

# 3TT16Z/C/J/F/F1

## 主要参数 MAIN CHARACTERISTICS

$I_{T(RMS)}$	16A
$V_{DRM}$	600V or 800V
$I_{GT}$	35mA

## 用途

- 交流开关
- 相位控制

## APPLICATIONS

- AC switching
- Phase control

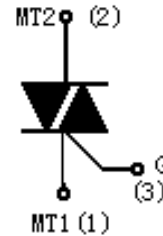
## 产品特性

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

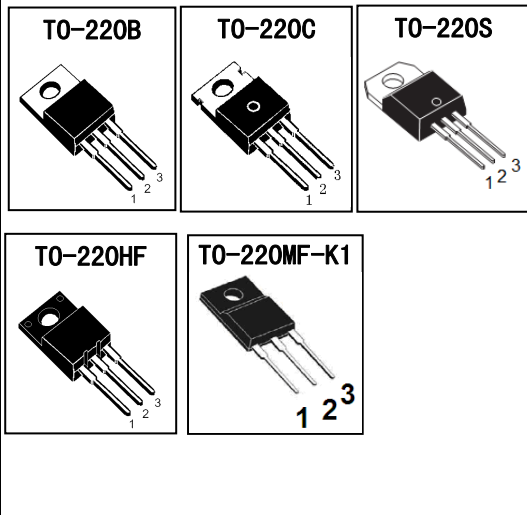
## FEATURES

- 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 code	印记 Marking	封装 Package	包装 Packaging
3TT16Z-O-Z-N-B	3TT16Z	TO-220B	条管 Tube
3TT16C-O-C-N-B	3TT16C	TO-220C	条管 Tube
3TT16J-O-J-N-B	3TT16J	TO-220S	条管 Tube
3TT16F-O-HF-N-B	3TT16F	TO-220HF	条管 Tube
3TT16F-O-F1-N-B	3TT16F1	TO-220MF-K1	条管 Tube

## 概述 GENERAL DESCRIPTION

3TT16Z/C/J/F1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-220B、TO-220C、TO-220S（引线及散热片绝缘）、TO-220HF（塑料全封装）、TO-220MF-K1（塑料全封装）。

3TT16Z/C/J/F1 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-220B、TO-220C、TO-220S (internally isolated)、TO-220HF (plastic envelope) and 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	$V_{\text{DRM}}$		$\pm 600$ $\pm 800$	V
通态方均根电流 On-state RMS current	$I_{\text{T(RMS)}}$	full sine wave,	16	A
非重复浪涌峰值通态电流 Non-repetitive surge peak on-state current	$I_{\text{TSM}}$	full sine wave ,t=20ms	150	A
		full sine wave ,t=16.7ms	161	A
		$I^2t$	t=10ms	112.5
通态电流临界上升率 Repetitive rate of rise of on-state current after triggering	$di/dt$	$I_{\text{TM}}=20\text{A}$ , $I_{\text{G}}=0.2\text{A}$ , $di_{\text{G}}/dt=0.2\text{A}/\mu\text{s}$	100	$\text{A}/\mu\text{s}$
峰值门极电流 Peak gate current	$I_{\text{GM}}$		2	A
峰值门极电压 Peak gate voltage	$V_{\text{GM}}$		5	V
峰值门极功率 Peak gate power	$P_{\text{GM}}$		5	W
平均门极功率 Average gate power	$P_{\text{G(AV)}}$	over any 20ms period	0.5	W
存储温度 Storage temperature	$T_{\text{stg}}$		-40~150	$^\circ\text{C}$
操作结温 Operation junction temperature	$T_{\text{VJ}}$		125	$^\circ\text{C}$



电特性 ELECTRICAL CHARACTERISTIC ( $T_c=25^\circ\text{C}$ )

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	$I_{\text{DRM}}$	$V_{\text{DM}}=V_{\text{DRM}}$ , $T_j=125^\circ\text{C}$ , gate open	-	-	1.0	mA	
峰值通态电压 Peak on-state voltage	$V_{\text{TM}}$	$I_{\text{TM}}=20\text{A}$	-	1.4	1.7	V	
门极触发电流 Gate trigger current	$I_{\text{GT}}$	$V_{\text{DM}}=12\text{V}$ , $R_L=100\ \Omega$	MT1(-),MT2(+),G(+)	-	-	35	mA
			MT1(-),MT2(+),G(-)	-	-	35	mA
			MT1(+),MT2(-),G(-)	-	-	35	mA
门极触发电压 Gate trigger voltage	$V_{\text{GT}}$	$V_{\text{DM}}=12\text{V}$ , $R_L=100\ \Omega$	MT1(-),MT2(+),G(+)	-	0.7	1.5	V
			MT1(-),MT2(+),G(-)	-	0.7	1.5	V
			MT1(+),MT2(-),G(-)	-	0.7	1.5	V
维持电流 Holding current	$I_{\text{H}}$	$V_{\text{DM}}=12\text{V}$ , $I_{\text{GT}}=0.1\text{A}$	-	-	35	mA	
擎住电流 Latching current	$I_{\text{L}}$	$V_{\text{DM}}=12\text{V}$ , $I_{\text{GT}}=0.1\text{A}$	MT1(-),MT2(+),G(+)	-	-	50	mA
			MT1(-),MT2(+),G(-)	-	-	60	mA
			MT1(+),MT2(-),G(-)	-	-	50	mA
断态临界电压上升率 Rise of off- state voltage	$dV/dt$	$V_{\text{DM}}=67\% V_{\text{DRM(MAX)}}$ , $T_j=125^\circ\text{C}$ , gate open	1000	-	-	V/ $\mu\text{s}$	
门极开通时间 Gate controlled turn-on time	tgt	$I_{\text{TM}}=20\text{A}$ , $V_{\text{DM}}=V_{\text{DRM(MAX)}}$ , $I_{\text{G}}=0.1\text{A}$ , $dI_{\text{G}}/dt=5\text{A}/\mu\text{S}$	-	2	-	$\mu\text{s}$	

## 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	$R_{\text{th(j-c)}}$	full cycle(TO-220B/TO-220C)			1.2	$^\circ\text{C/W}$
		full cycle(TO-220S)			2.2	$^\circ\text{C/W}$
		full cycle(TO-220HF/TO-220MF-K1)			3.6	$^\circ\text{C/W}$

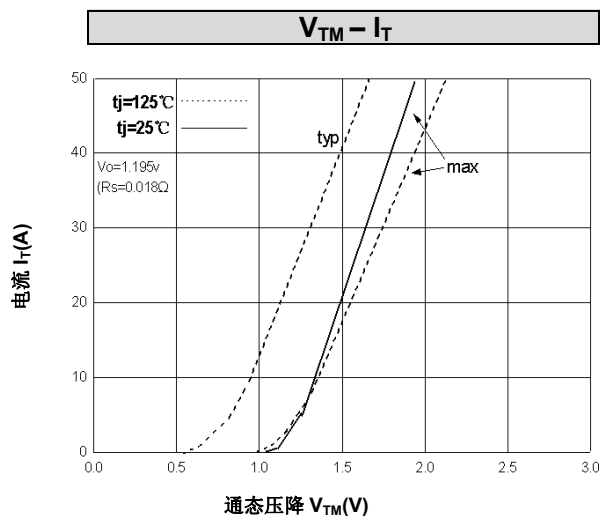
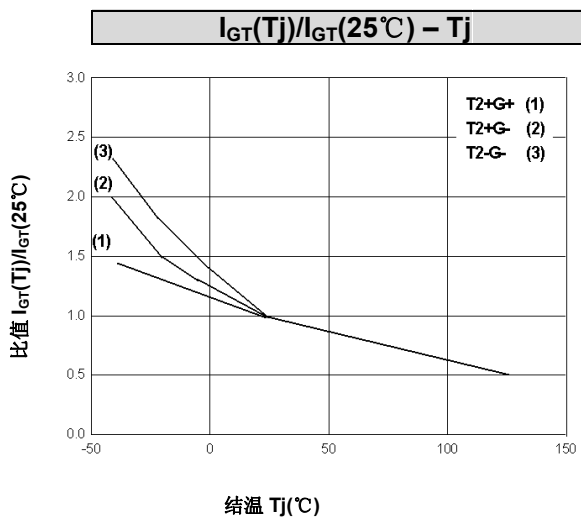
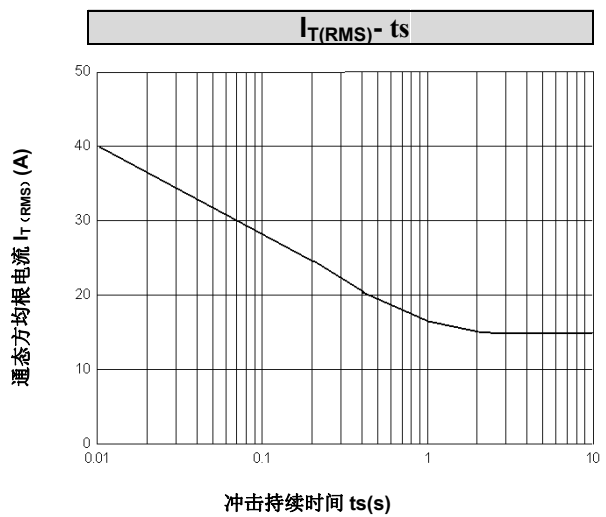
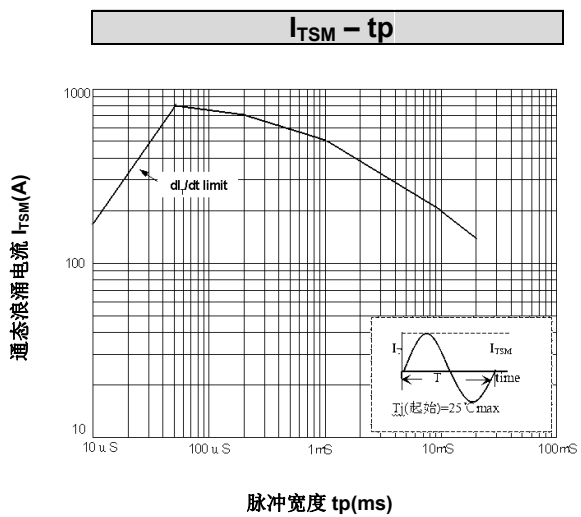
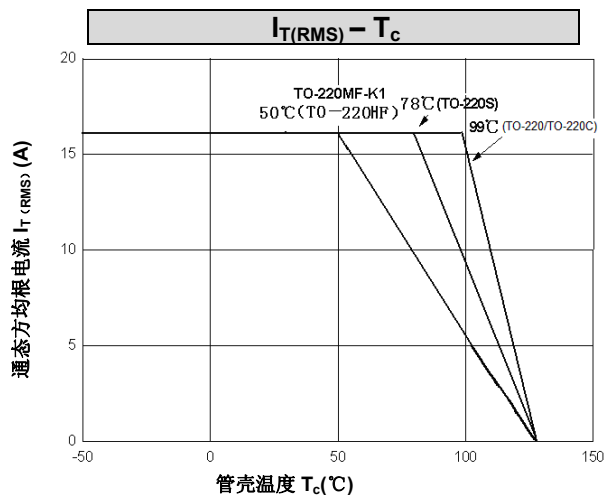
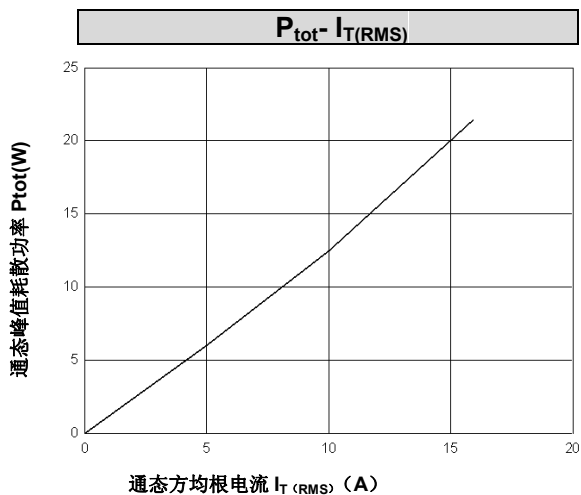
## 电绝缘特性 ELECTRICAL ISOLATION

项 目 Parameter	符 号 Symbol	条 件 Condition	数 值 Value	单 位 Unit
绝缘电压 Isolation voltage	$V_{\text{ISOL}}$	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)

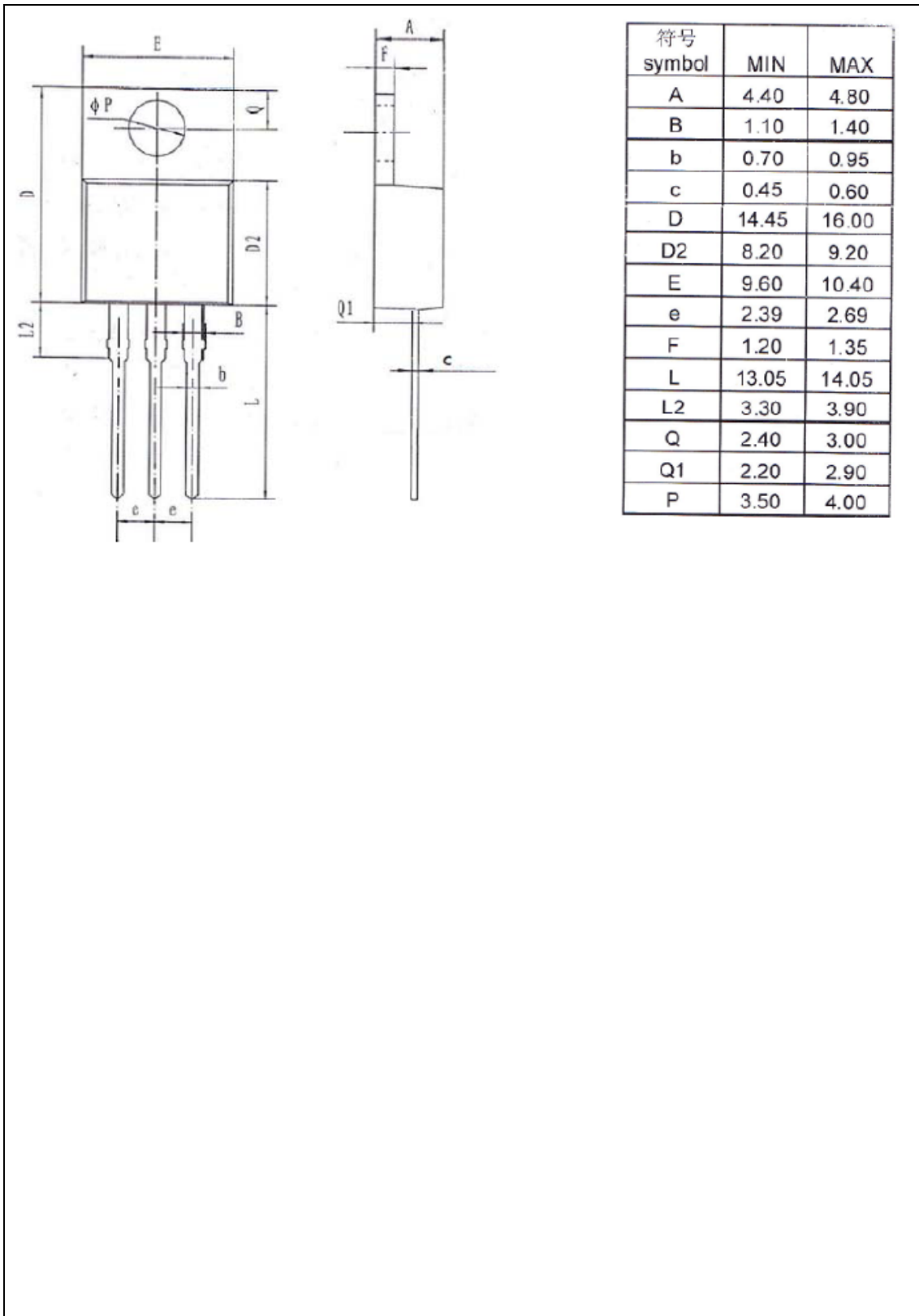




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220B

单位 Unit : mm

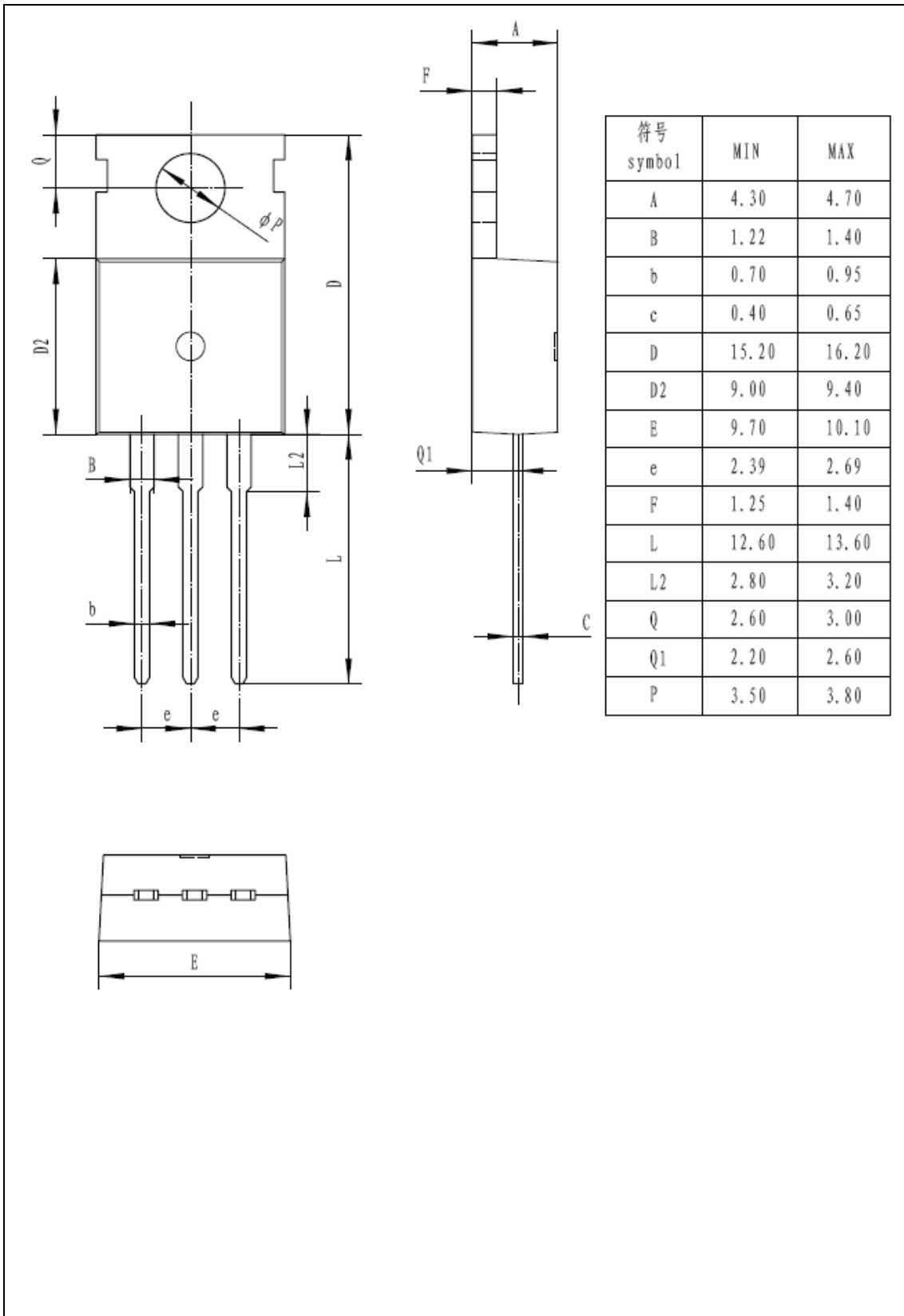




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220C

单位 Unit : mm

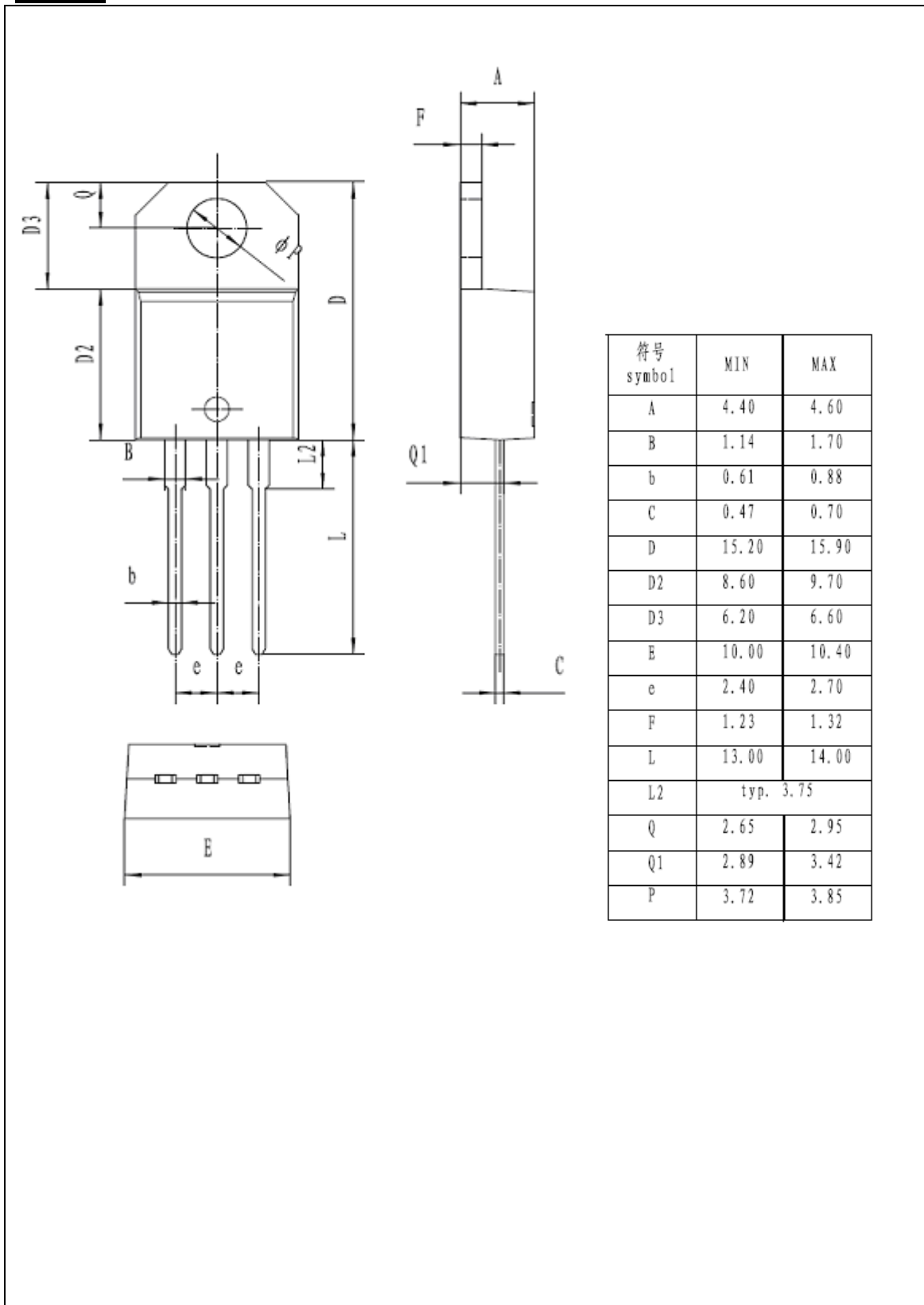




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220S

单位 Unit : mm

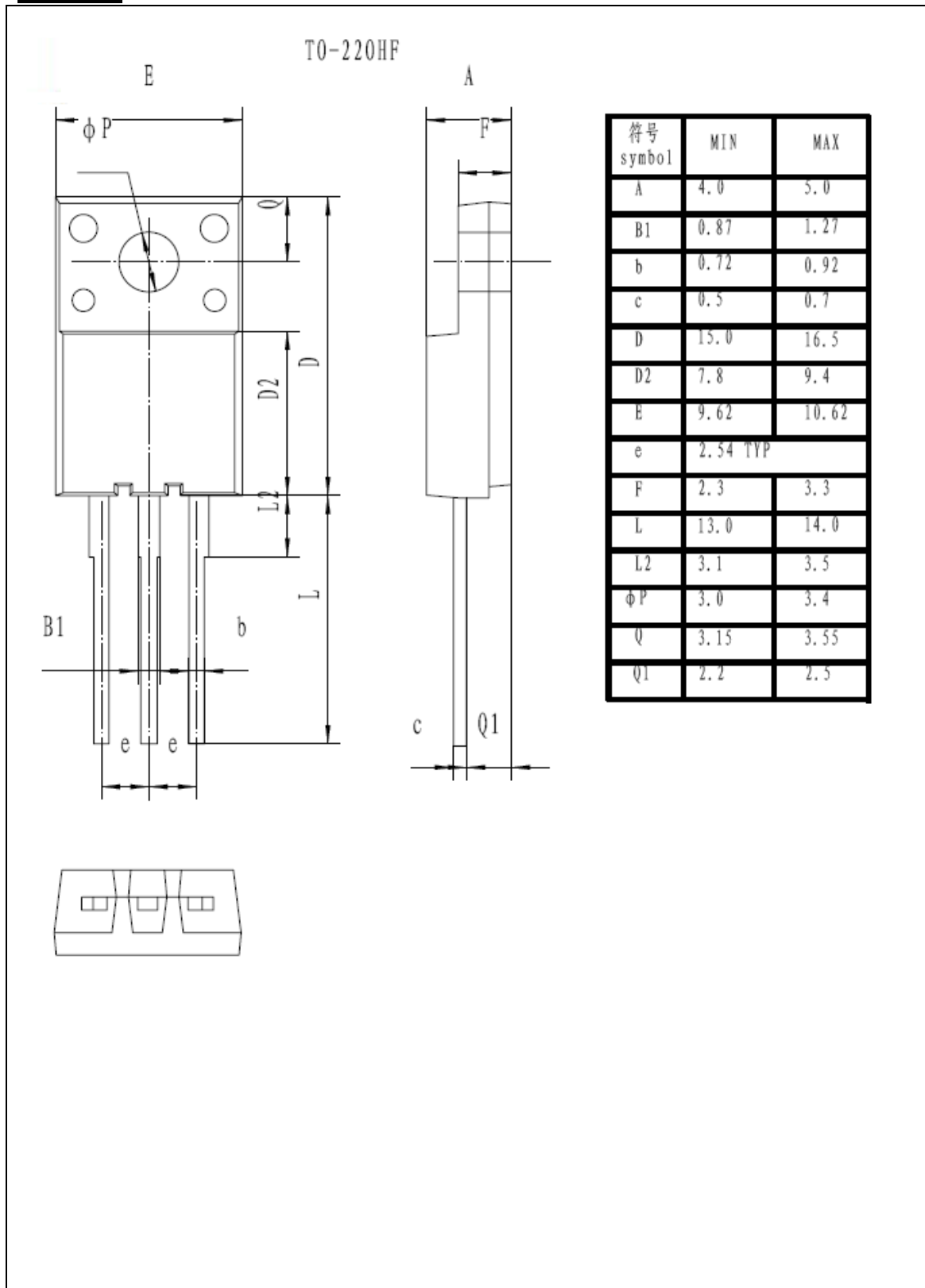




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220HF

单位 Unit : mm



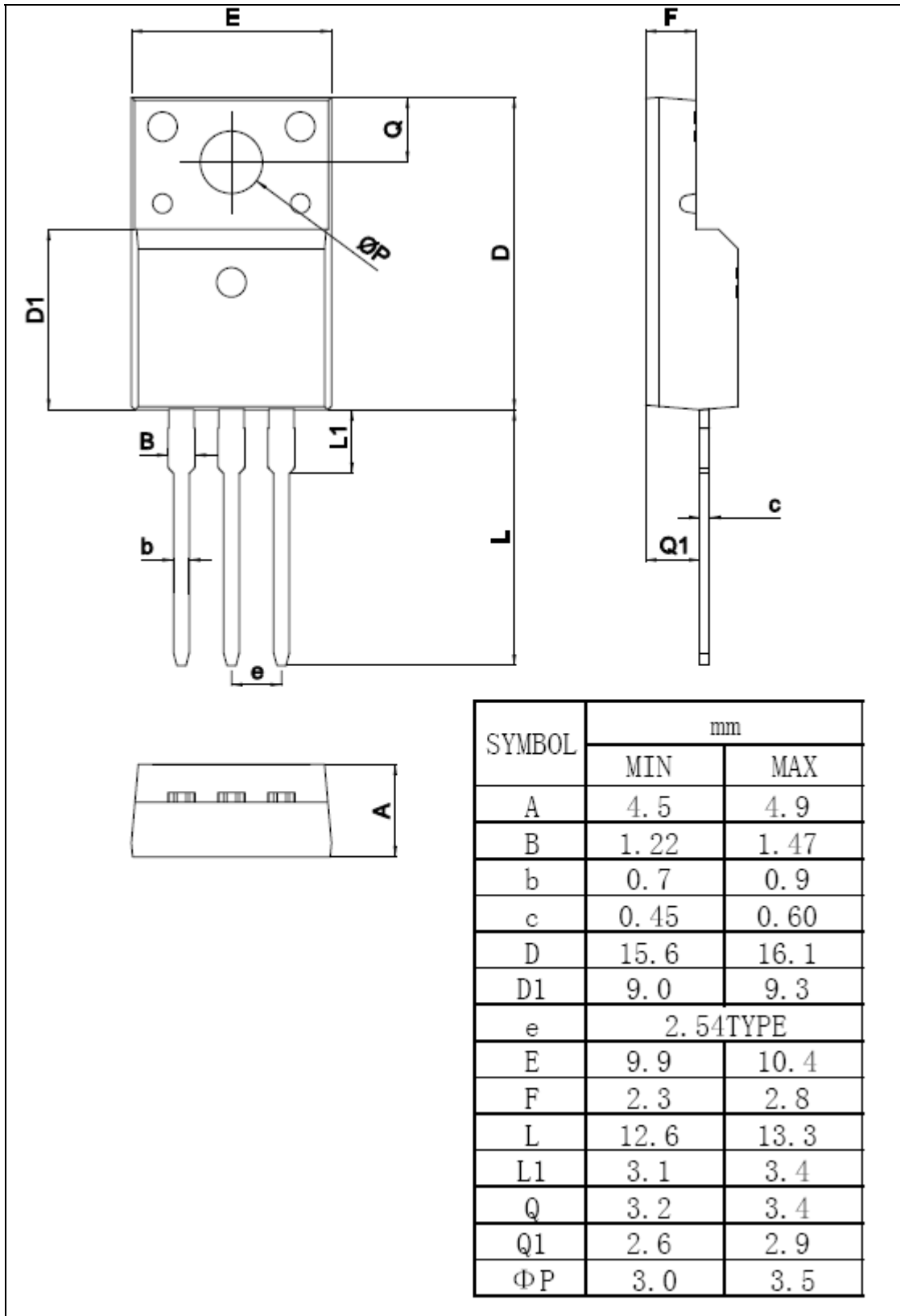




## 外形尺寸 PACKAGE MECHANICAL DATA

TO-220MF-K1

单位 Unit : mm



**注意事项**

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3. 在电路设计时请不要超过器件的绝对最大额定值，否则会影响整机的可靠性。
4. 本说明书如有版本变更不另外告知

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3. Please do not exceed the absolute maximum ratings of the device when circuit designing.
4. Jilin Sino-microelectronics co., Ltd reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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**附录 (Appendix)：修订记录 (Revision History)**

日期 Date	旧版本 Last Rev.	新版本 New Rev.	修订内容 Description of Changes
2015-10-21	201509F	201510G	修改热阻参数
2015-11-16	201510G	201511H	增加 TO-220C 外形
2016-12-20	201511H	201612I	增加 TO-220MF-K1 外形

