

## Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- Surface Mount Package Suited for Automated Assembly
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

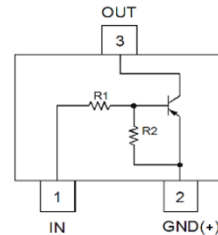
## Mechanical Data

- Case: SOT323
- 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 (Q3)
- Weight: 0.006 grams (Approximate)

Part Number	R1(NOM)	R2(NOM)
DDTB113EU	1k $\Omega$	1k $\Omega$
DDTB123EU	2.2k $\Omega$	2.2k $\Omega$
DDTB143EU	4.7k $\Omega$	4.7k $\Omega$
DDTB114EU	10k $\Omega$	10k $\Omega$
DDTB122JU	0.22k $\Omega$	4.7k $\Omega$
DDTB113ZU	1k $\Omega$	10k $\Omega$
DDTB123YU	2.2k $\Omega$	10k $\Omega$
DDTB133HU	3.3k $\Omega$	10k $\Omega$
DDTB123TU	2.2k $\Omega$	Open
DDTB143TU	4.7k $\Omega$	Open
DDTB114TU	10k $\Omega$	Open
DDTB114GU	0	10k $\Omega$



Top View



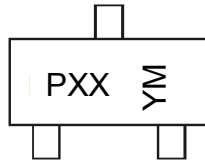
Device Schematic

## Ordering Information (Note 4)

Product	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDTB113EU-7-F	Obsolete	Standard	P60	7	8	3,000
DDTB123EU-7-F	Obsolete	Standard	P61	7	8	3,000
DDTB143EU-7-F	Active	Standard	P62	7	8	3,000
DDTB114EU-7-F	Obsolete	Standard	P63	7	8	3,000
DDTB122JU-7-F	Obsolete	Standard	P64	7	8	3,000
DDTB113ZU-7-F	Obsolete	Standard	P65	7	8	3,000
DDTB123YU-7-F	Obsolete	Standard	P66	7	8	3,000
DDTB133HU-7-F	Obsolete	Standard	P67	7	8	3,000
DDTB123TU-7-F	Obsolete	Standard	P69	7	8	3,000
DDTB143TU-7-F	Obsolete	Standard	P70	7	8	3,000
DDTB114TU-7-F	Obsolete	Standard	P71	7	8	3,000
DDTB114GU-7-F	Obsolete	Standard	P72	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



PXX = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: I = 2021)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2016	.....	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	D	.....	I	J	K	L	M	N	O	P	R	S
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<sub>A</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)	DDTB113EU	V <sub>IN</sub>	+10 to -10	V
	DDTB123EU		+10 to -12	
	DDTB143EU		+10 to -30	
	DDTB114EU		+10 to -40	
	DDTB122JU		+5 to -5	
	DDTB113ZU		+5 to -10	
	DDTB123YU		+5 to -12	
DDTB133HU	+6 to -20			
Input Voltage, (2) to (1)	DDTB123TU	V <sub>EBO (MAX)</sub>	-5	V
	DDTB143TU			
	DDTB114TU			
	DDTB114GU			
Output Current	All	I <sub>C</sub>	-500	mA

## Thermal Characteristics (@ T<sub>A</sub> = +25°C, unless otherwise specified.)

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

Note: 5. Mounted on FR4 PC Board with minimum recommended pad layout.

**Electrical Characteristics** (@ T<sub>A</sub> = +25°C, unless otherwise specified.) **R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	V <sub>I(off)</sub>	-0.5 -0.5 -0.5 -0.5 -0.3 -0.3 -0.3	—	—	V	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA
	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	V <sub>I(on)</sub>	—	—	-3.0 -3.0 -3.0 -3.0 -3.0 -2.0 -2.0 -2.0	V	V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -10mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -30mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA V <sub>O</sub> = -0.3V, I <sub>O</sub> = -20mA
Output Voltage		V <sub>O(on)</sub>	—	—	-0.3	V	I <sub>O</sub> /I <sub>I</sub> = -50mA/-2.5mA
Input Current	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	I <sub>I</sub>	—	—	-7.2 -3.8 -1.8 -0.88 -28 -7.2 -3.6 -2.4	mA	V <sub>I</sub> = -5V
Output Current		I <sub>O(off)</sub>	—	—	-0.5	μA	V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V
DC Current Gain	DDTB113EU DDTB123EU DDTB143EU DDTB114EU DDTB122JU DDTB113ZU DDTB123YU DDTB133HU	G <sub>I</sub>	33 39 47 56 47 56 56 56	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 50mA
Gain-Bandwidth Product (Note 6)		f <sub>T</sub>	—	200	—	MHZ	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHZ

**Electrical Characteristics** @ T<sub>A</sub> = 25°C unless otherwise specified **R1-Only, R2-Only Types**

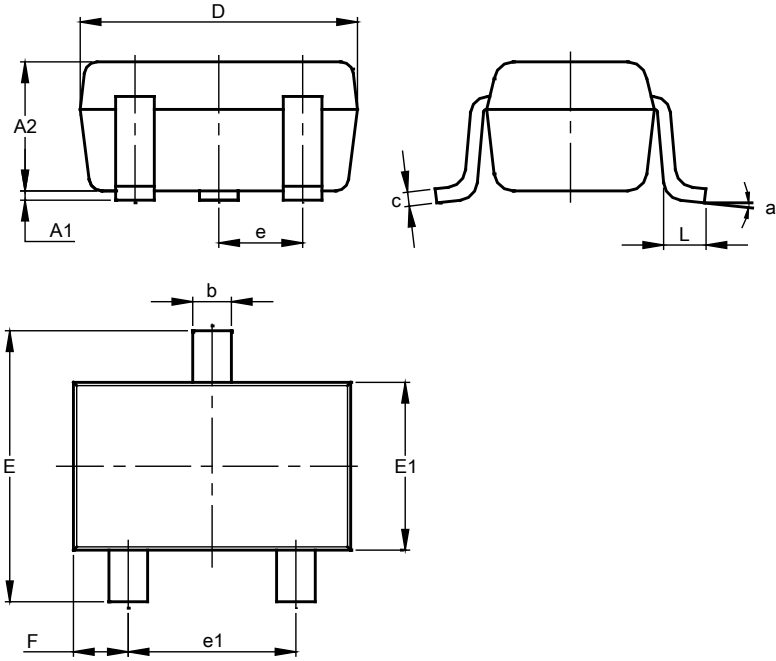
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV <sub>CB0</sub>	-50	—	—	V	I <sub>C</sub> = -50μA
Collector-Emitter Breakdown Voltage		BV <sub>CEO</sub>	-40	—	—	V	I <sub>C</sub> = -1mA
Emitter-Base Breakdown Voltage	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	BV <sub>EBO</sub>	-5	—	—	V	I <sub>E</sub> = -50μA I <sub>E</sub> = -50μA I <sub>E</sub> = -50μA I <sub>E</sub> = -720μA
Collector Cutoff Current		I <sub>CB0</sub>	—	—	-0.5	μA	V <sub>CB</sub> = -50V
Emitter Cutoff Current	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	I <sub>EBO</sub>	— — — -300	—	-0.5 -0.5 -0.5 -580	μA	V <sub>EB</sub> = -4V
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	—	—	-0.3	V	I <sub>C</sub> = -50mA, I <sub>B</sub> = -2.5mA
DC Current Transfer Ratio	DDTB123TU DDTB143TU DDTB114TU DDTB114GU	h <sub>FE</sub>	100 100 100 56	250 250 250 —	600 600 600 —	—	I <sub>C</sub> = -5mA, V <sub>CE</sub> = -5V
Gain-Bandwidth Product (Note 6)		f <sub>T</sub>	—	200	—	MHZ	V <sub>CE</sub> = -10V, I <sub>E</sub> = -5mA, f = 100MHZ

Note: 6. Transistor - for reference only

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT323

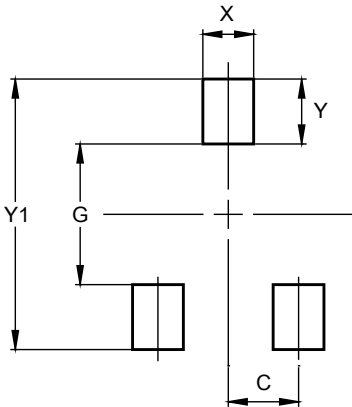


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
<b>All Dimensions in mm</b>			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT323



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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