



DDTC (LO-R1) U

NPN PRE-BIASED 100 mA SOT-323 SURFACE MOUNT TRANSISTOR

Features

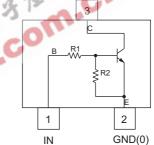
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- **Built-In Biasing Resistors**
- Lead Free/RoHS Compliant (Note 2)
- "Green" Device (Note 3 & 4)

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

G → B C
M W
D E L
OUT

	SOT-323									
Dim	Min	Max								
Α	0.25	0.40								
В	1.15	1.35								
С	2.00 2.20									
D	0.65 Nominal									
Е	0.30	0.40								
G	1.20	1.40								
Н	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 Din	ensions	in mm								



Schematic and Pin Configuration

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

Maximum Ratings @ $T_A = 25$ °C unless otherwise specified

Characteris	stic	Symbol	Value	Unit
Supply Voltage, (3) to (2)		V _{CC}	50	V
Input Voltage, (1) to (2) DDTC122LU DDTC142JU		V _{IN}	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	nput Voltage, (2) to (1) DDTC122TU DDTC142TU		5	V
Output Current	All	Ic	100	mA
Power Dissipation (Note 1)		P _d	200	mW
Thermal Resistance, Junction to Ar	mbient Air (Note 1)	R _θ JA	625	°C/W
Operating and Storage and Tempe	rature Range	T _j , T _{STG}	-55 to +150	°C

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	Тур	Max	Unit	Test Condition	
Input Voltage	DDTC122LU DDTC142JU	$V_{I(off)}$	0.3 0.3	_	_	V	$V_{CC} = 5V$, $I_{O} = 100 \mu A$
	DDTC122LU DDTC142JU	V _{I(on)}	_	_	2.0 2.0	٧	V _O = 0.3V, I _O = 20mA V _O = 0.3V, I _O = 20mA
Output Voltage	V _{O(on)}	_	_	0.3V	V	$I_O/I_I = 5\text{mA}/0.25\text{mA}$	
Input Current DDTC122LU DDTC142JU		II	_	_	28 13	mA	V _I = 5V
Output Current	Output Current		_	_	0.5	μА	V _{CC} = 50V, V _I = 0V
DC Current Gain DDTC122LU DDTC142JU		Gı	56 56	_	_	_	V _O = 5V, I _O = 10mA
Gain-Bandwidth Product*		f⊤	_	200	_	MHz	V _{CE} = 10V, I _E = 5mA, f = 100MHz

^{*} Transistor - For Reference Only

Electrical Characteristics @ TA = 25°C unless otherwise specified

R1-Only

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
Collector-Base Breakdown Voltag	BV _{CBO}	50	_		V	$I_C = 50\mu A$	
Collector-Emitter Breakdown Volta	age	BV _{CEO}	40		_	V	I _C = 1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	5	250	10	V	$I_E = 50\mu A$ $I_E = 50\mu A$	
Collector Cutoff Current	I _{CBO}	_	2-13-	0.5	μΑ	V _{CB} = 50V	
Emitter Cutoff Current DDTC122TU DDTC142TU		I _{EBO}	Z.	3	0.5 0.5	μА	V _{EB} = 4V
Collector-Emitter Saturation Volta	ge	V _{CE(sat)}	<u> </u>	C	0.3	V	$I_C = 5mA, I_B = 0.25mA$
DC Current Transfer Ratio DDTC122TU DDTC142TU		h _{FE}	100 1 00	250 250	600 600	_	$I_C = 1$ mA, $V_{CE} = 5$ V
Gain-Bandwidth Product*	fτ		200	_	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz	

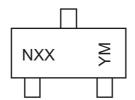
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Ordering Information (Note 4 & 5)

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: 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.

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

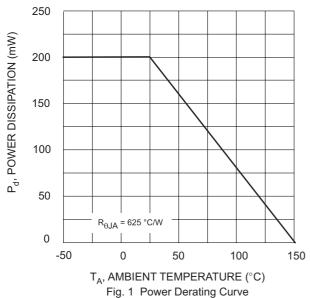
Date Code Key

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Code	N	Р	R	S	Т	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

^{5.} For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.





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