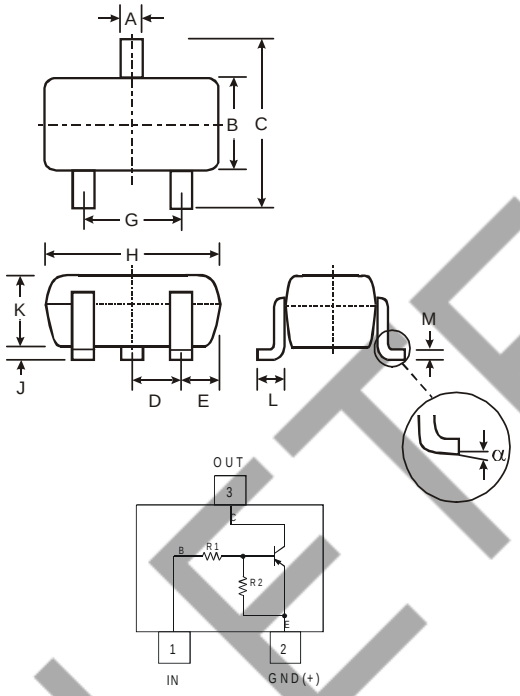
Features

- 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 or your local Diodes representative.**
  https://www.diodes.com/quality/product-definitions/

Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Marking Information: See Table Below & Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (Approximate)



Schematic and Pin Configuration

SOT-323		
Dim	**Min**	**Max**
A	0.25	0.40
B	1.15	1.35
C	2.00	2.20
D	0.65 Nominal	
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.0	0.10
K	0.90	1.00
L	0.25	0.40
M	0.10	0.18
α	0°	8°
All Dimensions in mm		

P/N	R1 (NOM)	R2 (NOM)	Type Code
DDTB122LU	0.22kΩ	10kΩ	P75
DDTB142JU	0.47kΩ	10kΩ	P76
DDTB122TU	0.22kΩ	OPEN	P77
DDTB142TU	0.47kΩ	OPEN	P78

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) DDTB122LU DDTB142JU		V_{IN}	+5 to -6 +5 to -6	V
Input Voltage, (2) to (1) DDTB122TU DDTB142TU		$V_{EBO\ (MAX)}$	-5	V
Output Current	All	I_C	-500	mA
Power Dissipation	(Note 5)	P_d	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	625	°C/W
Operating and Storage Temperature Range		T_j, T_{STG}	-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. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. Mounted on FR4 PC Board with recommended pad layout at http://www.diodes.com/package-outlines.html.

Electrical Characteristics @T_A = +25°C, unless otherwise specified. R1, R2 Types

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTB122LU DDTB142JU	$V_{I(off)}$	-0.3 -0.3	—	—	V	V_{CC} = -5V, I_O = -100μA
	DDTB122LU DDTB142JU	$V_{I(on)}$	—	—	-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	DDTB122LU DDTB142JU	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	DDTB122LU DDTB142JU	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°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 = -50μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	-40	—	—	V	I_C = -1mA
Emitter-Base Breakdown Voltage	DDTB122TU DDTB142TU	BV_{EBO}	-5	—	—	V	I_E = -50μA I_E = -50μA
Collector Cutoff Current		I_{CBO}	—	—	-0.5	μA	V_{CB} = -50V
Emitter Cutoff Current	DDTB122TU DDTB142TU	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	DDTB122TU DDTB142TU	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

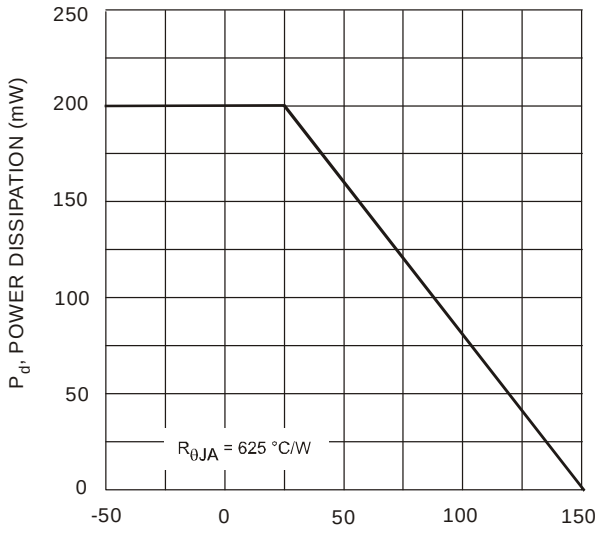


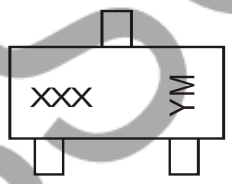
Fig. 1 Power Derating Curve

Ordering Information (Notes 4 & 6)

Part Number	Packaging	Shipping
DDTB122LU-7-F	SOT-323	3000/Tape & Reel
DDTB142JU-7-F	SOT-323	3000/Tape & Reel
DDTB122TU-7-F	SOT-323	3000/Tape & Reel
DDTB142TU-7-F	SOT-323	3000/Tape & Reel

Notes:
4. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
5. Mounted on FR4 PC Board with recommended pad layout at http://www.diodes.com/package-outlines.html.
6. 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 Page 1)
YM = Date Code Marking
Y = Year ex: I = 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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