

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

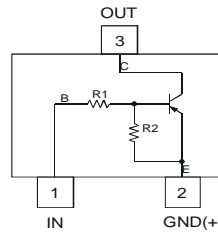
Mechanical Data

- 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)

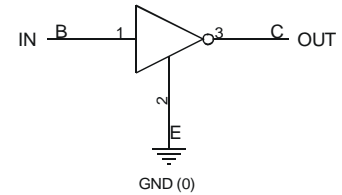
Part Number	R1, R2 (NOM)
DDTA123ECA	2.2KΩ
DDTA143ECA	4.7KΩ
DDTA114ECA	10KΩ
DDTA124ECA	22KΩ
DDTA144ECA	47KΩ
DDTA115ECA	100KΩ



Top View



Device Schematic

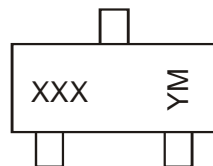


Equivalent Inverter Circuit

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

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

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 5 & 6)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Notes: 5. Mounted on FR4 PC Board with minimum recommended pad layout
6. 150mW per element must not be exceeded.

Electrical Characteristics @T_A = 25°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 = -100μA
		V _{I(on)}	—	-1.9	-3		V _O = -0.3V, I _O = -20mA, DDTA123ECA V _O = -0.3V, I _O = -20mA, DDTA143ECA V _O = -0.3V, I _O = -10mA, DDTA114ECA V _O = -0.3V, I _O = -5mA, DDTA124ECA V _O = -0.3V, I _O = -2mA, DDTA144ECA V _O = -0.3V, I _O = -1mA, DDTA115ECA
Output Voltage		V _{O(on)}	—	-0.1	-0.3	V	I _O /I _I = -10mA/-0.5mA DDTA123ECA I _O /I _I = -10mA/-0.5mA DDTA143ECA I _O /I _I = -10mA/-0.5mA DDTA114ECA I _O /I _I = -10mA/-0.5mA DDTA124ECA I _O /I _I = -10mA/-0.5mA DDTA144ECA I _O /I _I = -5mA/-0.25mA 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	μA	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 = -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		ΔR ₁	-30	—	+30	%	—
Resistance Ratio Tolerance		ΔR ₂ /R ₁	0.8	1	1.2	%	—
Gain-Bandwidth Product		f _T	—	250	—	MHz	V _{CE} = -10V, I _E = -5mA, f = 100MHz

Typical Characteristics – DDTA143ECA

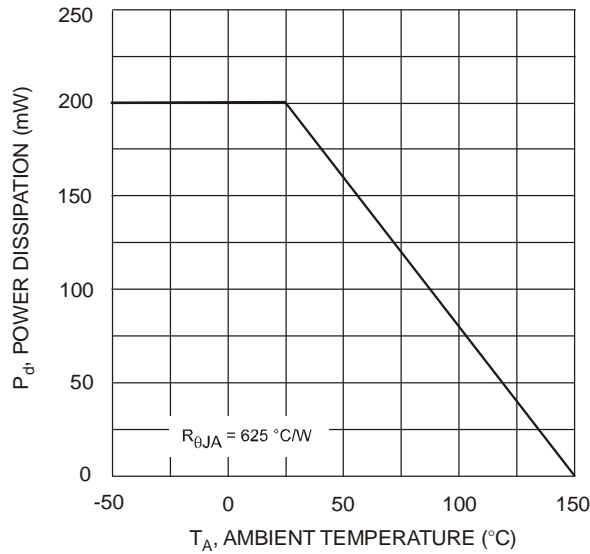


Fig. 1 Derating Curve

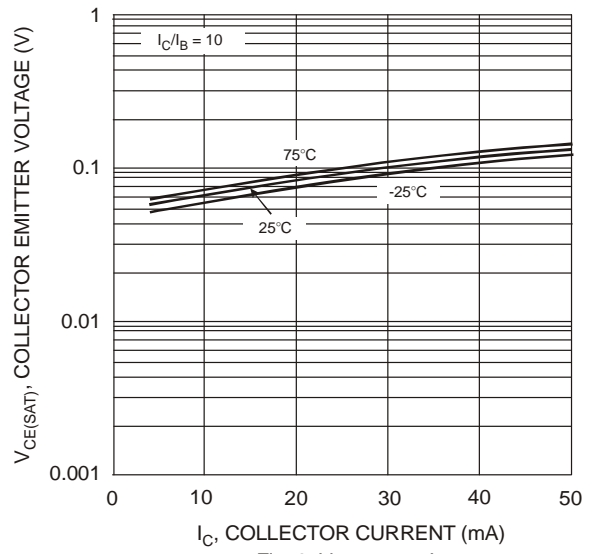


Fig. 2 $V_{CE(SAT)}$ vs. I_C

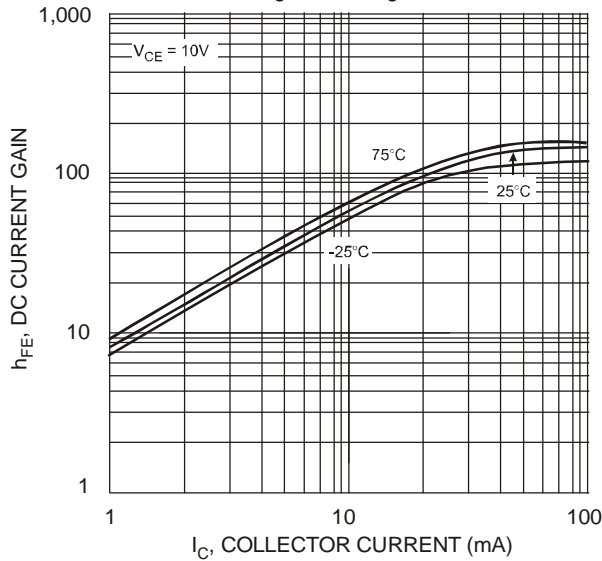


Fig. 3 DC Current Gain

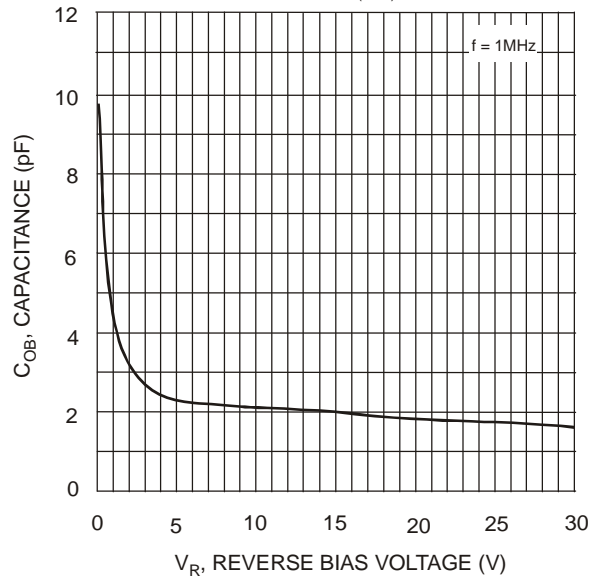


Fig. 4 Output Capacitance

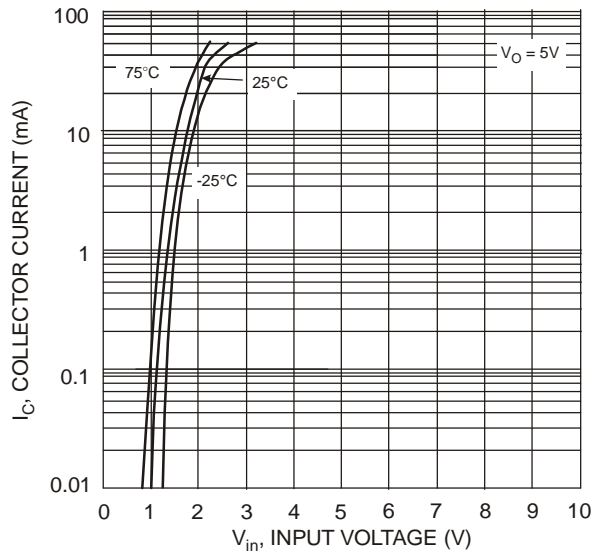


Fig. 5 Collector Current vs. Input Voltage

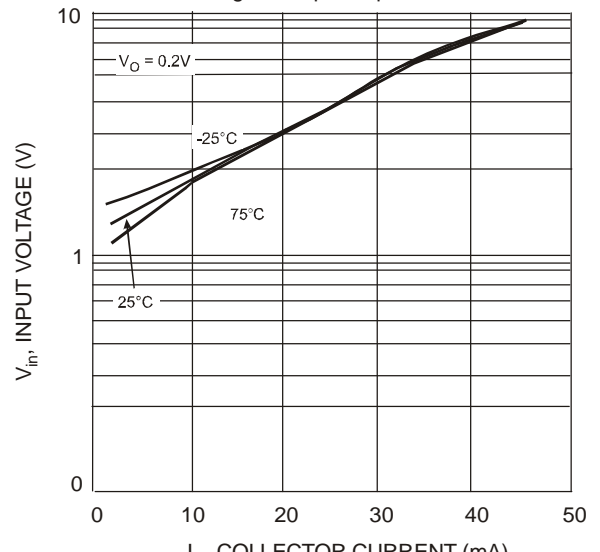
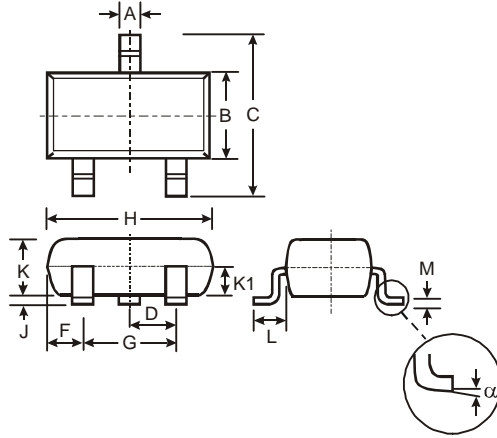


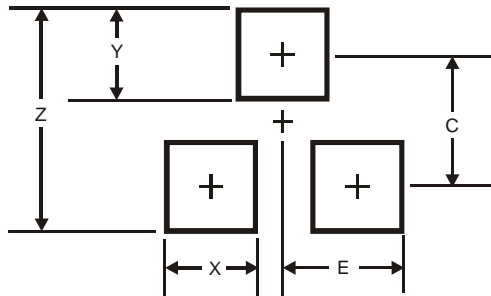
Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions



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	0.903	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
X	0.8
Y	0.9
C	2.0
E	1.35

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