



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

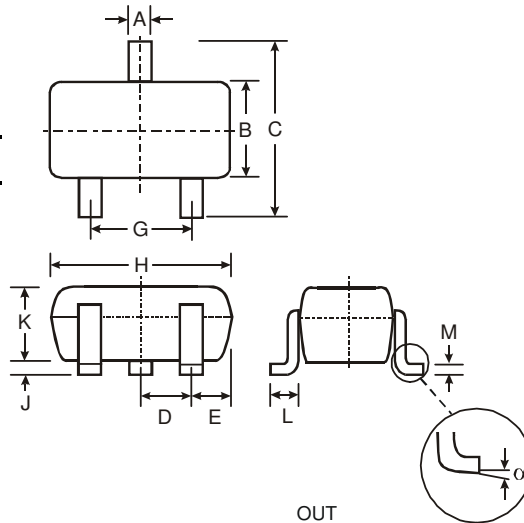


**Features**

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

**Mechanical Data**

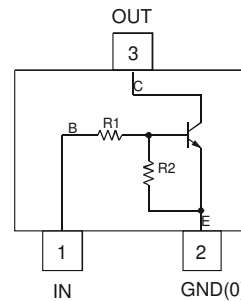
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Marking 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
$\alpha$	0°	8°

**All Dimensions in mm**

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTC122LU	0.22K $\Omega$	10K $\Omega$	N81
DDTC142JU	0.47K $\Omega$	10K $\Omega$	N82
DDTC122TU	0.22K $\Omega$	OPEN	N83
DDTC142TU	0.47K $\Omega$	OPEN	N84



Schematic and Pin Configuration

**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>	-5 to +6	V
Input Voltage, (2) to (1)	V <sub>EBO (MAX)</sub>	5	V
Output Current	I <sub>C</sub>	100	mA
Power Dissipation	P <sub>d</sub>	200	mW
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-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](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	DDTC122LU DDTC142JU	$V_{I(\text{off})}$	0.3 0.3	—	—	V	$V_{CC} = 5\text{V}, I_O = 100\mu\text{A}$
	DDTC122LU DDTC142JU	$V_{I(\text{on})}$	—	—	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	$I_O/I_I = 5\text{mA}/0.25\text{mA}$
Input Current	DDTC122LU DDTC142JU	$I_I$	—	—	28 13	mA	$V_I = 5\text{V}$
Output Current		$I_{O(\text{off})}$	—	—	0.5	$\mu\text{A}$	$V_{CC} = 50\text{V}, V_I = 0\text{V}$
DC Current Gain	DDTC122LU DDTC142JU	$G_I$	56 56	—	—	—	$V_O = 5\text{V}, I_O = 10\text{mA}$
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**

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	DDTC122TU DDTC142TU	$BV_{EBO}$	5	—	—	V	$I_E = 50\mu\text{A}$ $I_E = 50\mu\text{A}$
Collector Cutoff Current		$I_{CBO}$	—	—	0.5	$\mu\text{A}$	$V_{CB} = 50\text{V}$
Emitter Cutoff Current	DDTC122TU DDTC142TU	$I_{EBO}$	— —	—	0.5 0.5	$\mu\text{A}$	$V_{EB} = 4\text{V}$
Collector-Emitter Saturation Voltage		$V_{CE(\text{sat})}$	—	—	0.3	V	$I_C = 5\text{mA}, I_B = 0.25\text{mA}$
DC Current Transfer Ratio	DDTC122TU DDTC142TU	$h_{FE}$	100 100	250 250	600 600	—	$I_C = 1\text{mA}, V_{CE} = 5\text{V}$
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

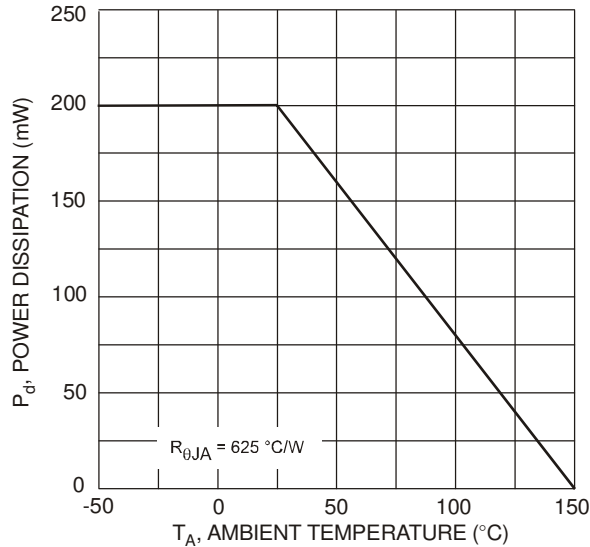


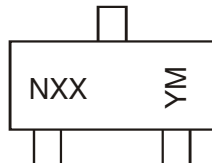
Fig. 1 Power Derating Curve

## Ordering Information (Note 4 & 5)

Device	Packaging	Shipping
DDTC122LU-7-F	SOT-323	3000/Tape & Reel
DDTC142JU-7-F	SOT-323	3000/Tape & Reel
DDTC122TU-7-F	SOT-323	3000/Tape & Reel
DDTC142TU-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 Table on Page 1  
 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

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