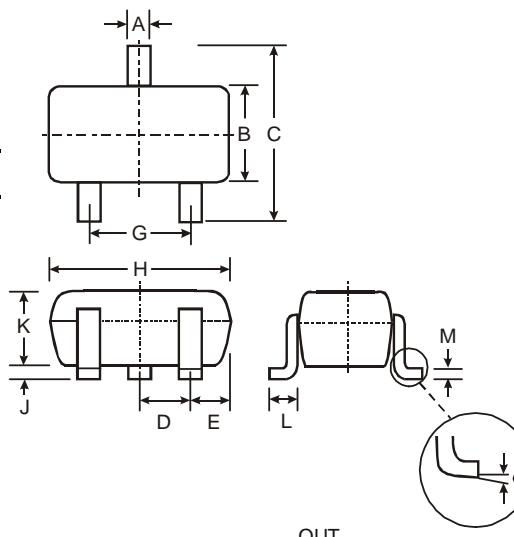


Features

- 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

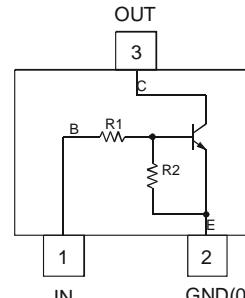
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- 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	0.22KΩ	10KΩ	N75
DDTD142JU	0.47KΩ	10KΩ	N76
DDTD122TU	0.22KΩ	OPEN	N77
DDTD142TU	0.47KΩ	OPEN	N78



Schematic and Pin Configuration

Maximum Ratings

$\text{@T}_A = 25^\circ\text{C}$ 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)	$V_{EBO} (\text{MAX})$	5	V
Output Current	I_C	500	mA
Power Dissipation	P_d	200	mW
Thermal Resistance, Junction to Ambient Air	R_{JJA}	625	°C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-55 to +150	°C

Notes:

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 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 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	DDTD122LU DDTD142JU	$V_{I(\text{off})}$	0.3 0.3	—	—	V	$V_{CC} = 5\text{V}$, $I_O = 100\mu\text{A}$
	DDTD122LU DDTD142JU	$V_{I(\text{on})}$	—	—	2.0 2.0	V	$V_O = 0.3\text{V}$, $I_O = 20\text{mA}$ $V_O = 0.3\text{V}$, $I_O = 20\text{mA}$
Output Voltage		$V_{O(\text{on})}$	—	—	0.3V	V	$I_O/I_I = 50\text{mA}/2.5\text{mA}$
Input Current		I_I	—	—	28 13	mA	$V_I = 5\text{V}$
Output Current		$I_{O(\text{off})}$	—	—	0.5	μA	$V_{CC} = 50\text{V}$, $V_I = 0\text{V}$
DC Current Gain	DDTD122LU DDTD142JU	G_I	56 56	—	—	—	$V_O = 5\text{V}$, $I_O = 50\text{mA}$
Gain-Bandwidth Product*		f_T	—	200	—	MHz	$V_{CE} = 10\text{V}$, $I_E = 5\text{mA}$, $f = 100\text{MHz}$

* Transistor - For Reference Only

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	DDTD122TU DDTD142TU	BV_{EBO}	5	—	—	V	$I_E = 50\mu\text{A}$ $I_E = 50\mu\text{A}$
Collector Cutoff Current		I_{CBO}	—	—	0.5	μA	$V_{CB} = 50\text{V}$
Emitter Cutoff Current	DDTD122TU DDTD142TU	I_{EBO}	—	—	0.5 0.5	μA	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage		$V_{CE(\text{sat})}$	—	—	0.3	V	$I_C = 50\text{mA}$, $I_B = 2.5\text{mA}$
DC Current Transfer Ratio	DDTD122TU DDTD142TU	h_{FE}	100 100	250 250	600 600	—	$I_C = 5\text{mA}$, $V_{CE} = 5\text{V}$
Gain-Bandwidth Product*		f_T	—	200	—	MHz	$V_{CE} = 10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$

* Transistor - For Reference Only

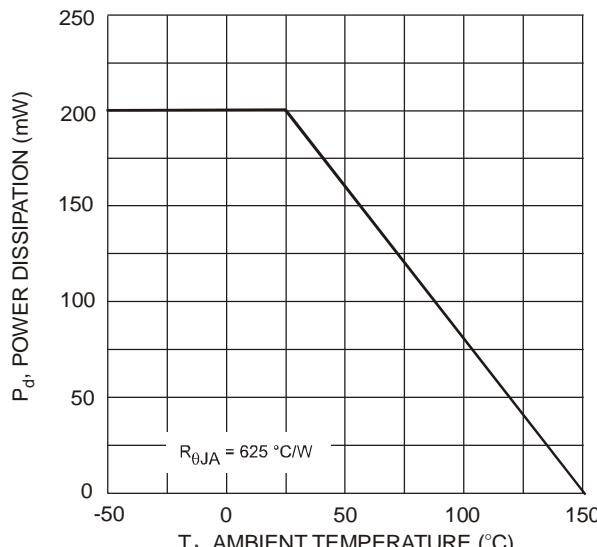


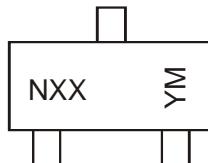
Fig. 1 Power Derating Curve

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: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



NXX = Product Type Marking Code
 See Page 1 Table
 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	0	N	D

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