DDC (LO-R1) U

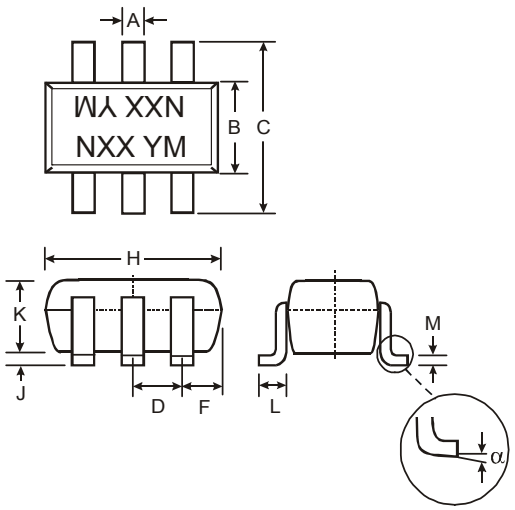
NPN PRE-BIASED SMALL SIGNAL DUAL SURFACE MOUNT TRANSISTOR

Features

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

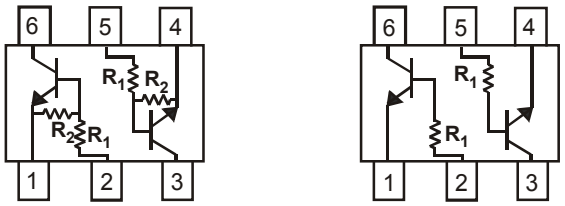
Mechanical Data

- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe)
- Terminal Connections: See Diagram
- Marking Information: See Diagrams & Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



SOT-363		
Dim	**Min**	**Max**
A	0.10	0.30
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
F	0.30	0.40
H	1.80	2.20
J	—	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.25
α	0°	8°
All Dimensions in mm		

P/N	R1 (NOM)	R2 (NOM)	MARKING
DDC122LU	0.22K	10K	N81
DDC142JU	0.47K	10K	N82
DDC122TU	0.22K	OPEN	N83
DDC142TU	0.47K	OPEN	N84



SCHEMATIC DIAGRAM

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic		Symbol	Value	Unit
Supply Voltage (6) to (1) and (3) to (4)		V_{CC}	50	V
Input Voltage (2) to (1) and (5) to (4)	DDC122LU DDC142JU	V_{IN}	-5 to +6 -5 to +6	V
Input Voltage (1) to (2) and (4) to (5)	DDC122TU DDC142TU	$V_{EBO\ (MAX)}$	5	V
Output Current	All	I_C	100	mA
Power Dissipation	(Note 1)	P_d	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 2)	$R_{\theta JA}$	625	°C/W

Notes:
1. 150mW per element must not be exceeded.
2. Mounted on FR4 PC 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.
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_A = 25°C unless otherwise specified **R1, R2 Types**

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDC122LU DDC142JU	$V_{I(off)}$	0.3 0.3	—	—	V	V_{CC} = 5V, I_O = 100μA
	DDC122LU DDC142JU	$V_{I(on)}$	—	—	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	DDC122LU DDC142JU	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	DDC122LU DDC142JU	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_{CBO}	50	—	—	V	I_C = 50μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	40	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	DDC122TU DDC142TU	BV_{EBO}	5	—	—	V	I_E = 50μA I_E = 50μA
Collector Cutoff Current		I_{CBO}	—	—	0.5	μA	V_{CB} = 50V
Emitter Cutoff Current	DDC122TU DDC142TU	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	DDC122TU DDC142TU	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

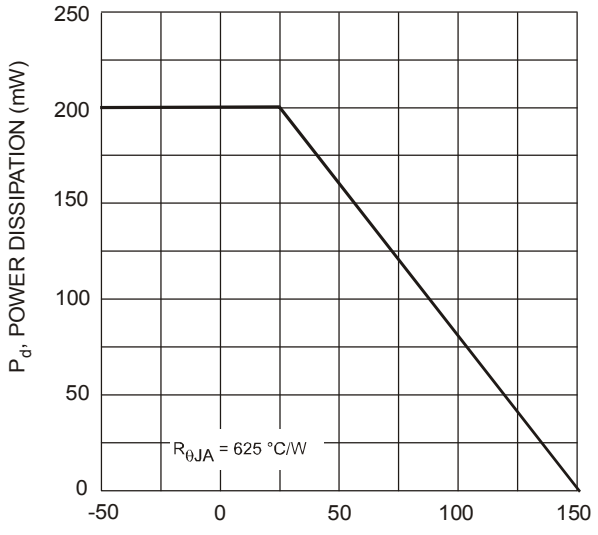


Fig. 1 Power Derating Curve

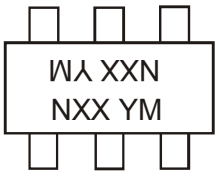
(150mW per element must not be exceeded).

Ordering Information (Note 6)

Device	Packaging	Shipping
DDC122LU-7-F	SOT-363	3000/Tape & Reel
DDC142JU-7-F	SOT-363	3000/Tape & Reel
DDC122TU-7-F	SOT-363	3000/Tape & Reel
DDC142TU-7-F	SOT-363	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 Diagrams
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