

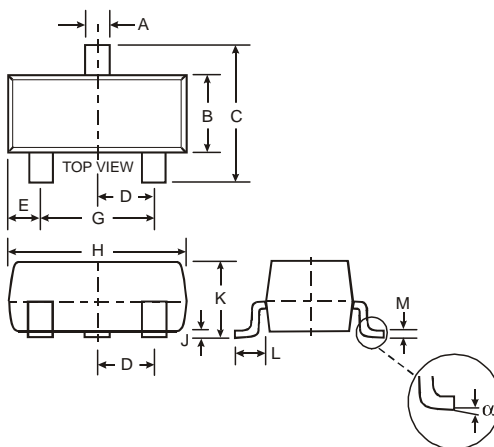
## Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 2)**

## Mechanical Data

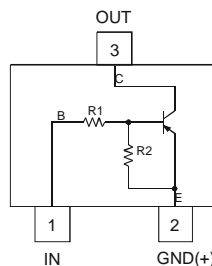
- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking and Date Code: See Table Below & Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTA113ZCA	1KΩ	10KΩ	P02
DDTA123YCA	2.2KΩ	10KΩ	P05
DDTA123JCA	2.2KΩ	47KΩ	P06
DDTA143XCA	4.7KΩ	10KΩ	P09
DDTA143FCA	4.7KΩ	22KΩ	P10
DDTA143ZCA	4.7KΩ	47KΩ	P11
DDTA114YCA	10KΩ	47KΩ	P14
DDTA114WCA	10KΩ	4.7KΩ	P15
DDTA124XCA	22KΩ	47KΩ	P18
DDTA144VCA	47KΩ	10KΩ	P21
DDTA144WCA	47KΩ	22KΩ	P22



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
α	0°	8°

All Dimensions in mm



Schematic and Pin Configuration



Equivalent Inverter Circuit

## Maximum Ratings @<sub>TA</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V <sub>CC</sub>	-50	V
Input Voltage, (1) to (2)	V <sub>IN</sub>	+5 to -10 +5 to -12 +5 to -12 +7 to -20 +6 to -30 +5 to -30 +6 to -40 +10 to -30 +10 to -40 +15 to -40 +10 to -40	V
Output Current	I <sub>O</sub>	-100 -100 -100 -100 -100 -100 -70 -100 -50 -30 -30	mA
Output Current	I <sub>C</sub> (Max)	-100	mA

Notes: 1. No purposefully added lead. Halogen and Antimony Free.  
2. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_d$	200	mW
Thermal Resistance, Junction to Ambient Air (Note 3)	$R_{\theta JA}$	625	$^{\circ}\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^{\circ}\text{C}$

Notes: 3. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

## Electrical Characteristics @ $T_A = 25^{\circ}\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	$V_{I(off)}$	-0.3			V	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$
		-0.3				
		-0.5				
		-0.3				
		-0.3				
		-0.5	—	—		
		-0.3				
		-0.8				
		-0.4				
		-1.0				
		-0.8				
Input Voltage	$V_{I(on)}$			-3.0	V	$V_O = -0.3\text{V}, I_O = -20\text{mA}$ $V_O = -0.3\text{V}, I_O = -20\text{mA}$ $V_O = -0.3\text{V}, I_O = -5\text{mA}$ $V_O = -0.3\text{V}, I_O = -20\text{mA}$ $V_O = -0.3\text{V}, I_O = -3\text{mA}$ $V_O = -0.3\text{V}, I_O = -5\text{mA}$ $V_O = -0.3\text{V}, I_O = -1\text{mA}$ $V_O = -0.3\text{V}, I_O = -2\text{mA}$ $V_O = -0.3\text{V}, I_O = -2\text{mA}$ $V_O = -0.3\text{V}, I_O = -2\text{mA}$ $V_O = -0.3\text{V}, I_O = -2\text{mA}$
				-3.0		
				-1.1		
				-2.5		
				-1.3		
			—	—		
				-1.3		
				-1.4		
				-3.0		
				-2.5		
				-5.0		
		-4.0				
Output Voltage	$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -5\text{mA}/-0.25\text{mA}$ DDTA123JCA $I_O/I_I = -5\text{mA}/-0.25\text{mA}$ DDTA143ZCA $I_O/I_I = -5\text{mA}/-0.25\text{mA}$ DDTA114YCA $I_O/I_I = -10\text{mA}/-0.5\text{mA}$ All Others
Input Current	$I_I$			-7.2	mA	$V_I = -5\text{V}$
				-3.8		
				-3.6		
				-1.8		
				-1.8		
			—	—		
				-1.8		
				-0.88		
				-0.88		
				-0.36		
				-0.16		
		-0.16				
Output Current	$I_{O(off)}$	—	—	-0.5	$\mu\text{A}$	$V_{CC} = -50\text{V}, V_I = 0\text{V}$
DC Current Gain	$G_I$	-33			—	$V_O = -5\text{V}, I_O = -10\text{mA}$
		-33				
		-80				
		-30				
		-68				
		-80	—	—		
		-68				
		-24				
		-68				
		-33				
		-56				
Input Resistor Tolerance	$\Delta R_1$	-30	—	+30	%	—
Resistance Ratio Tolerance	$\Delta R_2/R_1$	-20	—	+20	%	—
Gain-Bandwidth Product*	$f_T$	—	250	—	MHz	$V_{CE} = -10\text{V}, I_E = 5\text{mA}, f = 100\text{MHz}$

\* Transistor - For Reference Only

**Typical Curves – DDTA123JCA**

NEW PRODUCT



Fig. 1 Derating Curve

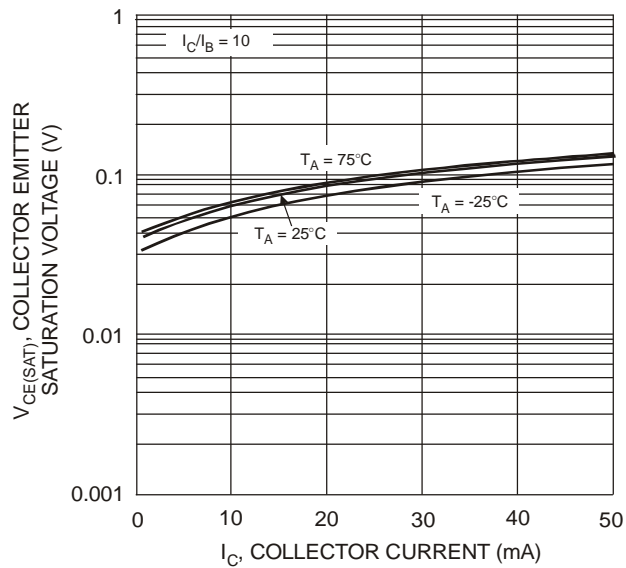


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$



Fig. 3 DC Current Gain



Fig. 4 Output Capacitance



Fig. 5 Collector Current vs. Input Voltage

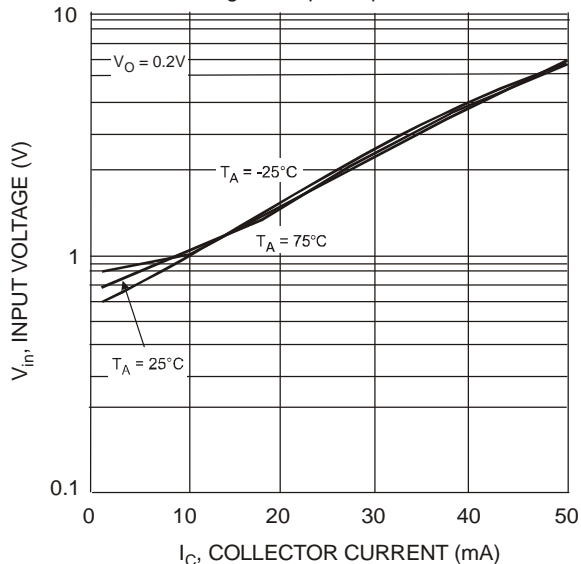


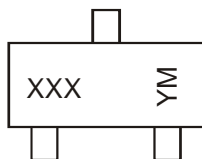
Fig. 6 Input Voltage vs. Collector Current

## Ordering Information (Note 4)

Device	Packaging	Shipping
DDTA113ZCA-7-F	SOT-23	3000/Tape & Reel
DDTA123YCA-7-F	SOT-23	3000/Tape & Reel
DDTA123JCA-7-F	SOT-23	3000/Tape & Reel
DDTA143XCA-7-F	SOT-23	3000/Tape & Reel
DDTA143FCA-7-F	SOT-23	3000/Tape & Reel
DDTA143ZCA-7-F	SOT-23	3000/Tape & Reel
DDTA114YCA-7-F	SOT-23	3000/Tape & Reel
DDTA114WCA-7-F	SOT-23	3000/Tape & Reel
DDTA124XCA-7-F	SOT-23	3000/Tape & Reel
DDTA144VCA-7-F	SOT-23	3000/Tape & Reel
DDTA144WCA-7-F	SOT-23	3000/Tape & Reel

Notes: 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



XXX = Product Type Marking Code, See Table on Page 1  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

Year	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	R	S	T	U	V	W	X	Y	Z

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

### LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.