



# JCS70N30C

## 主要参数 MAIN CHARACTERISTICS

$I_D$	70 A
$V_{DSS}$	300 V
$R_{dson} (V_{gs}=10V)$ -MAX	40m $\Omega$
$Q_g$ -Typ	115.1 nC

### 用途

- 高频开关电源.
- 电子镇流器
- UPS 电源

### APPLICATIONS

- High efficiency switch mode power supplies
- Electronic lamp ballasts based on half bridge
- UPS power supplies

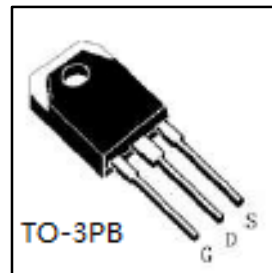
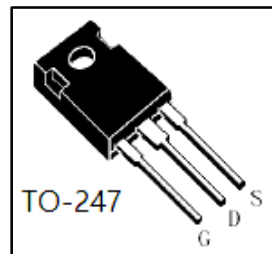
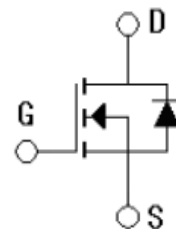
### 产品特性

- 低栅极电荷
- 低  $C_{rss}$  (典型值 94pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗  $dv/dt$  能力
- RoHS 产品

### FEATURES

- Low gate charge
- Low  $C_{rss}$  (typical 94pF)
- Fast switching
- 100% avalanche tested
- Improved  $dv/dt$  capability
- RoHS product

## 封装 Package



## 订货信息 ORDER MESSAGE

订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
JCS70N30WC-GE-B	JCS70N30WC-GE-BR	N/A	N/A	JCS70N30WC	TO-247
JCS70N30ABC-GD-B	JCS70N30ABC-GD-BR	N/A	N/A	JCS70N30ABC	TO-3PB



## 绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		JCS70N30WC/ABC	
最高漏极-源极直流电压 Drain-Source Voltage	V <sub>DSS</sub>	300	V
连续漏极电流 Drain Current -continuous	I <sub>D</sub> T=25℃ T=100℃	70	A
		42	A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I <sub>DM</sub>	280	A
最高栅源电压 Gate-Source Voltage	V <sub>GSS</sub>	±30	V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	E <sub>AS</sub>	6125	mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I <sub>AR</sub>	70	A
二极管反向恢复最大电压变化速率 (注 3) Peak Diode Recovery dv/dt (note 3)	dv/dt	1.242	V/ns
耗散功率(T <sub>C</sub> =25℃) Power Dissipation	P <sub>D</sub> T <sub>C</sub> =25℃ -Derate above 25℃	446	W
		3.57	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~+150	℃

\*漏极电流由最高结温限制

\*Drain current limited by maximum junction temperature



## 电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单 位 Units
<b>关态特性 Off –Characteristics</b>						
漏—源击穿电压 Drain-Source Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	300	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$BV_{DSS}/\Delta T_J$	$I_D=250\mu A$ , referenced to $25^\circ C$	-	2.4		$V/^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=300V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	10	$\mu A$
		$V_{DS}=240V, T_C=125^\circ C$	-	-	100	$\mu A$
正向栅极体漏电流 Gate-body leakage current, forward	$I_{GSSF}$	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	$I_{GSSR}$	$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	nA
<b>通态特性 On-Characteristics</b>						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	3.0	-	4.5	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=35A$	-	30	40	m $\Omega$
正向跨导 Forward Transconductance	$g_{fs}$	$V_{DS}=40V, I_D=70A$ (note 4)	-	72.9	-	S
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	$C_{iss}$	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	4662		pF
输出电容 Output capacitance	$C_{oss}$		-	963		pF
反向传输电容 Reverse transfer capacitance	$C_{rss}$		-	94		pF



## 电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=150V, I_D=70A, R_G=25\Omega,$ $V_{GS}=10V$ (note 4, 5)	-	80.8		ns
上升时间 Turn-On rise time	$t_r$		-	227.2		ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	327.8		ns
下降时间 Turn-Off Fall time	$t_f$		-	191.6		ns
栅极电荷总量 Total Gate Charge	$Q_g$	$V_{DS}=240V,$ $I_D=70A$ $V_{GS}=10V$ (note 4, 5)	-	115.1		nC
栅-源电荷 Gate-Source charge	$Q_{gs}$		-	28.56		nC
栅-漏电荷 Gate-Drain charge	$Q_{gd}$		-	54.25		nC
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings						
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current		$I_S$	-	-	70	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		$I_{SM}$	-	-	280	A
正向压降 Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V,$ $I_S=70.0A$	-	-	1.4	V
反向恢复电流 Reverse Recovery Current	$I_{RRM}$	$V_{GS}=0V,$ $I_S=30A$ $di/dt=100A/\mu s$ (note 4)		22.36		A
反向恢复时间 Reverse recovery time	$t_{rr}$		-	245.2	-	ns
反向恢复电荷 Reverse recovery charge	$Q_{rr}$		-	2677.8	-	nC

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		JCS70N30WC/ABC	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.165	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	$^{\circ}C/W$

注释:

- 1: 脉冲宽度由最高结温限制
- 2:  $L=2.5mH, I_{AS}=70A, V_{DD}=50V, R_G=25\Omega$ , 起始结温  $T_J=25^{\circ}C$
- 3:  $I_{SD}\leq 70A, di/dt\leq 200A/\mu s, V_{DD}\leq BV_{DSS}$ , 起始结温  $T_J=25^{\circ}C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$ , 占空比 $\leq 2\%$ , 受测试设备限制。
- 5: 基本与工作温度无关

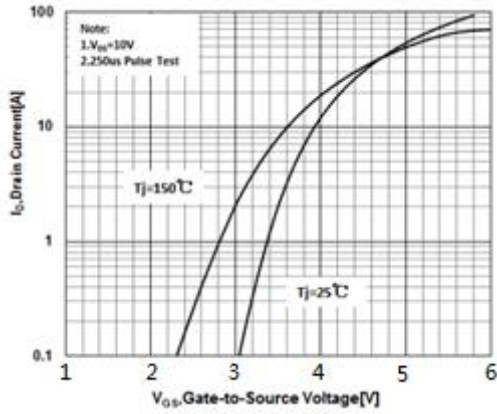
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2:  $L=2.5mH, I_{AS}=70A, V_{DD}=50V, R_G=25\Omega$ , Starting  $T_J=25^{\circ}C$
- 3:  $I_{SD}\leq 70A, di/dt\leq 200A/\mu s, V_{DD}\leq BV_{DSS}$ , Starting  $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycles  $\leq 2\%$ , limited by equipment.
- 5: Essentially independent of operating temperature

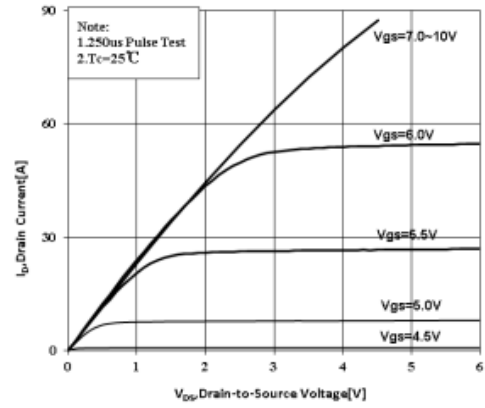




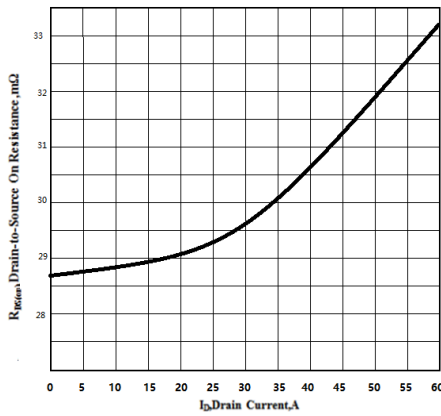
On-Region Characteristics



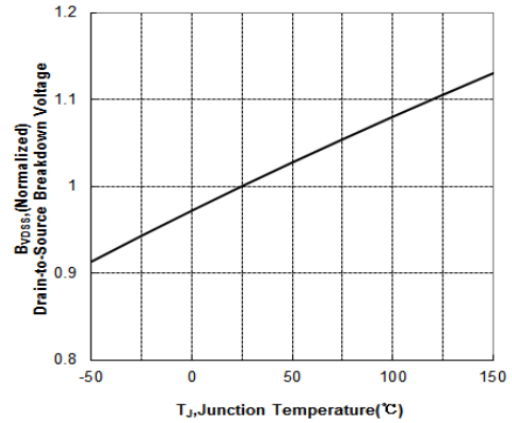
Transfer Characteristics



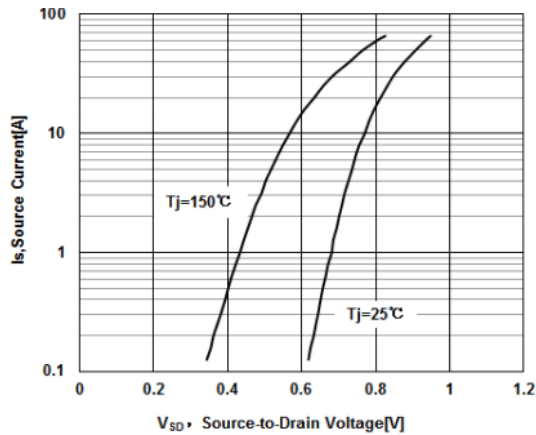
On-Resistance Variation vs. Drain Current and Gate Voltage



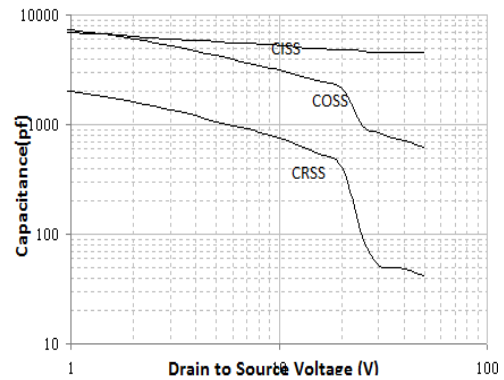
Breakdown Voltage Variation vs. Temperature



Body Diode Forward Voltage Variation vs. Source Current and Temperature

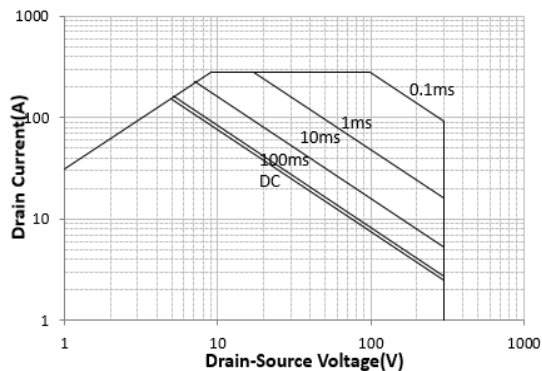


Capacitance Characteristics

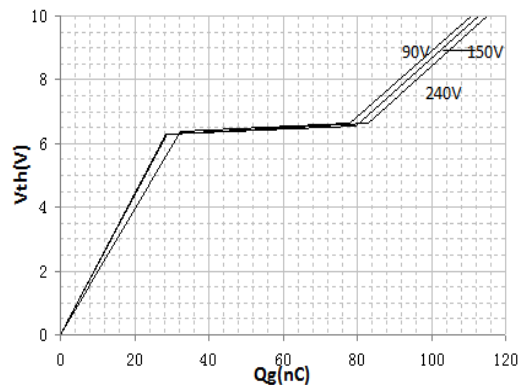




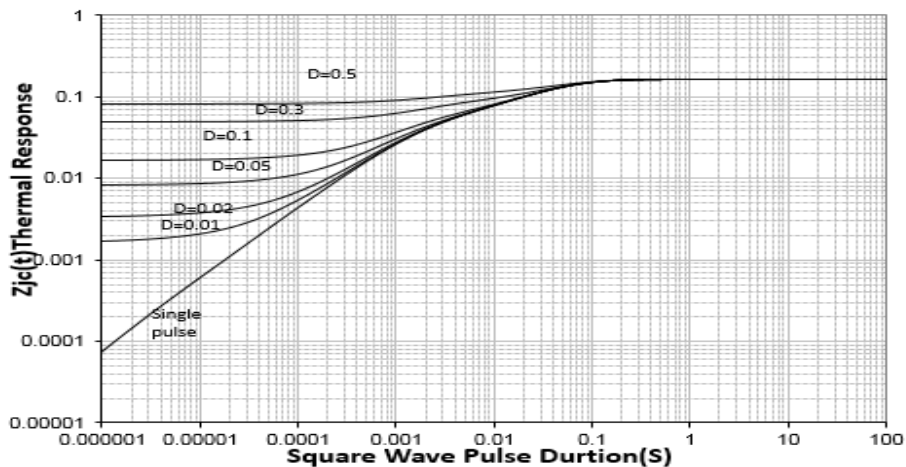
Maximum safe operating area



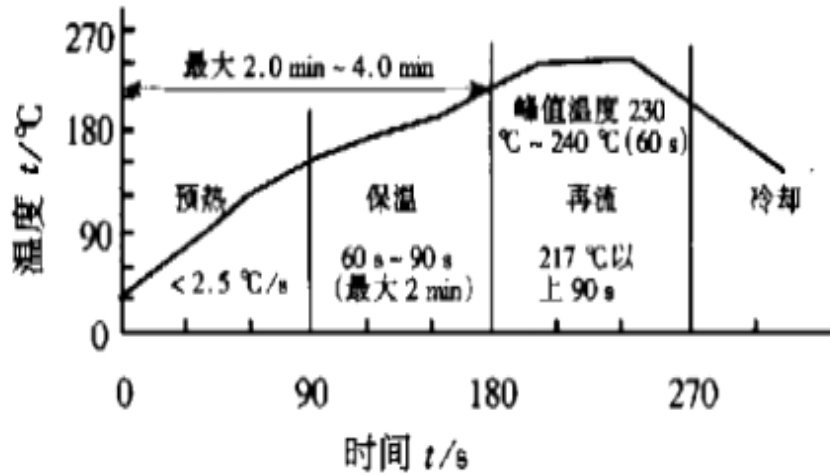
Gate Charge Characteristics



Transient Thermal Response Curve

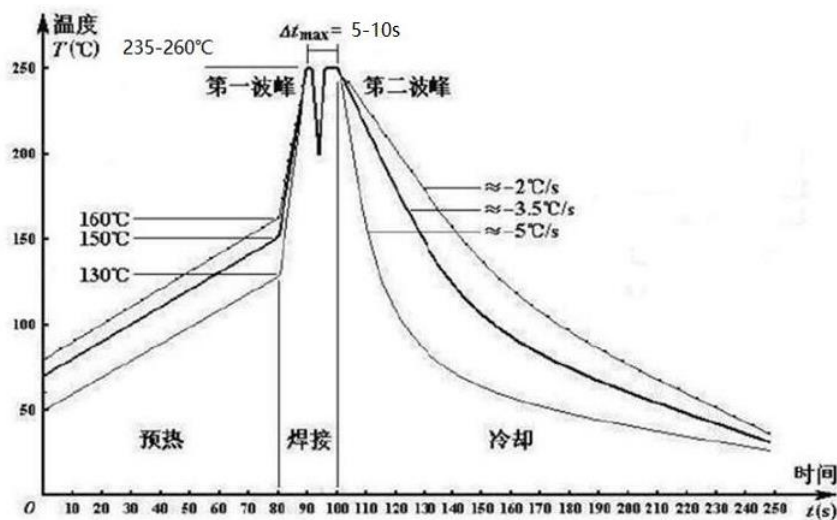


回流焊建议曲线



波峰焊建议曲线

wave soldering



产品工装扭力与塑封料阻燃等级

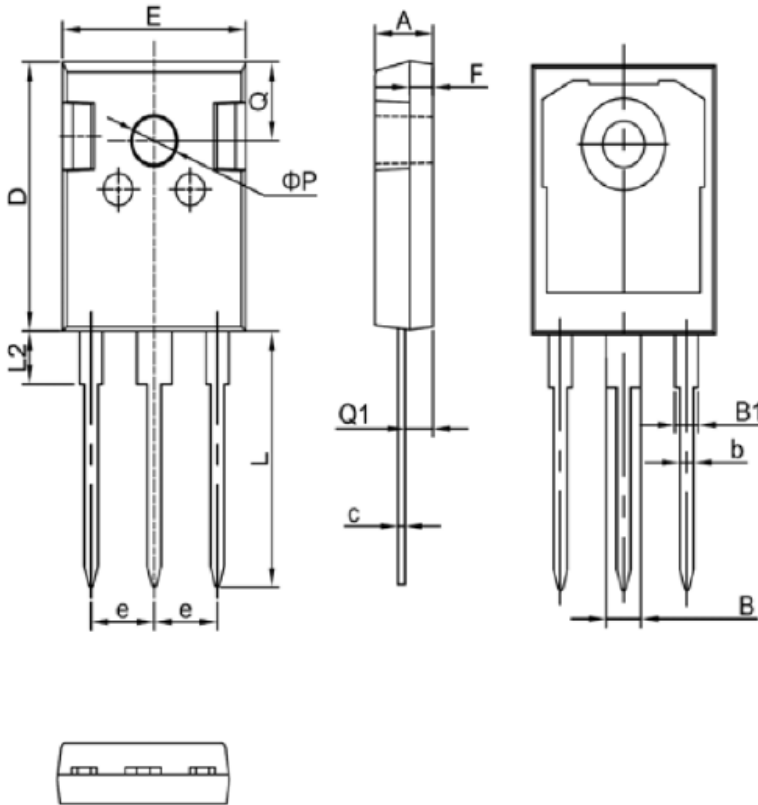
封装外型	建议工装扭力	塑封料阻燃等级
TO-247/TO-3PB	8-10Kgf.cm, 且应保证背面散热片平整。	UL94 V-0



## 外形尺寸 PACKAGE MECHANICAL DATA

TO-247

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

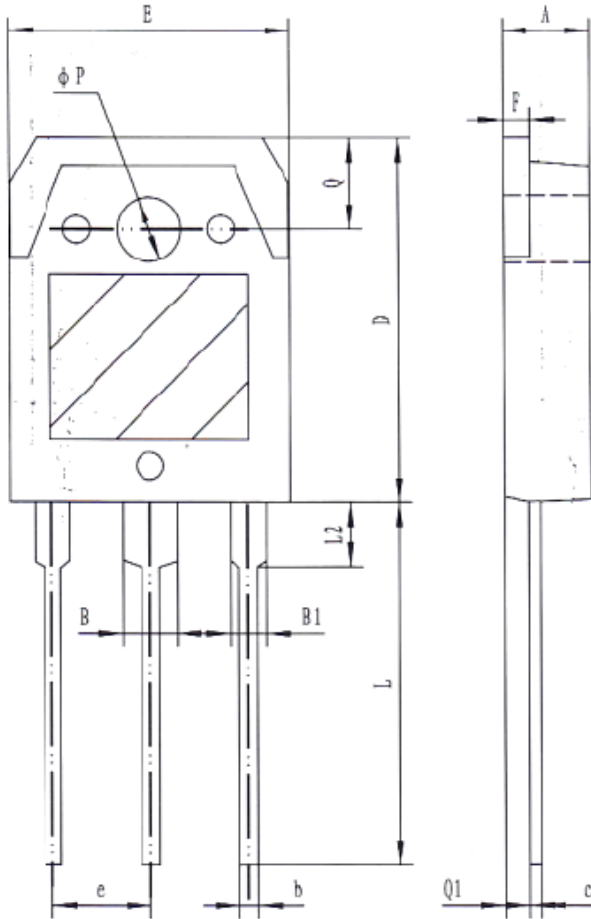




外形尺寸 PACKAGE MECHANICAL DATA

TO-3PB

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45(TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50



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3. 在电路设计时请不要超过器件的绝对最大额定值，否则会影响整机的可靠性。
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