



厦门华联电子股份有限公司

Xiamen Hualian Electronics Corp., Ltd.

产品规格书

SPECIFICATION

产品名称: 光电压输出型光耦合器

DESCRIPTION: Photovoltaic MOSFET Driver

产品型号: HPV9B33-×

PART NO.: HPV9B33-×

拟制 Prepared	审核 Verified	批准 Approved

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1 概述 General

光电压输出型光耦合器 HPV9B33-×由砷化铝镓红外发光二极管作为输入级耦合到高电压输出光探测电路，光探测电路由高速光电二极管阵列和驱动电路构成。适用于功率 MOSFET 或 IGBT 的栅极驱动，产品见图 1。

The Photovoltaic MOSFET Driver HPV9B33- × consists of a AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit. It is capable of directly driving gates of power MOSFETs or IGBTs. Products shown in Figure 1.

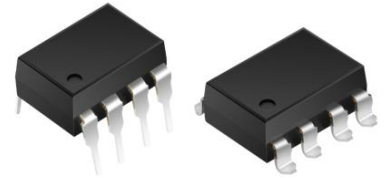


图 1 产品 Figure 1-Product

2 特点 Features

- 双通道光伏 MOSFET 驱动输出 Dual Channel Photovoltaic MOSFET Driver output;
- 输入、输出端之间绝缘电压高 Isolation voltage between input and output VISO ≥ 5000Vrms;
- 双列直插式/贴片式 8L 塑料封装 DIP/SOP 8L Plastic Package;
- 符合 RoHS 指令最新要求及 REACH 法规最新要求。Comply with the latest requirements of the RoHS directive and the latest requirements of REACH regulations.

3 应用 Applications

- 给电子电路提供电压源 Supply for electronic circuit;
- 驱动固态继电器 Drive Solid State Relay.

4 电原理图 Schematic Diagram

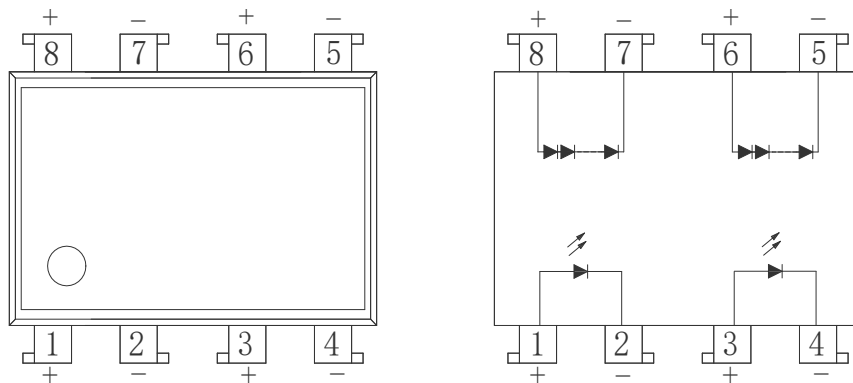


图 2 电原理图
Figure 2-Schematic

5 极限参数 Absolute Maximum Ratings

表 1 极限参数

Table 1-Absolute Maximum Ratings

参数名称 Characteristic	符号 Symbol	额定值 Rating	单位 Unit
输入端 正向电流 Forward Current	I_F	50	mA

Input	反向电压 Reverse Voltage	V_R	5	V
	耗散功率 (单个通道) Power Dissipation (Single channel)	P_M	100	mW
工作温度 Operating temp.		T_{aop}	-40 ~ +110	°C
贮存温度 Storage temp.		T_{stg}	-55 ~ +125	°C
焊接温度 Soldering Temperature	手工焊 Hand Soldering (3 Sec.)	T_{std}	360	°C
	回流焊 Reflow Soldering (5 Sec.)		260	
	波峰焊 Wave Soldering (10 Sec.)		270	
绝缘电压 Isolation voltage (RH≤60%,交流 1 分钟) (RH≤60%, AC 1min.)		V_{ISO}	5000	V_{rms}

6 光电参数 Opto-Electrical Characteristics

表 2 光电参数

Table 2-Opto-Electrical Characteristics

$T_a=25^\circ\text{C}$

参数 Parameters		符号 symbol	测试条件 Test condition	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
输入 Input	正向电压 Forward Voltage	V_F	$I_F=10\text{mA}$	-	1.35	1.7	V
	反向电流 Reverse Current	I_R	$V_R=5\text{V}$	-	-	10	μA
输出 Output	开路电压 Open Circuit Voltage	V_{oc}	$I_F=10\text{mA}$ $I_O=0\text{mA}$	6.5	-	10	V
	短路电流 Short Circuit Current	I_{SC}	$I_F=10\text{mA}$ $V_O=0\text{V}$	12	-	-	μA
传输隔离 特性 Switch specificati on	开启时间 Turn On Time	T_{ON}	$I_F=10\text{mA}$	-	100	-	us
	关断时间 Turn Off Time	T_{OFF}	$I_F=10\text{mA}$	-	500	-	us
	绝缘电压 Isolation voltage	V_{ISO}	$I_{off}\leq 0.3\text{mA}$, AC, 60s	5000	-	-	V
	绝缘电阻 Isolation resistance	R_{ISO}	$V_O=500\text{V}$	10^{12}	-	-	Ω

7 外形尺寸及电原理图 Dimensions and Circuit Diagram

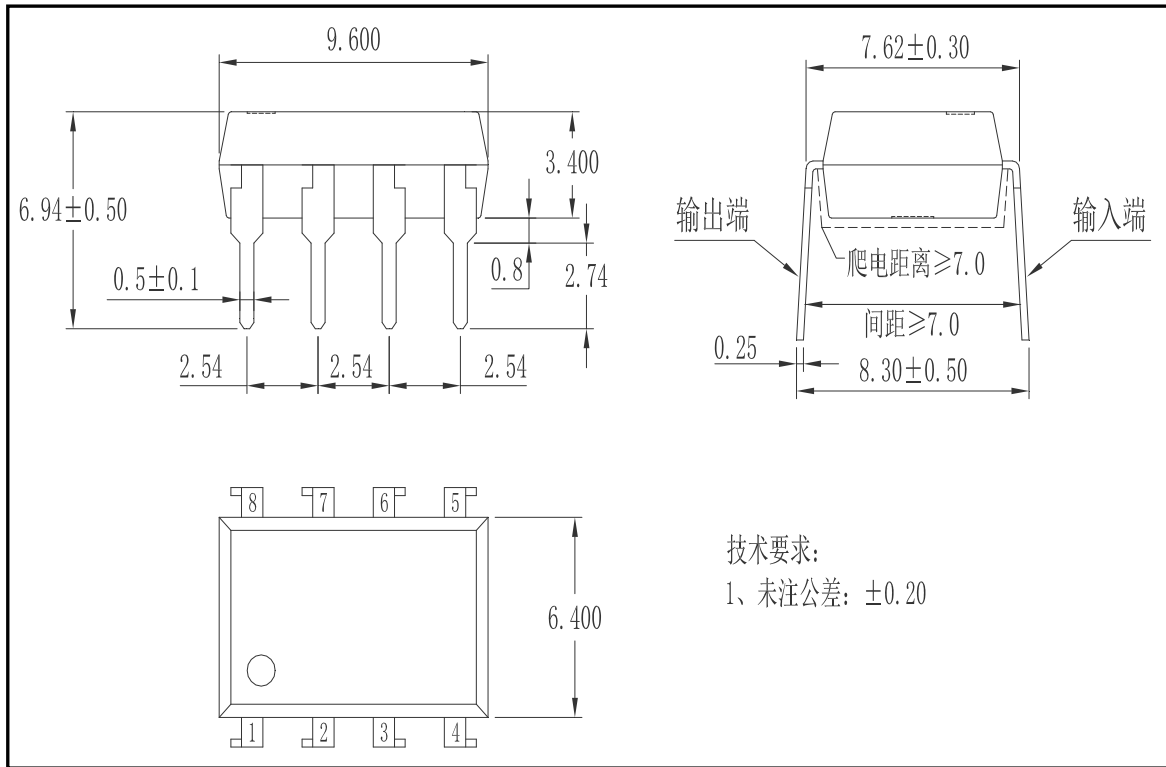


图 3 HPV9B33 外形尺寸
Figure 3- The dimensions of HPV9B33

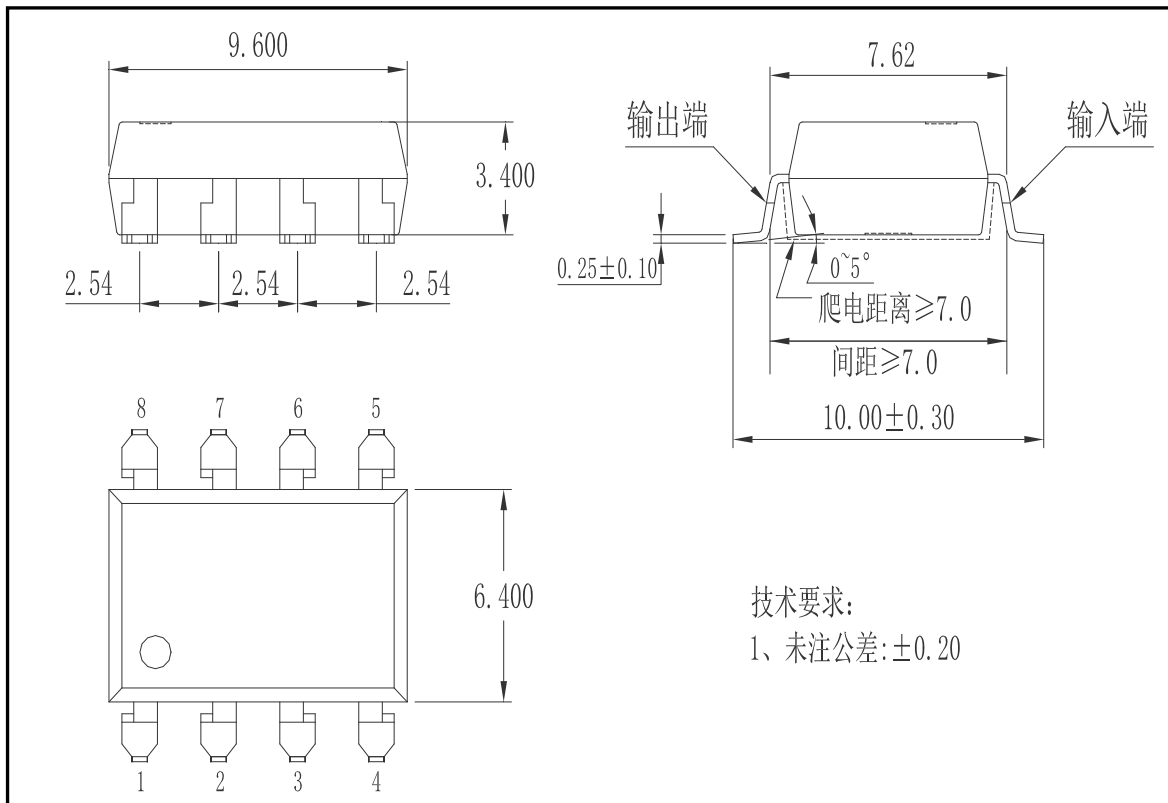


图 4 HPV9B33-2 外形尺寸
Figure 4- The dimensions of HPV9B33-2

8 标志 Mark

产品上应有型号、公司商标、生产日期代码、引出端识别标记。例如：HPV9B33-×产品印章如图 5。

Print type characters ,trade mark and Lot.No.on the Photo Coupler.For example the marking of product HPV9B33-× is shown as figure 5.

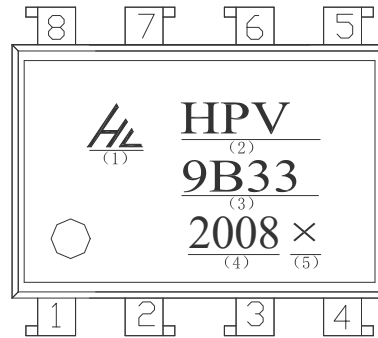


图 5 产品印章
Figure 5- Marking

9 包装方式 Packing

9.1 条管包装 (Tube): 适用于 For HPV9B33。

9.1.1 每箱数量 (Qty/ctn): 20000 只 (pcs)。

9.1.2 内包装 (Inner packing):

每条管 50 只, 采用防静电条管, 条管上有商标、防静电标志。

50pcs/tube, antistatic tube, indication of trade mark and antistatic.

每纸匣 1000 只, 贴合格证 (型号、生产日期代号、检验员代号)。

1000pcs/bundle, certificate on one end (model, code of product date, Inspector's code) .

9.1.3 外包装(Outer packing):

公司名称、地址、商标、产品型号、数量等标志。

Indication of company name, address, trade mark, model and quantity.

9.1.4 示意图 (Schematic):

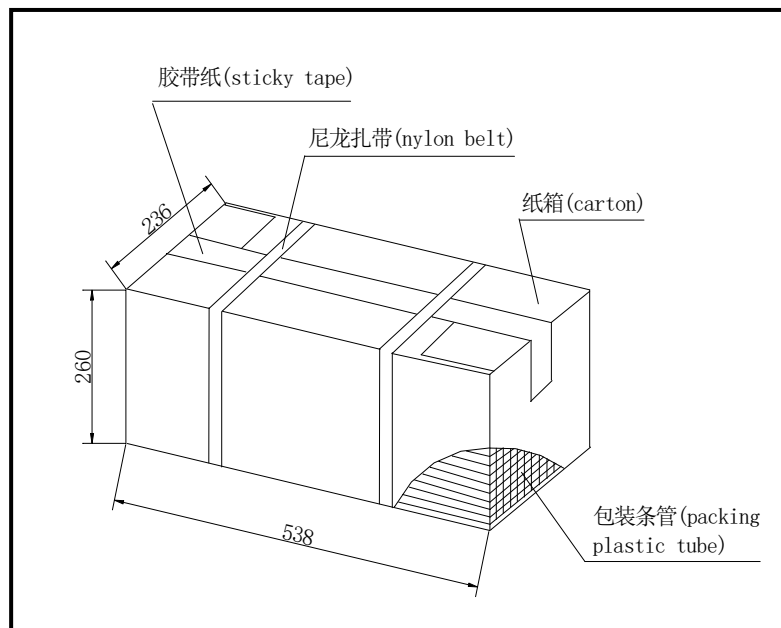


图 5 条管外包装
Figure 5- Outer packing for Tube

9.2 编带包装 (Tape and reel): 适用于 For HPV9B33-2。

9.2.1 每卷数量 (Qty/reel): 1000 只 (pcs)。每箱数量 (Qty/ctn): 10000 只 (pcs)。

9.2.2 内包装 (Inner packing):

每卷盘 1000 只, 贴合格证 (型号、生产日期代号、检验员代号)。

1000pcs/reel, certificate on reel (model, code of product date, Inspector's code)

9.2.3 外包装(Outer packing):

公司名称、地址、商标、产品型号、数量等标志。

Indication of company name, address, trade mark, model and quantity.

9.2.4 示意图 (Schematic):

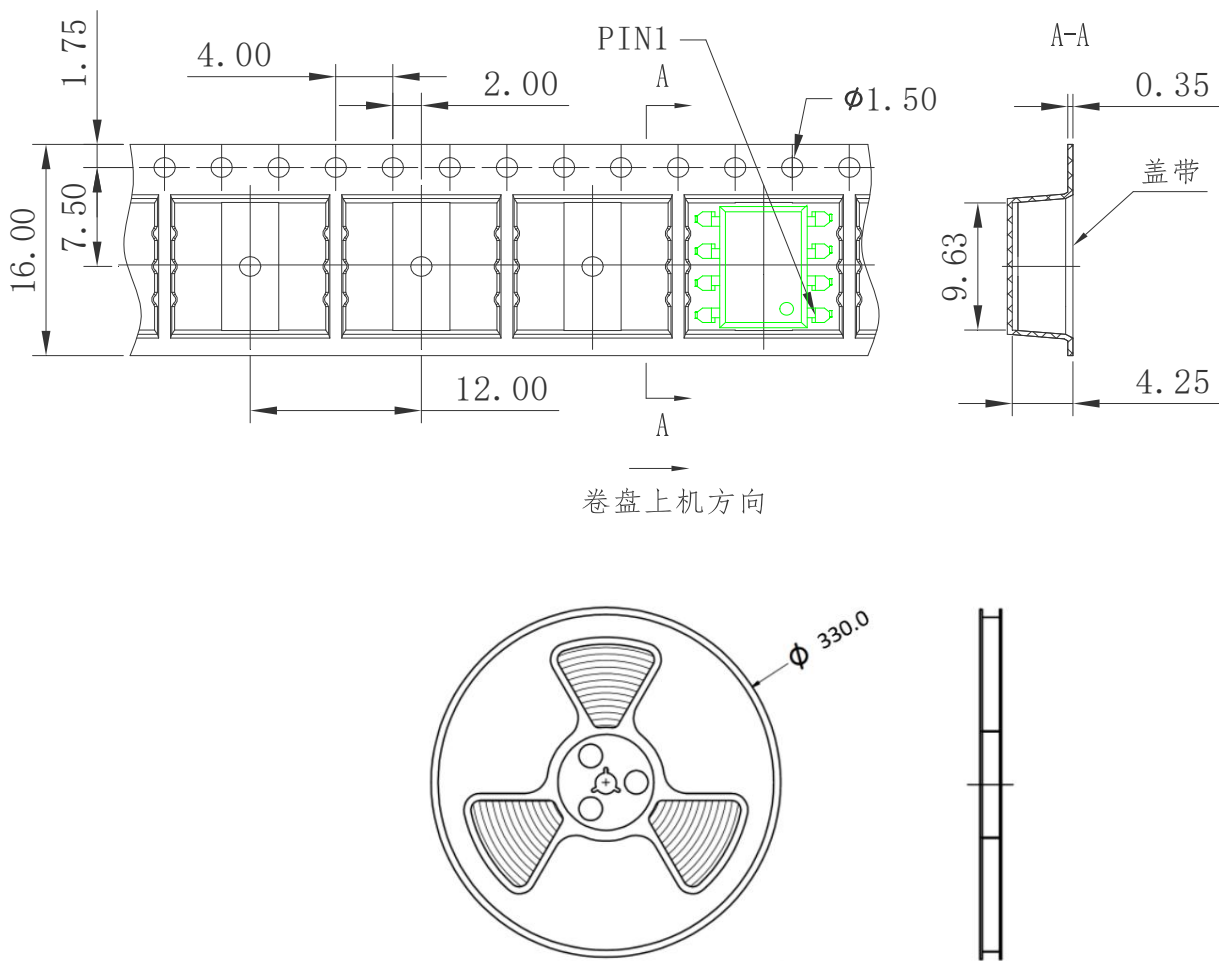


图 6 编带包装示意图

Figure 6- Taping Packing Schematic

10 使用注意事项 Note

10.1 推荐贮存温度 Recommend storage Temp.: 0~40°C;

推荐贮存湿度 Recommend storage humidity: <60%;

湿气敏感度等级 1 级。MSL level: MSL 1.

10.2 静电防护等级 (人体模式) ESD(HBM): ≥500V.

10.3 引脚镀锡厚度: 大于等于 5μm。

Thickness of Sn which plated on lead frame: ≥5μm.

10.4 推荐焊接条件 Recommended Soldering Conditions

10.4.1 请勿使用超过最高贮存温度的物体直接接触环氧本体。

Do not contact the epoxy body directly with objects exceeding the maximum storage temperature.

10.4.2 在高温下不要对环氧本体施加压力，特殊情况下施加的力不应超过2.5N。

Do not apply pressure to the epoxy at high temperatures, and in special cases do not apply more than 2.5N.

10.4.3 回流焊 Reflow soldering

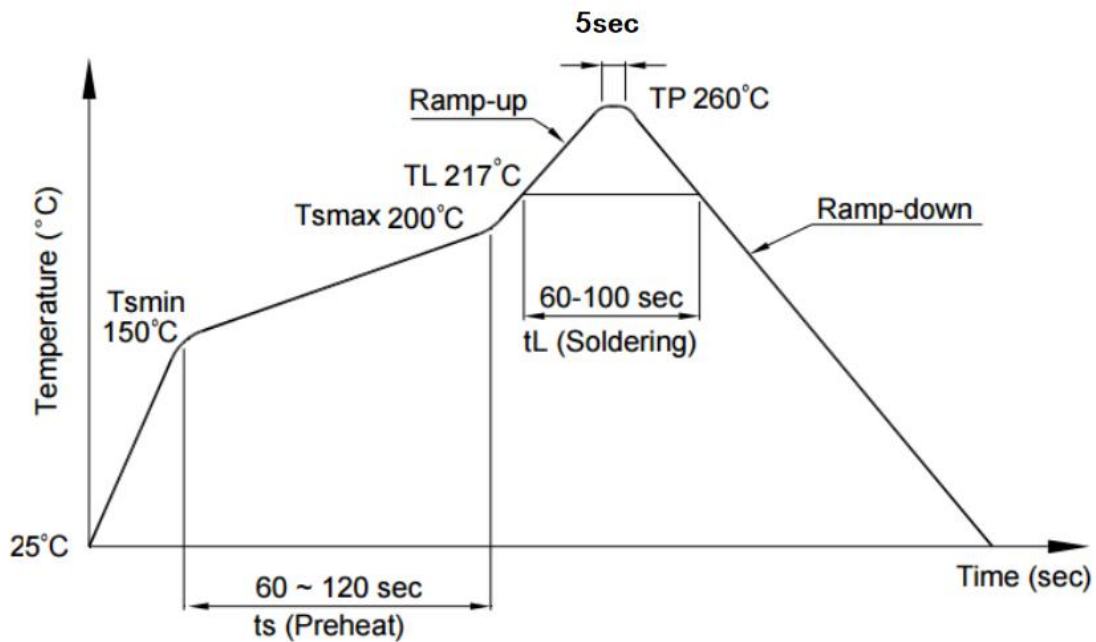
1) 推荐锡膏规格 Recommend tin glue specifications:

a) 熔点 Melting temperature: 217°C

b) 组分 Contains: SnAg3Cu0.5

2) 回流焊工序必须在器件冷却至室温后进行。Never take next process until the component is cooled down to room temperature after reflow.

3) 推荐回流焊接参数，如下图所示：The recommended reflow soldering profile is following:



项目 Items	条件 Conditions	
预热 Preheat	Temperature Min (T_{Smin})	150°C
	Temperature Max (T_{Smax})	200°C
	Time (min to max) (t_s)	90±30 sec
焊接区 Soldering zone	Temperature (T_L)	217°C
	Time (t_L)	60 ~ 100 sec
最高温度 Peak Temperature (T_P)		260°C
升温速率 Ramp-up rate		3°C / sec max.
降温速率 Ramp-down rate		3~6°C / sec

图 7 回流焊参数

Figure 7-Recommended reflow soldering profile

4) 建议在所示的温度和时间条件下进行一次回流焊，最多不能超过三次。One time soldering reflow is recommended within the condition of temperature and time profile shown below. Do not solder more than three times.

10.4.4 手工烙铁焊 Manual soldering

1) 手工烙铁焊仅用于产品返修或样品测试。Manual soldering is only applicable to product repair.

2) 手工烙铁焊要求：温度 $360^{\circ}\text{C} \pm 5^{\circ}\text{C}$ ，时间 $\leq 3\text{s}$ ，返修次数 ≤ 2 次。Manual soldering requirements: temperature $\leq (360^{\circ}\text{C} \pm 5^{\circ}\text{C})$, time $\leq 3\text{s}$, repair times ≤ 2 times.

10.5 本说明书所展示的产品是为一般电子应用而设计的，如办公自动化设备、通讯设备、视听设备、电气

应用和仪器仪表等。对于需要高可靠性或安全性的设备，如空间应用、核动力控制设备、医疗设备等，请与我们的销售代表联系。The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation. For equipment/devices where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc, please contact our sales representatives.

11 产地 Production Place

11.1 产地 Production Place: 中国厦门 Xiamen China;

11.2 工厂名称 Production NO.: 厦门华联电子股份有限公司; Xiamen Hualian Electronics Corp. , Ltd.;

11.3 工厂地址 Production Add.: 厦门市翔安区舩阳南路189号 No.189, Fangyang South Road, Xiang'an District, Xiamen China.

更改记录表
Engineering Change Notice-Record

版次 Edition	更改日期 Date	主要更改内容 Main Content	拟制 Prepared	确认 Checked
2.0	2023-04-19	新版发行	郑清清	黄发宝