MOSFET – N-Channel, Super Junction
600 V, 80.0 A, 30 mQ

JCH030N600S

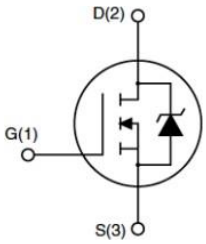
Features

V_{DSS}	$R_{DS(ON)}$ MAX	I_D MAX
600 V	30 mQ @ 10 V	80.0A

- Super Low Gate Charge
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Description

The JCH030N600S is the high cell density trenched N-ch MOSFETs, which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications. The JCH030N600S meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Equivalent Circuit	Outline
	**TO-247** 

Package Marking and Ordering Information

Part Number	Top Marking	Device Package	Quantity
JCH030N650S	JCH030N650S	TO-247	30PCS/Tube

Table 1. Thermal Characteristic

Symbol	Parameter	Max	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) [1]	28.8	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case [1]	0.2	℃/W

Table 2. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage (VGS=0V)	600	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±30	V
$I_{D\ (DC)}$	Drain Current-Continuous(Tc =25℃) [1]	80	A
	Drain Current-Continuous(Tc =100℃) [1]	50	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed [2]	240	A
P_D	Maximum Power Dissipation(Tc=25℃) [4]	625	W
E_{AS}	Single Pulse Avalanche Energy [3]	2500	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 3. Electrical Characteristics (TA=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=1mA	600			V
I_{DSS}	Zero Gate Voltage Drain Current(Tc=25℃)	V_{DS}=600V,V_{GS}=0V			3.5	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±30V,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=2mA	2.5	3.5	4.5	V
$R_{DS(ON)}$	Drain-Source On-State Resistance [2]	V_{GS}=10V, I_D=40A		25	30	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=50V,V_{GS}=0V f=0.1MHz		7700		PF
C_{oss}	Output Capacitance			3090		PF
C_{rss}	Reverse Transfer Capacitance			2		PF
Switching Times						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=400V, R_G =2Ω V_{GS}=10V, I_D=40A		62		nS
t_r	Turn-on Rise Time			55		nS
$t_{d(off)}$	Turn-Off Delay Time			233		nS
t_f	Turn-Off Fall Time			50		nS
Q_g	Total Gate Charge [4.5V]	V_{DS}=400V,		200		nC
Q_{gs}	Gate-Source Charge			45		nC

Q_{gd}	Gate-Drain Charge	V_{GS}=10V, I_D=40A		91		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current(Body Diode)[1.5]				80	A
V_{SD}	Forward On Voltage [2]	I_{SD}=40A,V_{GS}=0V,T_J =25℃			1.4	V
t_{rr}	Reverse Recovery Time	T_J=25℃ I_F=40A, di/dt=100A/μs		180		nS
Q_{rr}	Reverse Recovery Charge			1550		nC

Notes:

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 EAS data shows Max. rating . The test condition is VDD =100V,VGS =10V,L=80mH
4. The power dissipation is limited by 150℃ junction temperature
5. The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

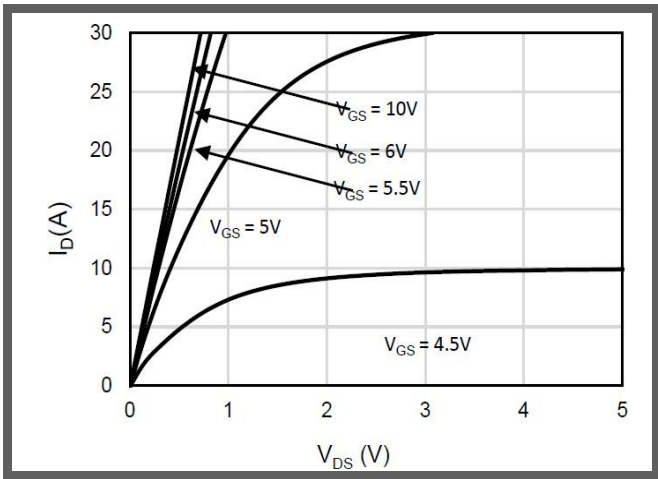


Figure1: Output Characteristics

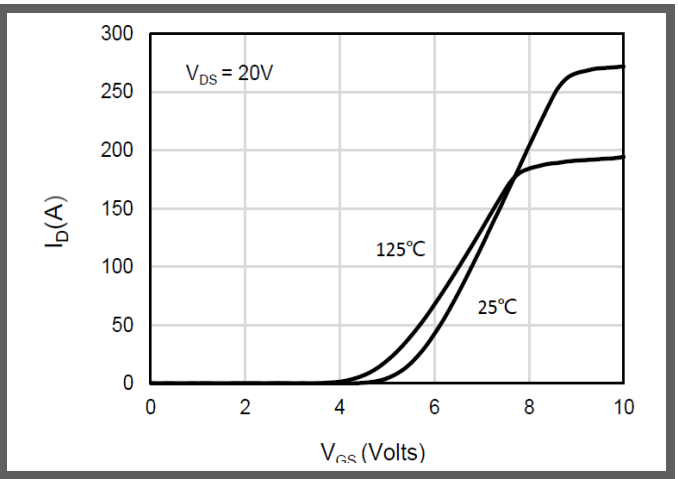


Figure 2: Transfer Characteristics

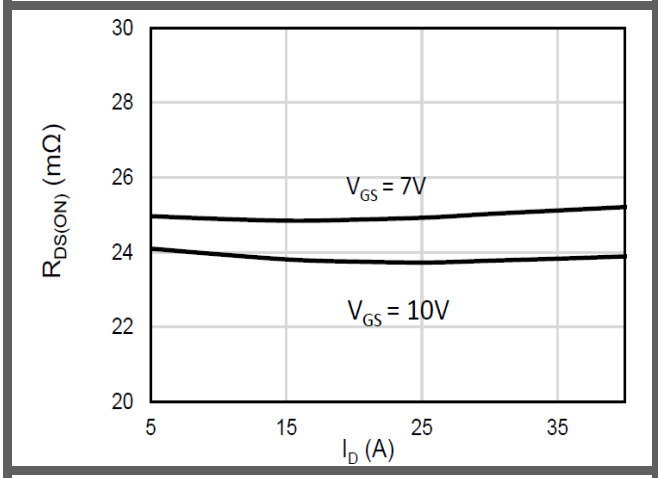


Figure 3: On-Resistance vs. Drain Current

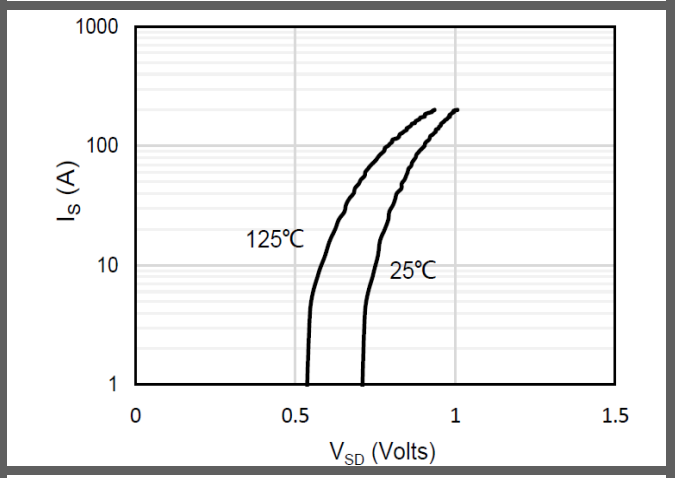


Figure 4: Body Diode Characteristics

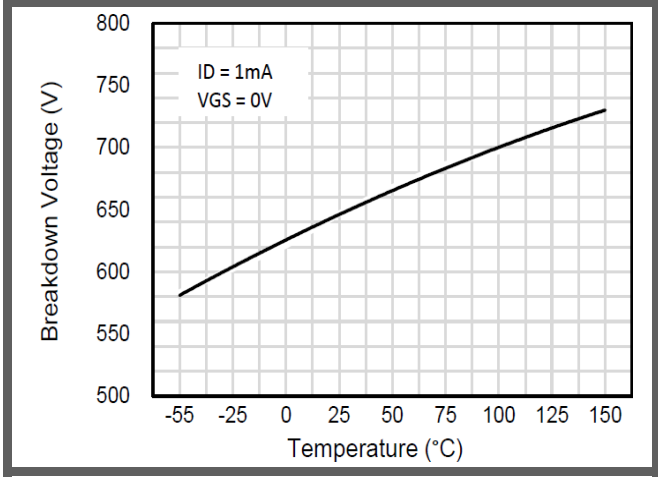


Figure 5: Breakdown Voltage vs. Junction Temperature

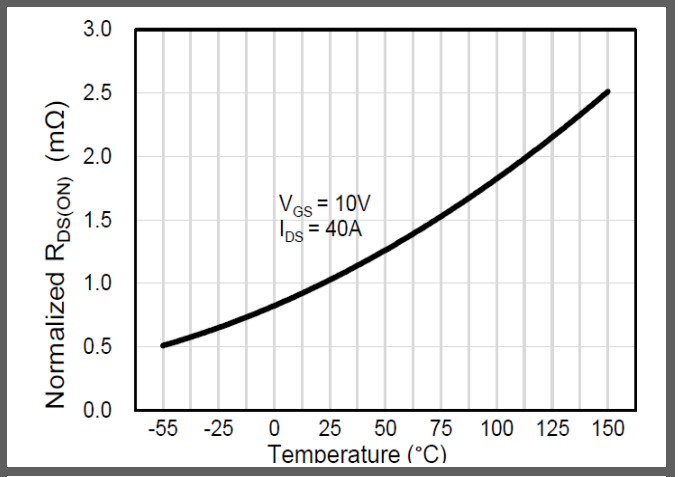


Figure 6: On-Resistance vs. Junction Temperature

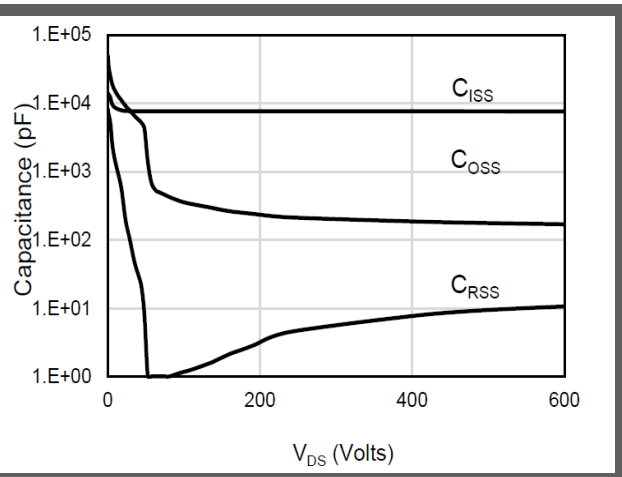


Figure 7: Capacitance Characteristics

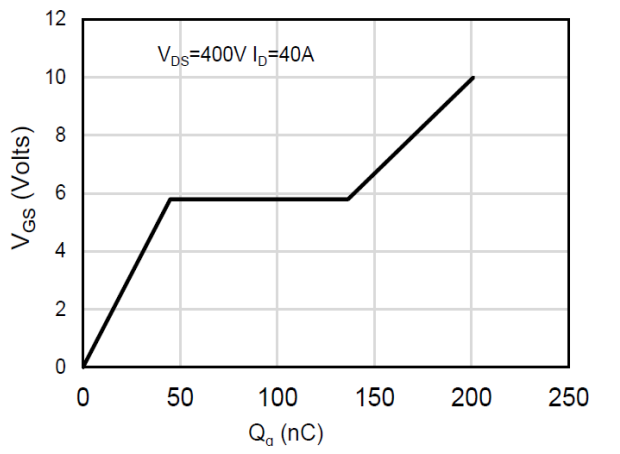


Figure 8: Gate Charge Characteristics

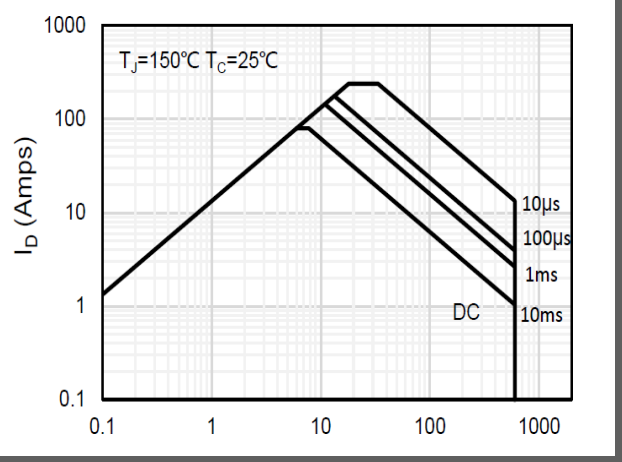


Figure 9: Maximum Forward Biased Safe Operating Area

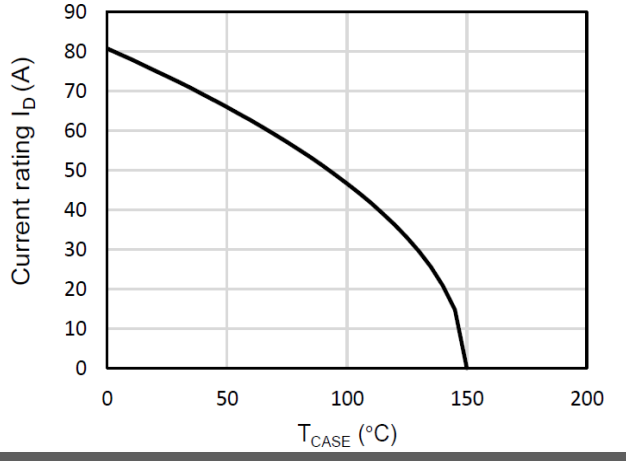


Figure 10: Drain Current

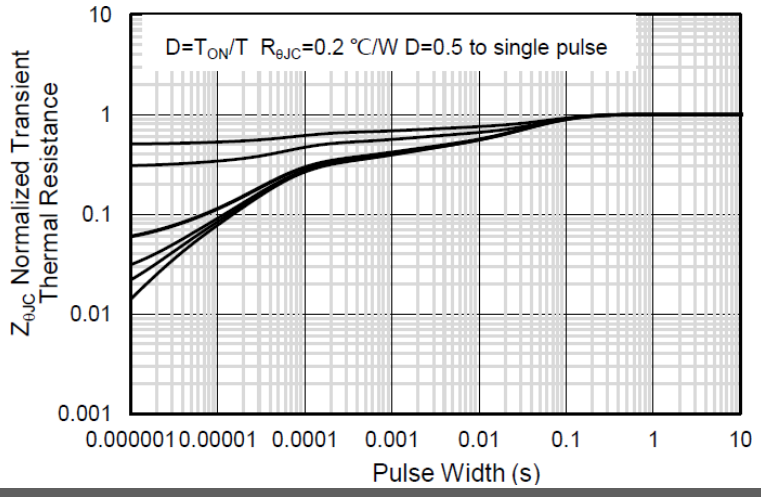
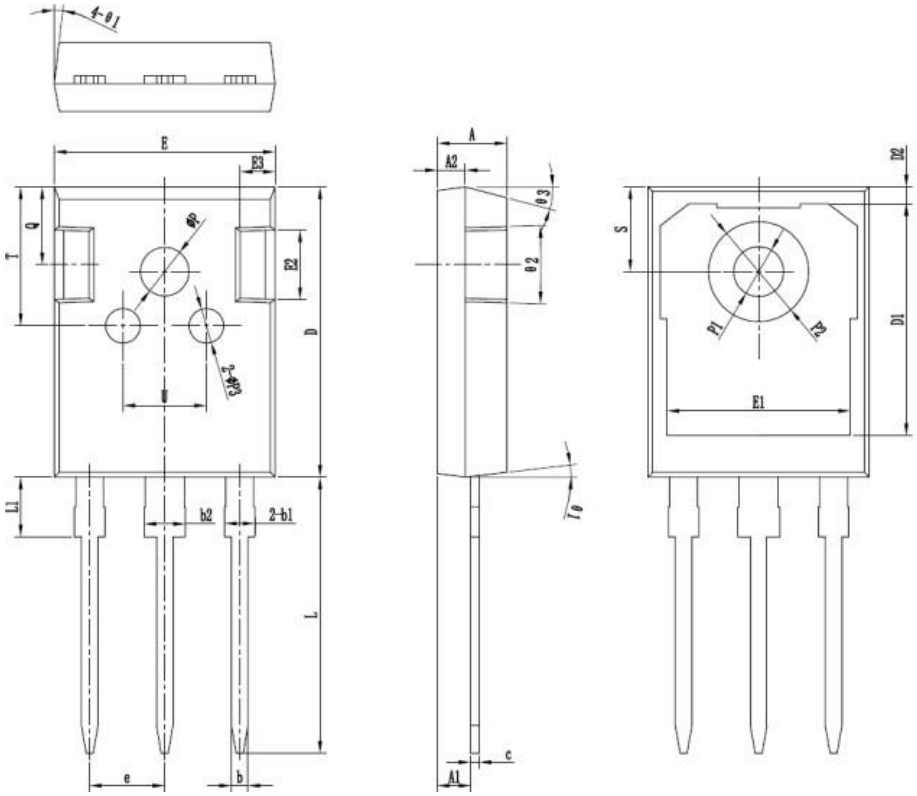


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

JCH030N600S

PACKAGE DIMENSIONS

TO−247 3−LEAD



符号	单位:mm		
	MIN	NOM	MAX
*A	4.90	5.00	5.10
*A1	2.31	2.41	2.51
A2	1.90	2.00	2.10
*b	1.15	1.20	1.25
*b1	1.95	2.10	2.25
*b2	2.95	3.10	3.25
*c	0.55	0.60	0.65
*D	20.90	21.00	21.10
D1	16.35	16.55	16.75
D2	1.05	1.20	1.35
*E	15.70	15.80	15.90
E1	13.10	13.25	13.40
E2	4.90	5.00	5.10
E3	2.40	2.50	2.60
*e	5.40	5.44	5.48
*L	19.80	19.92	20.10
*L1	-	-	4.30
*φP	3.70	3.80	3.90
*φP1	3.50	3.60	3.70
φP2	7.00	7.20	7.40
φP3	2.40	2.50	2.60
Q	5.60	5.80	6.00
*S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40
θ1	5°	7°	9°
θ2	1°	3°	5°
θ3	13°	15°	17°

*为关键管控尺寸

Note：
Dimension and tolerance per ASME 14.5M,1994.
Controlling dimension: Millimeters

Disclaimer

All product specifications and data are subject to change without notice.

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