

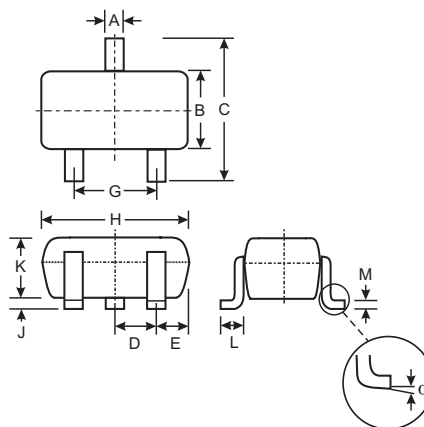
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTD)
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3 & 4)**

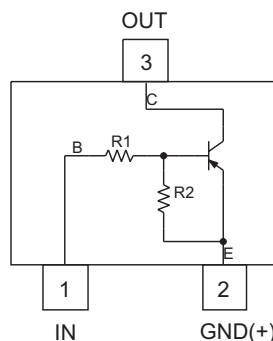
Mechanical Data

- 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 Type Code, See Page 2
- Ordering Information (See Page 2)
- Weight: 0.006 grams (approximate)

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTB122LU	0.22K Ω	10K Ω	P75
DDTB142JU	0.47K Ω	10K Ω	P76
DDTB122TU	0.22K Ω	OPEN	P77
DDTB142TU	0.47K Ω	OPEN	P78



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		



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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

R1, R2 Types

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTB122LU DDTB142JU	$V_{I(off)}$	-0.3 -0.3	—	V	$V_{CC} = -5V, I_O = -100\mu A$
	DDTB122LU DDTB142JU	$V_{I(on)}$	—	-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	DDTB122LU DDTB142JU	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	DDTB122LU DDTB142JU	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 @ $T_A = 25^\circ\text{C}$ unless otherwise specified

R1-Only Types

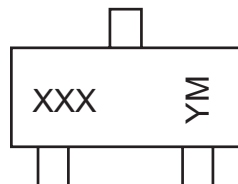
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	—	—	V	$I_C = -50\mu A$
Collector-Emitter Breakdown Voltage	BV_{CEO}	-40	—	—	V	$I_C = -1mA$
Emitter-Base Breakdown Voltage	DDTB122TU DDTB142TU	BV_{EBO}	-5	—	V	$I_E = -50\mu A$ $I_E = -50\mu A$
Collector Cutoff Current	I_{CBO}	—	—	-0.5	μA	$V_{CB} = -50V$
Emitter Cutoff Current	DDTB122TU DDTB142TU	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	DDTB122TU DDTB142TU	h_{FE}	100 100	250 250	—	$I_C = -5mA, V_{CE} = -5V$
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
DDTB122LU-7-F	SOT-323	3000/Tape & Reel
DDTB142JU-7-F	SOT-323	3000/Tape & Reel
DDTB122TU-7-F	SOT-323	3000/Tape & Reel
DDTB142TU-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


XXX = Product Type Marking Code (See Page 1)
 YM = Date Code Marking
 Y = Year ex: T = 2006
 M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012
Code	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

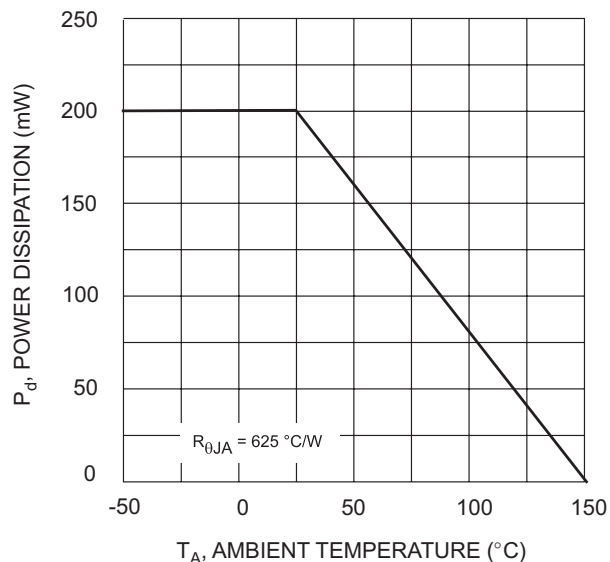


Fig. 1 Power Derating Curve

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