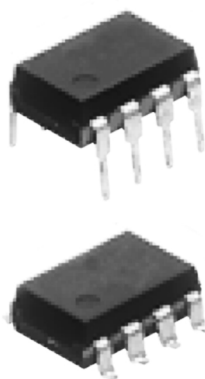


产品规格书

Product Specification



光MOS固态继电器

OPTOCOUPLER

MT-AQW214EH

SOLID STATE RELAY

晶体管光耦

可控硅光耦

达林顿光耦

高速光耦

施密特触发器

IPM驱动光耦

光MOS固态继电器

IGBT驱动光耦

深圳市美特光电子有限公司

SHENZHEN MATELIGHT ELECTRONICS CO.,LTD

www.matelight.cn Q

1 概述 General

产品 MT-AQW214EH由砷化铝镓红外发光二极管作为输入级耦合到高压输出光探测电路。光探测电路由高速光电二极管阵列和驱动电路构成，用以开启/关断两个独立的高压金属氧化物半导体场效应管(MOSFET)。一个最小 5mA 的电流流经输入级红外发光二极管可确保继电器动作。当加在输入级红外发光二极管的正向压降为 0.8V 或更小值时，继电器可确保复位。产品见图 1。

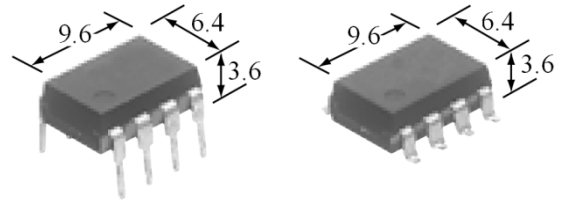


图 1 产品 Figure 1-Product

The MT-AQW214EH consists of a AlGaAs infrared emitting diode input stage optically coupled to a high-voltage output detector circuit. The detector consists of a high-speed photovoltaic diode array and driver circuitry to switch on/off two discrete high voltage MOSFETs. The relay action with a minimum input current of 5mA through the input LED. The relay reset with an input voltage of 0.8V or less. Products (DIP) shown in Figure 1.

2 特点 Features

- 双通道常开型单刀单掷继电器。Dual Channel Normally on Single-Pole-Single-Throw (SPST) Relay.
- 400V 输出耐压产品。400V Output Withstand Voltage.
- 120mA 额定电流产品。120mA Current Rating.
- 低输入电流，CMOS 兼容。Low Input Current: CMOS Compatibility.
- 30 Ω 低通态电阻。30 Ω Low On-Resistance.
- 非常高的断开阻抗：典型值 10 兆欧。
Very High Output Off-state Impedance: 10 Teraohms Typical.
- 非常快的开关速度：典型值 0.5ms (Ton), 0.2ms (Toff)。
High Speed Switching: 0.5ms (Ton), 0.2ms (Toff) Typical
- 高输入输出绝缘耐压：5000 Vrms for 1 min。
High Input-to-Output Insulation Voltage: 5000 Vrms for 1 min.

3 应用 Applications

- 电信切换。Telecommunication Switching.
- 数据通讯。Data Communications.
- 电池管理。Battery management.
- 工业控制。Industrial Controls.
- 医疗设备。Medical equipment.
- EMR/机械继电器替代。EMR / Reed Relay Replacement.

4 电原理图 Schematic Diagram

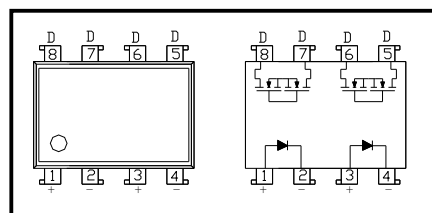


图 2 电原理图 Figure 2-Schematic

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 Input	正向电流 Forward Current	I_F	50	mA
	反向电压 Reverse Voltage	V_R	5	V
	耗散功率（单个通道） Power Dissipation (Single channel)	P_M	75	mW
输出端 output	开关电压 Switching Voltage	$V_{O(MAX)}$	400	V
	连续通态电流 Continuous load current	$I_{O(MAX)}$	120	mA
	耗散功率（单个通道） Power dissipation (Single channel)	P_C	360	mW
工作温度 Operating temp.		T_{aop}	-40 ~ +85	°C
贮存温度 Storage temp.		T_{stg}	-55 ~ +125	°C
焊接温度 Soldering Temperature	手工焊 Hand Soldering (5 Sec.)	T_{sld}	350	°C
	回流焊 Reflow Soldering (10 Sec.)		245	
	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

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

参数名称 Characteristic		符号 Symbol	测试条件 Test conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
输入端 Input	正向电压 Forward voltage	V _F	I _F =10mA	-	1.2	1.3	V
	反向电流 Reverse current	I _R	V _R =5V	-	-	10	uA
	动作电流 Action Current	I _{F(ON)} ^a	I _O = 120mA		1.5	3	mA
	复位电流 Reset Current	I _{F(OFF)}	I _O = 120mA		0.5		mA
输出端 Output	断态漏电流 OFF-State Leakage Current	I _{OFF}	V _O = 400V			100	nA
	导通电阻 ON Resistance	R _{ON}	I _O =120mA I _F =10mA			30	Ω
	输出电容 Output Capacitance	C _O	I _F =0mA, V _O =25V, f _o = 1MHz		16		pF

传输 Xfer	Time	T _{ON}	I _F =5mA, I _O = 120mA			1.0	ms
	复位时间 Reset Time	T _{OFF}	I _F =5mA, I _O = 120mA			0.5	ms
	耦合电容 Coupled Capacitance	C _{I/O}			0.35		pF
隔离 Isolation	绝缘电压 Isolation voltage	V _{ISO}	I _{off} ≤0.3mA, AC, 60s	5000			V

^a 保证所有器件在 I_F 值小于或等于最大的 I_{F(ON)}时动作。

It is guaranteed that all devices active when I_F value is less than or equal to the maximum value of I_{F(ON)}.

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

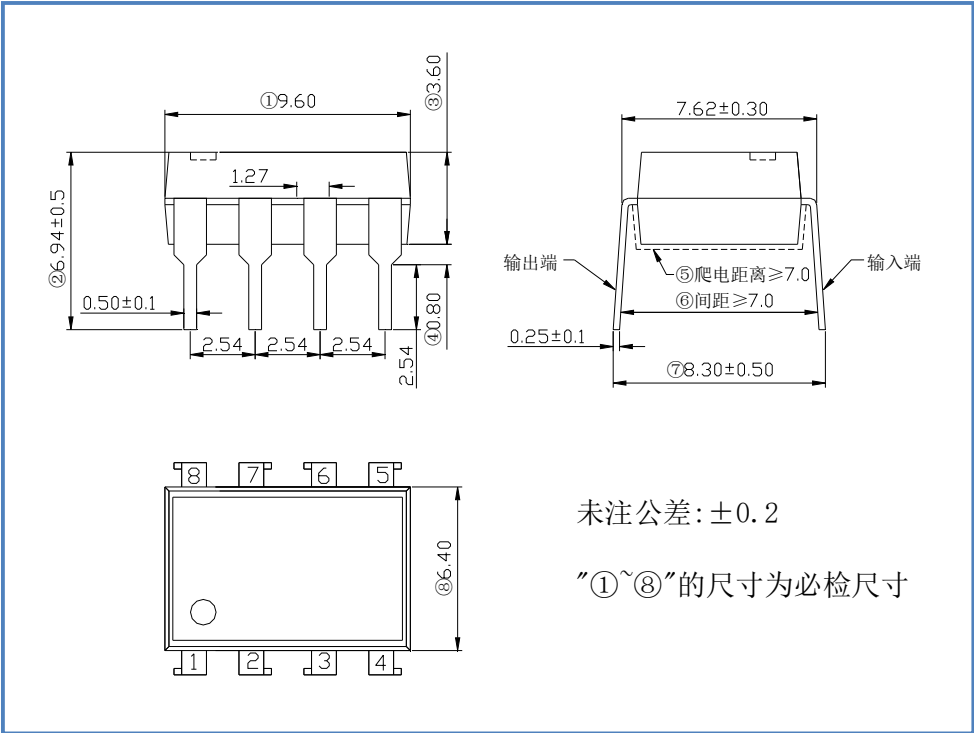


图3 MT-AQW214EH1 外形尺寸
Figure 3- The dimensions of HSSR-DA001

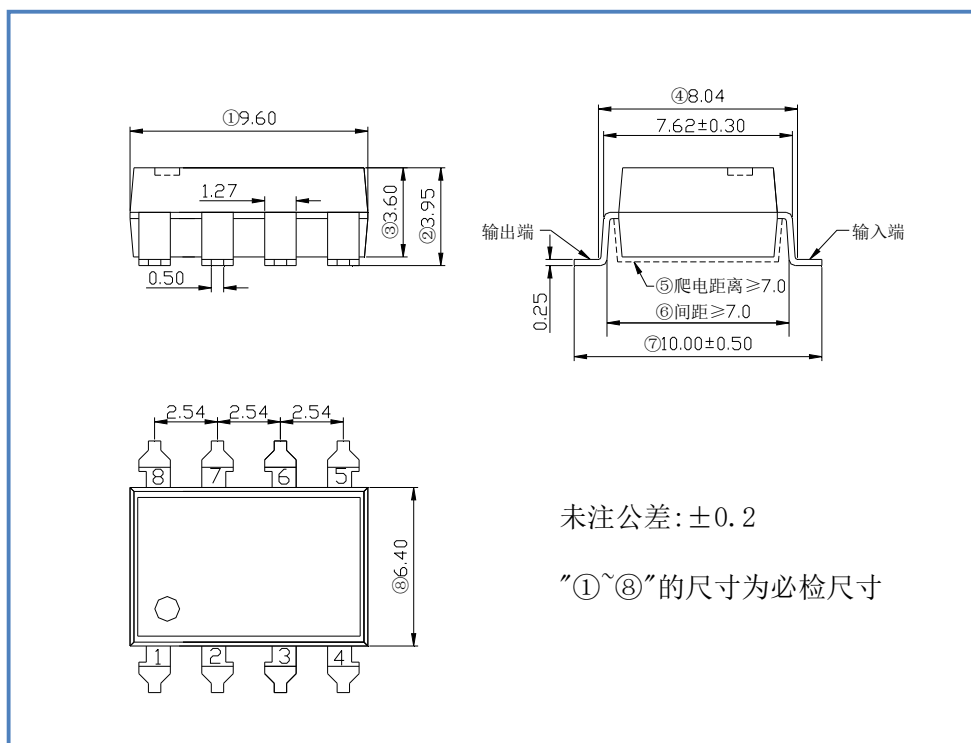


图 4 MT-AQW214EH 外形尺寸
Figure 4- The dimensions of HSSR-DA01-2

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: MT-AQW214EH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 MT-AQW214EH is shown as figure 5.

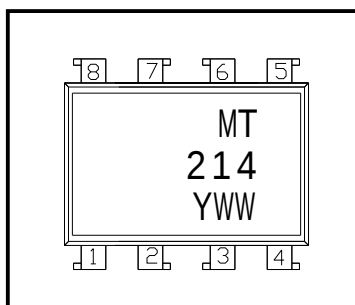


图 5 产品印章
Figure 5- Marking

9 包装方式 Packing

9.1 条管包装 (Tube): 适用于 For HSSR-DA01。

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.

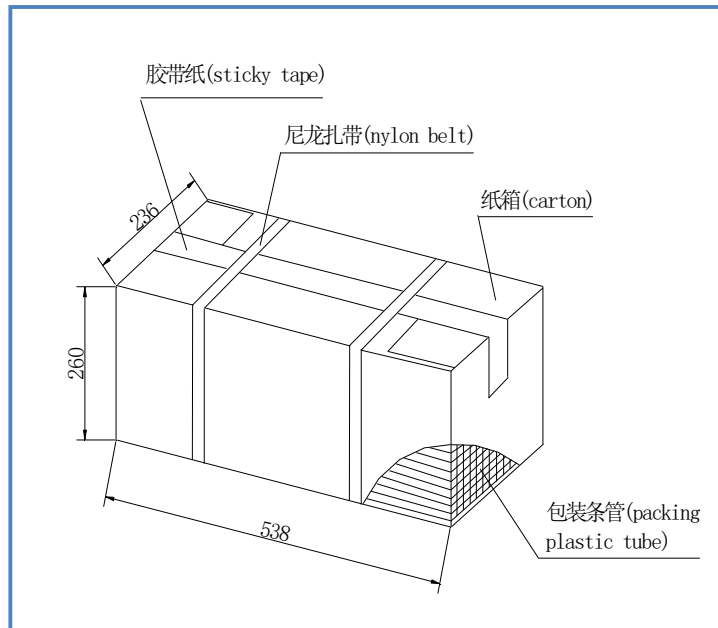
9.1.4 示意图 (Schematic):

图 6 条管外包装

Figure 6- Outer packing for Tube

9.2 编带包装 (Tape and reel): 适用于 For HSSR-DA01-2。

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):

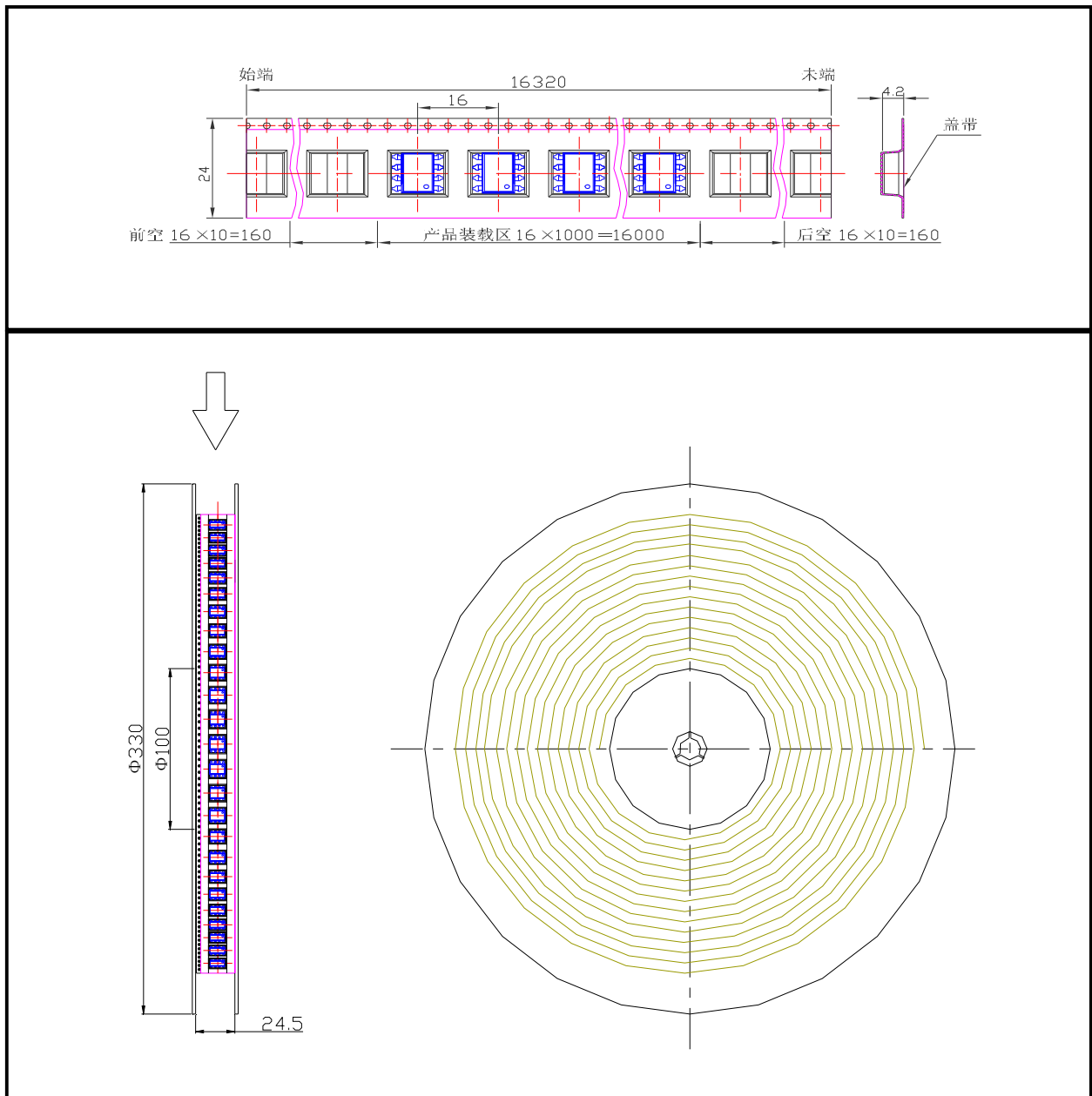


图 7 编带包装示意图

Figure 7- Taping Packing Schematic

9.3 标识 Label



图 8 标识 Figure 8-Label

9.4 注意事项 Note

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

推荐贮存湿度 Recommend storage humidity: <70%;

贮存有效期半年 Storage life: Half of a year.

9.4.2 湿气敏感度等级 3 级。MSL level: MSL 3.

9.5 引脚镀锡厚度：大于等于 5μm，平均 8μm~10μm。

Thickness of Sn which plated on lead frame: $\geq 5 \mu\text{m}$, average $8 \mu\text{m} \sim 10 \mu\text{m}$.