

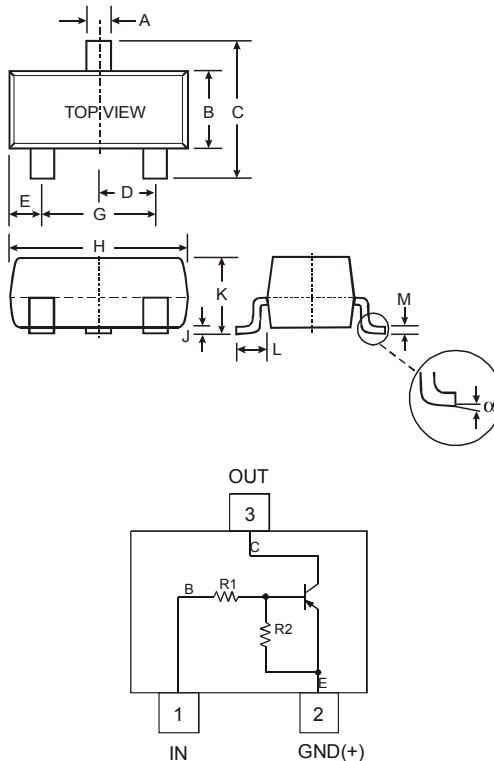
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTD)
- Built-In Biasing Resistors
- Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 3)**

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)

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



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
α	0°	8°

All Dimensions in mm

Schematic and Pin Diagram

Maximum Ratings

$\text{@T}_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Supply Voltage, (3) to (2)	V_{CC}	-50	V
Input Voltage, (1) to (2)	V_{IN}	+5 to -6 +5 to -6	V
Input Voltage, (2) to (1)	$V_{EBO} (\text{MAX})$	-5	V
Output Current	I_C	-500	mA
Power Dissipation	P_D	200	mW
Thermal Resistance, Junction to Ambient Air	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:

- No purposefully added lead. Halogen and Antimony Free.
- Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
- Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Data Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants.

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	$V_{I(\text{off})}$	-0.3 -0.3	—	—	V	$V_{CC} = -5\text{V}$, $I_O = -100\mu\text{A}$
	DDTB122LC DDTB142JC	$V_{I(\text{on})}$	—	—	-2.0 -2.0	V	$V_O = -0.3\text{V}$, $I_O = -20\text{mA}$ $V_O = -0.3\text{V}$, $I_O = -20\text{mA}$
Output Voltage		$V_{O(\text{on})}$	—	—	-0.3V	V	$I_O/I_I = -50\text{mA}/-2.5\text{mA}$
Input Current		I_I	—	—	-28 -13	mA	$V_I = -5\text{V}$
Output Current		$I_O(\text{off})$	—	—	-0.5	μA	$V_{CC} = -50\text{V}$, $V_I = 0\text{V}$
DC Current Gain	DDTB122LC DDTB142JC	G_I	56 56	—	—	—	$V_O = -5\text{V}$, $I_O = -50\text{mA}$
Gain-Bandwidth Product*		f_T	—	200	—	MHz	$V_{CE} = -10\text{V}$, $I_E = -5\text{mA}$, $f = 100\text{MHz}$

* 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	$I_C = -50\mu\text{A}$
Collector-Emitter Breakdown Voltage		BV_{CEO}	-40	—	—	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	DDTB122TC DDTB142TC	BV_{EBO}	-5	—	—	V	$I_E = -50\mu\text{A}$ $I_E = -50\mu\text{A}$
Collector Cutoff Current		I_{CBO}	—	—	-0.5	μA	$V_{CB} = -50\text{V}$
Emitter Cutoff Current	DDTB122TC DDTB142TC	I_{EBO}	—	—	-0.5 -0.5	μA	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage		$V_{CE(\text{sat})}$	—	—	-0.3	V	$I_C = -50\text{mA}$, $I_B = -2.5\text{mA}$
DC Current Transfer Ratio	DDTB122TC DDTB142TC	h_{FE}	100 100	250 250	600 600	—	$I_C = -5\text{mA}$, $V_{CE} = -5\text{V}$
Gain-Bandwidth Product*		f_T	—	200	—	MHz	$V_{CE} = -10\text{V}$, $I_E = 5\text{mA}$, $f = 100\text{MHz}$

* Transistor - For Reference Only

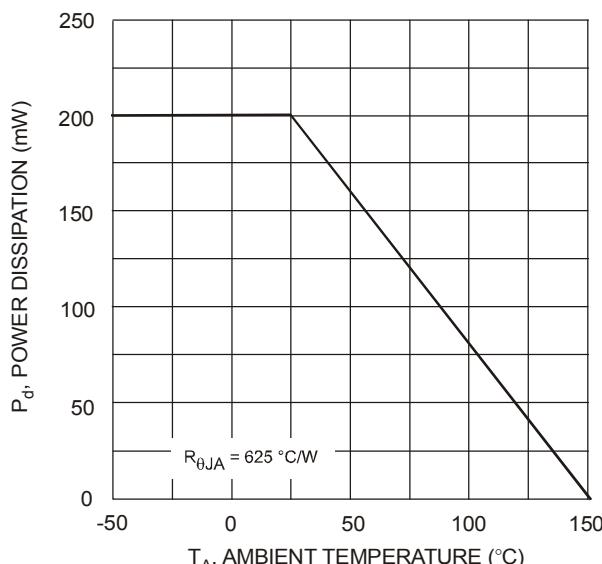

 T_A, AMBIENT TEMPERATURE (°C)

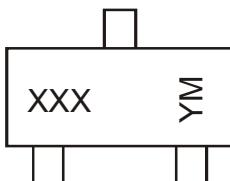
Fig. 1 Power Derating Curve

Ordering Information (Note 4)

Device	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

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

Marking Information



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

YM = Date Code Marking

Y = Year ex: T = 2006

M = Month ex: 9 = September

Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012					
Code	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

IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.