



**THE DATASHEET OF
DDTB142TC-7-F**



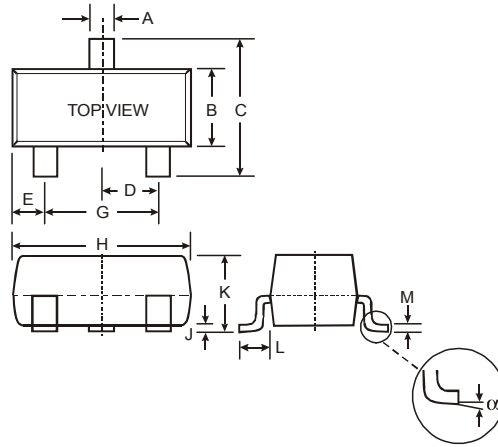
Features

- 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

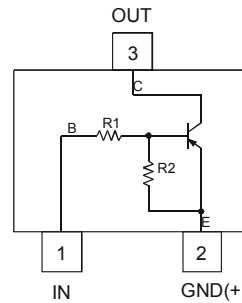
- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- 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	0.22K Ω	10K Ω	P75
DDTB142JC	0.47K Ω	10K Ω	P76
DDTB122TC	0.22K Ω	OPEN	P77
DDTB142TC	0.47K Ω	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 @T_A = 25°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	V
Input Voltage, (2) to (1)	V _{EBO (MAX)}	-5	V
Output Current	I _C	-500	mA
Power Dissipation	P _D	200	mW
Thermal Resistance, Junction to Ambient Air	R _{θJA}	625	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 3. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ 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	$V_{I(off)}$	-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	μA	$V_{CC} = -50V, V_I = 0V$
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	μA	$V_{CB} = -50V$
Emitter Cutoff Current	DDTB122TC DDTB142TC	I_{EBO}	— —	—	-0.5 -0.5	μA	$V_{EB} = -4V$
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

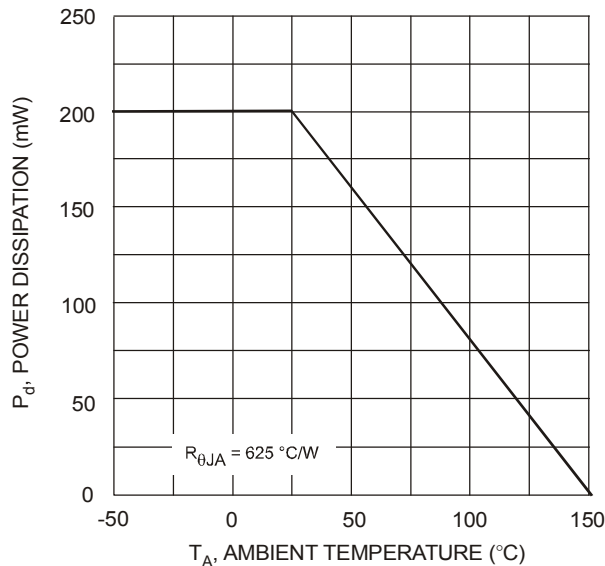


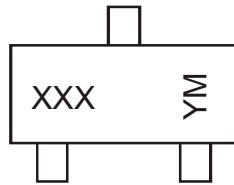
Fig. 1 Power Derating Curve

Ordering Information (Note 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

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