

#### PNP PRE-BIASED SMALL SIGNAL SOT23 SURFACE MOUNT TRANSISTOR

#### **Features**

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1 = R2
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

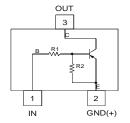
#### **Mechanical Data**

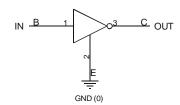
- Case: SOT23
- Case material: Molded Plastic. "Green" Molding Compound.
- Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.008 grams (approximate)

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

SOT23







Top View

**Device Schematic** 

**Equivalent Inverter Circuit** 

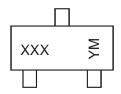
### Ordering Information (Note 3 & 4)

Product	Grade	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTA123ECA-7-F	Commercial	P04	7	8	3,000
DDTA143ECA-7-F	Commercial	P08	7	8	3,000
DDTA114ECA-7-F	Commercial	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	Commercial	P17	7	8	3,000
DDTA144ECA-7-F	Commercial	P20	7	8	3,000
DDTA115ECA-7-F	Commercial	P24	7	8	3,000

Notes:

- 1. No purposefully added lead.
- 2. Diodes Inc's "Green" policy can be found on our website at http://www.diodes.com.
- 3. For packaging details, go to our website at http://www.diodes.com.
- 4. Products with Q-suffix are automotive grade. Automotive products are electrical and thermal the same as the commercial, except where specified.

# **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

- and dodd may																
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	N	Ρ	R	S	Т	U	V	W	Χ	Υ	Z	Α	В	C	D	Е
Month	Jan	F	eb	Mar	Apr	M	lay	Jun	Jul	Α	ug	Sep	Oct	N	ov	Dec
Code	1		2	3	4		5	6	7		3	9	0	1	١	D



### **Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Ch	aracteristic	Symbol	Value	Unit	
Supply Voltage <pin: (2)="" (3)="" to=""></pin:>		V <sub>CC</sub>	50	V	
Input Voltage <pin: (1)="" (2)="" to=""></pin:>	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	V <sub>IN</sub>	+10 to -12 +10 to -30 +10 to -40 +10 to -40 +10 to -40 +10 to -40	V	
Output Current	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	lo	-100 -100 -50 -30 -30 -20	mA	
Output Current	·	I <sub>C</sub> (Max)	-100	mA	

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5 & 6)	P <sub>D</sub>	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{ heta JA}$	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

Notes:

<sup>5.</sup> Mounted on FR4 PC Board with minimum recommended pad layout

<sup>6. 150</sup>mW per element must not be exceeded.

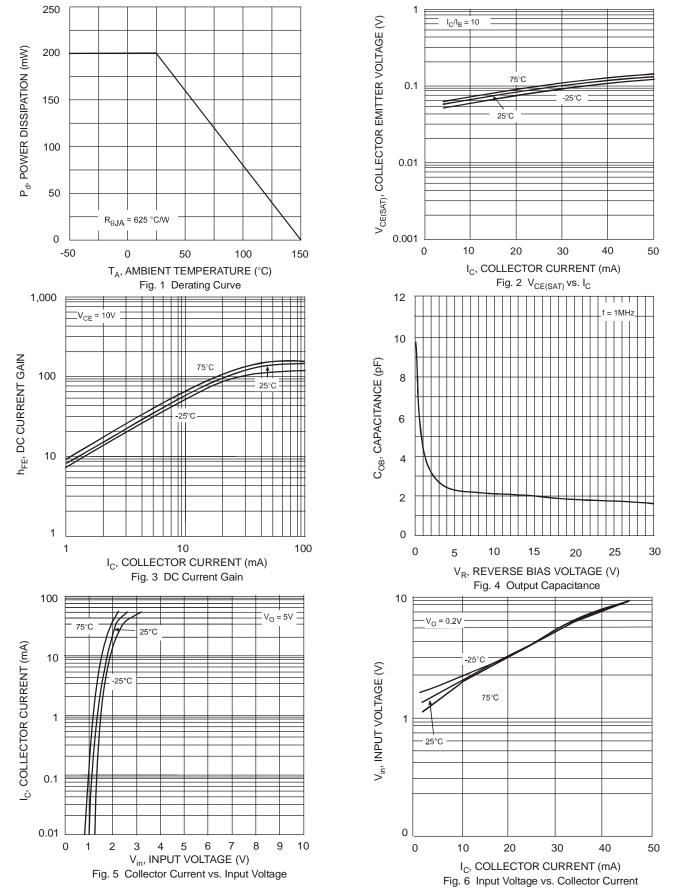


# **Electrical Characteristics** @TA = 25°C unless otherwise specified

Chara	cteristic	Symbol	Min	Тур	Max	Unit	Test Condition
		V <sub>I(off)</sub>	-0.5	-1.1	_		$V_{CC} = -5V, I_{O} = -100\mu A$
Input Voltage			_	-1.9	-3	V	$\begin{array}{l} V_O = -0.3V, \ I_O = -20 mA, \ DDTA123ECA \\ V_O = -0.3V, \ I_O = -20 mA, \ DDTA143ECA \\ V_O = -0.3V, \ I_O = -10 mA, \ DDTA114ECA \\ V_O = -0.3V, \ I_O = -5 mA, \ DDTA124ECA \\ V_O = -0.3V, \ I_O = -2 mA, \ DDTA144ECA \\ V_O = -0.3V, \ I_O = -1 mA, \ DDTA115ECA \\ \end{array}$
Output Voltage		V <sub>O(on)</sub>	_	-0.1	-0.3	V	$\begin{array}{llllllllllllllllllllllllllllllllllll$
Input Current	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	I <sub>I</sub>	_		-3.8 -1.8 -0.88 -0.36 -0.18 -0.15	mA	V <sub>I</sub> = -5V
Output Current	_	I <sub>O(off)</sub>	_		-0.5	μΑ	$V_{CC} = -50V, V_{I} = 0V$
DC Current Gain	DDTA123ECA DDTA143ECA DDTA114ECA DDTA124ECA DDTA144ECA DDTA115ECA	G <sub>I</sub>	20 20 30 56 68 82	_		_	$V_O = -5V$ , $I_O = -20mA$ $V_O = -5V$ , $I_O = -10mA$ $V_O = -5V$ , $I_O = -5mA$ $V_O = -5V$ , $I_O = -5mA$ $V_O = -5V$ , $I_O = -5mA$ $V_O = -5V$ , $I_O = -5mA$
Input Resistor Tolerance		$\Delta R_1$	-30	_	+30	%	_
Resistance Ratio Tolerance	Resistance Ratio Tolerance		0.8	1	1.2	%	_
Gain-Bandwidth Product		f <sub>T</sub>	_	250	_	MHz	$V_{CE} = -10V, I_{E} = -5mA,$ f = 100MHz

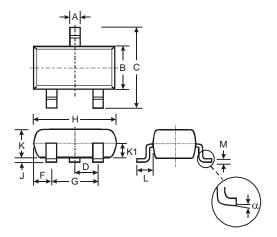


# Typical Characteristics - DDTA143ECA



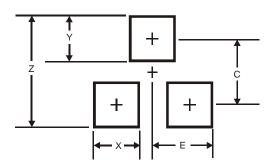


# **Package Outline Dimensions**



	SOT23								
Dim	Min	Max	Тур						
Α	0.37	0.51	0.40						
В	1.20	1.40	1.30						
С	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						
Н	2.80	3.00	2.90						
J	0.013	0.10	0.05						
K	0.903	1.10	1.00						
K1	-	-	0.400						
L	0.45	0.61	0.55						
M	0.085	0.18	0.11						
α	0°	8°	-						
All Dimensions in mm									

# **Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.9
Х	0.8
Y	0.9
С	2.0
Е	1.35



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