

# DDTB122LC-7 Datasheet



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	DDTB122LC-7-DG
Manufacturer	<a href="#">Diodes Incorporated</a>
Manufacturer Product Number	DDTB122LC-7
Description	TRANS PREBIAS PNP 50V SOT23-3
Detailed Description	Pre-Biased Bipolar Transistor (BJT) PNP - Pre-Biased 50 V 500 mA 200 MHz 200 mW Surface Mount SOT-23-3



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DiGi is a global authorized distributor of electronic components.

## Purchase and inquiry

Manufacturer Product Number:

DDTB122LC-7

Series:

-

Transistor Type:

PNP - Pre-Biased

Voltage - Collector Emitter Breakdown (Max):

50 V

Resistor - Emitter Base (R2):

10 kOhms

Vce Saturation (Max) @ Ib, Ic:

300mV @ 2.5mA, 50mA

Frequency - Transition:

200 MHz

Mounting Type:

Surface Mount

Supplier Device Package:

SOT-23-3

Manufacturer:

Diodes Incorporated

Product Status:

Discontinued at Digi-Key

Current - Collector (Ic) (Max):

500 mA

Resistor - Base (R1):

220 Ohms

DC Current Gain (hFE) (Min) @ Ic, Vce:

56 @ 50mA, 5V

Current - Collector Cutoff (Max):

500nA

Power - Max:

200 mW

Package / Case:

TO-236-3, SC-59, SOT-23-3

Base Product Number:

DDTB122

## Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.21.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

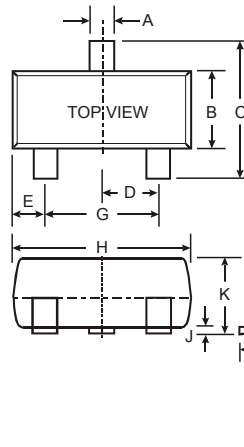
ECCN:

EAR99



## Features

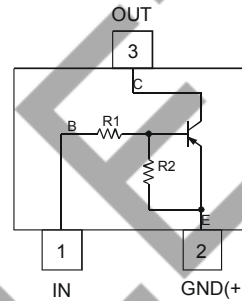
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTD)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative.**  
<https://www.diodes.com/quality/product-definitions/>



SOT-23		
Dim	Min	Max
A	0.37	0.51
B	1.20	1.40
C	2.30	2.50
D	0.89	1.03
E	0.45	0.60
G	1.78	2.05
H	2.80	3.00
J	0.013	0.10
K	0.903	1.10
L	0.45	0.61
M	0.085	0.180
$\alpha$	0°	8°
All Dimensions in mm		

## Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208 Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe).
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.008 grams (Approximate)



Schematic and Pin Diagram

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTB122LC	0.22k $\Omega$	10k $\Omega$	P75
DDTB142JC	0.47k $\Omega$	10k $\Omega$	P76
DDTB122TC	0.22k $\Omega$	OPEN	P77
DDTB142TC	0.47k $\Omega$	OPEN	P78

## Maximum Ratings @T<sub>A</sub> = +25°C, unless otherwise specified.

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V <sub>CC</sub>	-50	V
Input Voltage, (1) to (2)	V <sub>IN</sub>	+5 to -6 +5 to -6	V
Input Voltage, (2) to (1)	V <sub>EBO (MAX)</sub>	-5	V
Output Current	I <sub>C</sub>	-500	mA
Power Dissipation	P <sub>D</sub>	200	mW
Thermal Resistance, Junction to Ambient Air	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> 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. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/package-outlines.html>.

**Electrical Characteristics** @ $T_A = +25^\circ\text{C}$ , unless otherwise specified. **R1, R2 Types**

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition	
Input Voltage	DDTB122LC DDTB142JC	$V_{I(off)}$	-0.3 -0.3	—	—	V	$V_{CC} = -5V, I_O = -100\mu A$
	DDTB122LC DDTB142JC	$V_{I(on)}$	—	—	-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	$I_O/I_I = -50mA/-2.5mA$
Input Current	DDTB122LC DDTB142JC	$I_I$	—	—	-28 -13	mA	$V_I = -5V$
Output Current		$I_{O(off)}$	—	—	-0.5	$\mu A$	$V_{CC} = -50V, V_I = 0V$
DC Current Gain	DDTB122LC DDTB142JC	$G_I$	56 56	—	—	—	$V_O = -5V, I_O = -50mA$
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 Types**

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	DDTB122TC DDTB142TC	$BV_{EBO}$	-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	DDTB122TC DDTB142TC	$I_{EBO}$	—	—	-0.5 -0.5	$\mu A$	$V_{EB} = -4V$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	-0.3	V	$I_C = -50mA, I_B = -2.5mA$
DC Current Transfer Ratio	DDTB122TC DDTB142TC	$h_{FE}$	100 100	250 250	600 600	—	$I_C = -5mA, V_{CE} = -5V$
Gain-Bandwidth Product*		$f_T$	—	200	—	MHz	$V_{CE} = -10V, I_E = 5mA, f = 100MHz$

\* Transistor - For Reference Only

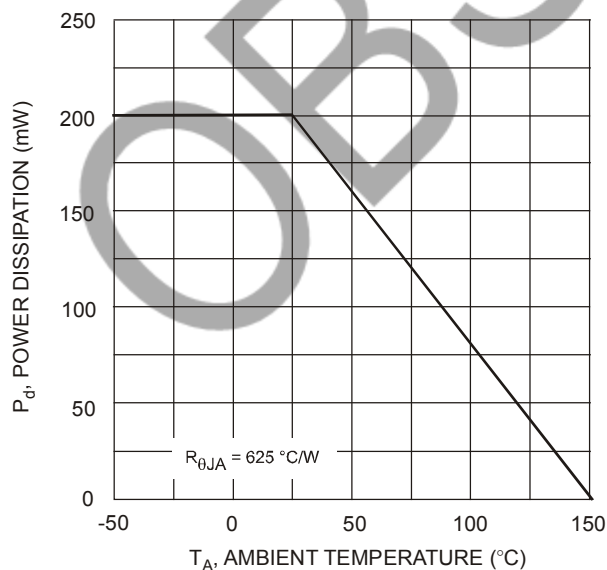


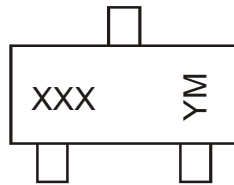
Fig. 1 Power Derating Curve

## Ordering Information (Note 5)

Part Number	Packaging	Shipping
DDTB122LC-7-F	SOT-23	3000/Tape & Reel
DDTB142JC-7-F	SOT-23	3000/Tape & Reel
DDTB122TC-7-F	SOT-23	3000/Tape & Reel
DDTB142TC-7-F	SOT-23	3000/Tape & Reel

Note: 5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



XXX = Product Type Marking Code, See Table on Page 1

YM = Date Code Marking

Y = Year ex: 1 = 2021

M = Month ex: 9 = September

### Date Code Key

Year	2006	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	T	...	I	J	K	L	M	N	O	P	R	S

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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