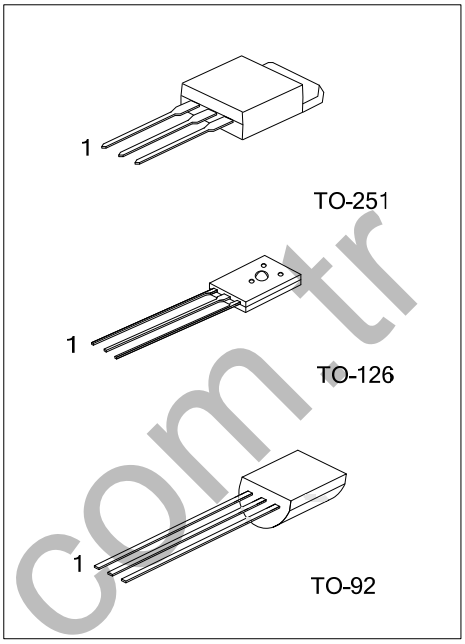
NPN SILICON BIPOLAR TRANSISTORS FOR LOW FREQUENCY AMPLIFICATION



■ DESCRIPTION

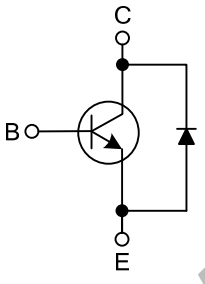
The UTC **13003ADA** is a silicon NPN power switching transistor; it uses UTC's advanced technology to provide customers high collector-base breakdown voltage, low reverse leakage current and high reliability, etc.

The UTC **13003ADA** is suitable for electronic ballast power switch circuit and the compact electronic energy-saving light.

■ FEATURES

* High collector-base breakdown voltage
* Low reverse leakage current
* High reliability

■ EQUIVALENT CIRCUIT



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
13003ADAL-TM3-T	13003ADAG-TM3-T	TO-251	B	C	E	Tube
13003ADAL-T60-F-K	13003ADAG-T60-F-K	TO-126	B	C	E	Bulk
13003ADAL-T92-F-B	13003ADAG-T92-F-B	TO-92	B	C	E	Tape Box
13003ADAL-T92-F-K	13003ADAG-T92-F-K	TO-92	B	C	E	Bulk

Note: Pin Assignment: B: Base C: Collector E: Emitter

13003ADAL-T60-F-B

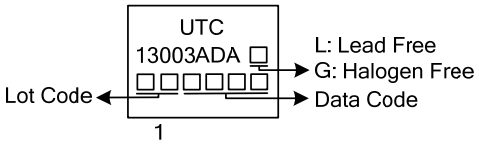
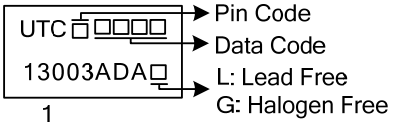
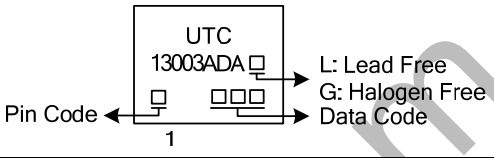
(1)Packing Type — (1) T: Tube, B: Bluk, K: Bulk

(2)Pin Assignment — (2) refer to Pin Assignment

(3)Package Type — (3) TM3: TO-251, T60: TO-126, T92: TO-92

(4)Lead Free — (4) L: Lead Free, G: Halogen Free

■ MARKING

PACKAGE	MARKING
TO-251	
TO-126	
TO-92	

■ ABSOLUTE MAXIMUM RATINGS (T_C=25°C, unless otherwise noted)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V_{CBO}	700	V
Collector-Emitter Voltage		V_{CEO}	450	V
Emitter-Base Voltage		V_{EBO}	9	V
Continuous Collector Current		I_C	1.5	A
Power Dissipation (T_C=25°C)	TO-251	P_D	10	W
	TO-126		20	W
	TO-92		1	W
Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{STG}	-55~+150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER		SYMBOL	RATING	UNIT
Junction to Ambient	TO-251	θ_{JA}	95	°C/W
	TO-126		107	
	TO-92		150	
Junction to Case	TO-251	θ_{JC}	13	°C/W
	TO-126		7.5	
	TO-92		100	

■ ELECTRICAL CHARACTERISTICS (T_A =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=0.1mA, I_E=0	700			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=1mA, I_B=0	450			V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E=0.1mA, I_C=0	9			V
Collector Cut-Off Current	I_{CBO}	V_{CB}=700V, I_E=0			100	μA
Collector-Emitter Cut-Off Current	I_{CEO}	V_{CE}=450V, I_B=0			50	μA
Emitter-Base Cut-Off Current	I_{EBO}	V_{EB}=7V, I_C=0			10	μA
DC Current Gain (Note)	h_{FE}	V_{CE}=5V, I_C=5mA	6		40	
		V_{CE}=10V, I_C=200mA	8		40	
		V_{CE}=5V, I_C=1.5mA	4			
Low current and high current h_{FE2} h_{FE1} ratio	h_{FE1}/ h_{FE2}	h_{FE1}: V_{CE}=5V, I_C=5mA	0.75	0.8		
		h_{FE2}: V_{CE}=5V, I_C=0.2A				
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	I_C=0.5A, I_B=0.1A		0.18	0.8	V
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	I_C=1.5A, I_B=0.5A		0.9	20	V
Storage Time	t_S	V_{CC}=24V, I_C=0.5A, I_{B1}=-I_{B2}=0.1A			4	μs
Rise Time	t_R					μs
Fall Time	t_F				0.7	μs
Transition Frequency	f_T	V_{CE}=10V, I_C=0.2A	4			MHz

Note: Pulse test, pulse width tp≤300μs, Duty cycle≤2%.