DDTC142TE-7 Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DDTC142TE-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DDTC142TE-7
Description	TRANS PREBIAS NPN 50V SOT523
Detailed Description	Pre-Biased Bipolar Transistor (BJT) NPN - Pre-Biased 50 V 100 mA 200 MHz 150 mW Surface Mount SOT-523

Tel: +00 852-30501935

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Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DDTC142TE-7	Diodes Incorporated
Series:	Product Status:
-	Discontinued at Digi-Key
Transistor Type:	Current - Collector (Ic) (Max):
NPN - Pre-Biased	100 mA
Voltage - Collector Emitter Breakdown (Max):	Resistor - Base (R1):
50 V	470 Ohms
DC Current Gain (hFE) (Min) @ Ic, Vce:	Vce Saturation (Max) @ Ib, Ic:
100 @ 1mA, 5V	300mV @ 250µA, 5mA
Current - Collector Cutoff (Max):	Frequency - Transition:
500nA (ICBO)	200 MHz
Power - Max:	Mounting Type:
150 mW	Surface Mount
Package / Case:	Supplier Device Package:
SOT-523	SOT-523
Base Product Number:	
DDTC142	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
RoHS non-compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

PART OBSOLETE – CONTACT US

Lead-free Green

DDTC (LO-R1) E

NPN PRE-BIASED TRANSISTOR

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistors
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

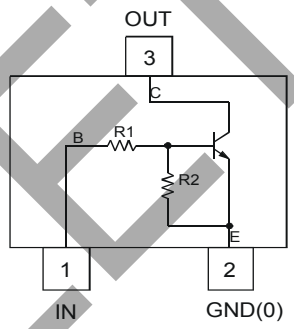
Mechanical Data

- Case: SOT523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.002 grams (Approximate)

Part Number	R1 (NOM)	R2 (NOM)	Marking
DDTC122LE	0.22kΩ	10kΩ	N81
DDTC142JE	0.47kΩ	10kΩ	N82
DDTC122TE	0.22kΩ	OPEN	N83
DDTC142TE	0.47kΩ	OPEN	N84

SOT523

Top View



Schematic and Pin Diagram

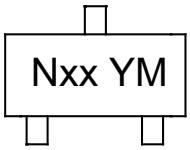
Ordering Information (Note 4)

Part Number	Compliance	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DDTC122LE-7-F	AEC-Q101	7	8	3,000
DDTC142JE-7-F	AEC-Q101	7	8	3,000
DDTC122TE-7-F	AEC-Q101	7	8	3,000
DDTC142TE-7-F	AEC-Q101	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

SOT523



Nxx = Product Type Marking Code
(See Table in Features)
YM = Date Code Marking
Y or $\overline{Y}$ = Year (ex: I = 2021)
M or $\overline{M}$ = Month (ex: 9 = September)

Date Code Key

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Code	F	G	H	I	J	K	L	M	N	O

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°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Supply Voltage, (3) to (2)		V_{CC}	50	V
Input Voltage, (1) to (2)	DDTC122LE DDTC142JE	V_{IN}	-5 to +6 -5 to +6	V
Input Voltage, (2) to (1)	DDTC122TE DDTC142TE	$V_{EBO\ (MAX)}$	5	V
Output Current	All	I_C	100	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	150	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

Note 5: Mounted on FR-4 PC Board with minimum recommended pad layout.

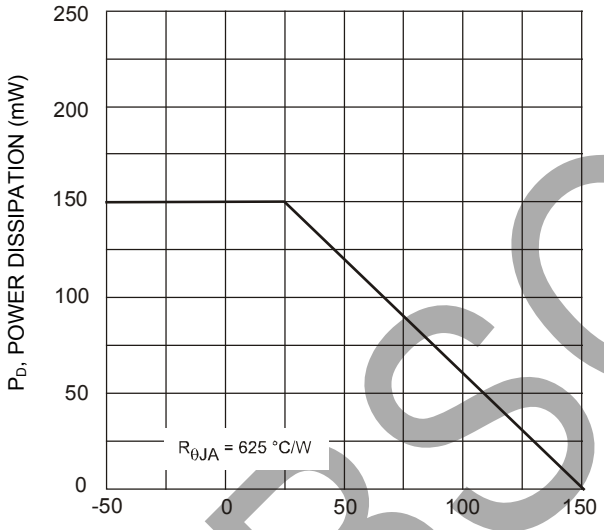


Fig. 1 Power Derating Curve

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
Input Voltage	DDTC122LE DDTC142JE	$V_{I(OFF)}$	0.3 0.3	—	—	V	V_{CC} = 5V, I_O = 100µA
	DDTC122LE DDTC142JE	$V_{I(ON)}$	—	—	2.0 2.0	V	V_O = 0.3V, I_O = 20mA V_O = 0.3V, I_O = 20mA
Output Voltage		$V_{O(ON)}$	—	—	0.3	V	I_O/I_I = 5mA/0.25mA
Input Current	DDTC122LE DDTC142JE	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	DDTC122LE DDTC142JE	G_I	56 56	—	—	—	V_O = 5V, I_O = 10mA
Gain-Bandwidth Product (Note 6)		f_T	—	200	—	MHz	V_{CE} = 10V, I_E = 5mA, f = 100MHz

Electrical Characteristics R1- Only Type (@T_A = +25°C, unless otherwise specified.)

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	DDTC122TE DDTC142TE	BV_{EBO}	5	—	—	V	I_E = 50µA I_E = 50µA
Collector Cutoff Current		I_{CBO}	—	—	0.5	µA	V_{CB} = 50V
Emitter Cutoff Current	DDTC122TE DDTC142TE	I_{EBO}	— —	—	0.5 0.5	µA	V_{EB} = 4V
Collector-Emitter Saturation Voltage		$V_{CE(SAT)}$	—	—	0.3	V	I_C = 5mA, I_B = 0.25mA
DC Current Transfer Ratio	DDTC122TE DDTC142TE	h_{FE}	100 100	250 250	600 600	—	I_C = 1mA, 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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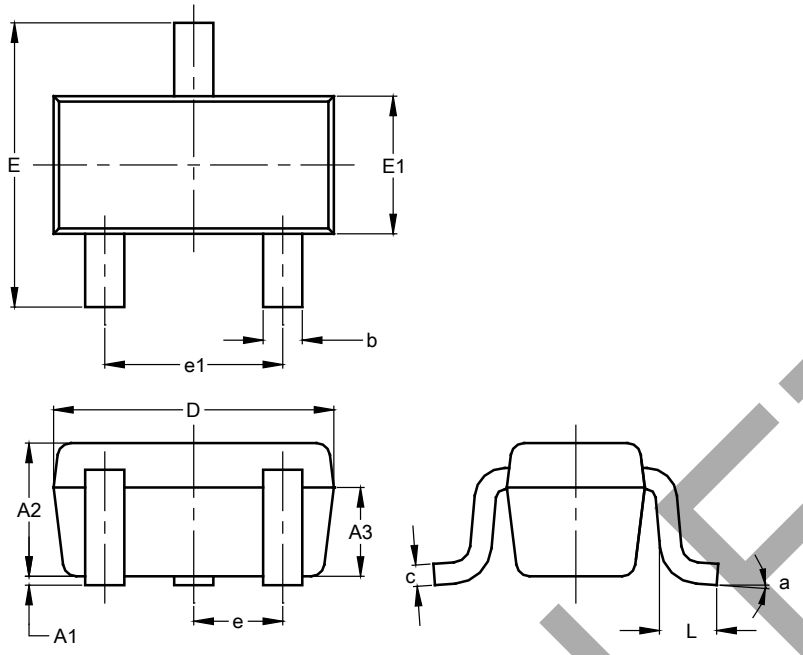
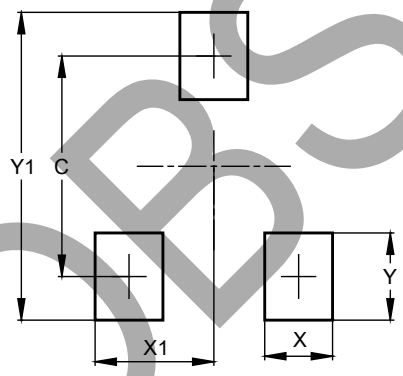


SOT523			
Dim	**Min**	**Max**	**Typ**
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

Suggested Pad Layout

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

SOT523



Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

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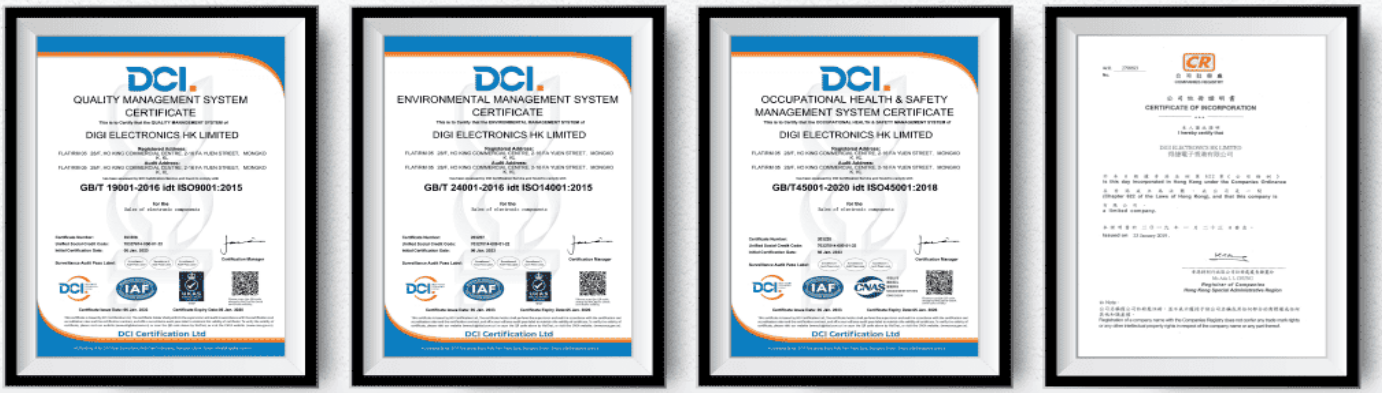

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