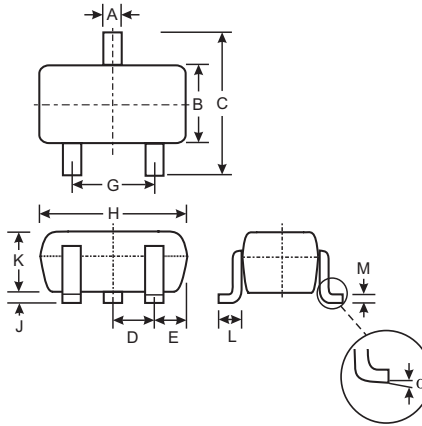


Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device, Note 3 and 4**

Mechanical Data

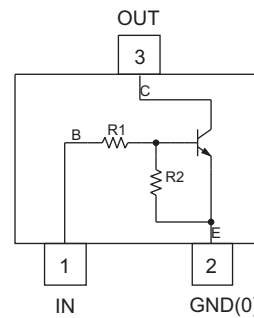
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking: Date Code and Marking Code (See Diagrams & Page 2)
- Ordering Information (See Page 2)
- Weight: 0.006 grams (approximate)



SOT-323		
Dim	Min	Max
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
α	0°	8°

All Dimensions in mm

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDTD122LU	0.22K Ω	10K Ω	N75
DDTD142JU	0.47K Ω	10K Ω	N76
DDTD122TU	0.22K Ω	OPEN	N77
DDTD142TU	0.47K Ω	OPEN	N78



Schematic and Pin Configuration

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V _{CC}	50	V
Input Voltage, (1) to (2)	V _{IN}	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	V _{EBO (MAX)}	5	V
Output Current	I _C	500	mA
Power Dissipation (Note 1)	P _d	200	mW
Thermal Resistance, Junction to Ambient Air (Note 1)	R _{θJA}	625	°C/W
Operating and Storage and Temperature Range	T _j , T _{STG}	-55 to +150	°C

- Note:
1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Electrical Characteristics @ T_A = 25°C unless otherwise specified

R1, R2 Types

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTD122LU DDTD142JU	V _{I(off)}	0.3 0.3	—	—	V	V _{CC} = 5V, I _O = 100μA
	DDTD122LU DDTD142JU	V _{I(on)}	—	—	2.0 2.0	V	V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA
Output Voltage		V _{O(on)}	—	—	0.3V	V	I _O /I _I = 50mA/2.5mA
Input Current	DDTD122LU DDTD142JU	I _I	—	—	28 13	mA	V _I = 5V
Output Current		I _{O(off)}	—	—	0.5	μA	V _{CC} = 50V, V _I = 0V
DC Current Gain	DDTD122LU DDTD142JU	G _I	56 56	—	—	—	V _O = 5V, I _O = 50mA
Gain-Bandwidth Product*		f _T	—	200	—	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

* Transistor - For Reference Only

Electrical Characteristics @ T_A = 25°C unless otherwise specified

R1-Only, R2-Only Types

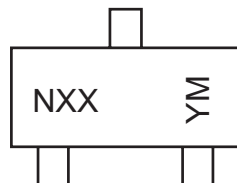
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV _{CBO}	50	—	—	V	I _C = 50μA
Collector-Emitter Breakdown Voltage		BV _{CEO}	40	—	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	DDTD122TU DDTD142TU	BV _{EBO}	5	—	—	V	I _E = 50μA I _E = 50μA
Collector Cutoff Current		I _{CBO}	—	—	0.5	μA	V _{CB} = 50V
Emitter Cutoff Current	DDTD122TU DDTD142TU	I _{EBO}	—	—	0.5 0.5	μA	V _{EB} = 4V
Collector-Emitter Saturation Voltage		V _{CE(sat)}	—	—	0.3	V	I _C = 50mA, I _B = 2.5mA
DC Current Transfer Ratio	DDTD122TU DDTD142TU	h _{FE}	100 100	250 250	600 600	—	I _C = 5mA, V _{CE} = 5V
Gain-Bandwidth Product*		f _T	—	200	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz

* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTD122LU-7-F	SOT-323	3000/Tape & Reel
DDTD142JU-7-F	SOT-323	3000/Tape & Reel
DDTD122TU-7-F	SOT-323	3000/Tape & Reel
DDTD142TU-7-F	SOT-323	3000/Tape & Reel

- Notes: 4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information


NXX = Product Type Marking Code
See Sheet 1 Diagrams
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	N	P	R	S	T	U	V	W	X	Y	Z

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

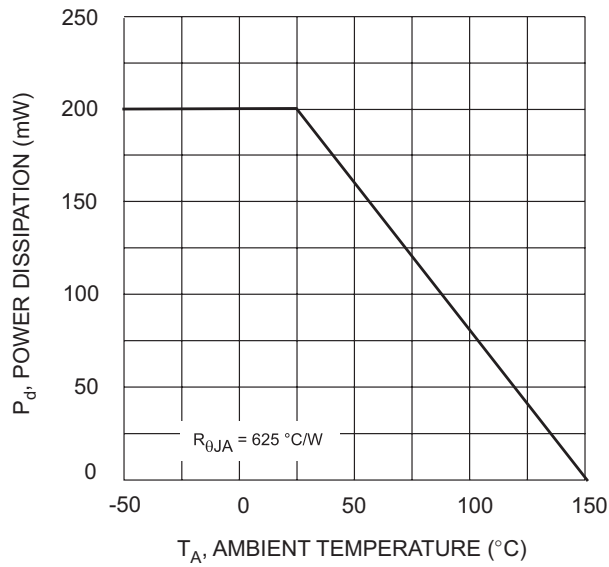


Fig. 1 Power Derating Curve

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