



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-UPA2003GR-E1

NPN SILICON EPITAXIAL DARLINGTON TRANSISTOR ARRAY

网址 www.sztdbdt.com Q

用芯智造 · 卓越品质

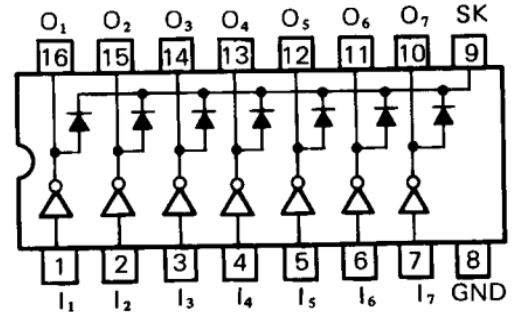
**semiconductor device
manufacturer**

- Design
- research and development
- production
- and sales



FEATURES

- Transient Protected Outputs
- High DC Current Gain
- High Output Drive Current
- High Output Voltage
- The packaging uses a 16-pin P-type interface.



DESCRIPTION

The μ PA2001C, 2002C, 2003C and 2004C are monolithic arrays of seven darlington transistors. These devices are especially suited for driving relays, solenoids, LED, lamps, and other devices with up to 0.3 A output current per unit.



ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents ($T_a = 25\text{ }^{\circ}\text{C}$)

Output Voltage	V_O	60	V
Input Voltage (except $\mu\text{PA2001C}$)	V_I	-0.5 to +30	V
Input Current (only $\mu\text{PA2001C}$)	I_I	25	mA/unit
Output Current	I_O	500	mA/unit
Output Current	I_{O^*}	2.3	A/package
Reverse Voltage (Clamp Diode)	V_R	60	V
Forward Current (Clamp Diode)	I_F	500	mA/unit

Maximum Power Dissipation

Total Power Dissipation	P_d	900	mW/package
Total Power Dissipation	P_{d^*}	2.5	W/package

Maximum Temperature

Operating Temperature	T_{opt}	-30 to + 75	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^{\circ}\text{C}$

* $PW \leq 20\text{ ms}$, duty cycle $\leq 10\%$

ELECTRICAL CHARACTERISTICS ($T_a = 25\text{ }^{\circ}\text{C}$)

CHARACTERISTIC		SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Output Leakage Current		I_L			10	μA	$V_{CE}=50\text{ V}$
					100	μA	$V_{CE}=50\text{ V}$, $T_a=70\text{ }^{\circ}\text{C}$
DC Current Gain		h_{FE}	1000	2800			$V_{CE}=2.0\text{ V}$, $I_O=350\text{ mA}$
Collector Saturation Voltage		$V_{CE(sat)}$		0.9	1.1	V	$I_O=100\text{ mA}$, $I_I=250\text{ }\mu\text{A}$
				1.0	1.3	V	$I_O=200\text{ mA}$, $I_I=350\text{ }\mu\text{A}$
				1.2	1.6	V	$I_O=350\text{ mA}$, $I_I=500\text{ }\mu\text{A}$
Input Voltage	$\mu\text{PA2002C}$	V_I			11	V	$V_{CE}=2.0\text{ V}$, $I_O=100\text{ mA}$
					12	V	$V_{CE}=2.0\text{ V}$, $I_O=200\text{ mA}$
					13.5	V	$V_{CE}=2.0\text{ V}$, $I_O=350\text{ mA}$
	$\mu\text{PA2003C}$				2.0	V	$V_{CE}=2.0\text{ V}$, $I_O=100\text{ mA}$
					2.4	V	$V_{CE}=2.0\text{ V}$, $I_O=200\text{ mA}$
					3.4	V	$V_{CE}=2.0\text{ V}$, $I_O=350\text{ mA}$
	$\mu\text{PA2004C}$				5.0	V	$V_{CE}=2.0\text{ V}$, $I_O=100\text{ mA}$
					6.0	V	$V_{CE}=2.0\text{ V}$, $I_O=200\text{ mA}$
					8.0	V	$V_{CE}=2.0\text{ V}$, $I_O=350\text{ mA}$
Input Current	$\mu\text{PA2002C}$	I_I			1.3	mA	$V_I=17\text{ V}$
	$\mu\text{PA2003C}$				1.35	mA	$V_I=3.85\text{ V}$
	$\mu\text{PA2004C}$				1.0	mA	$V_I=5.0\text{ V}$
Reverse Current (Clamp Diode)		I_R			50	μA	$V_R=50\text{ V}$
Forward Voltage (Clamp Diode)		V_F			2.0	V	$I_F=350\text{ mA}$
Terminal Capacitance		C_t		15		pF	$V_I=0$, $f=1.0\text{ MHz}$

Note: Input Voltage and Current of the $\mu\text{PA2001C}$ depend on external resistor.

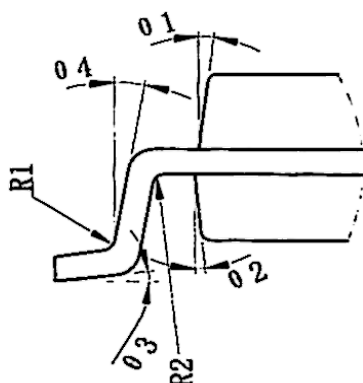
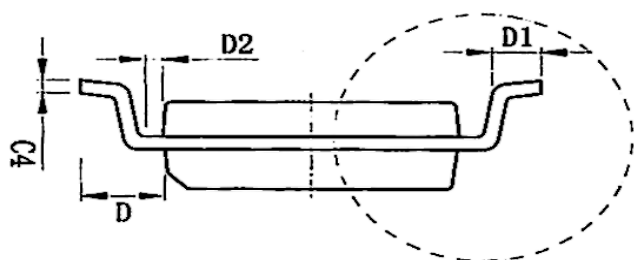
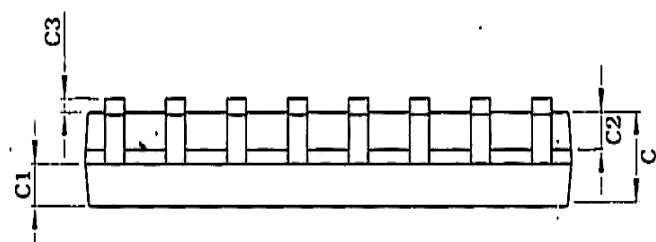
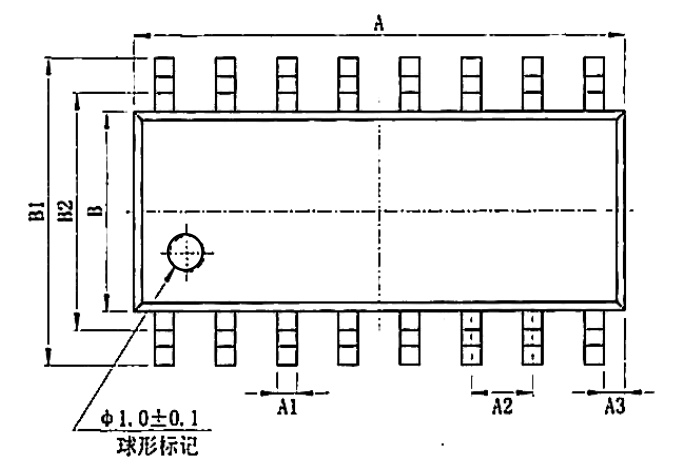


Order information

Order Number	Package	Package Quantity	Marking On The park
UPA2003GR-E1-TUDI	SOP16	Tape,Reel,2500	UPA2003GR-E1



Package SOP16



SIZE SYMBOL	MIN./mm	MAX./mm
A	9.80	10.00
A1	0.356	0.456
A2	1.27TYP	
A3	0.302TYP	
B	3.85	3.95
B1	5.84	6.24
B2	5.00 TYP	
C	1.40	1.60
C1	0.61	0.71
C2	0.54	0.64
C3	0.05	0.25
C4	0.203	0.233
D	1.05 TYP	
D1	0.40	0.70
D2	0.15	0.25
R1	0.20TYP	
R2	0.20TYP	
O1	8°~12°TYP4	
O2	8°~12°TYP4	
O3	0°~8°	
O4	4°~12°	



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