

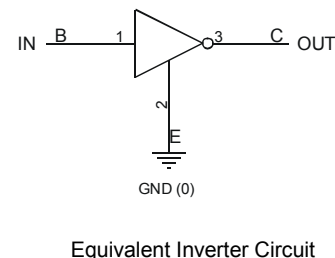
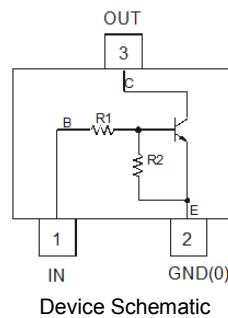
## Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- 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](https://www.diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

## Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208 @3
- Weight: 0.008 grams (Approximate)

P/N	R1 (NOM)	R2 (NOM)
DDTD122LC	0.22kΩ	10kΩ
DDTD142JC	0.47kΩ	10kΩ
DDTD122TC	0.22kΩ	OPEN
DDTD142TC	0.47kΩ	OPEN

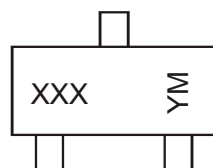


## Ordering Information (Note 4)

Product	Status	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DDTD122LC -7-F	Obsolete	Standard	N75	7	8	3,000
DDTD142JC -7-F	Active	Standard	N76	7	8	3,000
DDTD122TC -7-F	Obsolete	Standard	N77	7	8	3,000
DDTD142TC -7-F	Obsolete	Standard	N78	7	8	3,000

- 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. 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 Above  
 YM = Date Code Marking  
 Y = Year ex: I = 2021  
 M = Month ex: 9 = September

### Date Code Key

Year	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	I	J	K	L	M	N	O	P	R	S	T	U

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

**Absolute Maximum Ratings** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage <Pin: (3) to (2)>		$V_{CC}$	50	V
Input Voltage <Pin: (1) to (2)>	DDTD122LC	$V_{IN}$	-5 to +6	V
	DDTD142JC		-5 to +6	
Input Voltage <Pin: (2) to (1)>	DDTD122TC	$V_{EBO (MAX)}$	5	V
	DDTD142TC		5	
Output Current		$I_C$	500	mA

**Thermal Characteristics** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	625	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

Note: 5. Mounted on FR4 PC board with recommended pad layout.

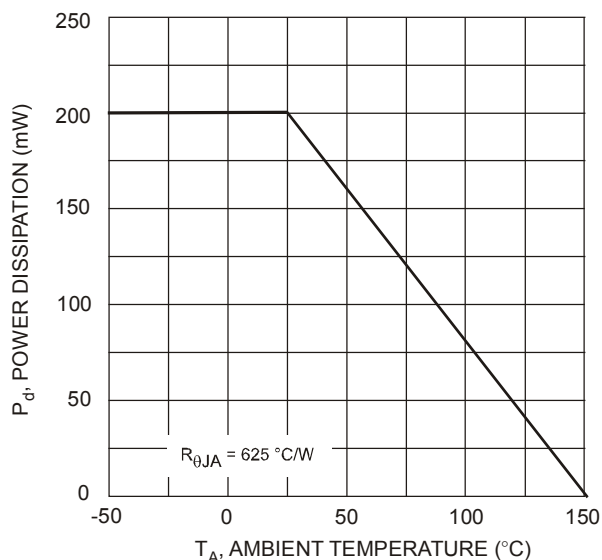


Fig. 1 Power Derating Curve

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTD122LC DDTD142JC	$V_{I(off)}$	0.3 0.3	—	—	V	$V_{CC} = 5V, I_O = 100\mu A$
	DDTD122LC DDTD142JC	$V_{I(on)}$	—	—	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	DDTD122LC DDTD142JC	$I_I$	—	—	28 13	mA	$V_I = 5V$
Output Current		$I_{O(off)}$	—	—	0.5	$\mu A$	$V_{CC} = 50V, V_I = 0V$
DC Current Gain	DDTD122LC DDTD142JC	$G_I$	56 56	—	—	—	$V_O = 5V, I_O = 50mA$
Gain-Bandwidth Product (Note 6)		$f_T$	—	200	—	MHz	$V_{CE} = 10V, I_E = 5mA, f = 100MHz$

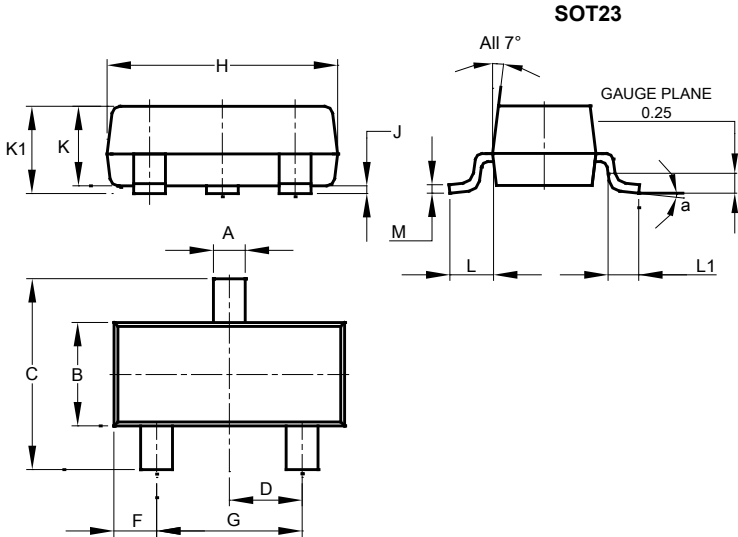
**Electrical Characteristics - R1- Only, R2- Only Types** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

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	DDTD122TC DDTD142TC	$BV_{EBO}$	5	—	—	V	$I_E = 50\mu A$ $I_E = 50\mu A$
Collector Cut-Off Current		$I_{CBO}$	—	—	0.5	$\mu A$	$V_{CB} = 50V$
Emitter Cut-Off Current	DDTD122TC DDTD142TC	$I_{EBO}$	— —	—	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	DDTD122TC DDTD142TC	$h_{FE}$	100 100	250 250	600 600	—	$I_C = 5mA, V_{CE} = 5V$
Gain-Bandwidth Product (Note 6)		$f_T$	—	200	—	MHz	$V_{CE} = 10V, I_E = -5mA, f = 100MHz$

Note: 6. Transistor – For Reference Only

**Package Outline Dimensions**

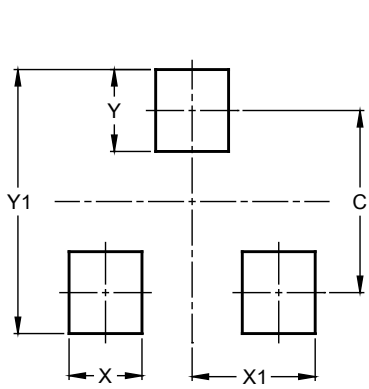
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	--
All Dimensions in mm			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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