



# JCS86N25T

## 主要参数 MAIN CHARACTERISTICS

$I_D$	86 A
$V_{DSS}$	250 V
$R_{dson} (V_{gs}=10V)$ -MAX	50m $\Omega$
$Q_g$ -Typ	123 nC

### 用途

- 高频开关电源.
- 电子镇流器
- UPS 电源

### 产品特性

- 低栅极电荷
- 低  $C_{rss}$  (典型值 78pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗  $dv/dt$  能力
- RoHS 产品

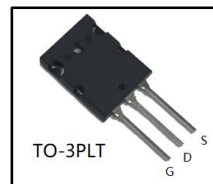
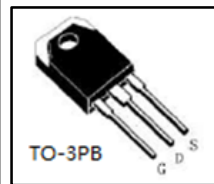
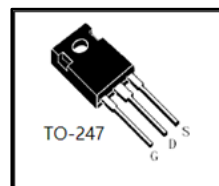
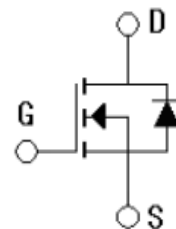
### APPLICATIONS

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

### FEATURES

- Low gate charge
- Low  $C_{rss}$  (typical 78pF)
- 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				耿利红 李大喆 印 记	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	2023-09-06 2023-09-06 Marking	
JCS86N25WT-GE-B	JCS86N25WT-GE-BR	N/A	N/A	JCS86N25WT	TO-247
JCS86N25ABT-GD-B	JCS86N25ABT-GD-BR	N/A	N/A	JCS86N25ABT	TO-3PB
JCS86N25GCT-GC-B	JCS86N25GCT-GC-BR	N/A	N/A	JCS86N25GCT	TO-3PLT



## 绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value		单 位 Unit
		JCS86N25WT/ABT	JCS86N25GCT	
最高漏极-源极直流电压 Drain-Source Voltage	V <sub>DSS</sub>	250		V
连续漏极电流 Drain Current -continuous	I <sub>D</sub> T=25℃ T=100℃	86		A
		52		A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I <sub>DM</sub>	344		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>	2300		mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I <sub>AR</sub>	86		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	5.0		V/ns
耗散功率(Tc=25℃) Power Dissipation	P <sub>D</sub> Tc =25℃ -Derate above 25℃	750	788	W
		6	6.3	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	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	250	-	-	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 $25^\circ C$	-	0.25		V/ $^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=250V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	10	$\mu A$
		$V_{DS}=200V, T_C=125^\circ C$	-	-	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	37	50	m $\Omega$
正向跨导 Forward Transconductance	$g_{fs}$	$V_{DS}=40V, I_D=69A$ (note 4)	-	52.1	-	S
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	$C_{iss}$	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	4401		pF
输出电容 Output capacitance	$C_{oss}$		-	734		pF
反向传输电容 Reverse transfer capacitance	$C_{rss}$		-	78		pF



## 电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics					
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=125V, I_D=69A, R_G=25\Omega, V_{GS}=10V$ (note 4, 5)	-	76.6	ns
上升时间 Turn-On rise time	$t_r$		-	120.6	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$		-	239	ns
下降时间 Turn-Off Fall time	$t_f$		-	184	ns
栅极电荷总量 Total Gate Charge	$Q_g$	$V_{DS}=200V, I_D=69A$ $V_{GS}=10V$ (note 4, 5)	-	123	nC
栅-源电荷 Gate-Source charge	$Q_{gs}$		-	29.4	nC
栅-漏电荷 Gate-Drain charge	$Q_{gd}$		-	71.25	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		$I_S$	-	-	86 A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		$I_{SM}$	-	-	344 A
正向压降 Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=69.0A$	-	-	1.4 V
反向恢复电流 Reverse Recovery Current	$I_{RRM}$	$V_{GS}=0V, I_S=69A$ $di/dt=100A/\mu s$ (note 4)		23.7	A
反向恢复时间 Reverse recovery time	$t_{rr}$		-	267.2	ns
反向恢复电荷 Reverse recovery charge	$Q_{rr}$		-	3204	nC

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max		单 位 Unit
		JCS86N25WT/ABT	JCS86N25GCT	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.165	0.157	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62.5	62.5	$^{\circ}C/W$

注释:

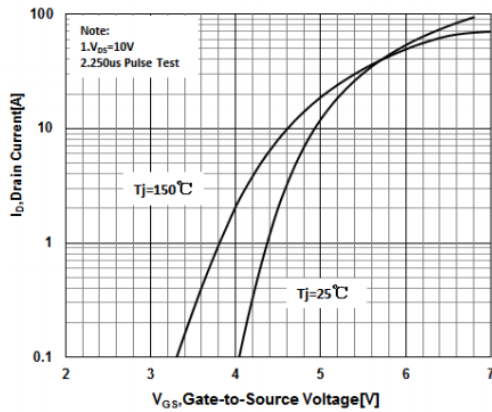
- 1: 脉冲宽度由最高结温限制
- 2:  $L=0.8mH, I_{AS}=69A, V_{DD}=50V, R_G=25\Omega$ , 起始结温  $T_J=25^{\circ}C$
- 3:  $I_{SD}\leq 69A, di/dt\leq 200A/\mu s, V_{DD}\leq BVDSS$ , 起始结温  $T_J=25^{\circ}C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$ , 占空比 $\leq 2\%$
- 5: 基本与工作温度无关

Notes:

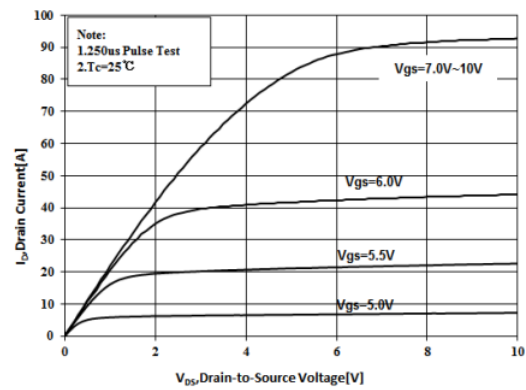
- 1: Pulse width limited by maximum junction temperature
- 2:  $L=0.8mH, I_{AS}=69A, V_{DD}=50V, R_G=25\Omega$ , Starting  $T_J=25^{\circ}C$
- 3:  $I_{SD}\leq 69A, di/dt\leq 100A/\mu s, V_{DD}\leq BVDSS$ , Starting  $T_J=25^{\circ}C$
- 4: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$
- 5: Essentially independent of operating temperature



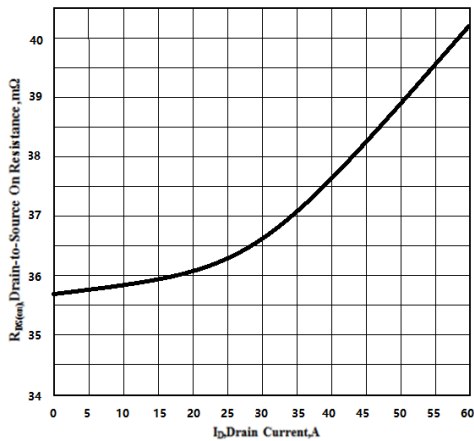
### On-Region Characteristics



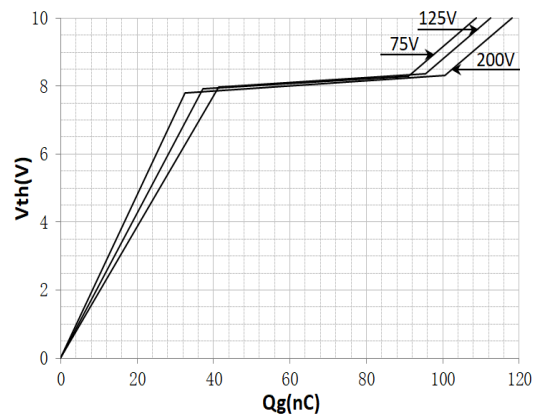
### Transfer Characteristics



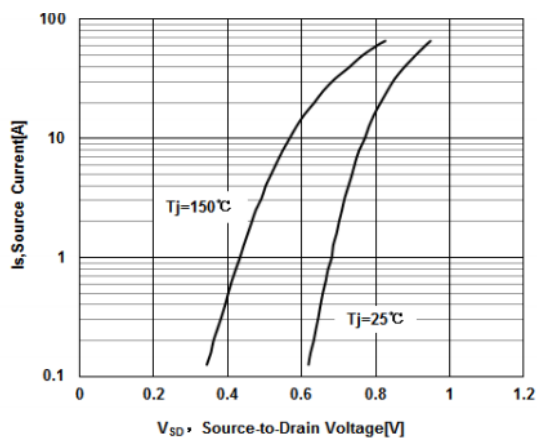
### On-Resistance Variation vs. Drain Current and Gate Voltage



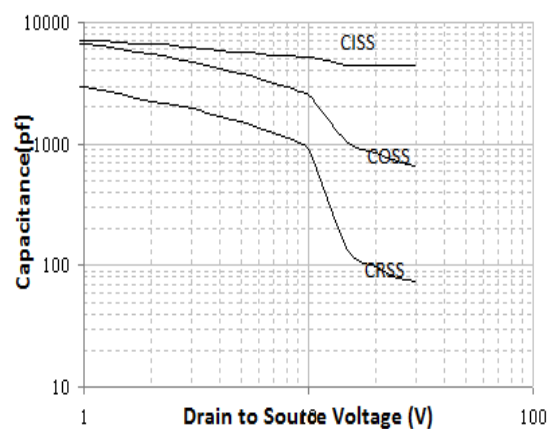
### Gate Charge Characteristics



### Body Diode Forward Voltage Variation vs. Source Current and Temperature

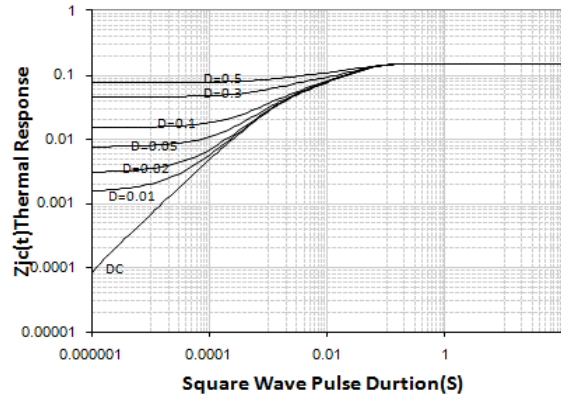
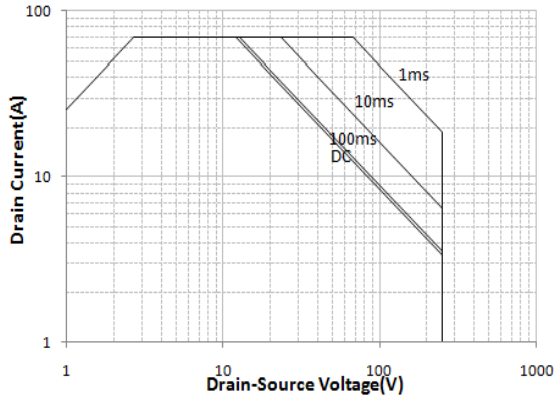


### Capacitance Characteristics

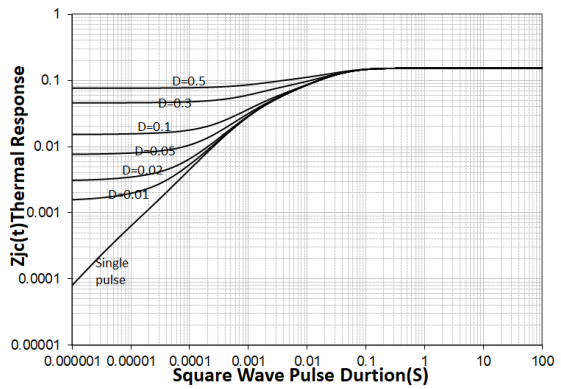
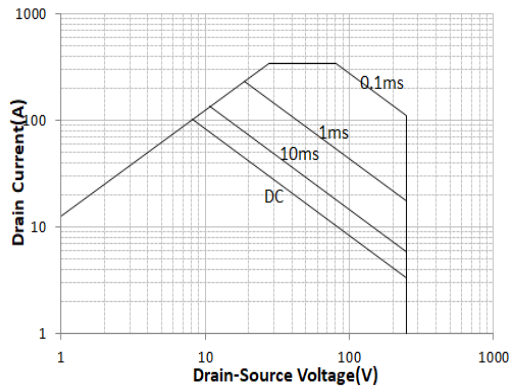




Maximum safe operating area For JCS86N25WT/ABT      Transient Thermal Response Curve For JCS86N25WT/ABT



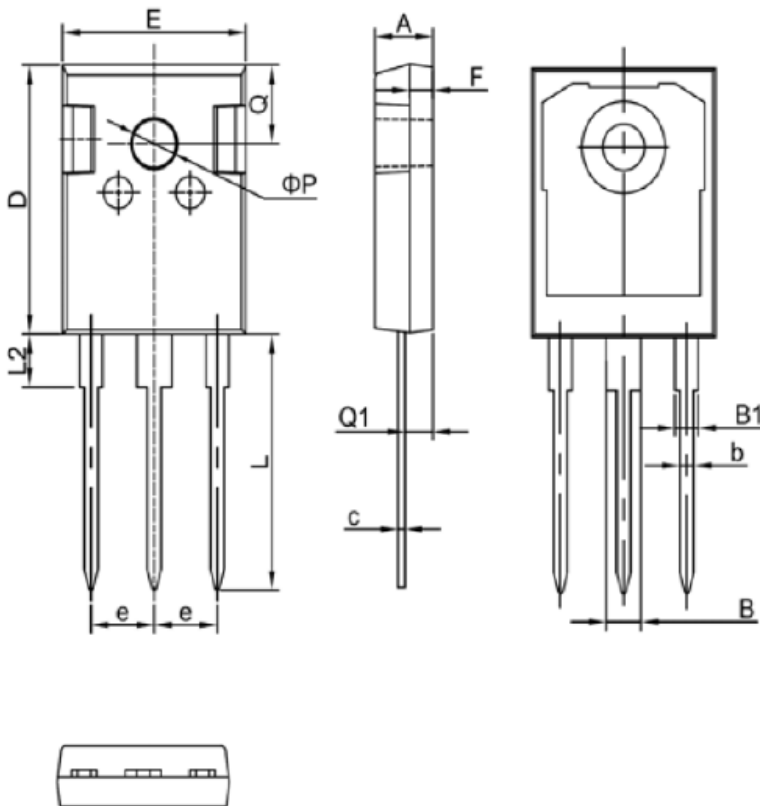
Maximum safe operating area For JCS86N25GCT      Transient Thermal Response Curve For JCS86N25GCT





TO-247

单位 Unit: mm

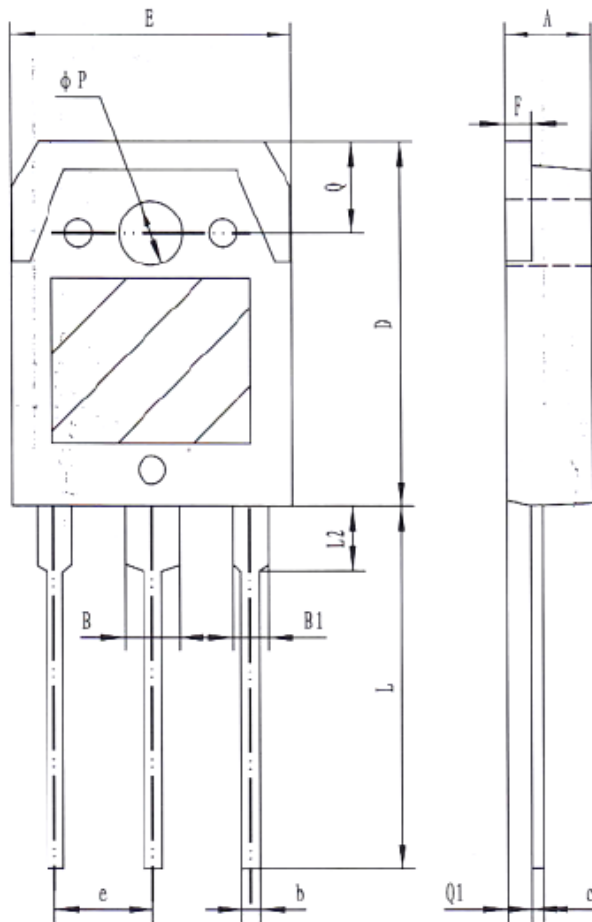


符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70



## TO-3PB

单位 Unit: mm



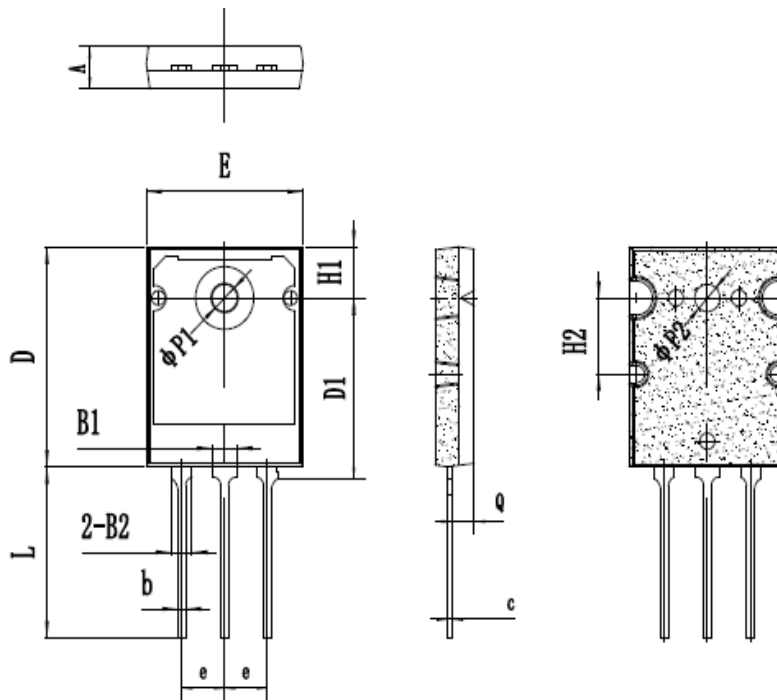
符号 symbol	MIN	MAX
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45(TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50





TO-3PLT

单位 Unit: mm



SYMBOL	mm		
	MIN	NOM	MAX
A	4.90	5.00	5.10
B1	3.00	3.10	3.20
B2	2.50	2.60	2.70
b	0.95	1.00	1.05
c	0.59	0.60	0.61
D	25.90	26.00	26.10
D1	20.98	21.28	21.58
E	19.85	19.95	20.05
e	5.40	5.45	5.50
H1	6.00	6.05	6.10
H2	8.95	9.00	9.05
L	20.00	20.20	20.40
Q	2.75	2.80	2.85
$\phi p1$	3.45	3.50	3.55
$\phi p2$	3.20	3.25	3.30



## 注意事项

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3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
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