

Features

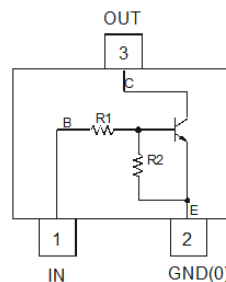
- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTB)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/contact-us) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

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

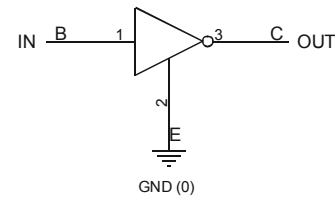
SOT23



Top View



Device Schematic



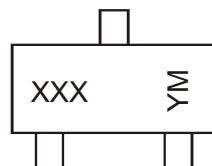
Equivalent Inverter Circuit

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	$V_{EBO} \text{ (MAX)}$	5	V
	DDTD142TC			
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.

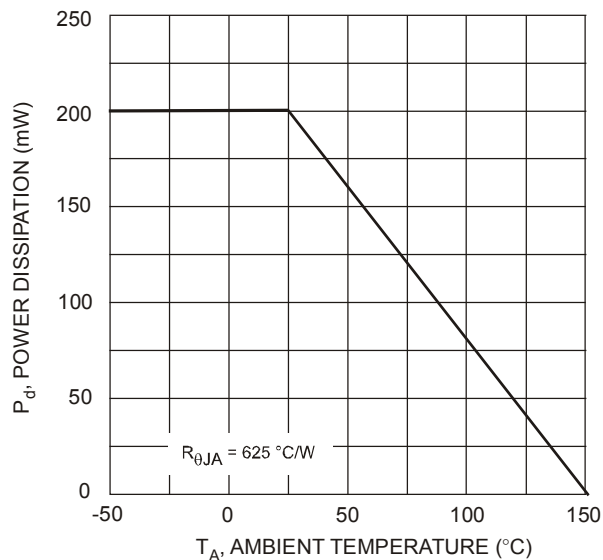


Fig. 1 Power Derating Curve

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	μA	$V_{CC} = 50V, V_I = 0V$
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.)

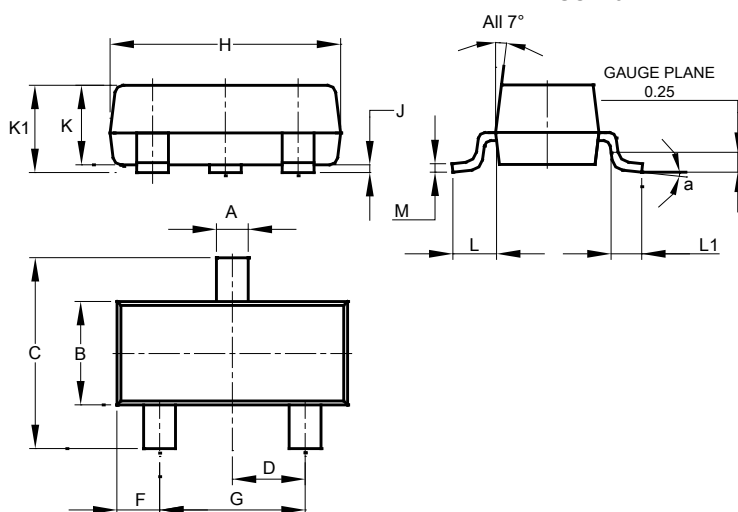
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage		BV_{CBO}	50	—	—	V	$I_C = 50\mu A$
Collector-Emitter Breakdown Voltage		BV_{CEO}	40	—	—	V	$I_C = 1mA$
Emitter-Base Breakdown Voltage	DDTD122TC DDTD142TC	BV_{EBO}	5	—	—	V	$I_E = 50\mu A$ $I_E = 50\mu A$
Collector Cut-Off Current		I_{CBO}	—	—	0.5	μA	$V_{CB} = 50V$
Emitter Cut-Off Current	DDTD122TC DDTD142TC	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	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.

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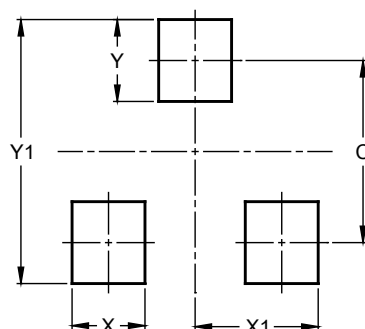


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Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110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

Suggested Pad Layout

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

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

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