



JCS13N90A

主要参数 MAIN CHARACTERISTICS

I_D	13.0 A
V_{DSS}	900 V
$R_{dson} (V_{gs}=10V)$ -MAX	0.75 Ω
Q_g -Typ	66.64 nC

用途

- 高频开关电源.
- 电子镇流器
- LED 电源

APPLICATIONS

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

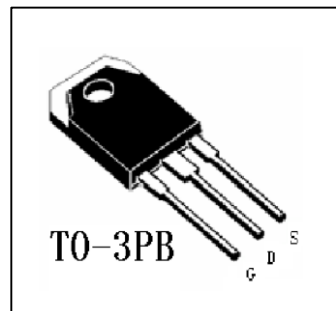
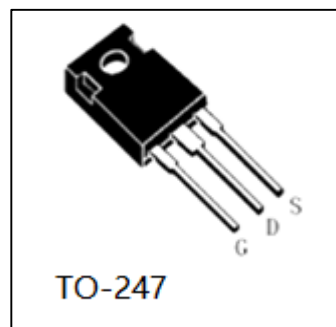
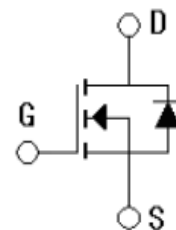
产品特性

- 平面 MOS
- 低栅极电荷
- 低 C_{rss} (典型值 30pF)
- 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

- Planar MOS
- Low gate charge
- Low C_{rss} (typical 30pF)
- 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		
JCS13N90ABA-GD-B	JCS13N90ABA-GD-BR	N/A	N/A	JCS13N90ABA	TO-3PB
JCS13N90WA-GE-B	JCS13N90WA-GE-BR	N/A	N/A	JCS13N90WA	TO-247



绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value		单 位 Unit
		JCS13N90ABA	JCS13N90WA	
最高漏极-源极直流电压 Drain-Source Voltage	V _{DSS}	900		V
连续漏极电流 Drain Current -continuous	I _D T=25°C T=100°C	13.0		A
		7.8		A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I _{DM}	52		A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±30		V
单脉冲雪崩能量 (注 2) Single Pulsed Avalanche Energy (note 2)	E _{AS}	750		mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I _{AR}	13		A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	E _{AR}	270		mJ
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	0.41		V/ns
耗散功率(Tc=25°C) Power Dissipation	P _D Tc =25°C -Derate above 25°C	470		W
		3.76		W/ °C
最高结温及存储温度 Operating and Storage Temperature Range	T _J , T _{STG}	-55~+150		°C

*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
关态特性 Off –Characteristics						
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0V$	900	-	-	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 $25^\circ C$	-	7.2		$V/^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=900V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=720V,$ $T_C=125^\circ C$	-	-	10	μA
正向栅极体漏电流 Gate-body leakage current, forward	I_{GSSF}	$V_{DS}=0V,$ $=30V$	V_{GS}	-	-	100 nA
反向栅极体漏电流 Gate-body leakage current, reverse	I_{GSSR}	$V_{DS}=0V,$ $=-30V$	V_{GS}	-	-	-100 nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS},$ $I_D=250\mu A$	2.0	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=6.5A$	-	0.55	0.75	Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=13A$ (note 4)	-	27	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	2840		pF
输出电容 Output capacitance	C_{oss}		-	290		pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	30		pF



电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_{d(on)}$	V _{DD} =450V, I _D =13A, V _{GS} =10V, R _G =25Ω (note 4, 5)	-	40		ns
上升时间 Turn-On rise time	t_r		-	50.2		ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	234.6		ns
下降时间 Turn-Off Fall time	t_f		-	67.2		ns
栅极电荷总量 Total Gate Charge	Q _g	V _{DS} =720V, V _{GS} =10V, I _D =13A (note 4, 5)	-	66.64		nC
栅-源电荷 Gate-Source charge	Q _{gs}		-	15.68		nC
栅-漏电荷 Gate-Drain charge	Q _{gd}		-	24.92		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	-	-	13	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}	-	-	52	A
正向压降 Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =13.0A	-	-	1.5	V
反向恢复时间 Reverse recovery time	t _{rr}	V _{GS} =0V, I _S =13.0A	-	590	-	ns
反向恢复电荷 Reverse recovery charge	Q _{rr}	di/dt=100A/μs (note 4)	-	6702	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max		单位 Unit
		JCS13N90ABA	JCS13N90WA	
结到管壳的热阻 Thermal Resistance, Junction to Case	R _{th(j-c)}	0.212		°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	R _{th(j-A)}	62.5		°C/W

注释:

- 1: 脉冲宽度由最高结温限制
- 2: L=8.9mH, I_{AS}=13, V_{DD}=100V, R_G=25 Ω, 起始结温 T_J=25°C
- 3: I_{SD}≤13A, di/dt≤200A/μs, V_{DD}≤BVDSS, 起始结温 T_J=25°C
- 4: 脉冲测试: 脉冲宽度≤300μs, 占空比≤2%
- 5: 基本与工作温度无关

Notes:

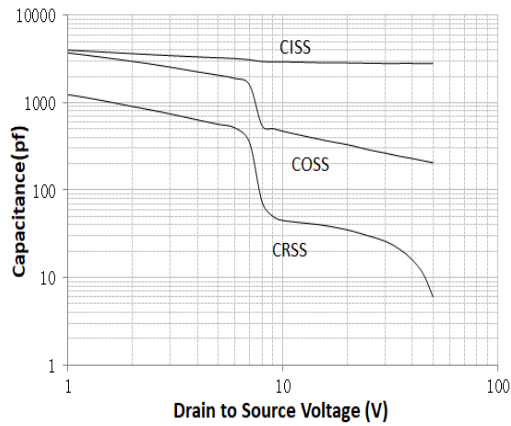
- 1: Pulse width limited by maximum junction temperature
- 2: L=8.9mH, I_{AS}=13A, V_{DD}=100V, R_G=25 Ω, Starting T_J=25°C
- 3: I_{SD}≤13A, di/dt≤200A/μs, V_{DD}≤BVDSS, Starting T_J=25°C
- 4: Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%
- 5: Essentially independent of operating temperature



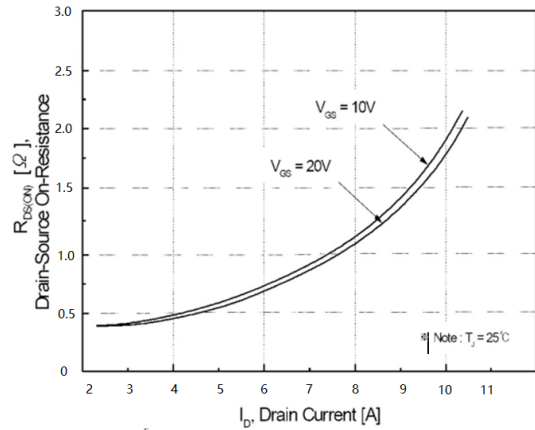


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

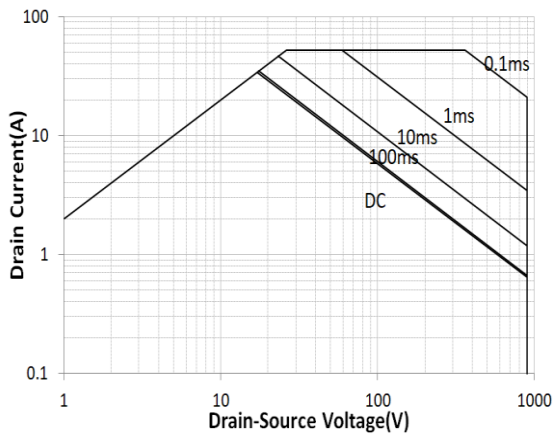
Capacitance Characteristics



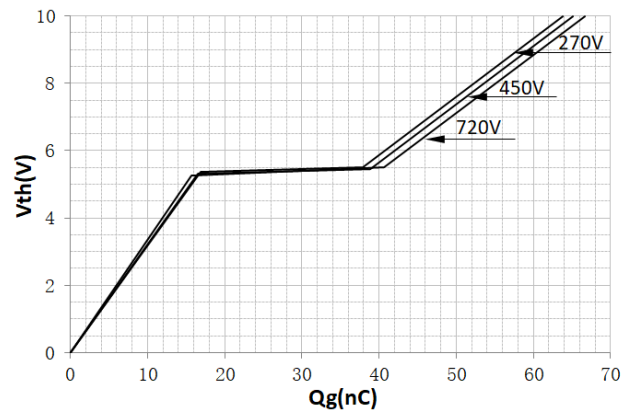
On-Resistance Variation vs. Id



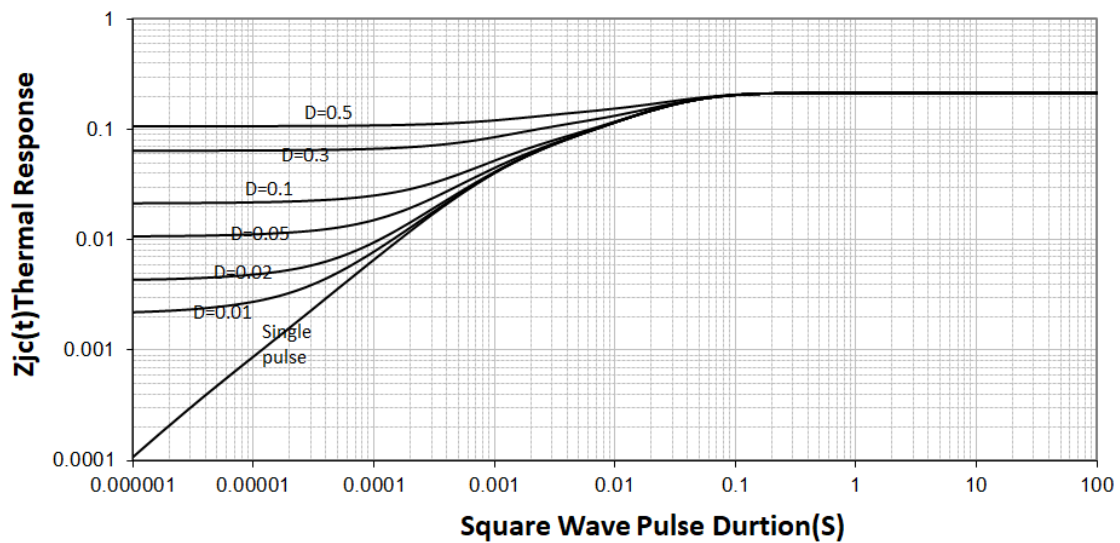
Maximum Safe Operating Area for JCS13N90ABA/WA



Gate charge vs. Vth



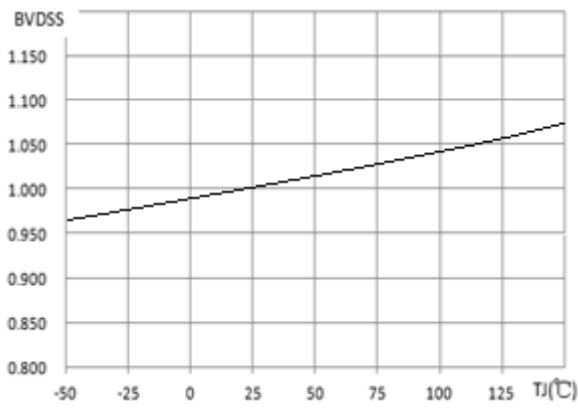
Thermal impedance for JCS13N90ABA/WA



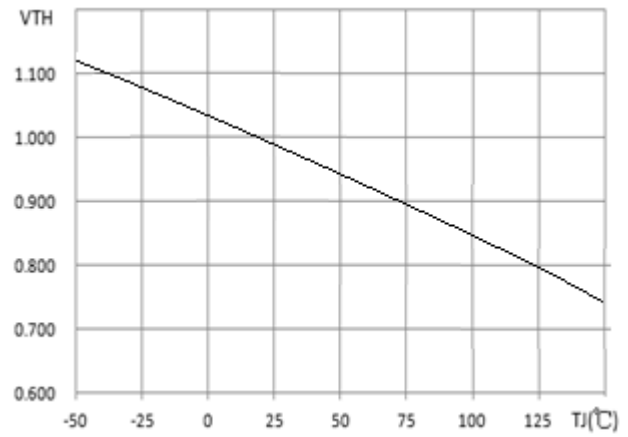


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

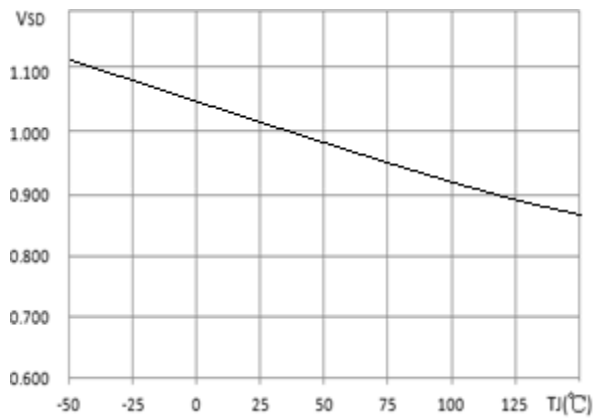
Normalized BV_{DSS} vs. temperature



Normalized V_{TH} vs. temperature



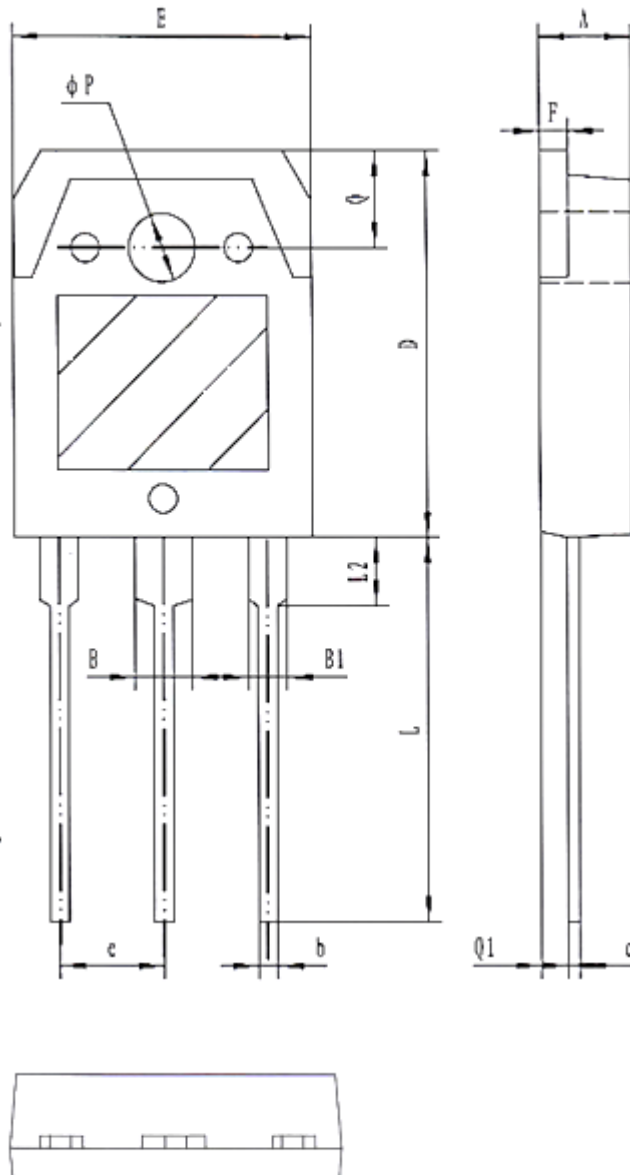
Normalized V_{SD} vs. temperature





TO-3PB

单位 Unit: mm

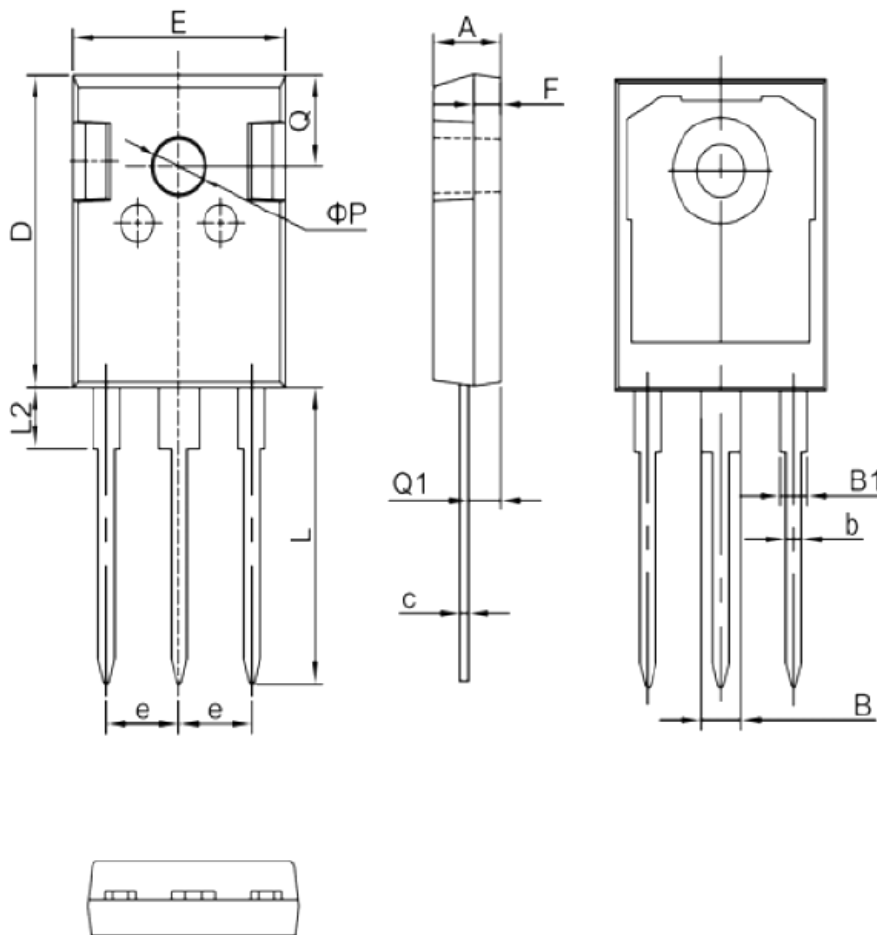


符号 symbol	MIN	MAX
A	4.60	5.00
B	2.90	3.20
B1	1.90	2.20
b	0.90	1.10
c	0.50	0.70
D	19.40	20.40
E	15.40	15.80
e	5.45(TYP)	
F	1.40	1.60
L	19.50	20.50
L2	3.30	3.70
Q	4.90	5.10
Q1	1.30	1.50
P	3.10	3.50



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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



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