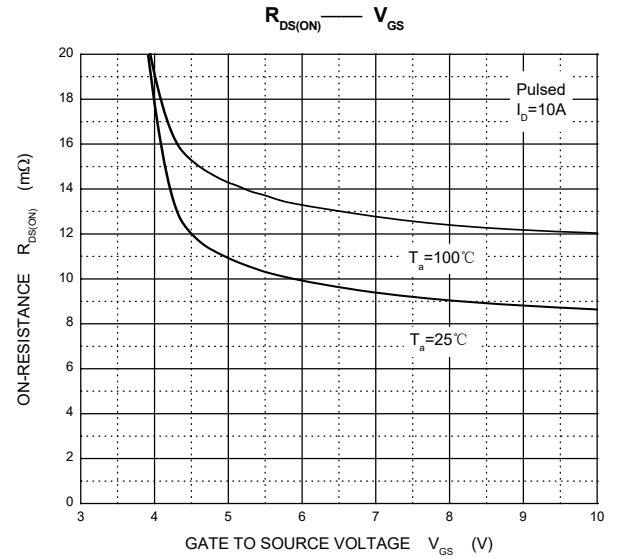
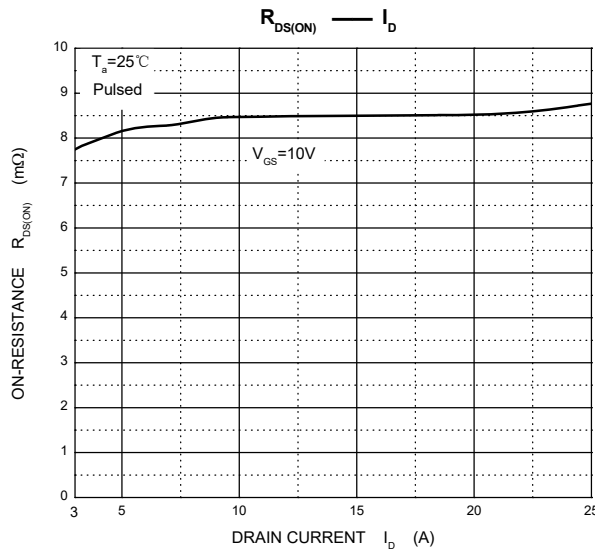
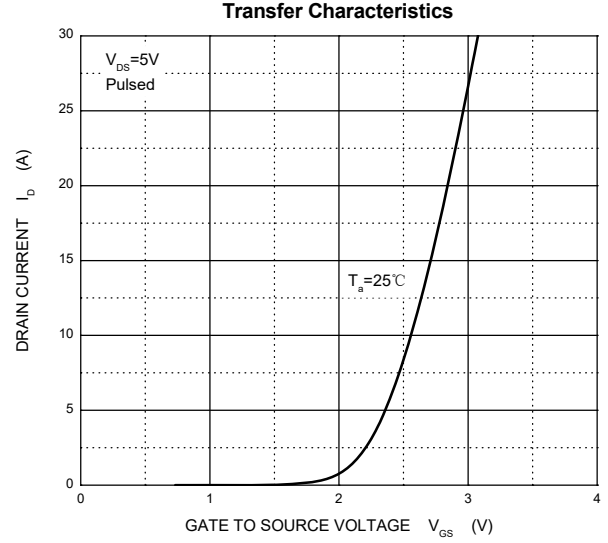
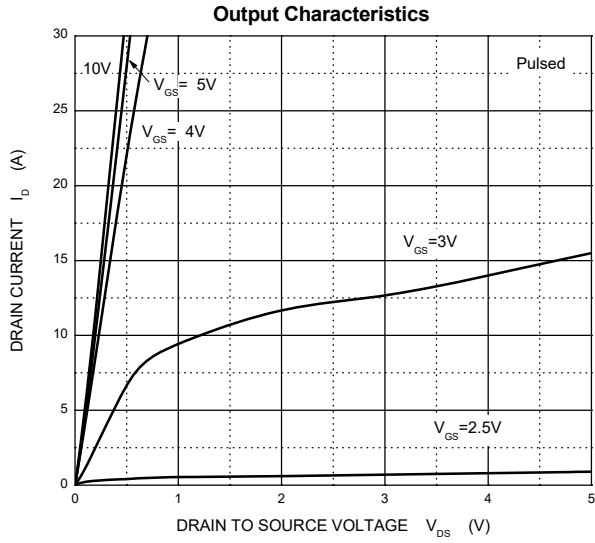
$T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Off characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage current	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
<b>On characteristics (note1)</b>						
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.7	3.0	V
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 10A$		8.5	12	$m\Omega$
		$V_{GS} = 4.5V, I_D = 10A$		12	18	$m\Omega$
Forward transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 20A$	15			S
<b>Dynamic characteristics (note 2)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 15V, V_{GS} = 0V,$ $f = 1MHz$		823		pF
Output capacitance	$C_{oss}$			138		
Reverse transfer capacitance	$C_{rss}$			100		
<b>Switching characteristics (note 2)</b>						
Total gate charge	$Q_g$	$V_{DS} = 15V, V_{GS} = 10V,$ $I_D = 9A$		13		nC
Gate-source charge	$Q_{gs}$			3		
Gate-drain charge	$Q_{gd}$			4.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 15V, V_{GS} = 10V,$ $R_L = 1.8\Omega, R_{GEN} = 3\Omega$			10	ns
Turn-on rise time	$t_r$				8	
Turn-off delay time	$t_{d(off)}$				30	
Turn-off fall time	$t_f$				5	
<b>Drain-Source Diode Characteristics</b>						
Drain-source diode forward voltage(note1)	$V_{SD}$	$V_{GS} = 0V, I_S = 10A$			1.2	V
Continuous drain-source diode forward current	$I_S$				20	A
Pulsed drain-source diode forward current	$I_{SM}$				100	A
Reverse Recovery Time	$t_{rr}$	$T_J = 25^\circ\text{C}, I_F = 10A$		22	35	ns
Reverse Recovery Charge	$Q_{rr}$	$di/dt = 100A/\mu s(\text{Note1})$		12	20	nC

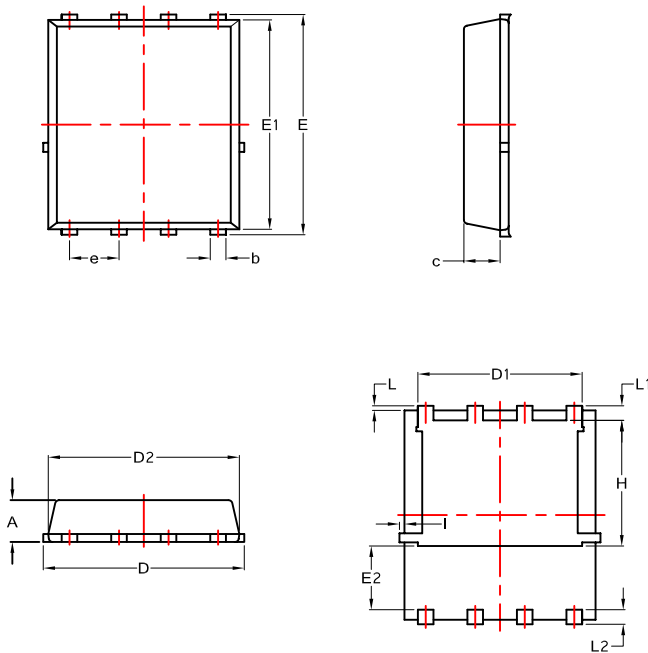
Notes:

1. Pulse Test : Pulse Width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
2. Guaranteed by design, not subject to production.

# Typical Characteristics

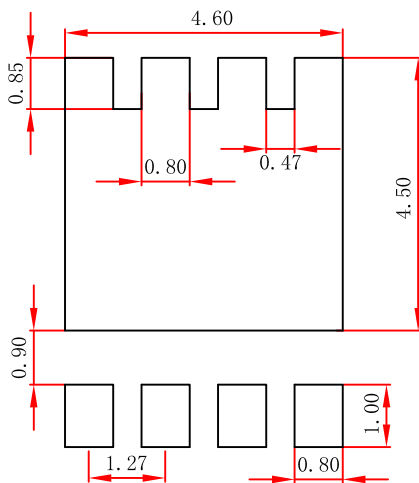


## PDFNWB5x6-8L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	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	0.0382
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	1.270 BSC	-	0.050 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

## PDFNWB5x6-8L Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.

### NOTICE

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