



**THE DATASHEET OF  
DDTD142JU-7-F**



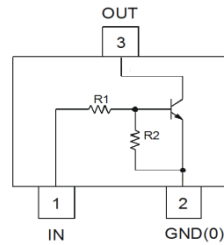
## Features

- Complementary PNP Types Available (DDTB)
- 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 refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**

Part Number	R1(NOM)	R2(NOM)
DDTD122LU	0.22k $\Omega$	10k $\Omega$
DDTD142JU	0.47k $\Omega$	10k $\Omega$
DDTD122TU	0.22k $\Omega$	Open
DDTD142TU	0.47k $\Omega$	Open



Top View



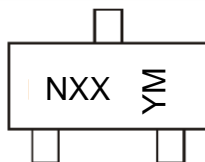
Device Schematic

## Ordering Information (Note 4)

Part Number	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DDTD122LU-7-F	Obsolete	Standard	N75	7	8	3,000
DDTD142JU-7-F	Active	Standard	N76	7	8	3,000
DDTD122TU-7-F	Obsolete	Standard	N77	7	8	3,000
DDTD142TU-7-F	Obsolete	Standard	N78	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	2010	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	X	...	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.)

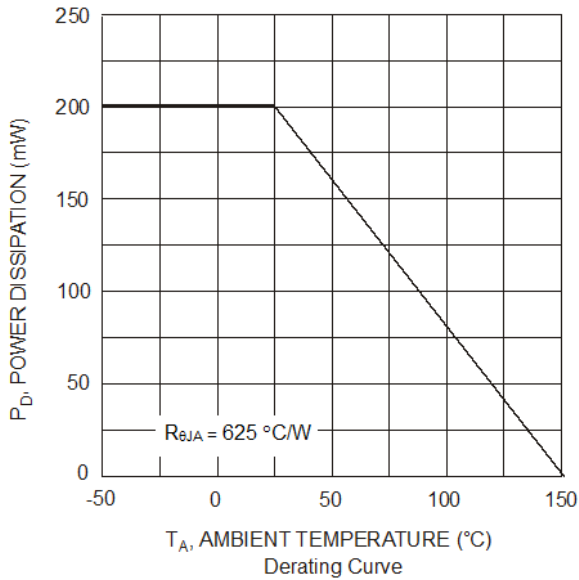
Characteristic		Symbol	Value	Unit
Supply Voltage, (3) to (2)		V <sub>CC</sub>	50	V
Input Voltage, (1) to (2)	DDTD122TU DDTD142TU	V <sub>IN</sub>	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	DDTD122TU DDTD142TU	V <sub>EBO(MAX)</sub>	5	V
Output Current	All	I <sub>C</sub>	500	mA

**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.

**Power Derating Curve**



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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTD122LU DDTD142JU	V <sub>I(off)</sub>	0.3 0.3	—	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
	DDTD122LU DDTD142JU	V <sub>I(on)</sub>	—	—	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
Output Voltage		V <sub>O(on)</sub>	—	—	0.3	V	I <sub>O</sub> /I <sub>I</sub> = 50mA/2.5mA
Input Current	DDTD122LU DDTD142JU	I <sub>I</sub>	—	—	28 13	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	DDTD122LU DDTD142JU	G <sub>I</sub>	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 Types**

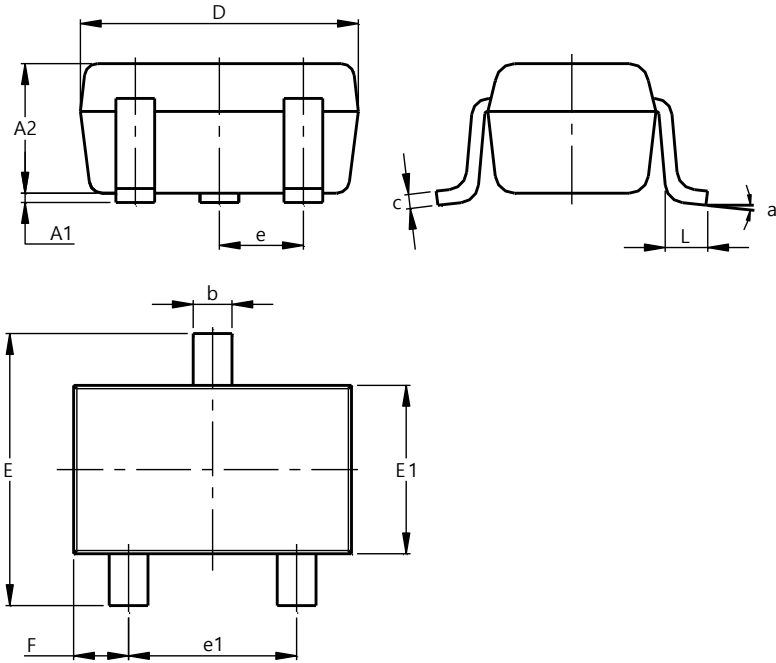
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV <sub>CBO</sub>	50	—	—	V	I <sub>C</sub> = 50μA
Collector-Emitter Breakdown Voltage		BV <sub>CEO</sub>	40	—	—	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	DDTD122TU DDTD142TU	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> = 50μA I <sub>E</sub> = 50μA
Collector Cutoff Current		I <sub>CBO</sub>	—	—	0.5	μA	V <sub>CB</sub> = 50V
Emitter Cutoff Current	DDTD122TU DDTD142TU	I <sub>EBO</sub>	— —	— —	0.5 0.5	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	DDTD122TU DDTD142TU	h <sub>FE</sub>	100 100	250 250	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**

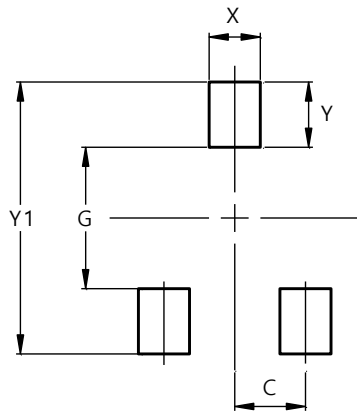


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**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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