



# CP1610N3B

## 主要参数 MAIN CHARACTERISTICS

$I_T(RMS)$	16A
$V_{DRM}$	800V
$I_{GT}(I,II,III)$	<10mA

### 用途

- 交流开关
- 相位控制

### APPLICATIONS

- AC switching
- Phase control

### 产品特性

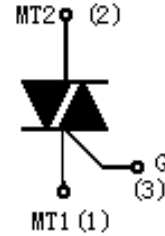
- 平面工艺芯片，高可靠性和一致性
- 三象限可控硅，触发电流的一致性好
- 环保 RoHS 产品
- 150℃ 高结温产品

### FEATURES

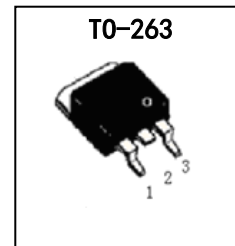
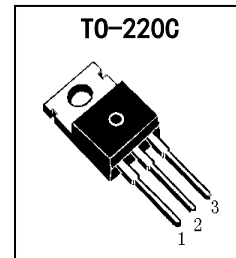
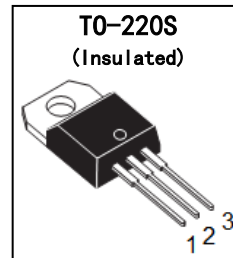
- The planar process chip for reliability and uniform
- Uniform gate trigger currents in three quadrants
- RoHS products
- 150℃ High operating junction temperature

## 订货信息 ORDER MESSAGES

## 封装 Package



序号 Pin	引线名称 Description
1	主电极 1 MT1
2	主电极 2 MT2
3	门极 G



订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管	无卤-条管	有卤-编带	无卤-编带		
Halogen-Tube	Halogen-Free-Tube	Halogen-Reel	Halogen-Free-Reel		
CP1610N3B-CB-B	CP1610N3B-CB-BR	N/A	N/A	CP1610N3B	TO-220S
CP1610N3B-C-B	CP1610N3B-C-BR	N/A	N/A	CP1610N3B	TO-220C
CP1610N3B-S-B	CP1610N3B-S-BR	CP1610N3B-S-A	CP1610N3B-S-AR	CP1610N3B	TO-263



**概述 GENERAL DESCRIPTION**

CP1610N3B是平面可控硅芯片结构的三象限双向晶闸管，产品在第四象限不可触发，具有较高的使用可靠性。可适用于容易出现较高 $dV/dt$ 或 $dI/dt$ 的交流全波控制线路中，特别推荐应用与电感性负载控制（如电机控制线路）。器件封装形式有TO-220S(引线与散热片绝缘)、TO-220C和TO-263。

CP1610N3B are The planar process chip three quadrant triacs, designed for high performance full-wave ac control applications where high static and dynamic  $dV/dt$  and high  $dI/dt$  can occur. They are specially recommended for use on inductive loads such as motor control circuits. Available packages are TO-220S (internally insulated)、TO-220C and TO-263.

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

项 目 Parameter	符 号 Symbol	试 验 条 件 Condition	数 值 Value	单 位 Unit
重复峰值断态电压 Repetitive peak off-state voltage	$V_{DRM}$		$\pm 800$	V
通态方均根电流 On-state RMS current	$I_{T(RMS)}$	full sine wave,	16	A
非重复浪涌峰值通态电流 Non-repetitive surge peak on-state current	$I_{TSM}$	full sine wave , $t=20\text{ms}$	120	A
		full sine wave , $t=16.7\text{ms}$	126	A
	$I^2t$	$t=10\text{ms}$	72	$\text{A}^2\text{s}$
通态电流临界上升率 Repetitive rate of rise of on-state current after triggering	$dI/dt$	$I_{TM}=20\text{A}$ , $I_G=0.2\text{A}$ , $dI_G/dt=0.2\text{A}/\mu\text{s}$	100	$\text{A}/\mu\text{s}$
峰值门极电流 Peak gate current	$I_{GM}$		4	A
峰值门极电压 Peak gate voltage	$V_{GM}$		5	V
峰值门极功率 Peak gate power	$P_{GM}$		5	W
平均门极功率 Average gate power	$P_{G(AV)}$	over any 20ms period	1	W
存储温度 Storage temperature	$T_{stg}$		-40~150	$^\circ\text{C}$
操作结温 Operation junction temperature	$T_{VJ}$		-40~150	$^\circ\text{C}$



电特性 ELECTRICAL CHARACTERISTIC (T<sub>c</sub>=25°C)

项 目 Parameter	符 号 Symbol	测 试 条 件 Condition	最小 Min	典型 Typ	最大 Max	单位 Unit
峰值重复断态电流 Peak Repetitive Blocking Current	I <sub>DRM</sub>	V <sub>DM</sub> =V <sub>DRM</sub> , T <sub>j</sub> =150°C, gate open		--	2.0	mA
峰值通态电压 Peak on-state voltage	V <sub>TM</sub>	I <sub>TM</sub> =20A, T <sub>j</sub> =25°C,		--	1.5	V
门极触发电流 Gate trigger current	I <sub>GT</sub>	V <sub>DM</sub> =12V, MT1(-),MT2(+),G(+)		--	10	mA
		R <sub>L</sub> =100 Ω, MT1(-),MT2(+),G(-)		--	10	mA
		Ω, MT1(+),MT2(-),G(-)		--	10	mA
门极触发电压 Gate trigger voltage	V <sub>GT</sub>	V <sub>DM</sub> =12V, MT1(-),MT2(+),G(+)		-	1.5	V
		R <sub>L</sub> =100 Ω, MT1(-),MT2(+),G(-)		-	1.5	V
		Ω, MT1(+),MT2(-),G(-)		-	1.5	V
维持电流 Holding current	I <sub>H</sub>	V <sub>DM</sub> =12V, I <sub>GT</sub> =0.1A		--	25	mA
擎住电流 Latching current	I <sub>L</sub>	V <sub>DM</sub> =12V, MT1(-),MT2(+),G(+)		-	25	mA
		I <sub>GT</sub> =0.1A, MT1(-),MT2(+),G(-)		-	30	mA
		MT1(+),MT2(-),G(-)		-	30	mA
断态临界电压上升率 Rise of off- state voltage	dV/dt	V <sub>DM</sub> =67% V <sub>DRM(MAX)</sub> , T <sub>j</sub> =150°C, gate open	10	-	-	V/ μ s
门极开通时间 Gate controlled turn-on time	tgt	I <sub>TM</sub> =20A, V <sub>DM</sub> =V <sub>DRM(MAX)</sub> , I <sub>G</sub> =0.1A, dI <sub>G</sub> /dt=5A/ μ S	-	2	-	μ s

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	条 件 Condition	最小 Min	典型 Typ	最大 Max	单位 Unit
结到管壳的热阻 Thermal resistance junction to case	R <sub>th(j-c)</sub>	full cycle(TO-220S)			1.9	°C/W
	R <sub>th(j-c)</sub>	full cycle(TO-220C/TO-263)			1.2	°C/W

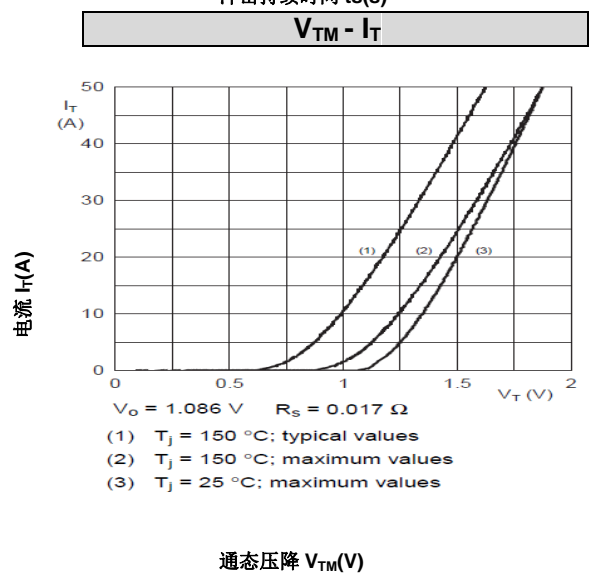
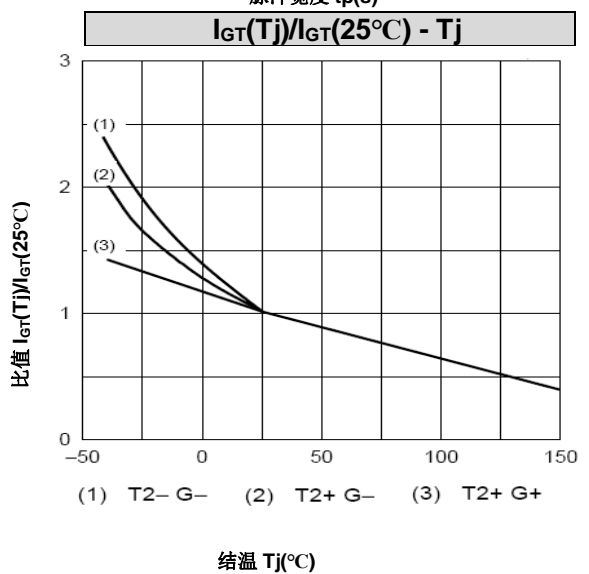
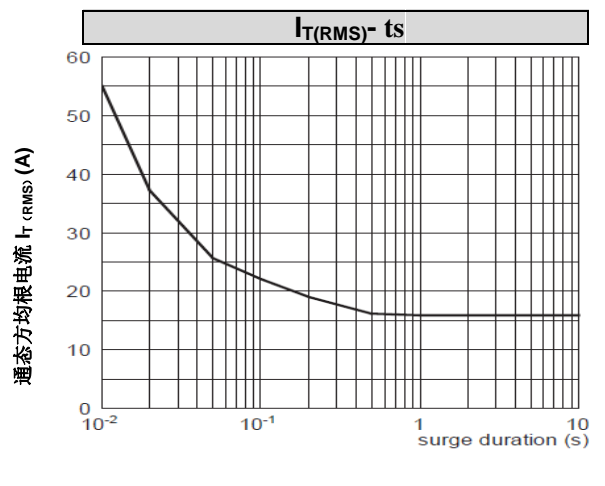
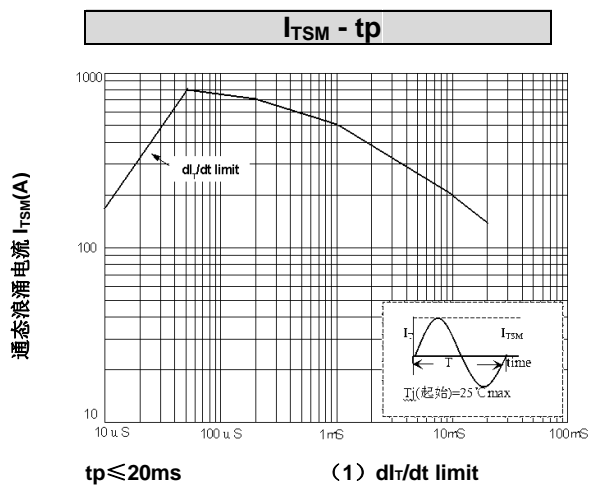
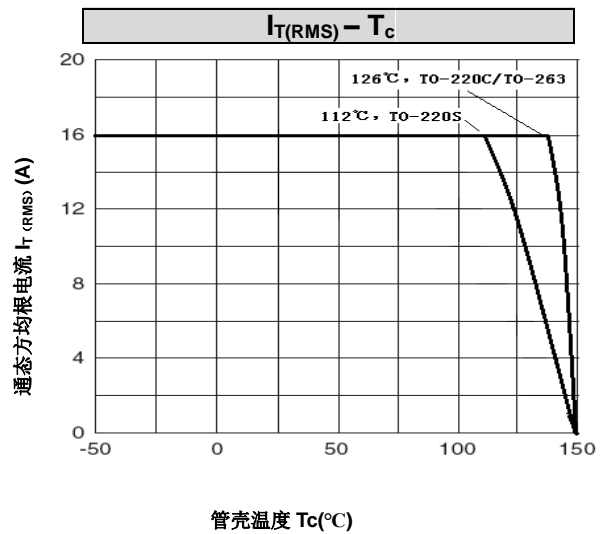
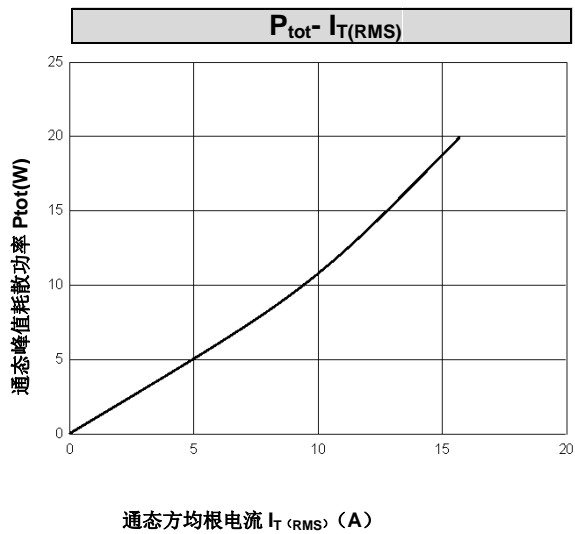
## 电绝缘特性 ELECTRICAL ISOLATION

项 目 Parameter	符 号 Symbol	条 件 Condition	数 值 Value	单 位 Unit
绝缘电压 Isolation voltage	V <sub>ISOL</sub>	1 minute, leads to mounting tab TO-220S.	2000	V





特征曲线 ELECTRICAL CHARACTERISTICS (curves)

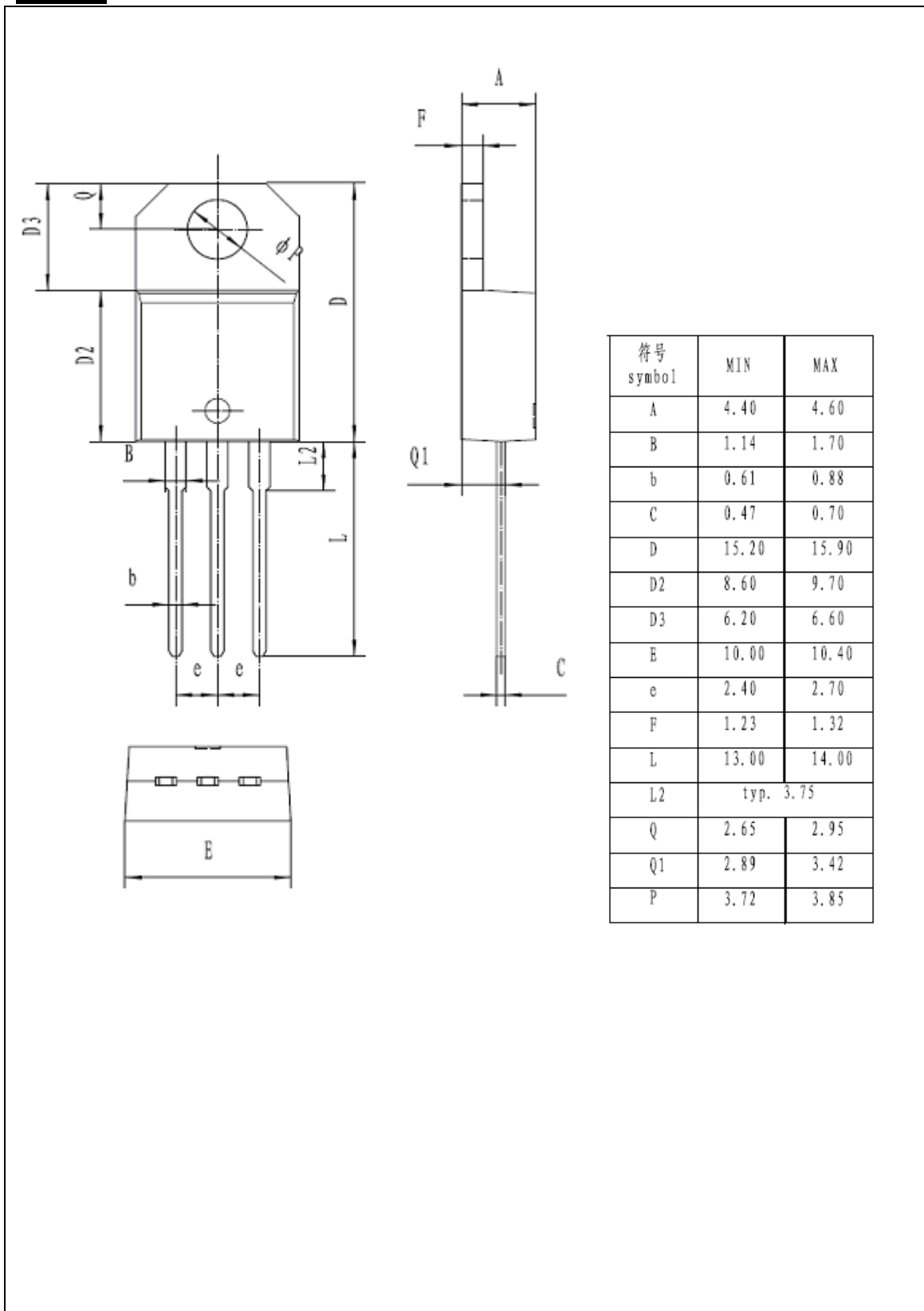




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220S

单位 Unit : mm

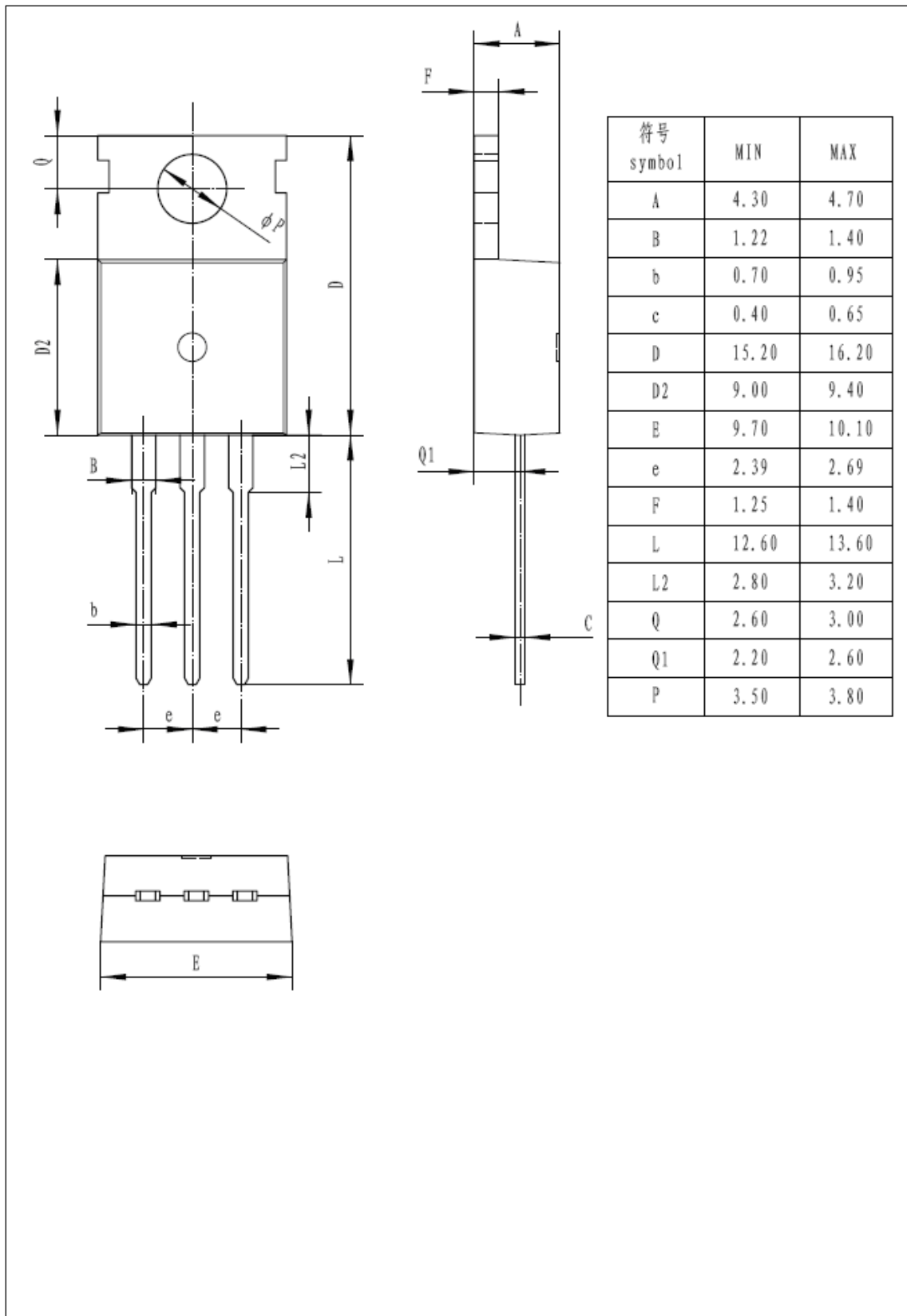




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit : mm

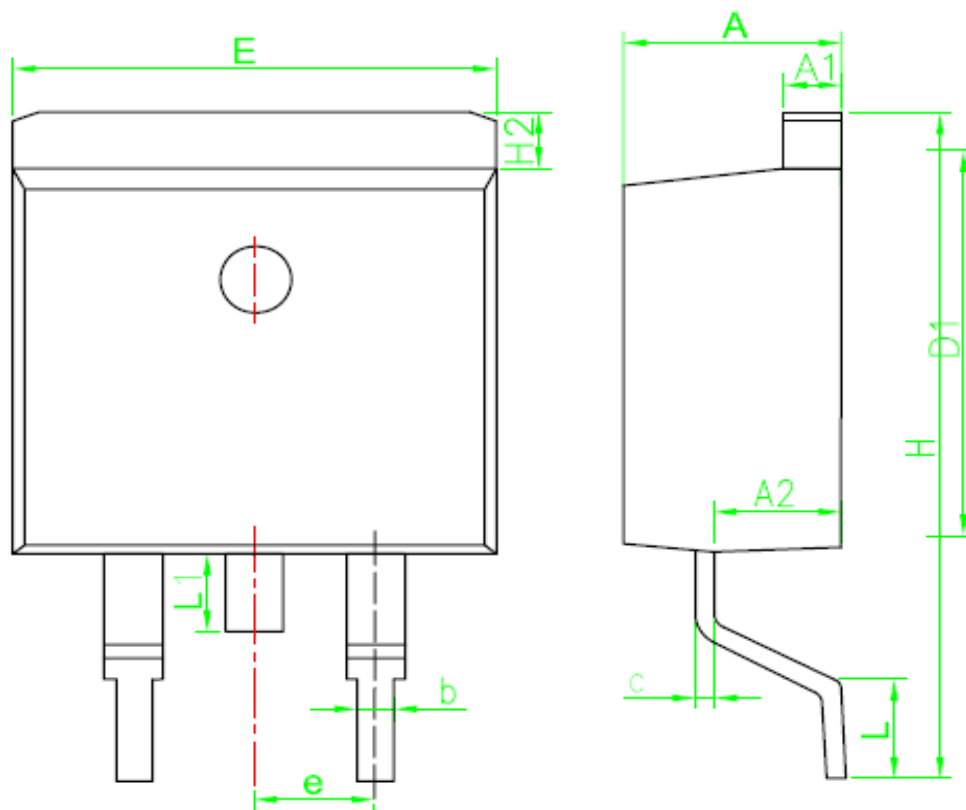




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-263

单位 Unit : mm



SYMBOL	MM	
	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70





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