



JCS9N95A

主要参数 MAIN CHARACTERISTICS

I_D	9.0 A
V_{DSS}	950 V
$R_{dson} (V_{gs}=10V)$ -MAX	1.3 Ω
Q_g -Typ	39.92

用途

- 高频开关电源.
- 电子镇流器
- LED 电源

产品特性

- 平面 MOS
- 低栅极电荷
- 低 C_{rss} (典型值 17pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗 dv/dt 能力
- RoHS 产品

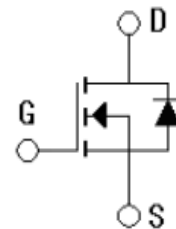
APPLICATIONS

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

FEATURES

- Planar MOS
- Low gate charge
- Low C_{rss} (typical 17pF)
- 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 Non halogen-Tube	有卤-编带 Halogen-Reel	无卤-编带 Non halogen-Reel		
JCS9N95FA-F1-B	JCS9N95FA-F1-BR	N/A	N/A	JCS9N95FA	TO-220MF-K1
JCS9N95CA-C-B	JCS9N95CA-C-BR	N/A	N/A	JCS9N95CA	TO-220C
JCS9N95WA - GE -B	JCS9N95WA - GE -BR	N/A	N/A	JCS9N95WA	TO-247

绝对最大额定值 ABSOLUTE RATINGS ($T_c=25^\circ\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value		单 位 Unit
		JCS9N95FA	JCS9N95WA/CA	
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSS}	950		V
连续漏极电流 Drain Current -continuous	I_D $T=25^\circ\text{C}$ $T=100^\circ\text{C}$	9.0		A
		5.4		A
最大脉冲漏极电流 (注 1) Drain Current - pulse (note 1)	I_{DM}	36		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}	810		mJ
雪崩电流 (注 1) Avalanche Current (note 1)	I_{AR}	9		A
重复雪崩能量 (注 1) Repetitive Avalanche Current (note 1)	E_{AR}	27.7		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	4.1		V/ns
耗散功率($T_c=25^\circ\text{C}$) Power Dissipation	P_D $T_c=25^\circ\text{C}$ -Derate above 25°C	32	320	W
		0.26	2.56	W/ $^\circ\text{C}$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55~+150		$^\circ\text{C}$

*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}	$I_D=250\mu A, V_{GS}=0V$	950	-	-	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°C	-	7.6		V/°C
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=950V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	1	μA
		$V_{DS}=760V,$ $T_C=125^\circ C$	-	-	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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4.5A$	-	1.10	1.3	Ω
正向跨导 Forward Transconductance	g_{fs}	$V_{DS}=40V, I_D=9A$ (note 4)	-	16.8	-	S
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C_{iss}	$V_{DS}=25V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	1622		pF
输出电容 Output capacitance	C_{oss}		-	170		pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	17		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} =475V, I _D =9A, V _{GS} =10V, R _G =25Ω (note 4, 5)	-	23.2		ns
上升时间 Turn-On rise time	t_r		-	41.4		ns
延迟时间 Turn-Off delay time	$t_{d(off)}$		-	131.6		ns
下降时间 Turn-Off Fall time	t_f		-	54.6		ns
栅极电荷总量 Total Gate Charge	Q _g	V _{DS} =760V, V _{GS} =10V, I _D =9A (note 4, 5)	-	39.92		nC
栅-源电荷 Gate-Source charge	Q _{gs}		-	8.44		nC
栅-漏电荷 Gate-Drain charge	Q _{gd}		-	14.6		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	-	-	9	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		I _{SM}	-	-	36	A
正向压降 Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9.0A	-	-	1.5	V
反向恢复时间 Reverse recovery time	t _{rr}	V _{GS} =0V, I _S =9.0A dI _F /dt=100A/μs (note 4)	-	550	-	ns
反向恢复电荷 Reverse recovery charge	Q _{rr}		-	3450	-	nC

热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max		单 位 Unit
		JCS9N95FA	JCS9N95WA/CA	
结到管壳的热阻 Thermal Resistance, Junction to Case	R _{th(j-c)}	3.25	0.325	°C/W
结到环境的热阻 Thermal Resistance, Junction to Ambient	R _{th(j-A)}	62.5	40	°C/W

注释:

- 1: 脉冲宽度由最高结温限制
- 2: L=20mH, I_{AS}=9A, V_{DD}=100V, R_G=25 Ω, 起始结温 T_J=25°C
- 3: I_{SD}≤9A, dv/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

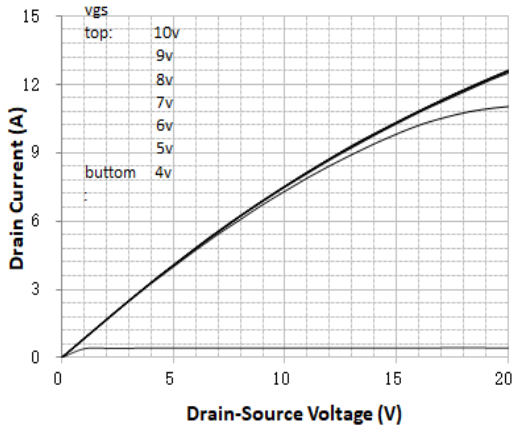
Notes:

- 1: Pulse width limited by maximum junction temperature
- 2: L=20mH, I_{AS}=9A, V_{DD}=100V, R_G=25 Ω, Starting T_J=25°C
- 3: I_{SD}≤9A, dv/dt≤100A/μs, V_{DD}≤BVDSS, Starting T_J=25°C
- 4: Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%
- 5: Essentially independent of operating temperature

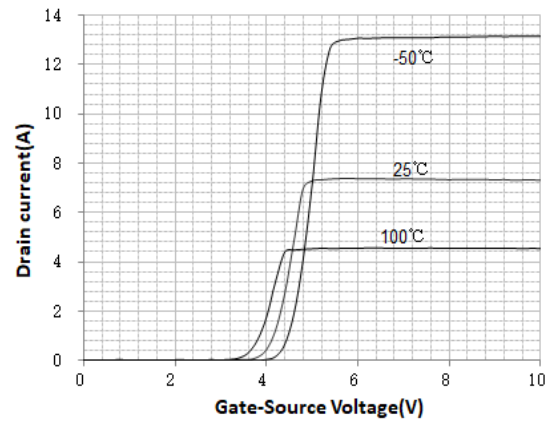


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

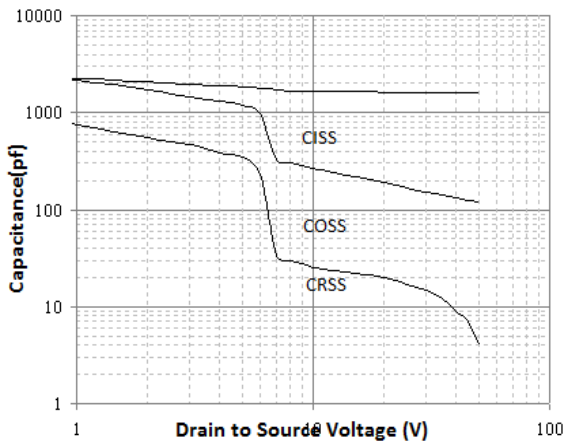
Output characteristics



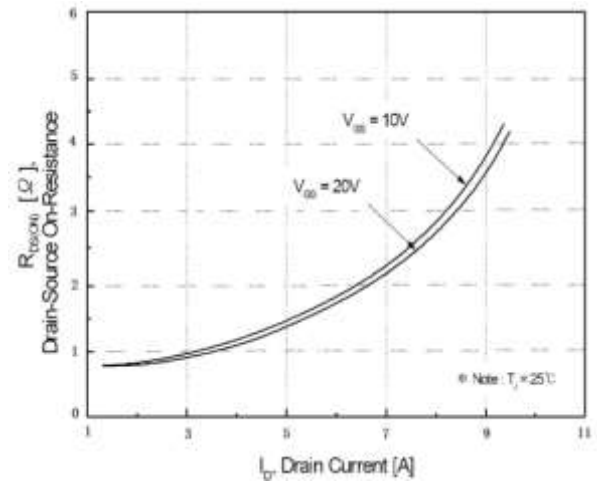
Transfer characteristics



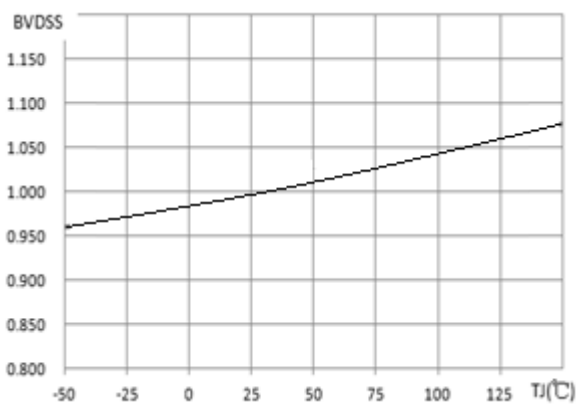
Capacitance Characteristics



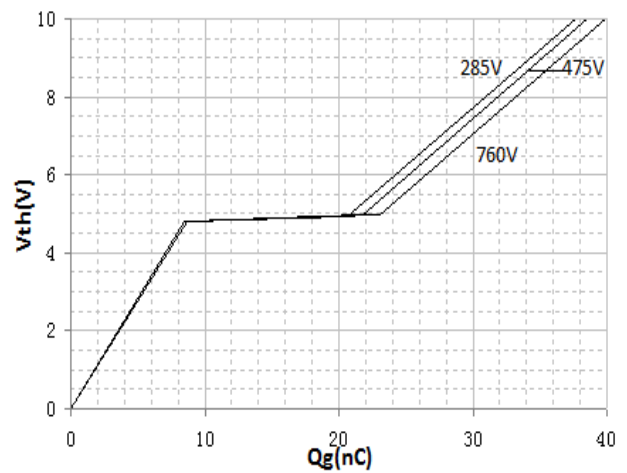
On-Resistance Variation vs. Id



Normalized BVDSS vs. temperature



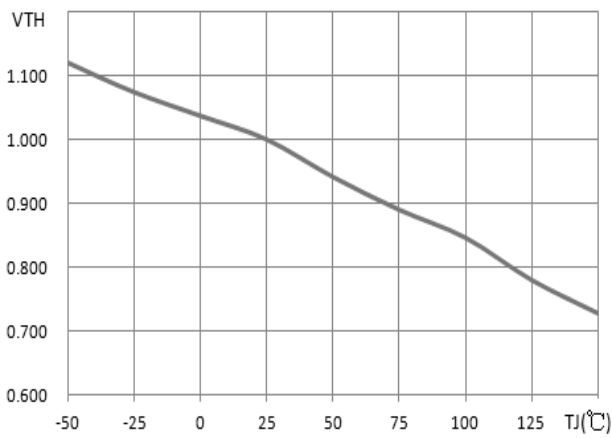
Gate charge vs. Vth



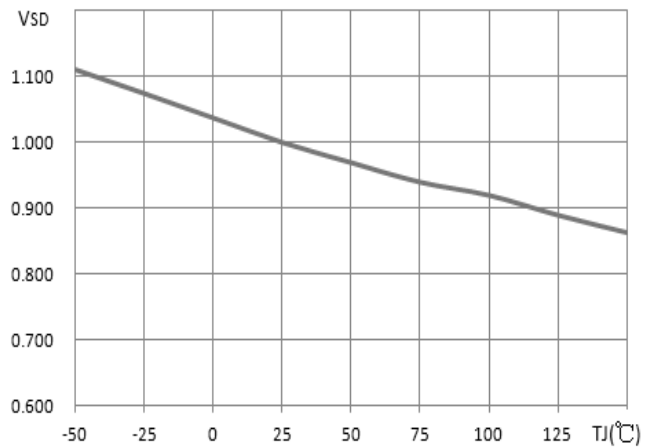


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

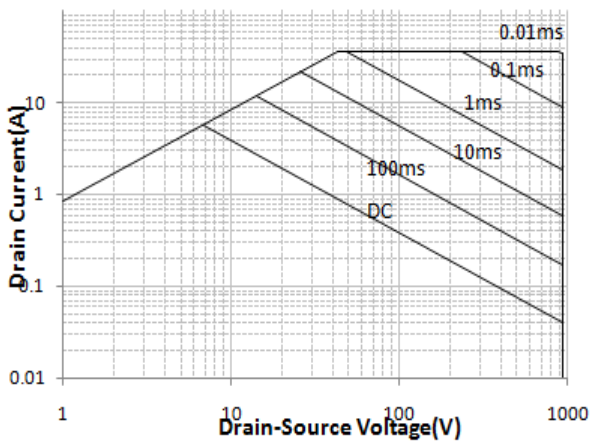
Normalized VTH vs. temperature



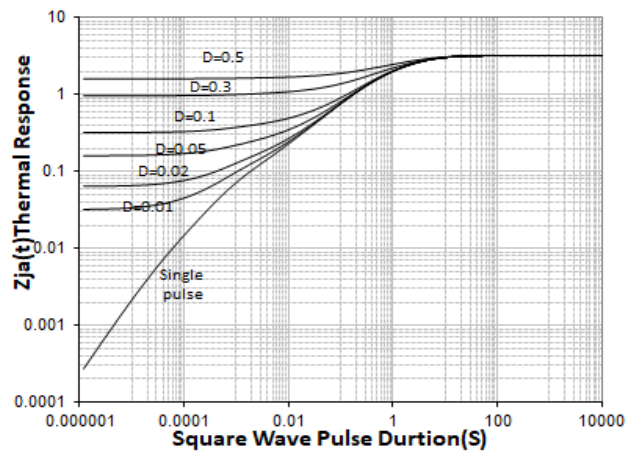
Normalized VSD vs. temperature



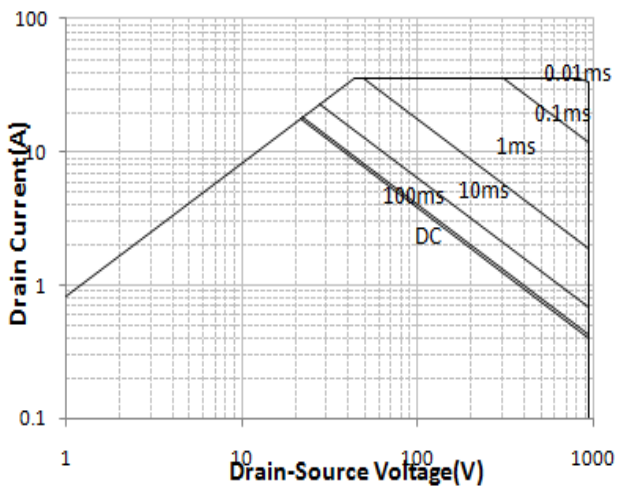
Maximum Safe Operating Area for JCS9N95FA



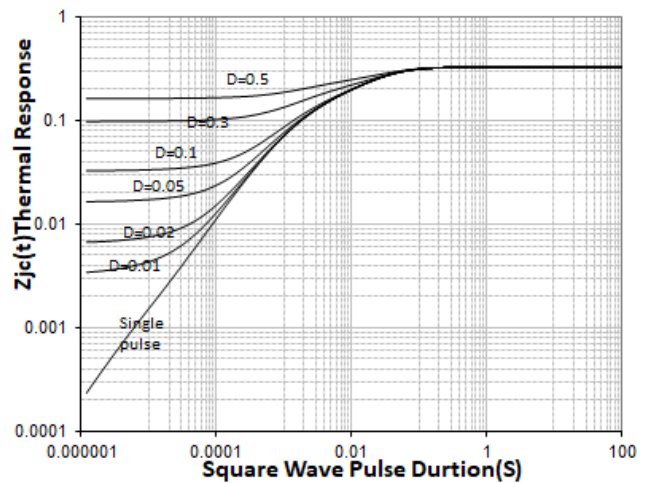
Thermal impedance for JCS9N95FA



Maximum Safe Operating Area for JCS9N95WA/CA



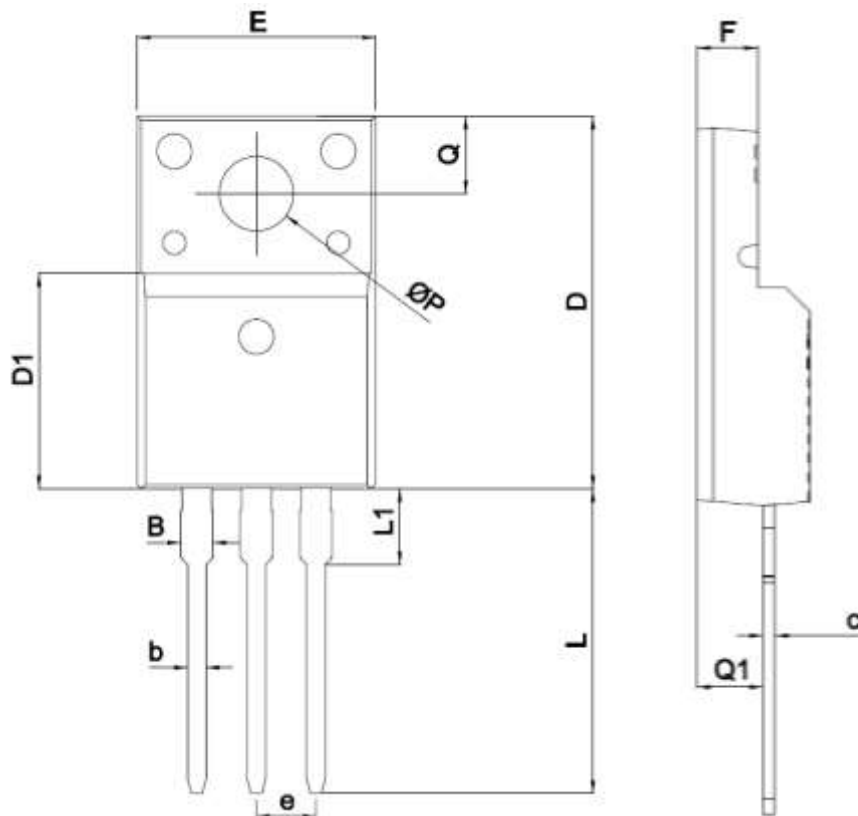
Thermal impedance for JCS9N95WA/CA





TO-220MF-K1

单位 Unit: mm



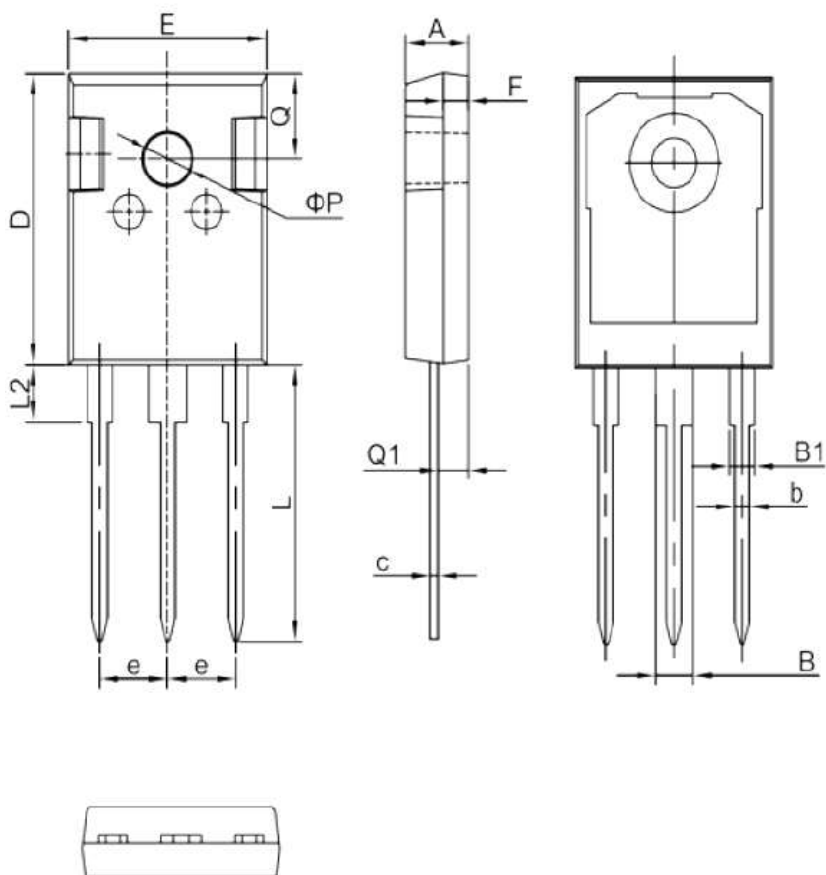
SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B	1.22	1.47
b	0.7	0.9
c	0.45	0.60
D	15.6	16.1
D1	9.0	9.3
e	2.54TYPE	
E	9.9	10.4
F	2.3	2.8
L	12.6	13.3
L1	3.1	3.4
Q	3.2	3.4
Q1	2.6	2.9
ΦP	3.0	3.5





TO-247

单位 Unit: mm

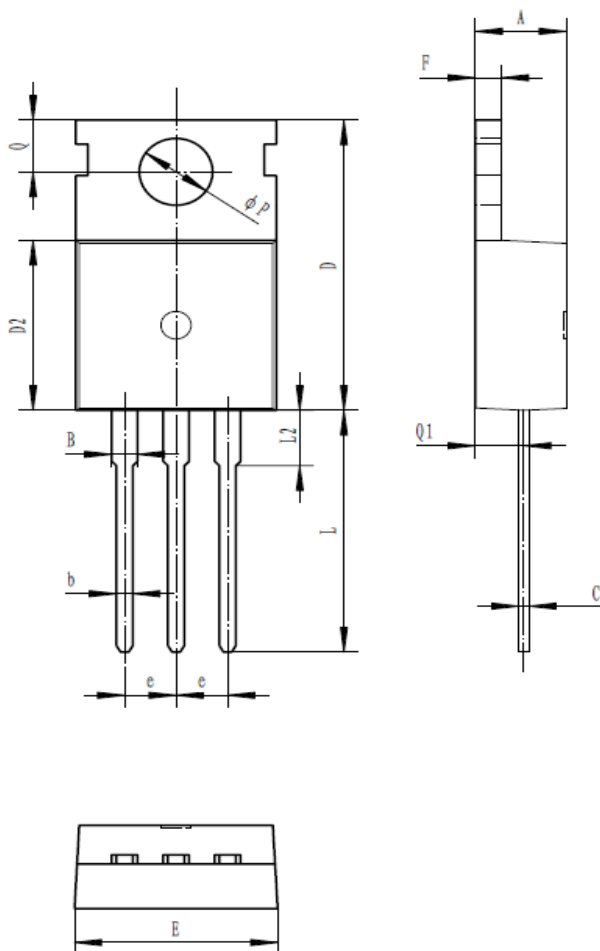


符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70



TO-220C

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.30	4.70
B	1.22	1.40
b	0.70	0.95
c	0.40	0.65
D	15.20	16.20
D2	9.00	9.40
E	9.70	10.10
e	2.39	2.69
F	1.25	1.40
L	12.60	13.60
L2	2.80	3.20
Q	2.60	3.00
Q1	2.20	2.60
P	3.50	3.80



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