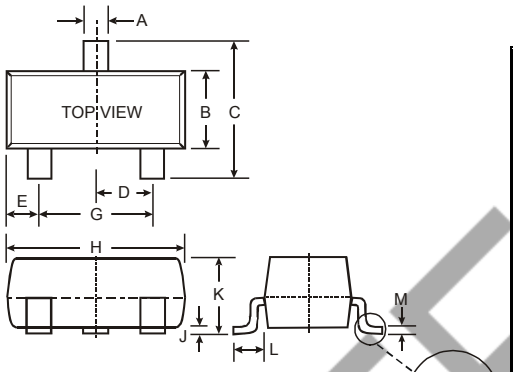
Features

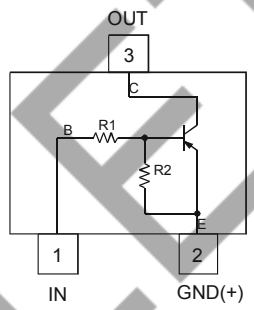
- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTD)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts 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/**



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		

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	0.22kΩ	10kΩ	P75
DDTB142JC	0.47kΩ	10kΩ	P76
DDTB122TC	0.22kΩ	OPEN	P77
DDTB142TC	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)	DDTB122LC DDTB142JC	V_{IN}	+5 to -6 +5 to -6	V
Input Voltage, (2) to (1)	DDTB122TC DDTB142TC	$V_{EBO\ (MAX)}$	-5	V
Output Current	All	I_C	-500	mA
Power Dissipation	(Note 4)	P_D	200	mW
Thermal Resistance, Junction to Ambient Air	(Note 4)	$R_{\theta JA}$	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. 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	DDTB122LC DDTB142JC	$V_{I(off)}$	-0.3 -0.3	—	—	V	V_{CC} = -5V, I_O = -100μA
	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°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	DDTB122TC DDTB142TC	BV_{EBO}	-5	—	—	V	I_E = -50μA I_E = -50μA
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

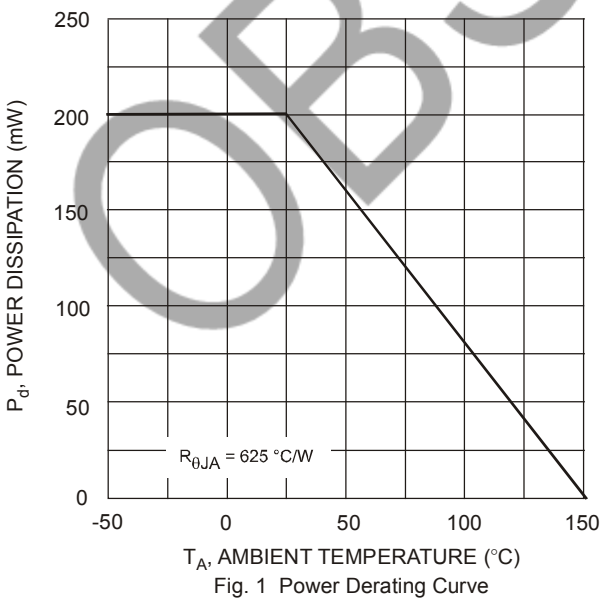


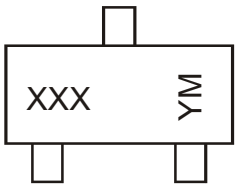
Fig. 1 Power Derating Curve

Ordering Information (Note 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: 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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