



CS1610N3B

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

产品特性

- 玻璃钝化芯片，高可靠性和一致性
- 三象限可控硅，触发电流的一致性
- 环保 RoHS 产品

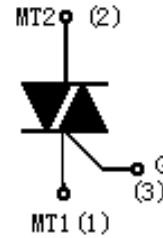
APPLICATIONS

- AC switching
- Phase control

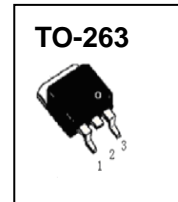
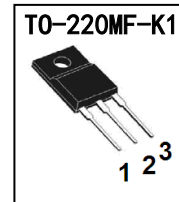
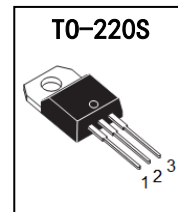
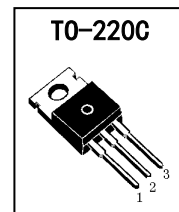
FEATURES

- Glass-passivated mesa chip for reliability and uniform
- Uniform gate trigger currents in three quadrants
- RoHS products

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



订货信息 ORDER MESSAGES

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-袋装 Halogen-Bag	有卤-袋装 Halogen-Free-Bag	CS1610N3B	TO-220C		
CS1610N3B-C-B	CS1610N3B-C-BR	CS1610N3B-C-C	CS1610N3B-C-CR				
有卤-条管 Halogen-Tube	无卤-条管 halogen-Free-Tube	有卤-袋装 Halogen-Bag	有卤-袋装 Halogen-Free-Bag			CS1610N3B	TO-220S
CS1610N3B-CB-B	CS1610N3B-CB-BR	CS1610N3B-CB-C	CS1610N3B-CB-CR				
有卤-条管 Halogen-Tube	无卤-条管 halogen-Free-Tube	有卤-袋装 Halogen-Bag	有卤-袋装 Halogen-Free-Bag	CS1610N3B	TO-220MF-K1		
CS1610N3B-F1-B	CS1610N3B-F1-BR	CS1610N3B-F1-C	CS1610N3B-F1-CR				
有卤-条管 Halogen-Tube	无卤-条管 halogen-Free-Tube	有卤-袋装 Halogen-Bag	有卤-袋装 Halogen-Free-Bag			CS1610N3B	TO-263
CS1610N3B-S-B	CS1610N3B-S-BR	CS1610N3B-S-C	CS1610N3B-S-CR				

**概述 GENERAL DESCRIPTION**

CS1610N3B是玻璃钝化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-220C、TO-220S（引线与散热片绝缘）、TO-263、TO-220MF-K1（塑料全封装）。

CS1610N3B are Glass passivated 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-220C、TO-220S (internally insulated)、TO-263、TO-220MF-K1 (plastic envelope).

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}		± 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 , $t=20\text{ms}$	150	A
		full sine wave , $t=16.7\text{ms}$	161	A
	I^2t	$t=10\text{ms}$	112.5	A^2s
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	0.5	W
存储温度 Storage temperature	T_{stg}		-40~150	$^\circ\text{C}$
操作结温 Operation junction temperature	T_{VJ}		125	$^\circ\text{C}$

电特性 ELECTRICAL CHARACTERISTIC (T_c=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 _{DRM}	V _{DM} =V _{DRM} , T _j =125°C, gate open	-	-	1.0	mA
峰值通态电压 Peak on-state voltage	V _{TM}	I _{TM} =20A	-	1.4	1.7	V
门极触发电流 Gate trigger current	I _{GT}	V _{DM} =12V, MT1(-),MT2(+),G(+)	-	-	10	mA
		R _L =100 Ω, MT1(-),MT2(+),G(-)	-	-	10	mA
		Ω, MT1(+),MT2(-),G(-)	-	-	10	mA
门极触发电压 Gate trigger voltage	V _{GT}	V _{DM} =12V, MT1(-),MT2(+),G(+)	-	-	1.5	V
		R _L =100 Ω, MT1(-),MT2(+),G(-)	-	-	1.5	V
		Ω, MT1(+),MT2(-),G(-)	-	-	1.5	V
维持电流 Holding current	I _H	V _{DM} =12V, I _{GT} =0.1A	-	-	25	mA
擎住电流 Latching current	I _L	V _{DM} =12V, MT1(-),MT2(+),G(+)	-	-	20	mA
		I _{GT} =0.1A, MT1(-),MT2(+),G(-)	-	-	50	mA
		Ω, MT1(+),MT2(-),G(-)	-	-	30	mA
断态临界电压上升率 Rise of off- state voltage	dV/dt	V _{DM} =67% V _{DRM(MAX)} , T _j =125°C, gate open	40	-	-	V/μs
门极开通时间 Gate controlled turn-on time	t _{gt}	I _{TM} =20A, V _{DM} =V _{DRM(MAX)} , I _G =0.1A, dI _G /dt=5A/μs	-	2	-	μs

热特性 THERMAL CHARACTERISTIC

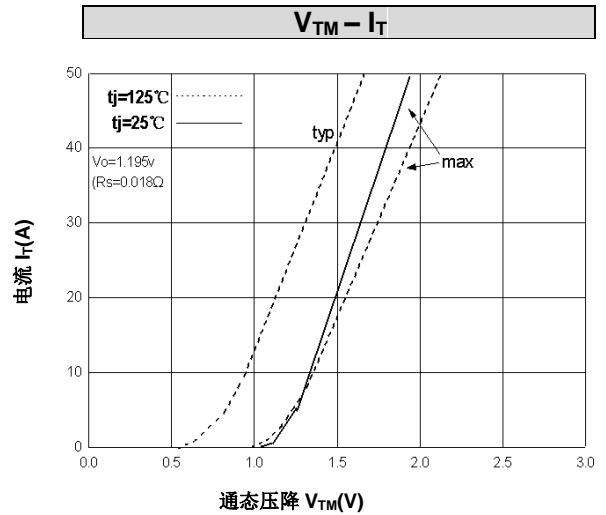
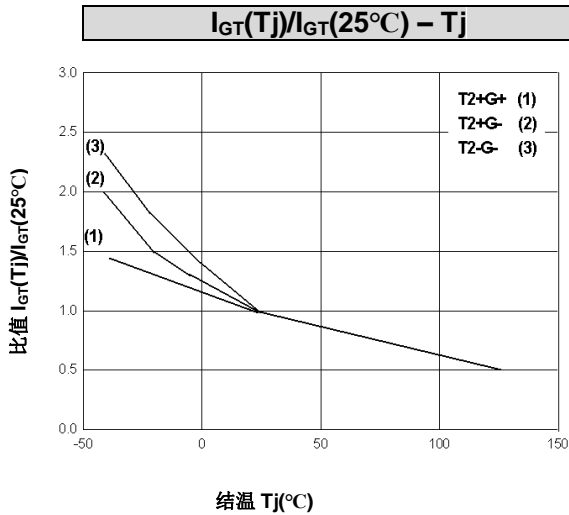
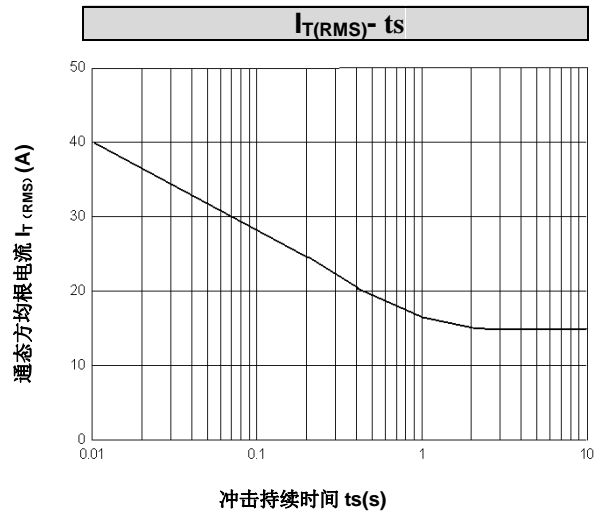
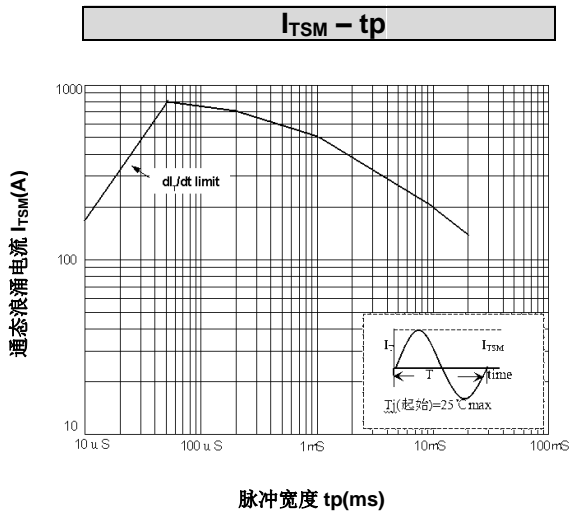
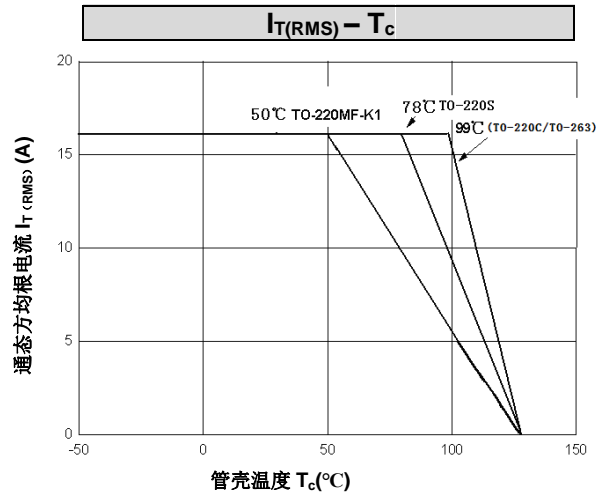
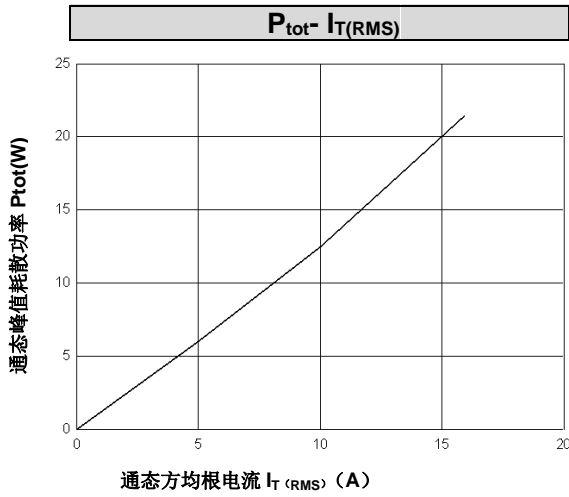
项 目 Parameter	符 号 Symbol	条 件 Condition	最小 Min	典型 Typ	最大 Max	单位 Unit
结到管壳的热阻 Thermal resistance junction to case	R _{th(j-c)}	full cycle(TO-263/TO-220C)			1.2	°C/W
		full cycle(TO-220S)			2.2	°C/W
		full cycle(TO-220MF-K1)			3.6	°C/W

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 _{ISOL}	1 minute, leads to mounting tab TO-220S	2000	V
		1 minute, leads to mounting tab TO-220HF/TO-220MF-K1	2000	V



特征曲线 ELECTRICAL CHARACTERISTICS (curves)

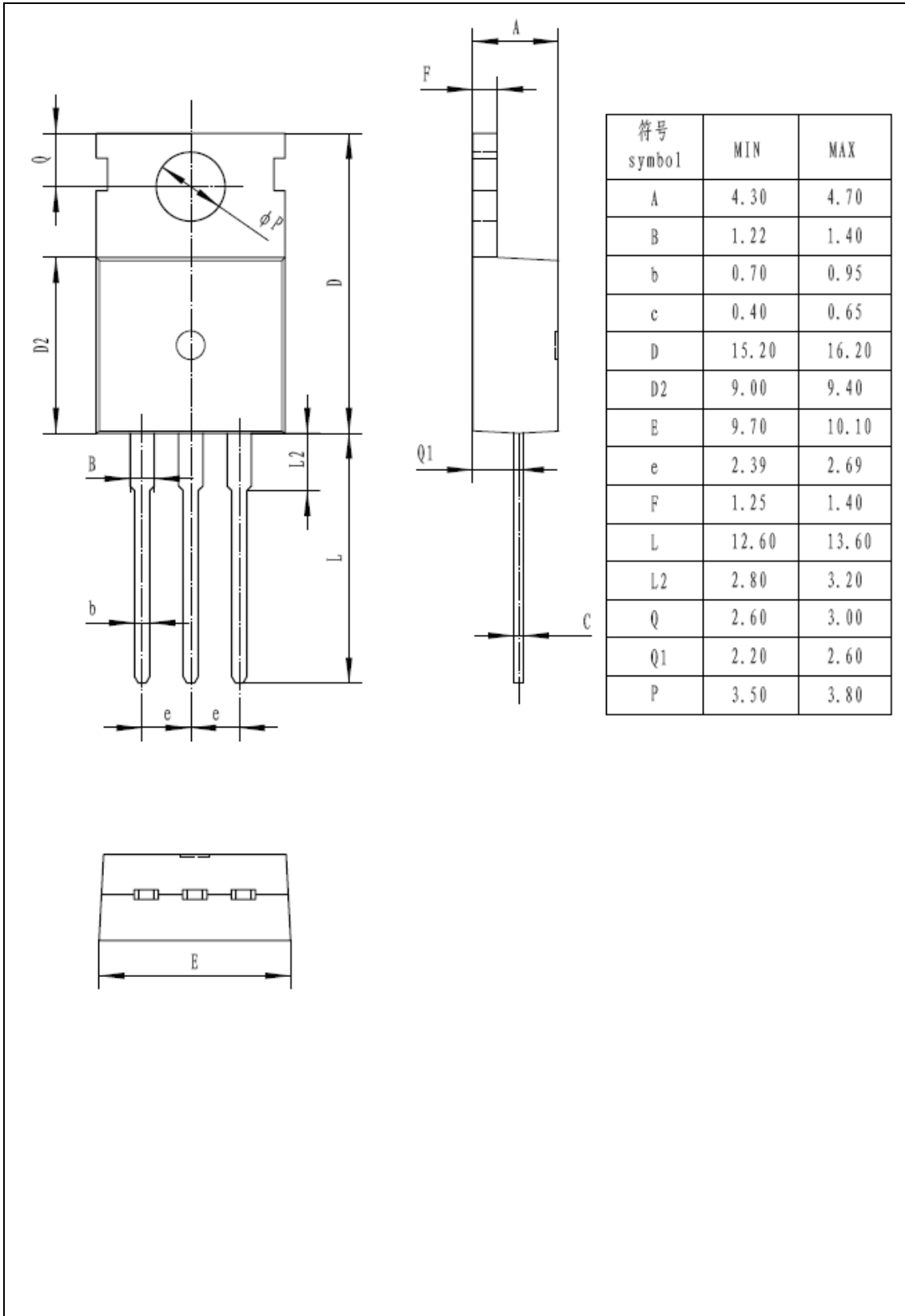




外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit : mm

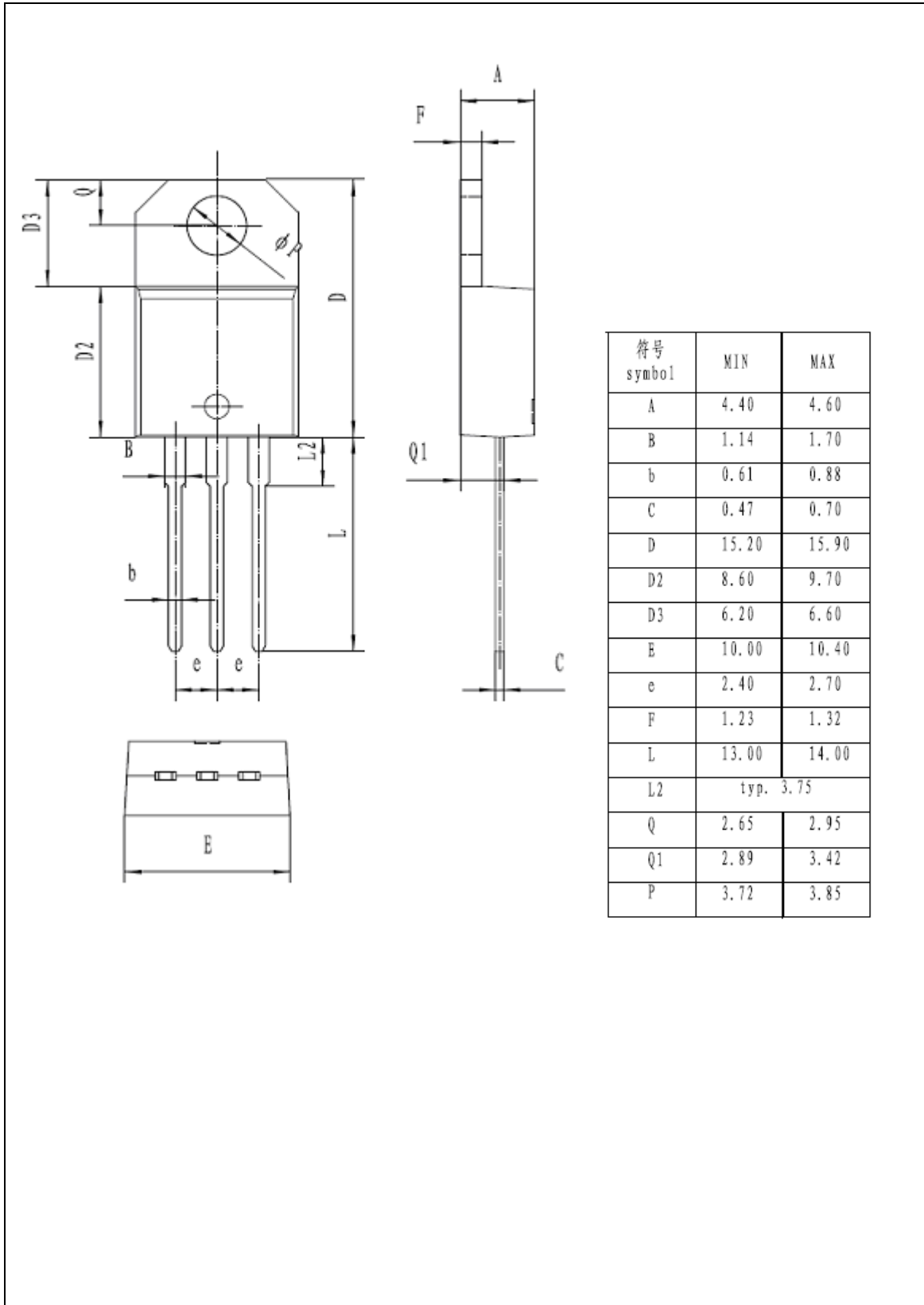




外形尺寸 PACKAGE MECHANICAL DATA

TO-220S

单位 Unit : mm

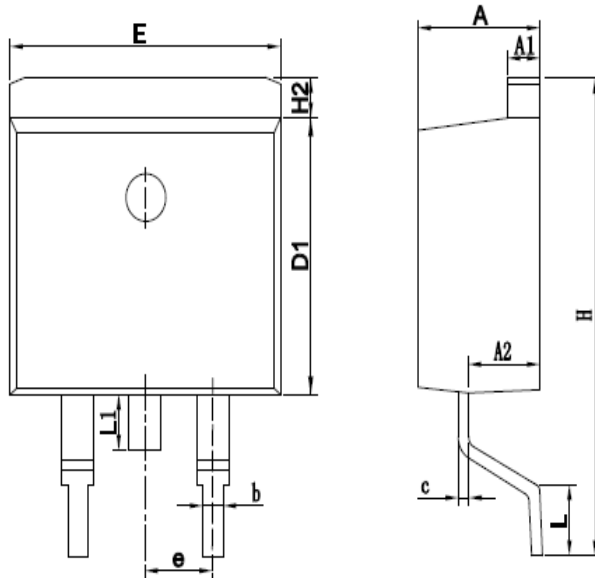




外形尺寸 PACKAGE MECHANICAL DATA

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

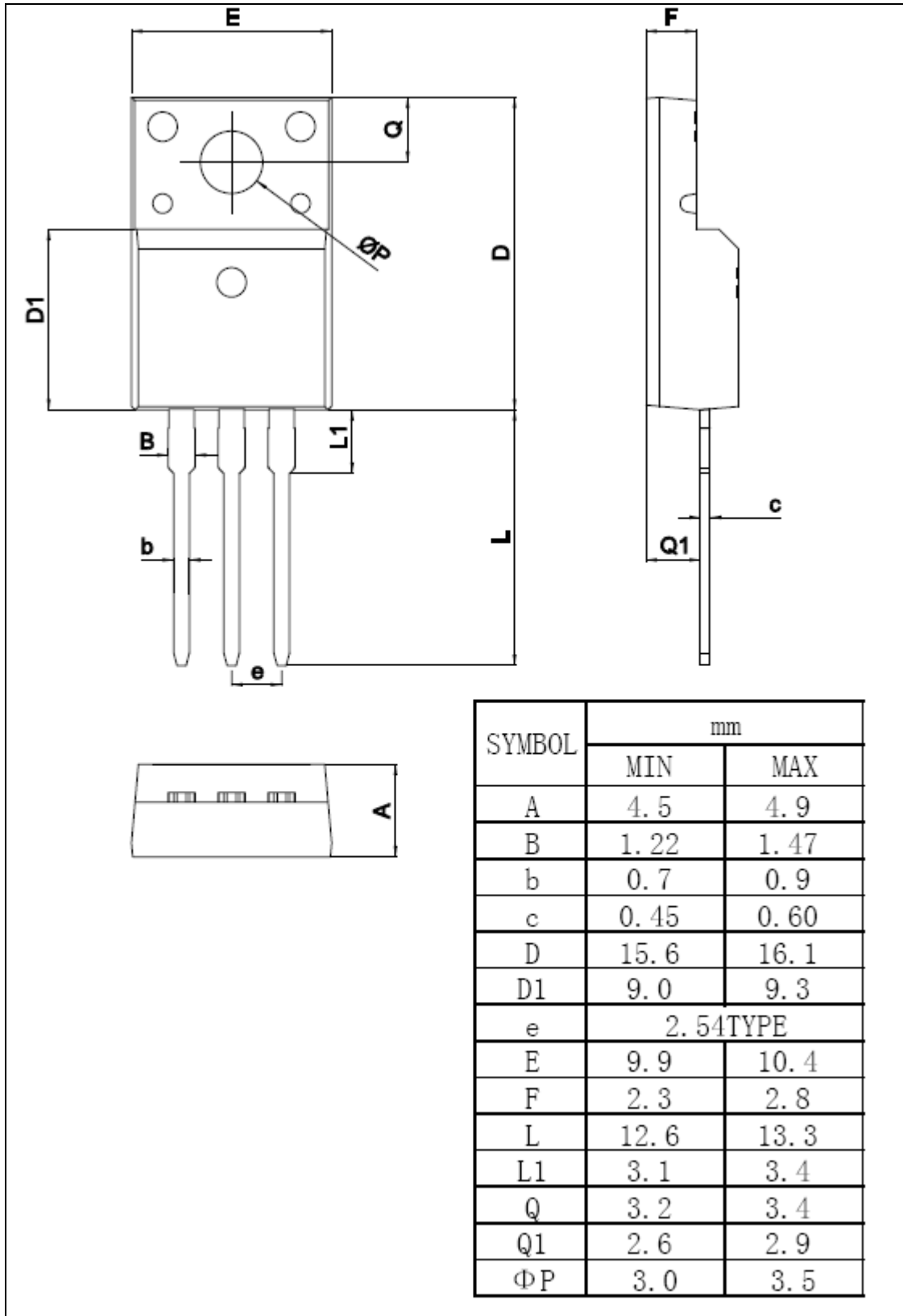
单位: mm



外形尺寸 PACKAGE MECHANICAL DATA

TO-220MF-K1

单位 Unit : mm





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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