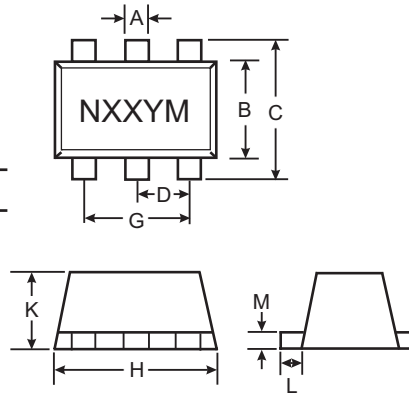


### Features

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

### Mechanical Data

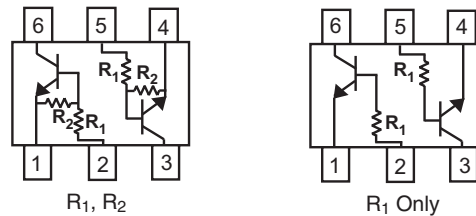
- Case: SOT-563, Molded Plastic
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approx.)



SEE NOTE 1

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			

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



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

- Note:
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.

**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

**R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDC122LH DDC142JH	$V_{I(off)}$	0.3 0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu A$
	DDC122LH DDC142JH	$V_{I(on)}$	—	—	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	$\mu A$	$V_{CC} = 50V, V_I = 0V$
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** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

**R1-Only**

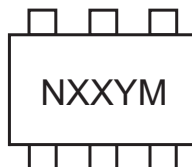
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		$BV_{CBO}$	50	—	—	V	$I_C = 50\mu A$
Collector-Emitter Breakdown Voltage		$BV_{CEO}$	40	—	—	V	$I_C = 1mA$
Emitter-Base Breakdown Voltage	DDC122TH DDC142TH	$BV_{EBO}$	5	—	—	V	$I_E = 50\mu A$ $I_E = 50\mu A$
Collector Cutoff Current		$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 50V$
Emitter Cutoff Current	DDC122TH DDC142TH	$I_{EBO}$	— —	—	0.5 0.5	$\mu A$	$V_{EB} = 4V$
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

**Ordering Information** (Note 4)

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: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**


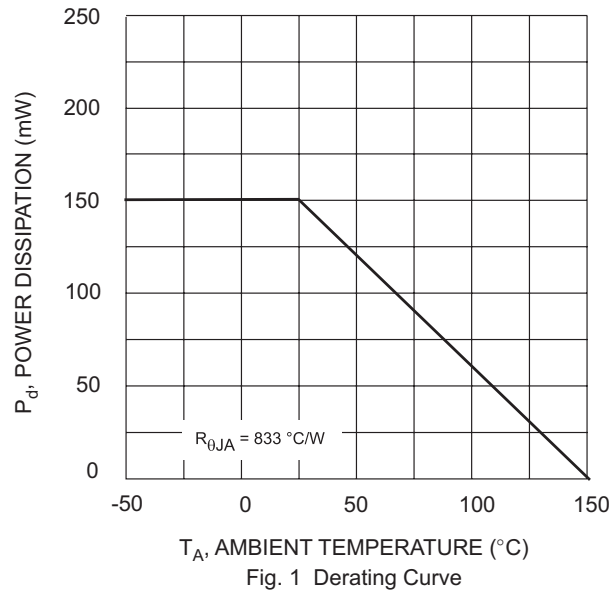
NXX = Product Type Marking Code (See Page 1)  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

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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