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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



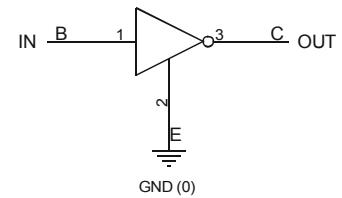
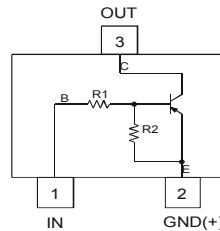
**PNP PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR**
**Features**

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1 = R2
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

**Mechanical Data**

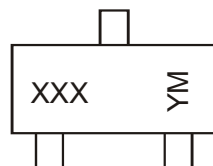
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.008 grams (approximate)

Part Number	R1, R2 (NOM)
DDTA123ECA	2.2KΩ
DDTA143ECA	4.7KΩ
DDTA114ECA	10KΩ
DDTA124ECA	22KΩ
DDTA144ECA	47KΩ
DDTA115ECA	100KΩ


**Ordering Information** (Notes 3 & 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTA123ECA-7-F	AEC-Q101	P04	7	8	3,000
DDTA143ECA-7-F	AEC-Q101	P08	7	8	3,000
DDTA114ECA-7-F	AEC-Q101	P13	7	8	3,000
DDTA114ECAQ-7-F	Automotive	P13	7	8	3,000
DDTA114ECAQ-13-F	Automotive	P13	13	8	10,000
DDTA124ECA-7-F	AEC-Q101	P17	7	8	3,000
DDTA144ECA-7-F	AEC-Q101	P20	7	8	3,000
DDTA144ECAQ-13-F	Automotive	P20	13	8	10,000
DDTA115ECA-7-F	AEC-Q101	P24	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


XXX = Product Type Marking Code, See Ordering Information  
 YM = Date Code Marking  
 Y = Year (ex: X = 2010)  
 M = Month (ex: 9 = September)

**Date Code Key**

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	N	P	R	S	T	U	V	W	X	Y	Z	A	B	C	D	E

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

**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>		$V_{CC}$	50	V
Input Voltage <Pin: (1) to (2)>	DDTA123ECA	$V_{IN}$	+10 to -12	V
	DDTA143ECA		+10 to -30	
	DDTA114ECA		+10 to -40	
	DDTA124ECA		+10 to -40	
	DDTA144ECA		+10 to -40	
	DDTA115ECA		+10 to -40	
Output Current	DDTA123ECA	$I_O$	-100	mA
	DDTA143ECA		-100	
	DDTA114ECA		-50	
	DDTA124ECA		-30	
	DDTA144ECA		-30	
	DDTA115ECA		-20	
Output Current		$I_C$ (Max)	-100	mA

**Thermal Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Notes: 6. Mounted on FR4 PC Board with minimum recommended pad layout

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage		$V_{I(off)}$	-0.5	-1.1	—	V	$V_{CC} = -5V, I_O = -100\mu\text{A}$ $V_O = -0.3V, I_O = -20\text{mA}$ , DDTA123ECA $V_O = -0.3V, I_O = -20\text{mA}$ , DDTA143ECA $V_O = -0.3V, I_O = -10\text{mA}$ , DDTA114ECA $V_O = -0.3V, I_O = -5\text{mA}$ , DDTA124ECA $V_O = -0.3V, I_O = -2\text{mA}$ , DDTA144ECA $V_O = -0.3V, I_O = -1\text{mA}$ , DDTA115ECA
		$V_{I(on)}$	—	-1.9	-3		
Output Voltage		$V_{O(on)}$	—	-0.1	-0.3	V	$I_O/I_I = -10\text{mA}/-0.5\text{mA}$ DDTA123ECA $I_O/I_I = -10\text{mA}/-0.5\text{mA}$ DDTA143ECA $I_O/I_I = -10\text{mA}/-0.5\text{mA}$ DDTA114ECA $I_O/I_I = -10\text{mA}/-0.5\text{mA}$ DDTA124ECA $I_O/I_I = -10\text{mA}/-0.5\text{mA}$ DDTA144ECA $I_O/I_I = -5\text{mA}/-0.25\text{mA}$ DDTA115ECA
Input Current	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	$I_I$	—	—	-3.8 -1.8 -0.88 -0.36 -0.18 -0.15	mA	$V_I = -5V$
Output Current		$I_{O(off)}$	—	—	-0.5	$\mu\text{A}$	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	$G_I$	20 20 30 56 68 82	—	—	—	$V_O = -5V, I_O = -20\text{mA}$ $V_O = -5V, I_O = -10\text{mA}$ $V_O = -5V, I_O = -5\text{mA}$ $V_O = -5V, I_O = -5\text{mA}$ $V_O = -5V, I_O = -5\text{mA}$
Input Resistor Tolerance		$\Delta R_1$	-30	—	+30	%	—
Resistance Ratio Tolerance		$\Delta R_2/R_1$	0.8	1	1.2	%	—
Gain-Bandwidth Product (Note 7)		$f_T$	—	250	—	MHz	$V_{CE} = -10V, I_E = -5\text{mA}$ , $f = 100\text{MHz}$

Note: 7. Transistor - For Reference Only



**Typical Characteristics – DDTA143ECA** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

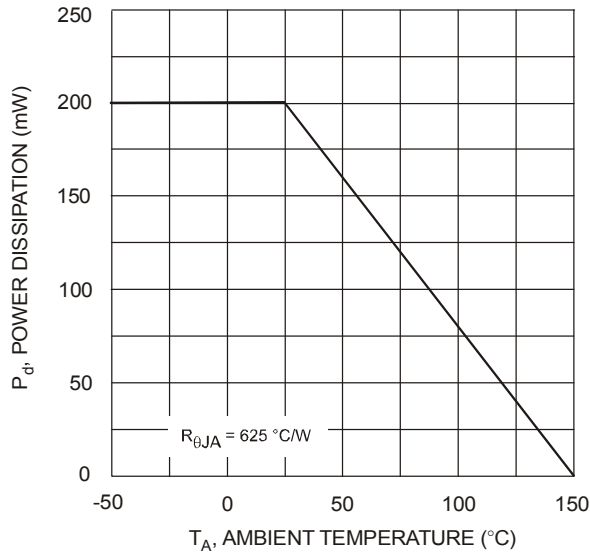


Fig. 1 Derating Curve

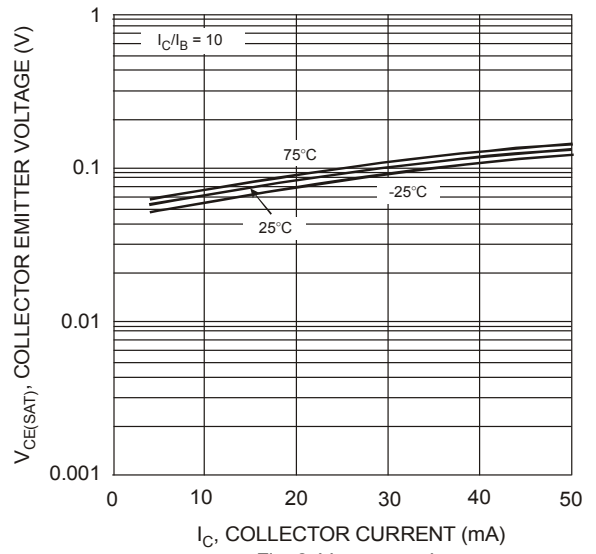


Fig. 2  $V_{CE(SAT)}$  vs.  $I_C$

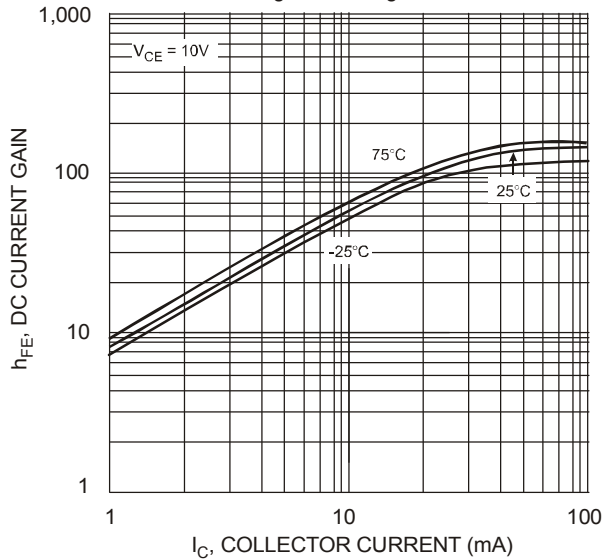


Fig. 3 DC Current Gain

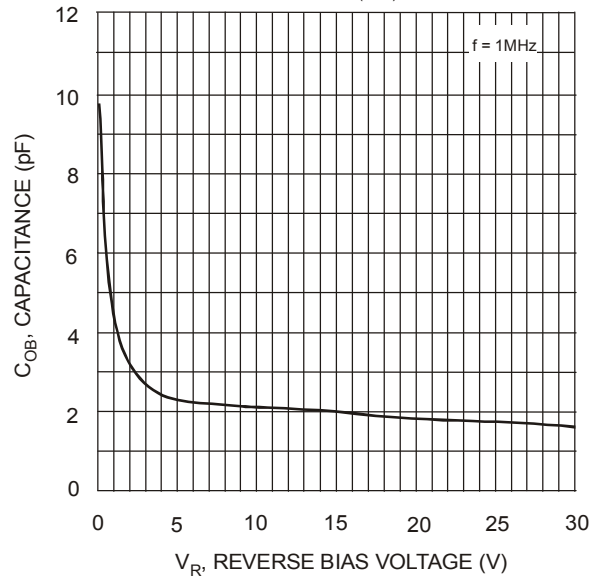


Fig. 4 Output Capacitance

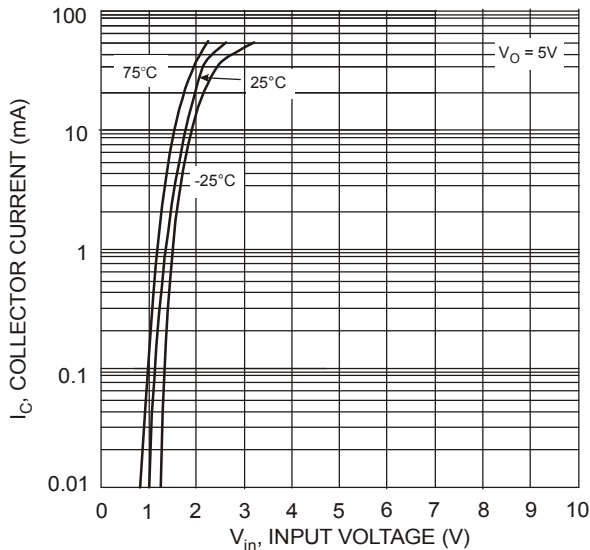


Fig. 5 Collector Current vs. Input Voltage

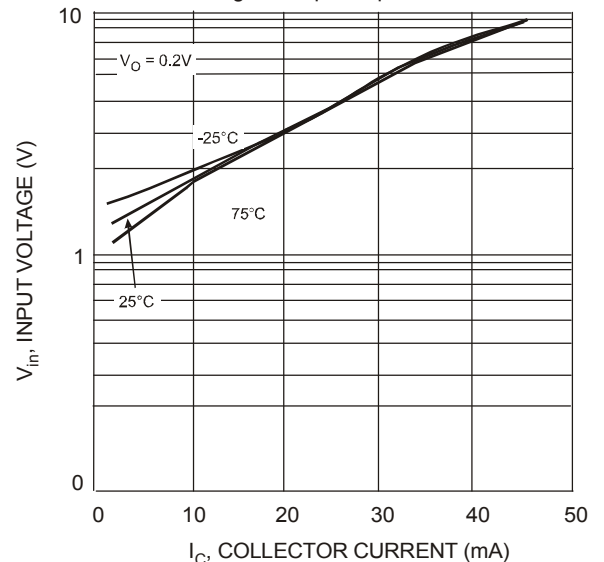
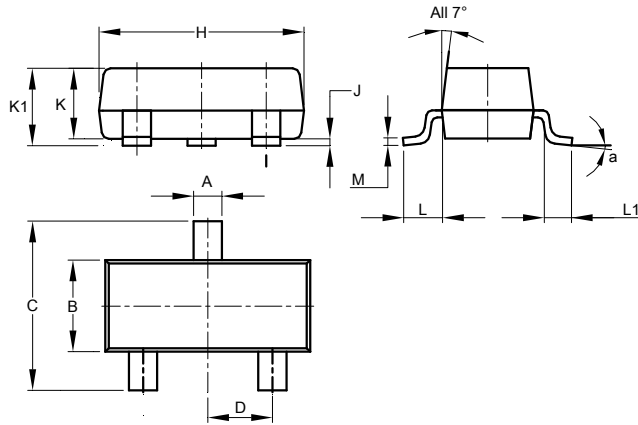


Fig. 6 Input Voltage vs. Collector Current

## Package Outline Dimensions

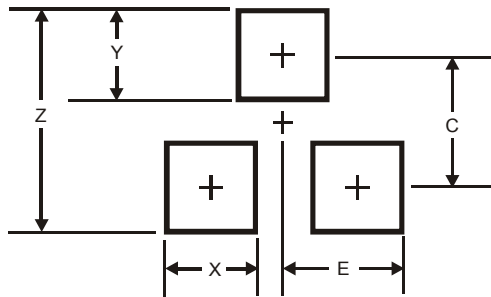
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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