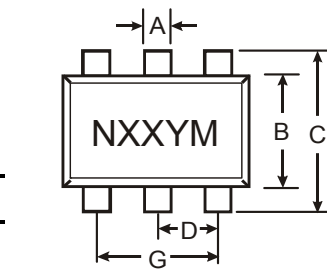


**Features**

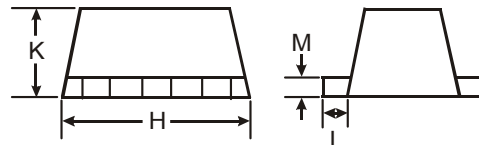
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDA)
- Built-In Biasing Resistors
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

**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 Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approximate)

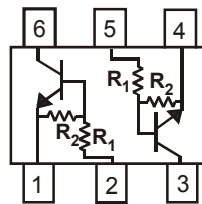


SOT-563			
Dim	Min	Max	Typ
A	0.15	0.30	0.25
B	1.10	1.25	1.20
C	1.55	1.70	1.60
D	0.50		
G	0.90	1.10	1.00
H	1.50	1.70	1.60
K	0.56	0.60	0.60
L	0.15	0.25	0.20
M	0.10	0.18	0.11
All Dimensions in mm			

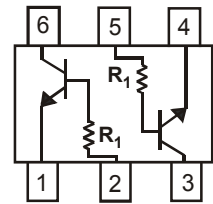


SEE NOTE 1

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



R<sub>1</sub>, R<sub>2</sub>



R<sub>1</sub> Only

SCHEMATIC DIAGRAM, TOP VIEW

**Maximum Ratings**

@T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage (6) to (1) and (3) to (4)	V <sub>CC</sub>	50	V
Input Voltage (2) to (1) and (5) to (4)	V <sub>IN</sub>	-5 to +6	V
Input Voltage (1) to (2) and (4) to (5)	V <sub>EBO (MAX)</sub>	5	V
Output Current	I <sub>C</sub>	100	mA
Power Dissipation	P <sub>d</sub>	150	mW
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	833	°C/W

- Notes:
1. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).
  2. Mounted on FR4 Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
  3. No purposefully added lead.
  4. 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).
  5. 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<sub>A</sub> = 25°C unless otherwise specified **R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDC122LH DDC142JH	V <sub>I(off)</sub>	0.3	—	—	V	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA
	DDC122LH DDC142JH	V <sub>I(on)</sub>	—	—	2.0 2.0	V	V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA V <sub>O</sub> = 0.3V, I <sub>O</sub> = 20mA
Output Voltage		V <sub>O(on)</sub>	—	—	0.3V	V	I <sub>O</sub> /I <sub>I</sub> = 5mA/0.25mA
Input Current	DDC122LH DDC142JH	I <sub>I</sub>	—	—	28 13	mA	V <sub>I</sub> = 5V
Output Current		I <sub>O(off)</sub>	—	—	0.5	μA	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V
DC Current Gain	DDC122LH DDC142JH	G <sub>I</sub>	56 56	—	—	—	V <sub>O</sub> = 5V, I <sub>O</sub> = 10mA
Gain-Bandwidth Product*		f <sub>T</sub>	—	200	—	MHZ	V <sub>CE</sub> = 10V, I <sub>E</sub> = 5mA, f = 100MHZ

\* Transistor - For Reference Only

## Electrical Characteristics @T<sub>A</sub> = 25°C unless otherwise specified **R1-Only**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV <sub>CB0</sub>	50	—	—	V	I <sub>C</sub> = 50μA
Collector-Emitter Breakdown Voltage		BV <sub>CEO</sub>	40	—	—	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	DDC122TH DDC142TH	BV <sub>EBO</sub>	5	—	—	V	I <sub>E</sub> = 50μA I <sub>E</sub> = 50μA
Collector Cutoff Current		I <sub>CB0</sub>	—	—	0.5	μA	V <sub>CB</sub> = 50V
Emitter Cutoff Current	DDC122TH DDC142TH	I <sub>EBO</sub>	—	—	0.5 0.5	μA	V <sub>EB</sub> = 4V
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	—	—	0.3	V	I <sub>C</sub> = 5mA, I <sub>B</sub> = 0.25mA
DC Current Transfer Ratio	DDC122TH DDC142TH	h <sub>FE</sub>	100 100	250 250	600 600	—	I <sub>C</sub> = 1mA, V <sub>CE</sub> = 5V
Gain-Bandwidth Product*		f <sub>T</sub>	—	200	—	MHZ	V <sub>CE</sub> = 10V, I <sub>E</sub> = -5mA, f = 100MHZ

\* Transistor - For Reference Only

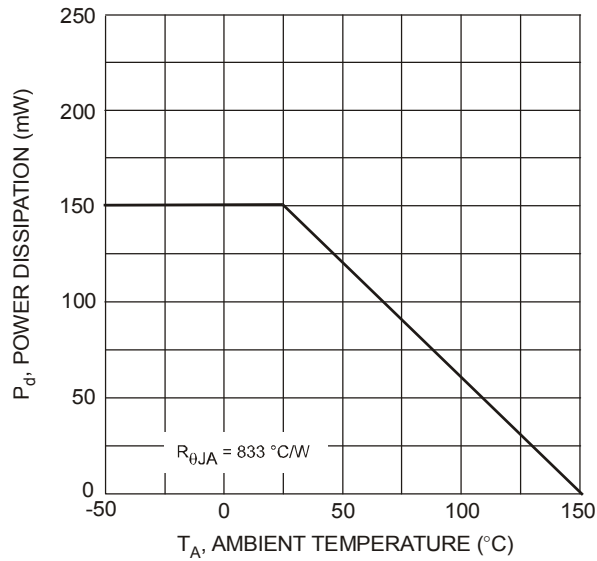


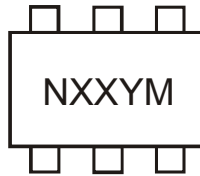
Fig. 1 Derating Curve

## Ordering Information (Note 6)

Device	Packaging	Shipping
DDC122LH-7	SOT-563	3000/Tape & Reel
DDC142JH-7	SOT-563	3000/Tape & Reel
DDC122TH-7	SOT-563	3000/Tape & Reel
DDC142TH-7	SOT-563	3000/Tape & Reel

Notes: 6. 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)  
 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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