

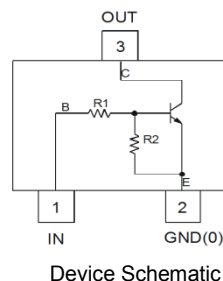
## Features

- 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](#) 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)
DDTD113EU	1kΩ	10kΩ
DDTD123EU	2.2kΩ	2.2kΩ
DDTD143EU	4.7kΩ	4.7kΩ
DDTD114EU	10kΩ	10kΩ
DDTD122JU	0.22kΩ	4.7kΩ
DDTD113ZU	1kΩ	10kΩ
DDTD123YU	2.2kΩ	10kΩ
DDTD133HU	3.3kΩ	10kΩ
DDTD123TU	2.2kΩ	Open
DDTD143TU	4.7kΩ	Open
DDTD114TU	10kΩ	Open
DDTD114GU	0	10kΩ

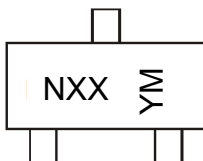


## Ordering Information (Note 4)

Product	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDTD113EU-7-F	Obsolete	Standard	N60	7	8	3,000
DDTD123EU-7-F	Obsolete	Standard	N61	7	8	3,000
DDTD143EU-7-F	Obsolete	Standard	N62	7	8	3,000
DDTD114EU-7-F	Obsolete	Standard	N63	7	8	3,000
DDTD122JU-7-F	Obsolete	Standard	N64	7	8	3,000
DDTD113ZU-7-F	Active	Standard	N65	7	8	3,000
DDTD123YU-7-F	Obsolete	Standard	N66	7	8	3,000
DDTD133HU-7-F	Obsolete	Standard	N67	7	8	3,000
DDTD123TU-7-F	Active	Standard	N69	7	8	3,000
DDTD143TU-7-F	Obsolete	Standard	N70	7	8	3,000
DDTD114TU-7-F	Obsolete	Standard	N71	7	8	3,000
DDTD114GU-7-F	Obsolete	Standard	N72	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



NXX = 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)	V <sub>IN</sub>	DDTD113EU -10 to +10 DDTD123EU -10 to +12 DDTD143EU -10 to +30 DDTD114EU -10 to +40 DDTD122JU -5 to +5 DDTD113ZU -5 to +10 DDTD123YU -5 to +12 DDTD133HU -6 to +20	V
Input Voltage, (2) to (1)	V <sub>EBO (MAX)</sub>	5	V
Output Current	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** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.) **R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU	$V_{I(off)}$	0.5 0.5 0.5 0.5 0.3 0.3 0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu\text{A}$
	DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU	$V_{I(on)}$	—	—	3.0 3.0 3.0 3.0 3.0 2.0 2.0 2.0	V	$V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 10\text{mA}$ $V_O = 0.3V, I_O = 30\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$ $V_O = 0.3V, I_O = 20\text{mA}$
Output Voltage		$V_{O(on)}$	—	—	0.3V	V	$I_O/I_I = 50\text{mA}/2.5\text{mA}$
Input Current	DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU	$I_I$	—	—	7.2 3.8 1.8 0.88 28 7.2 3.6 2.4	mA	$V_I = 5V$
Output Current		$I_{O(off)}$	—	—	0.5	$\mu\text{A}$	$V_{CC} = 50V, V_I = 0V$
DC Current Gain	DDTD113EU DDTD123EU DDTD143EU DDTD114EU DDTD122JU DDTD113ZU DDTD123YU DDTD133HU	$G_I$	33 39 47 56 47 56 56 56	—	—	—	$V_O = 5V, I_O = 50\text{mA}$
Gain-Bandwidth Product (Note 6)		$f_T$	—	200	—	MHz	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$

**Electrical Characteristics** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified) **R1-Only, R2-Only Types**

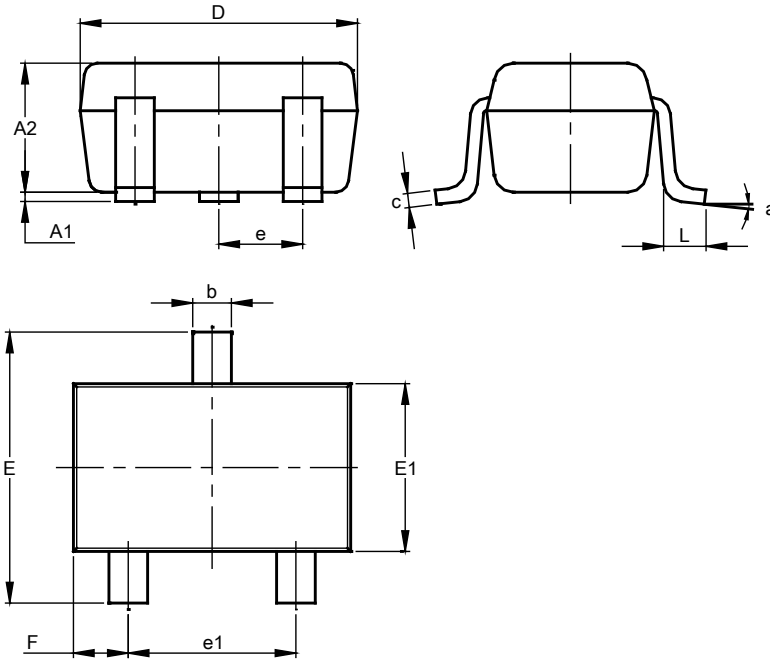
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		$BV_{CBO}$	50	—	—	V	$I_C = 50\mu\text{A}$
Collector-Emitter Breakdown Voltage		$BV_{CEO}$	40	—	—	V	$I_C = 1\text{mA}$
Emitter-Base Breakdown Voltage	DDTD123TU DDTD143TU DDTD114TU DDTD114GU	$BV_{EBO}$	5	—	—	V	$I_E = 50\mu\text{A}$ $I_E = 50\mu\text{A}$ $I_E = 50\mu\text{A}$ $I_E = 720\mu\text{A}$
Collector Cutoff Current		$I_{CBO}$	—	—	0.5	$\mu\text{A}$	$V_{CB} = 50V$
Emitter Cutoff Current	DDTD123TU DDTD143TU DDTD114TU DDTD114GU	$I_{EBO}$	— — — 300	—	0.5 0.5 0.5 580	$\mu\text{A}$	$V_{EB} = 4V$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	0.3	V	$I_C = 50\text{mA}, I_B = 2.5\text{mA}$
DC Current Transfer Ratio	DDTD123TU DDTD143TU DDTD114TU DDTD114GU	$h_{FE}$	100 100 100 56	250 250 250 —	600 600 600 —	—	$I_C = 5\text{mA}, V_{CE} = 5V$
Gain-Bandwidth Product (Note 6)		$f_T$	—	200	—	MHz	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$

Note: 6. Transistor - for reference only

**Package Outline Dimensions**

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

SOT323

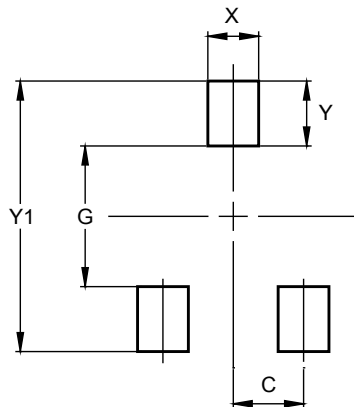


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**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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