

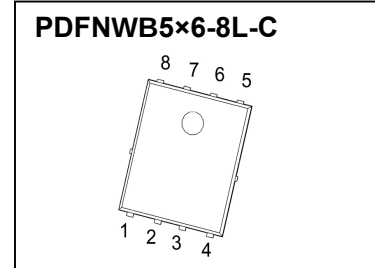


JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD

PDFNWB5×6-8L-C Plastic-Encapsulate MOSFETS

CJAC140SN04 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	1.65mΩ@10V	140A



DESCRIPTION

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

FEATURES

- 40V, 140A, $R_{DS(ON)} = 2.2m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast Switching
- Green Device Available

APPLICATIONS

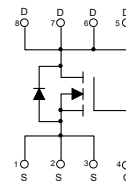
- PowerTools
- Load Switch
- LED applications
- Motor Drive Applications

MARKING



CJAC140SN04 = Part No.
Solid dot=Pin1 indicator
XX=Date Code

EQUIVALENT CIRCUIT



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	140	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	400	
Maximum Power Dissipation ⁽⁴⁾	P_D	2.0	W
Avalanche energy*	E_{AS}	180	mJ
Thermal Resistance from Junction to Case ($T_c=25^\circ\text{C}$)	$R_{\theta JC}$	1.7	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ⁽³⁾	$R_{\theta JA}$	62	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	

* EAS test condition $V_{GS}=10V$, $V_{DD}=25V$, $R_G=25\ \Omega$, $L=1.0\ \text{mH}$, starting $T_J=25^\circ\text{C}$.

MOSFET ELECTRICAL CHARACTERISTICS

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

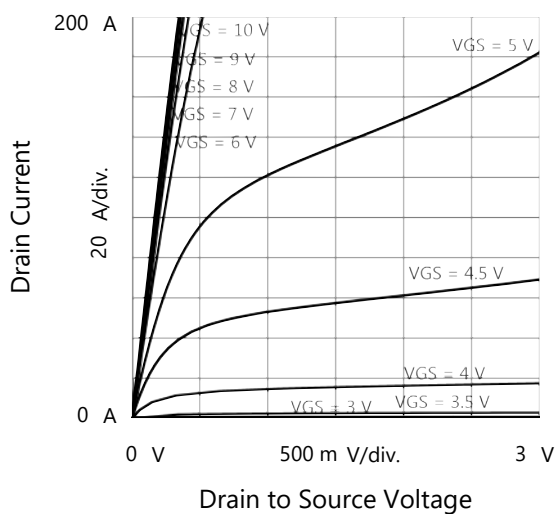
Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage ⁽¹⁾	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V
Drain-source on-resistance ⁽¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 40A$		1.65	2.2	m Ω
Forward Transconductance	g_{fs}	$V_{DS} = 10V, I_D = 40A$		55		S
Dynamic characteristics ⁽²⁾						
Total gate charge	Q_g	$V_{DS} = 20V, V_{GS} = 10V, I_D = 40A$		65	130	nC
Gate-source charge	Q_{gs}			15	25	
Gate-drain charge	Q_{gd}			11	22	
Input Capacitance	C_{iss}	$V_{DS} = 20V, V_{GS} = 0V, f = 1MHz$		4100	6500	pF
Output Capacitance	C_{oss}			160	238	
Reverse Transfer Capacitance	C_{rss}			2.8	12	
Gate resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, F = 1MHz$		2.5	5	Ω
SWITCHING PARAMETERS ⁽²⁾						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 20V, V_{DS} = 10V, R_G = 3\Omega, I_D = 40A$		16	32	ns
Turn-on rise time	t_r			26	52	
Turn-off delay time	$t_{d(off)}$			70	140	
Turn-off fall time	t_f			25	50	
Source-Drain Diode characteristics ⁽¹⁾						
Body diode voltage	V_{SD}	$I_S = 1A, V_{GS} = 0V$			1	V

Notes:

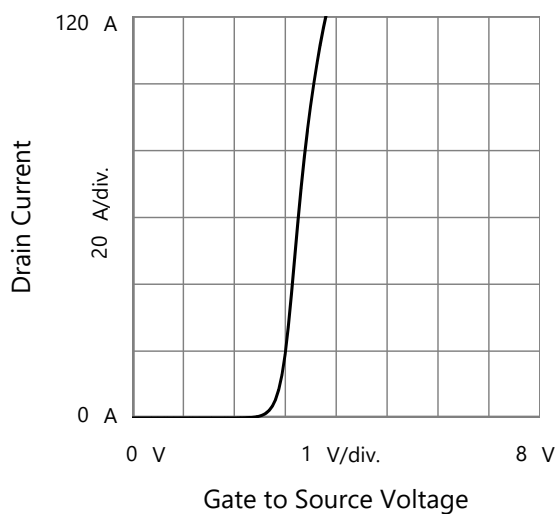
1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
2. Guaranteed by design, not subject to production testing.
3. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a = 25\text{ }^{\circ}\text{C}$.
4. Pd is based on max. junction temperature, using junction-case thermal resistance.

Typical Characteristics

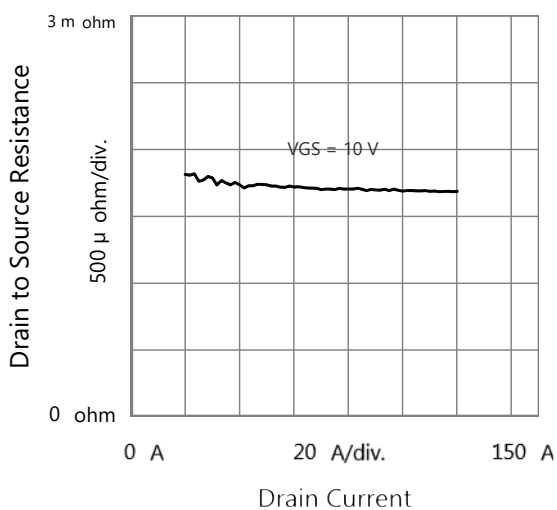
Output Characteristics



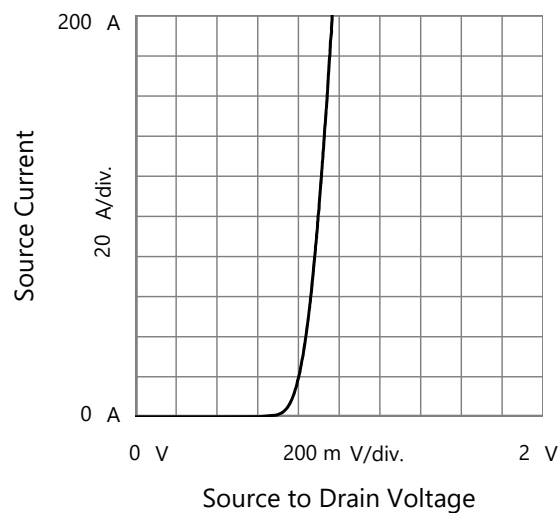
Transfer Characteristics



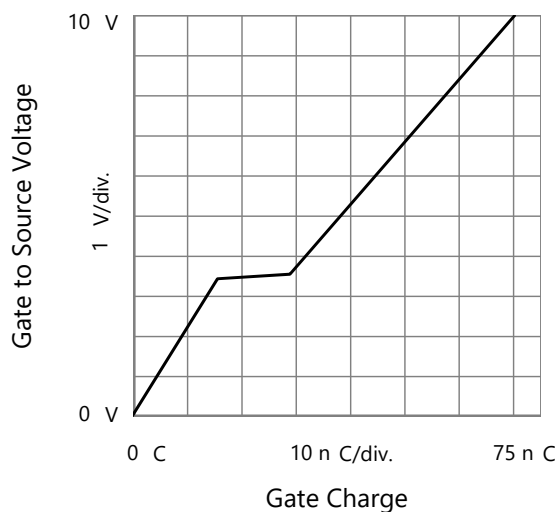
Drain to Source Resistance vs. Drain Current



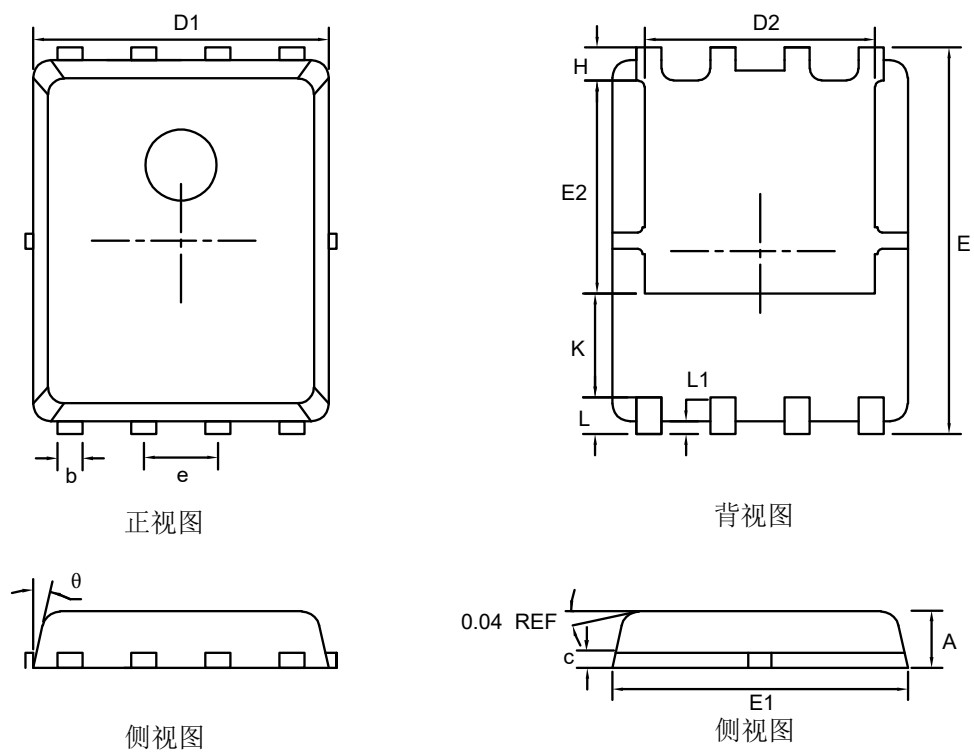
Body Diode Forward Characteristics



Gate Charge



PDFNWB5×6-8L-C Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.800	1.100	0.031	0.043
b	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.100	0.189	0.201
D2	3.610	4.100	0.142	0.161
E	5.900	6.200	0.232	0.244
E1	5.700	5.900	0.224	0.232
E2	3.350	3.780	0.132	0.149
e	1.27BSC		0.05BSC	
H	0.410	0.700	0.016	0.028
K	1.100	1.500	0.043	0.059
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
θ	0°	12°	0°	12°

NOTICE

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