



NPN PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR

Product Summary

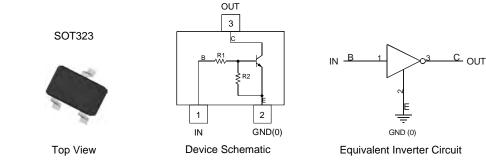
Part Number	R1, R2 (NOM)
DDTC123EUA	2.2ΚΩ
DDTC143EUA	4.7ΚΩ
DDTC114EUA	10KΩ
DDTC124EUA	22ΚΩ
DDTC144EUA	47ΚΩ
DDTC115EUA	100ΚΩ

Features and Benefits

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- 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: SOT323
- 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)



Ordering Information (Notes 3 & 4)

Product	Grade	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTC123EUA-7-F	Commercial	N04	7	8	3,000
DDTC143EUA-7-F	Commercial	N08	7	8	3,000
DDTC114EUA-7-F	Commercial	N13	7	8	3,000
DDTC124EUA-7-F	Commercial	N17	7	8	3,000
DDTC124EUAQ-7-F	Automotive	N17	7	8	3,000
DDTC124EUAQ-13-F	Automotive	N17	13	8	10,000
DDTC144EUA-7-F	Commercial	N20	7	8	3,000
DDTC144EUAQ-7-F	Automotive	N20	7	8	3,000
DDTC144EUAQ-13-F	Automotive	N20	13	8	10,000
DDTC115EUA-7-F	Commercial	N24	7	8	3,000

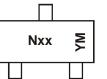
Notes: 1. No purposefully added lead.

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



Nxx = Product Type Marking Code (See Table Above) YM = Date Code Marking Y = Year (ex: X = 2010)

M = Month (ex: 9 = September)

Date Code Key	,				
Year	2002	2003	2004	2005	20
Code	N	Р	R	Ś	

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	Ν	Р	R	S	Т	U	V	W	Х	Y	Z	Α	В	С	D	E
Month	Jan	F	eb	Mar	Apr	M	lav	Jun	Jul	A		Sep	Oct	N	ov	Dec
	Uan		0.0	Initial			-	oun			ug		001			Dec
Code	1		2	3	4		5	6	7	1 8	3	9			N	D



Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage <pine: (2)="" (3)="" to=""></pine:>		Vcc	50	V
Input Voltage <pin: (1)="" (2)="" to=""></pin:>	DDTC123EUA DDTC143EUA DDTC114EUA DDTC124EUA DDTC124EUA DDTC144EUA DDTC115EUA	V _{IN}	-10 to +12 -10 to +30 -10 to +40 -10 to +40 -10 to +40 -10 to +40	V
Output Current	DDTC123EUA DDTC143EUA DDTC114EUA DDTC124EUA DDTC124EUA DDTC144EUA DDTC115EUA	lo	100 100 50 30 100 20	mA
Output Current	All	I _{C(MAX)}	100	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Notes 5 & 6)	PD	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{ ext{ heta}JA}$	625	°C/W
Operating and Storage Temperature Range	TJ, T _{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

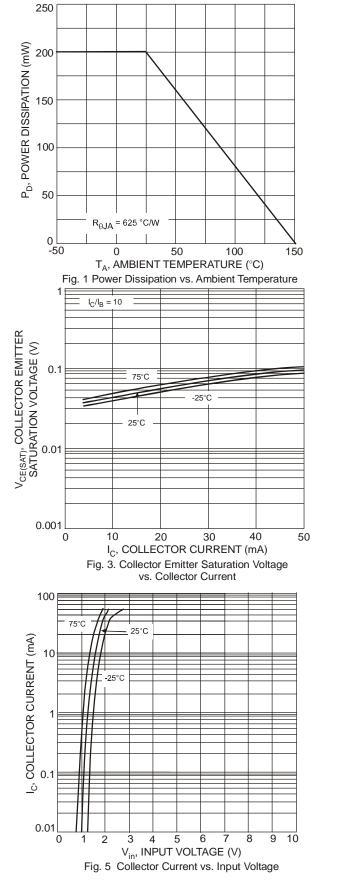
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
		VI(OFF)	0.5	1.1	_	V	$V_{CC} = 5V, I_{O} = 100 \mu A$
Input Voltage		V _{I(ON)}		1.9	3	V	$ \begin{array}{l} V_{O}=0.3V,\ I_{O}=20mA,\ DDTC123EUA\\ V_{O}=0.3V,\ I_{O}=20mA,\ DDTC143EUA\\ V_{O}=0.3V,\ I_{O}=10mA,\ DDTC114EUA\\ V_{O}=0.3V,\ I_{O}=5mA,\ DDTC124EUA\\ V_{O}=0.3V,\ I_{O}=2mA,\ DDTC144EUA\\ V_{O}=0.3V,\ I_{O}=1mA,\ DDTC115EUA\\ \end{array} $
Output Voltage		V _{O(ON)}	_	0.1	0.3	>	$\begin{split} & _O/I_{ } = 10 \text{mA}/0.5 \text{mA}, \text{DDTC123EUA} \\ & _O/I_{ } = 10 \text{mA}/0.5 \text{mA}, \text{DDTC143EUA} \\ & _O/I_{ } = 10 \text{mA}/0.5 \text{mA}, \text{DDTC114EUA} \\ & _O/I_{ } = 10 \text{mA}/0.5 \text{mA}, \text{DDTC124EUA} \\ & _O/I_{ } = 10 \text{mA}/0.5 \text{mA}, \text{DDTC144EUA} \\ & _O/I_{ } = 5 \text{mA}/0.25 \text{mA}, \text{DDTC115EUA} \end{split}$
Input Current	DDTC123EUA DDTC143EUA DDTC114EUA DDTC124EUA DDTC124EUA DDTC144EUA DDTC115EUA	h		_	3.8 1.8 0.88 0.36 0.18 0.15	mA	V ₁ = 5V
Output Current		I _{O(OFF)}	_	_	0.5	μA	$V_{CC} = 50V, V_{I} = 0V$
DC Current Gain	DDTC123EUA DDTC143EUA DDTC114EUA DDTC124EUA DDTC124EUA DDTC144EUAQ DDTC114EUAQ	Gı	20 20 30 56 68 80 82				$ \begin{array}{l} V_{O}=5V, \ I_{O}=20mA \\ V_{O}=5V, \ I_{O}=10mA \\ V_{O}=5V, \ I_{O}=5mA \end{array} $
Input Resistor (R ₁) Tolerance		ΔR_1	-30	_	+30	%	
Resistance Ratio		R ₂ /R ₁	0.8	1	1.2	—	
Gain-Bandwidth Product*		f _T	_	250	_	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

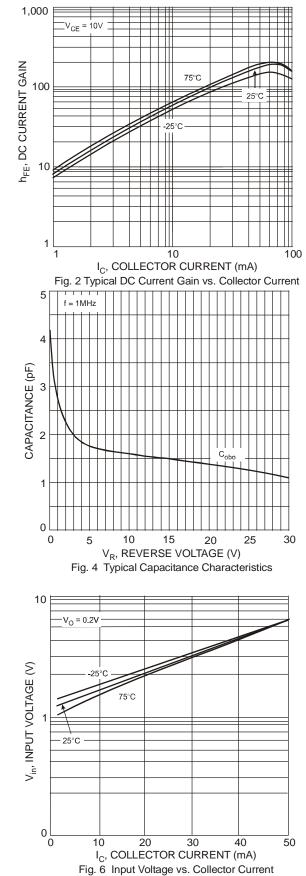
* Transistor - For Reference Only

5. Mounted on FR4 PC Board with recommended pad layout as shown on Diodes Inc., suggested pad layout document AP02001, which can be found on Notes: our website at http://www.diodes.com.6. 150mW per element must not be exceeded.



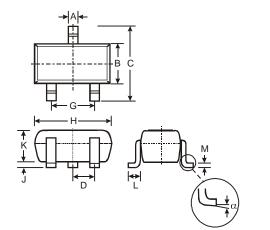
Typical Curves – DDTC143EUA @T_A = 25°C unless otherwise specified





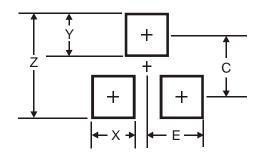


Package Outline Dimensions



SOT323									
Dim	Min	Max	Тур						
Α	0.25	0.40	0.30						
В	1.15	1.35	1.30						
С	2.00	2.20	2.10						
D	-	-	0.65						
G	1.20	1.40	1.30						
Н	1.80	2.20	2.15						
J	0.0	0.10	0.05						
Κ	0.90	1.00	1.00						
L	0.25	0.40	0.30						
М	0.10	0.18	0.11						
α	0°	8°	-						
All									

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.8
Х	0.7
Y	0.9
С	1.9
E	1.0



IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein 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 Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
 - 1. are intended to implant into the body, or
 - 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2011, Diodes Incorporated

www.diodes.com