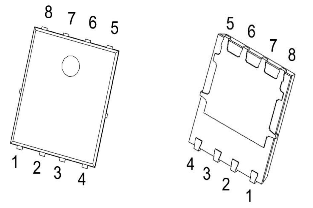
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

PDFNWB5x6-8L-F Plastic-Encapsulate MOSFET

CJAC3R6SN10AH N-Channel Power MOSFET

PDFNWB5x6-8L-F



Key Performance Parameters

$V_{BR(DSS)}$	$R_{DS(on)}$TYP	I_D
100V	3.0mΩ@10V	180A
	4.5mΩ@6V	

DESCRIPTION

The N-Channel enhancement mode power field effect transistors is using SGT 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

- High Power and current handing capability
- High density cell design for ultra-low $R_{DS(ON)}$
- Good stability and uniformity with high EAS
- Excellent package for good heat dissipation

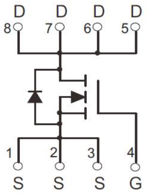
APPLICATIONS

- DC/DC Converter
- Ideal for high-frequency switching and synchronous

MARKING

XXXXX = 3R6SN10AH
Solid dot = Pin1 indicator.
YY = Code.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C =25℃	I_D	180	A
	T_C =100℃		114	
Pulsed Drain Current		I_{DM}①②	720	A
Continuous Drain Current	T_A =25℃	I_D	17	A
	T_A =75℃		13	
Avalanche Current		I_{AS}③	40	A
Single Pulsed Avalanche Energy		E_{AS}③	400	mJ
Power Dissipation		P_D①	250	W
Operating Junction and Storage Temperature Range		T_J,T_{stg}	-55~+150	℃

Thermal Characteristics

Parameter	Symbol	Value		Unit
		Typ	Max	
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.33	0.50	℃/W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$⑥	38	57	℃/W

Typical Characteristics

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Static Characteristics

Parameter	Symbol	Test Condition		Value			Unit
				Min	Typ	Max	
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA		100	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=100V, V_{GS}=0V	T_J=25℃	-	-	1.0	μA
			T_J=125℃	-	-	100	
Gate-body leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V		-	-	±100	nA
Gate-threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA		2.4	3.1	3.8	V
Static drain-source on-sate resistance	$R_{DS(on)}$④	V_{GS}=10V, I_D=50A	T_J=25℃	-	3.0	3.6	mΩ
			T_J=125℃	-	5.2	6.3	
		V_{GS}=6V, I_D=50A		-	4.5	6.2	
Forward transconductance	g_{FS}	V_{DS}=5V, I_D=20A		-	46	-	S

Dynamic Characteristics⑤

Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	4728	-	pF
Output capacitance	C_{oss}		-	818	-	
Reverse transfer capacitance	C_{rss}		-	8	-	
Gate resistance	R_g	f=1MHz	-	2.3	-	Ω
Total gate charge	Q_g	V_{GS}=6V, V_{DS}=50V, I_D=50A	-	48	-	nC
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=50A	-	74	-	
Gate charge at threshold	$Q_{G(th)}$		-	14	-	
Gate-source charge	Q_{gs}		-	22	-	
Gate-drain charge	Q_{gd}		-	22	-	
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, I_D=50A, R_g=1.6Ω	-	15	-	ns
Turn-on rise time	t_r		-	14	-	
Turn-off delay time	$t_{d(off)}$		-	27	-	
Turn-off fall time	t_f		-	12	-	

Reverse Diode Characteristics

Drain-source diode forward voltage	V_{SD}④	V_{GS}=0V, I_S=50A	-	0.86	1.0	V
Continuous drain-source diode forward current	I_S①		-	-	180	A
Pulsed drain-source diode forward current	I_{SM}①②		-	-	720	A
Reverse recovery time	t_{rr}	V_{DD}=50V, I_S=50A, di/dt=100A/μs	-	67	-	ns
Reverse recovery charge	Q_{rr}		-	150	-	nC

Notes:

①.T_C=25℃ Limited only by maximum temperature allowed.

②.P_W ≤10μs, Duty cycle ≤1%.

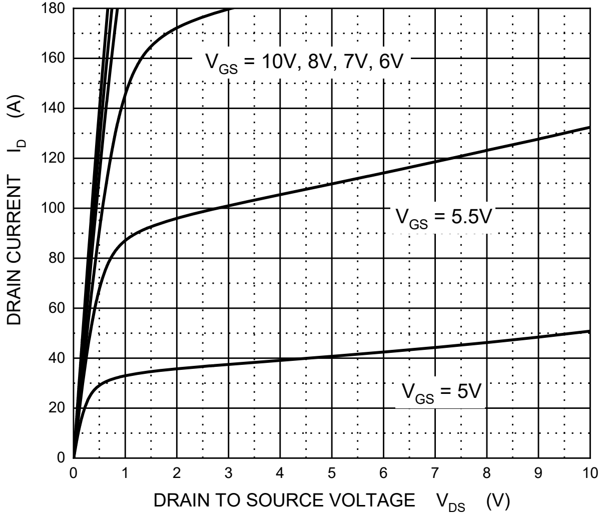
③.EAS condition: V_{DD}=50V, V_{GS}=10V, L=0.5mH, R_g=25Ω Starting T_J=25℃.

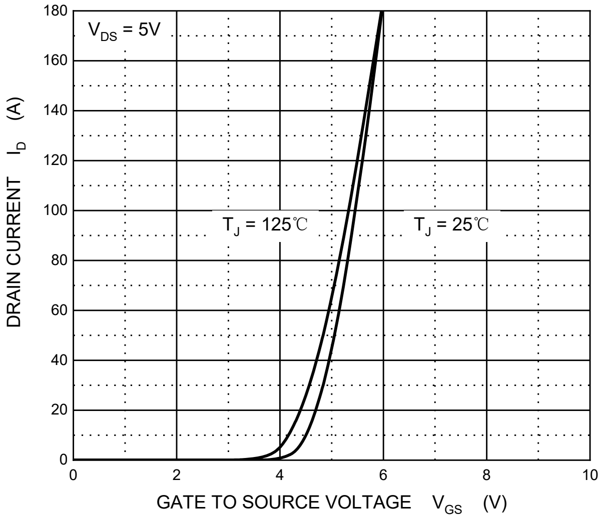
④.Pulse Test : Pulse Width ≤380μs, duty cycle ≤2%.

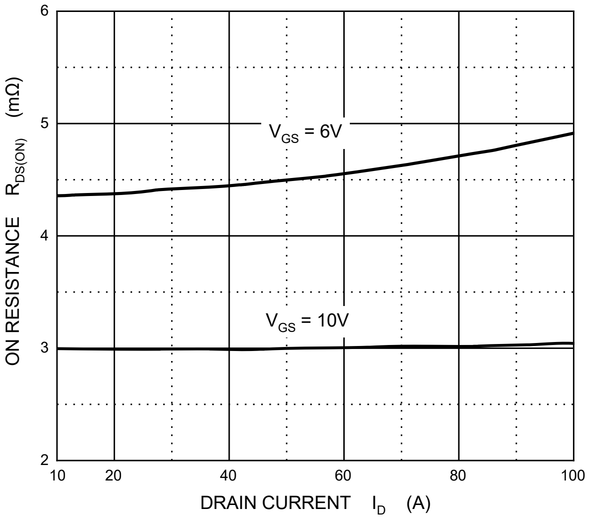
⑤.Guaranteed by design, not subject to production.

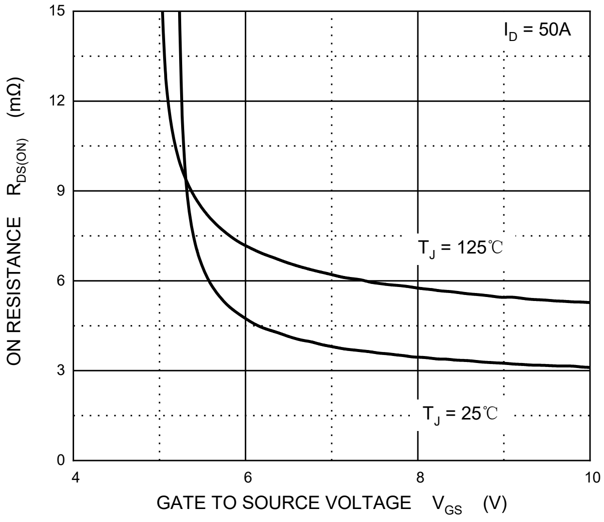
⑥.Device mounted on 1 in^2 FR-4 board with 2oz. double-sided Copper, in a still air environment with T_A=25℃.

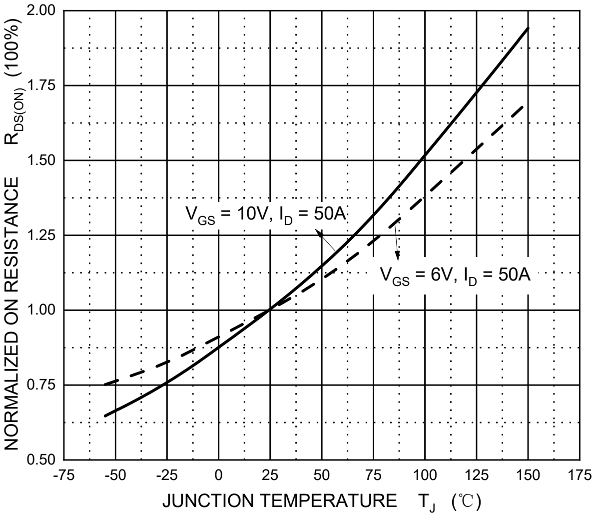
Typical Characteristics

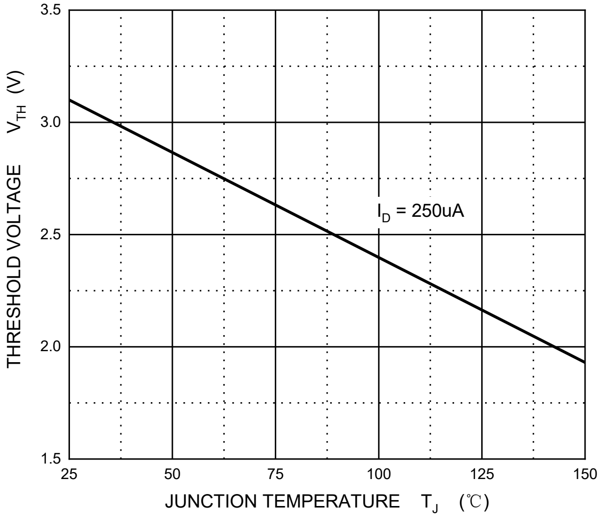

Output Characteristics


Transfer Characteristics


On Resistance vs. Drain Current

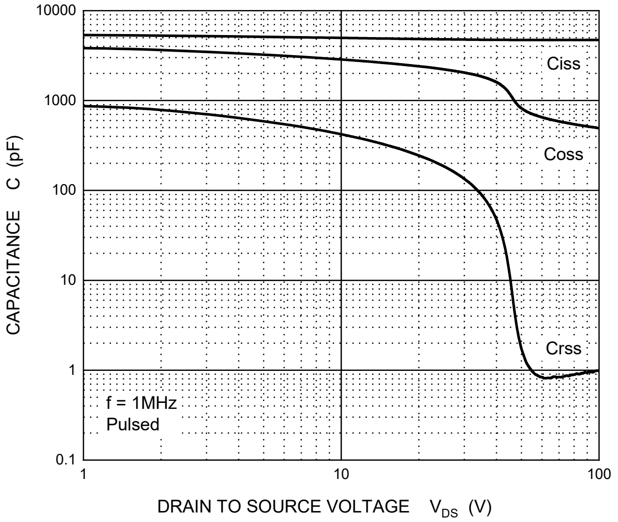

On Resistance vs. Gate-Source Bias


On Resistance vs. Junction Temperature

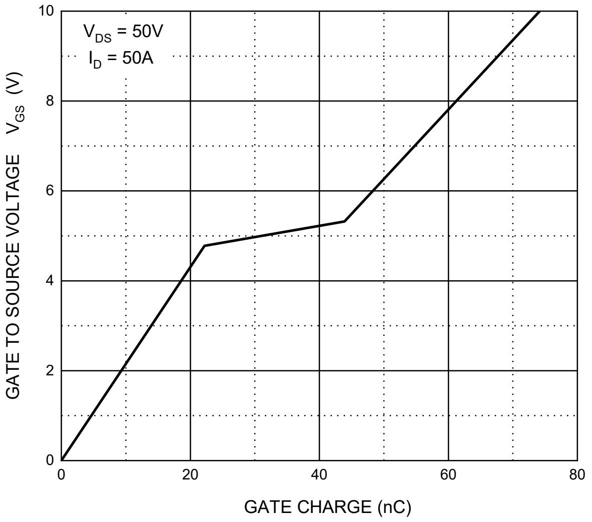

Gate-Source Threshold Voltage

Typical Characteristics

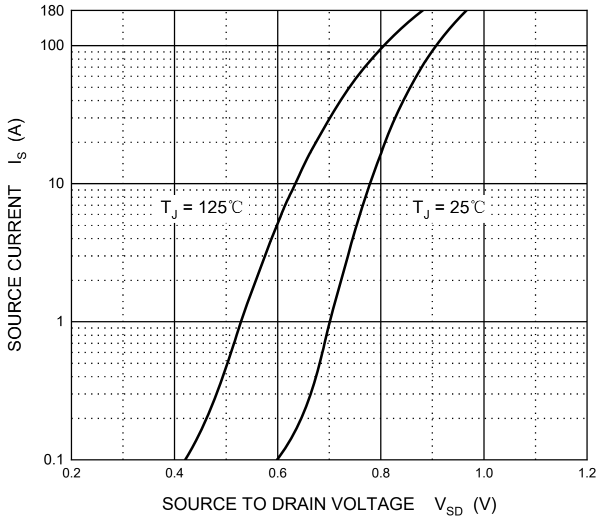
Typical Capacitances



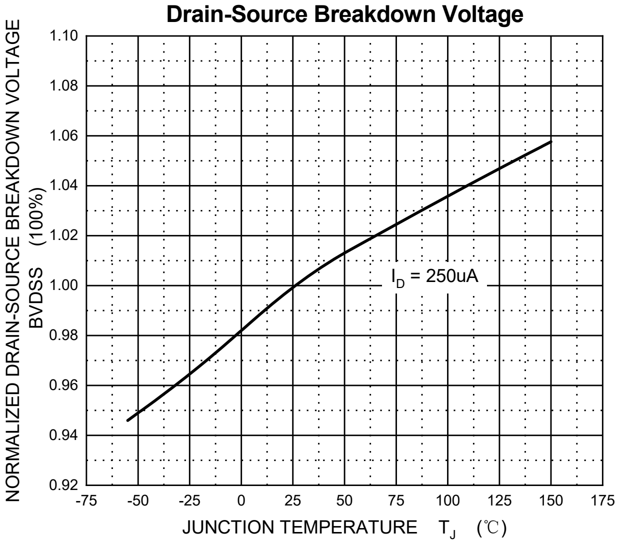
Gate Charge



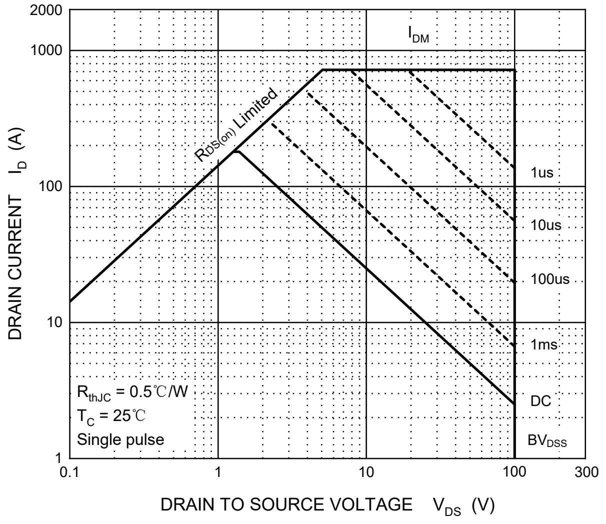
Source-Drain Diode Forward Characteristics



Drain-Source Breakdown Voltage



Maximum Safe Operating Area



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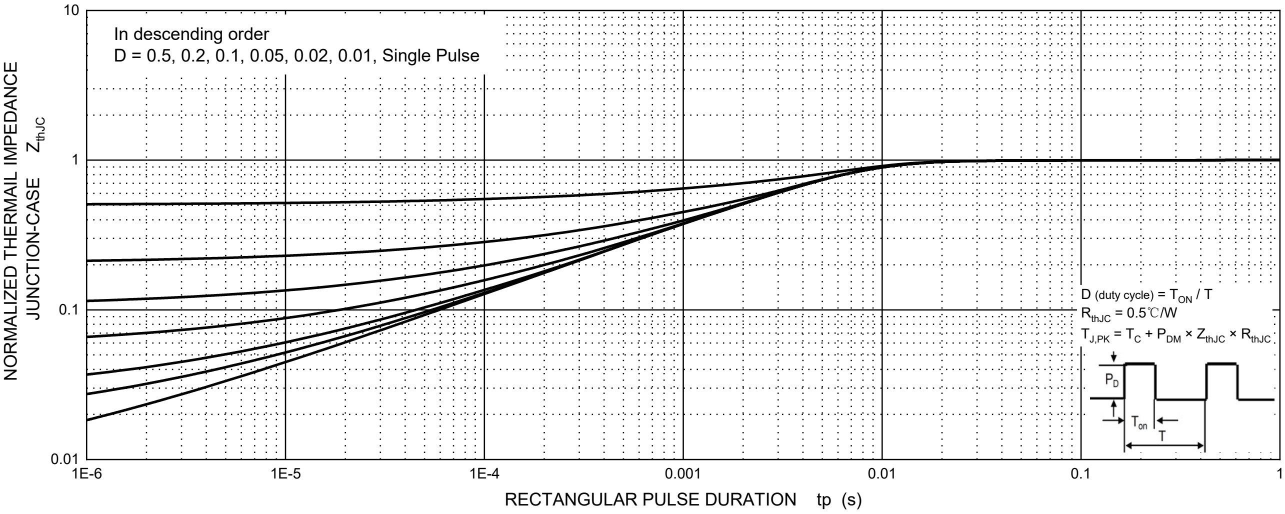
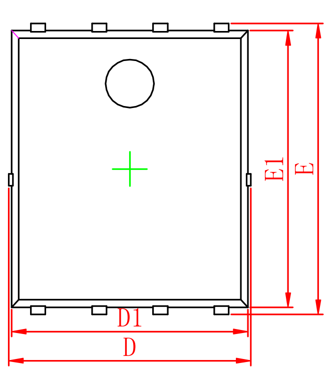
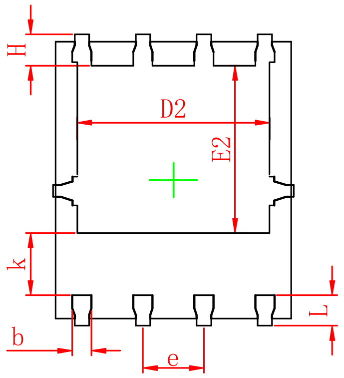

Transient Thermal Impedance, Junction-Case

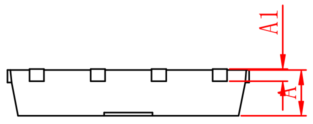
PDFNWB5×6-8L-F PACKAGE OUTLINE DIMENSIONS



Top View
[顶视图]



Bottom View
[背视图]

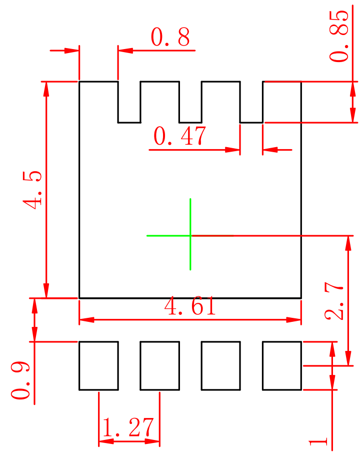


Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
A1	0.25 REF.		0.010 REF.	
D	5.00	5.40	0.197	0.213
D1	4.90	5.10	0.193	0.201
D2	3.90	4.30	0.154	0.169
E	6.00	6.40	0.236	0.252
E1	5.75	5.95	0.226	0.234
E2	3.40	3.80	0.134	0.150
k	1.10	1.50	0.043	0.059
b	0.30	0.50	0.012	0.020
e	1.27 BSC		0.050 BSC	
L	0.40	0.60	0.016	0.024
H	0.50	0.70	0.020	0.028

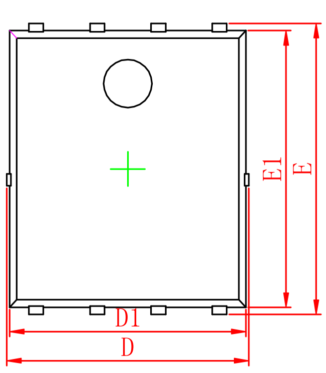
Notes：
1 Dimensions exclusive of mold gate burrs。
2 Dimensions exclusive of mold flash and cutting burrs。

PDFNWB5×6-8L Suggested Pad Layout



Notes：
1 Controlling dimension： in millimeters。
2 General tolerance:±0.05mm.
3 The pad layout is for referance purpose only。

PDFNWB5.15×6.15-8L PACKAGE OUTLINE DIMENSIONS



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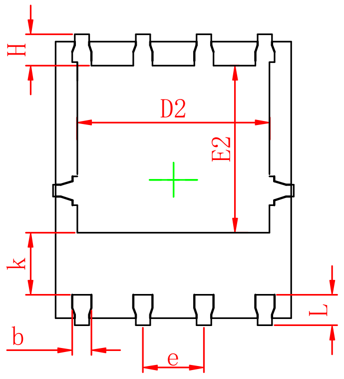
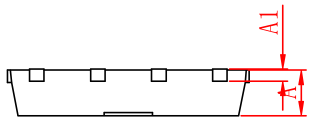


Bottom View
[背视图]



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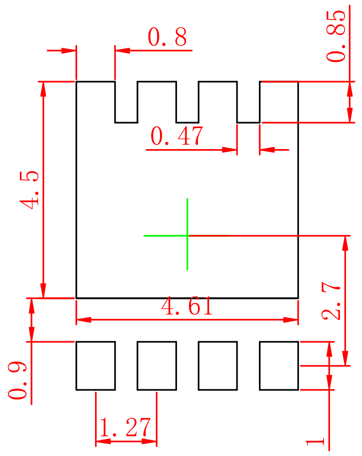

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