



**THE DATASHEET OF
DDC142TH-7**



NPN PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR
Features

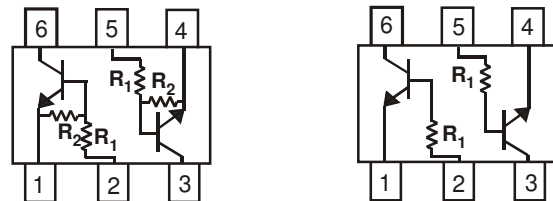
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDA)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Product Summary

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDC122LH	0.22K Ω	10K Ω	N81
DDC142JH	0.47K Ω	10K Ω	N82
DDC122TH	0.22K Ω	OPEN	N83
DDC142TH	0.47K Ω	OPEN	N84

Mechanical Data

- Case: SOT-563, Molded Plastic
- Case Material: Molded Plastic.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe.
Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)

Pin Assignments

 R₁, R₂

 R₁ Only

SCHEMATIC DIAGRAM, TOP VIEW

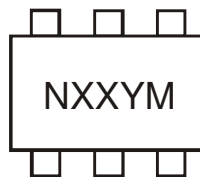
Ordering Information (Note 4)

Device	Packaging	Shipping
DDC122LH-7	SOT-563	3,000/Tape & Reel
DDC142JH-7	SOT-563	3,000/Tape & Reel
DDC122TH-7	SOT-563	3,000/Tape & Reel
DDC142TH-7	SOT-563	3,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information

SOT-563



NXX = 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	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

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Supply Voltage (Note 4) to (Note 5) and (Note 1) to (Note 3)	V _{CC}	50	V
Input Voltage (Note 6) to (Note 5) and (Note 7) to (Note 3) DDC122LH DDC142JH	V _{IN}	-5 to +6 -5 to +6	V
Input Voltage (Note 5) to (Note 6) and (Note 3) to (Note 7) DDC122TH DDC142TH	V _{EBO (MAX)}	5	V
Output Current	I _C	100	mA
Power Dissipation	P _d	150	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	R _{θJA}	833	°C/W

- Notes:
- Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
 - Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 - Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO 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	DDC122LH DDC142JH	0.3 0.3	—	—	V	V _{CC} = 5V, I _O = 100μA
	DDC122LH DDC142JH	—	—	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 = 5mA/0.25mA
Input Current	DDC122LH DDC142JH	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	DDC122LH DDC142JH	G _I	56 56	—	—	V _O = 5V, I _O = 10mA
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**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CB0}	50	—	—	V	I _C = 50μA
Collector-Emitter Breakdown Voltage	BV _{CEO}	40	—	—	V	I _C = 1mA
Emitter-Base Breakdown Voltage	DDC122TH DDC142TH	BV _{EBO}	5	—	V	I _E = 50μA I _E = 50μA
Collector Cutoff Current	I _{CBO}	—	—	0.5	μA	V _{CB} = 50V
Emitter Cutoff Current	DDC122TH DDC142TH	I _{EBO}	—	0.5 0.5	μA	V _{EB} = 4V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	—	—	0.3	V	I _C = 5mA, I _B = 0.25mA
DC Current Transfer Ratio	DDC122TH DDC142TH	h _{FE}	100 100	250 250	600 600	I _C = 1mA, V _{CE} = 5V
Gain-Bandwidth Product*	f _T	—	200	—	MHz	V _{CE} = 10V, I _E = -5mA, f = 100MHz

* Transistor - For Reference Only

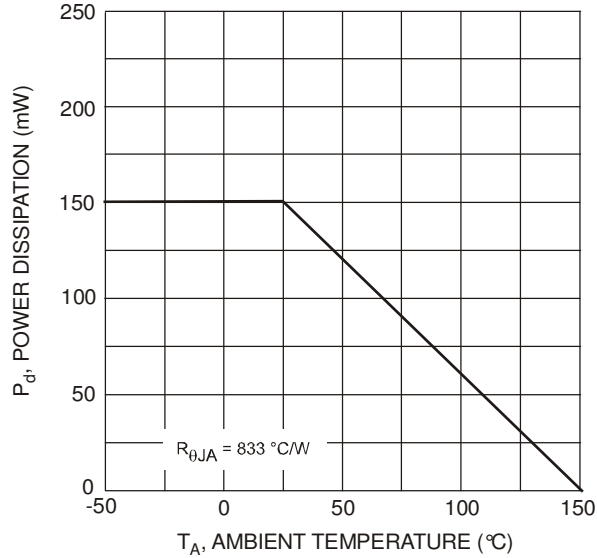
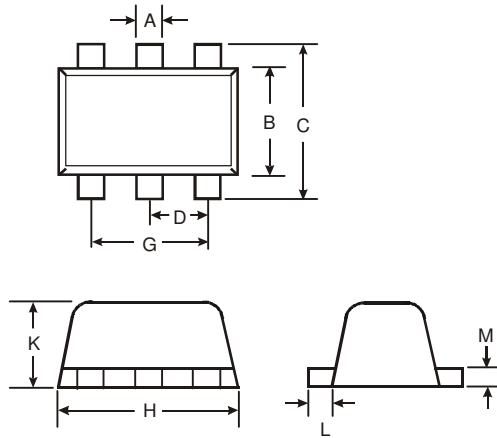


Fig. 1 Derating Curve

Package Outline Dimensions

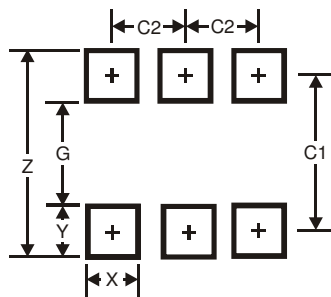
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



SOT563			
Dim	Min	Max	Typ
A	0.15	0.30	0.20
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	-	-	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.55	0.60	0.60
L	0.10	0.30	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.2
G	1.2
X	0.375
Y	0.5
C1	1.7
C2	0.5

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