DDTC144TE-7-F Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DDTC144TE-7-F-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DDTC144TE-7-F
Description	TRANS PREBIAS NPN 50V SOT523
Detailed Description	Pre-Biased Bipolar Transistor (BJT) NPN - Pre-Biased 50 V 100 mA 250 MHz 150 mW Surface Mount SOT-523

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DDTC144TE-7-F	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN - Pre-Biased	100 mA
Voltage - Collector Emitter Breakdown (Max):	Resistor - Base (R1):
50 V	47 kOhms
DC Current Gain (hFE) (Min) @ Ic, Vce:	Vce Saturation (Max) @ Ib, Ic:
100 @ 1mA, 5V	300mV @ 250µA, 2.5mA
Current - Collector Cutoff (Max):	Frequency - Transition:
500nA (ICBO)	250 MHz
Power - Max:	Mounting Type:
150 mW	Surface Mount
Package / Case:	Supplier Device Package:
SOT-523	SOT-523
Base Product Number:	
DDTC144	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

Lead-free Green

DDTC (R1-ONLY SERIES) E

NPN PRE-BIASED TRANSISTOR IN SOT523

Features

- Epitaxial Planar Die Construction
- Complementary PNP Types Available (DDTA)
- Built-In Biasing Resistor, R1 Only
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The DDTC (R1-ONLY SERIES) E is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

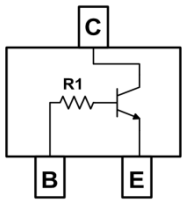
Mechanical Data

- 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)
DDTC113TE	1kΩ
DDTC123TE	2.2kΩ
DDTC143TE	4.7kΩ
DDTC114TE	10kΩ
DDTC124TE	22kΩ
DDTC144TE	47kΩ
DDTC115TE	100kΩ
DDTC125TE	200kΩ

SOT523

Top View



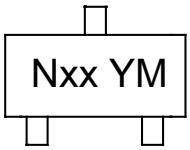
Device Schematic – Top View

Ordering Information (Note 4)

Part Number	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
DDTC113TE-7-F	Active	Standard	N01	7	8	3,000
DDTC123TE-7-F	Active	Standard	N03	7	8	3,000
DDTC143TE-7-F	Active	Standard	N07	7	8	3,000
DDTC114TE-7-F	Active	Standard	N12	7	8	3,000
DDTC124TE-7-F	Active	Standard	N16	7	8	3,000
DDTC124TEQ-7-F	Active	Automotive	N16	7	8	3,000
DDTC144TE-7-F	Active	Standard	N19	7	8	3,000
DDTC115TE-7-F	Active	Standard	N23	7	8	3,000
DDTC125TE-7-F	Obsolete	Standard	N25	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



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

Date Code Key

Year	2002	…	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	O	…	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

Absolute Maximum Ratings (@ T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	$I_{C(MAX)}$	100	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	150	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	833	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@ 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}	50	—	—	V	I_C = 1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 50μA
Collector Cutoff Current	I_{CBO}	—	—	0.5	μA	V_{CB} = 50V
Emitter Cutoff Current	I_{EBO}	—	—	0.5	μA	V_{EB} = 4V
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	0.3	V	I_C/I_B = 10mA/1mA DDTC113TE I_C/I_B = 5mA/0.5mA DDTC123TE I_C/I_B = 2.5mA/0.25mA DDTC143TE I_C/I_B = 1mA/0.1mA DDTC114TE I_C/I_B = 5mA/0.5mA DDTC124TE I_C/I_B = 2.5mA/0.25mA DDTC144TE I_C/I_B = 1mA/0.1mA DDTC115TE I_C/I_B = 0.5mA/0.05mA DDTC125TE
DC Current Transfer Ratio	h_{FE}	100	250	600	—	I_C = 1mA, V_{CE} = 5V
Input Resistor (R_1) Tolerance	ΔR_1	-30	—	+30	%	—
Gain-Bandwidth Product (Note 6)	f_T	—	250	—	MHz	V_{CE} = 10V, I_E = -5mA, f = 100MHz

Notes: 5. Mounted on FR-4 PC Board with minimum recommended pad layout.
6. Transistor only.

Typical Curves – DDTC114TE

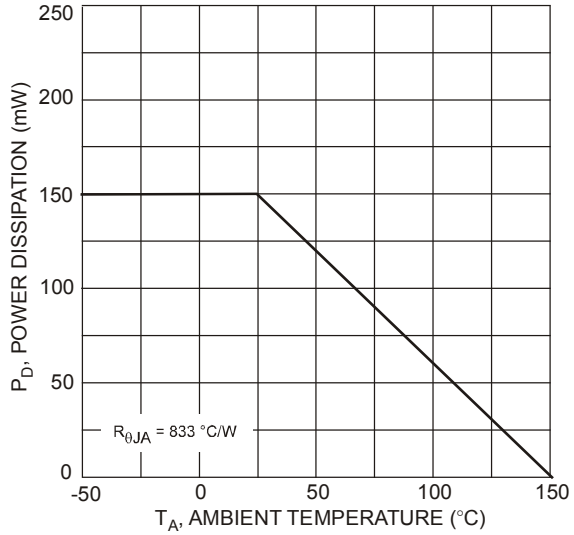


Fig. 1 Power Dissipation vs. Ambient Temperature

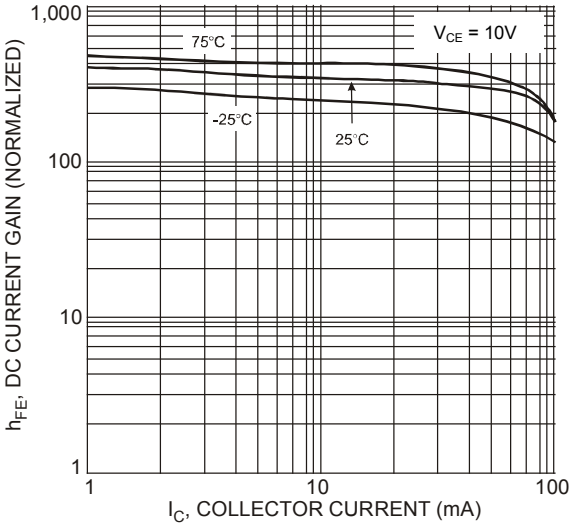


Fig. 2 Typical DC Current Gain vs. Collector Current

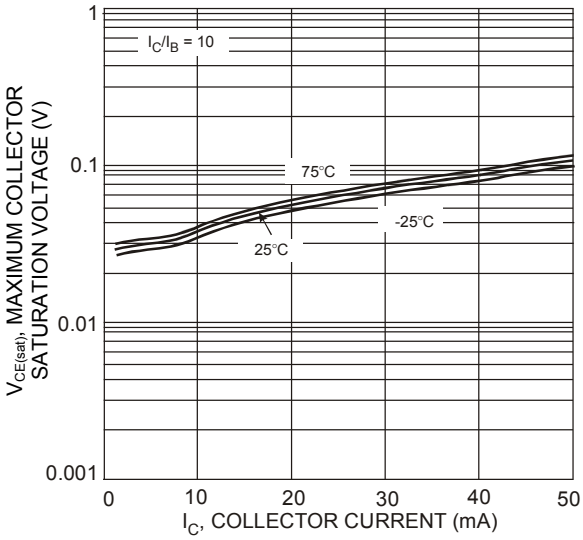


Fig. 3 Typical Collector Emitter Saturation Voltage vs. Collector Current

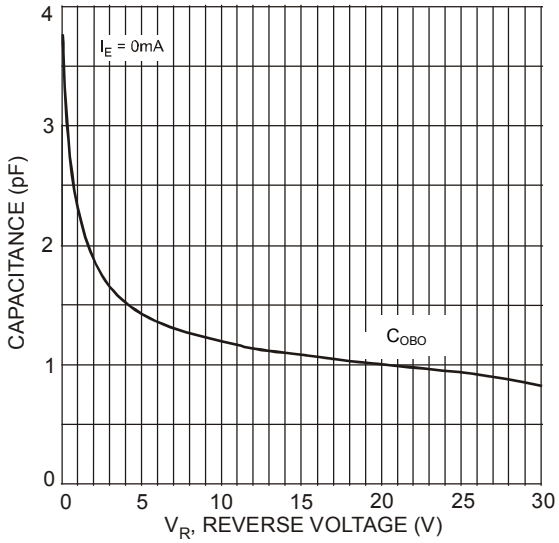


Fig. 4 Typical Capacitance Characteristics

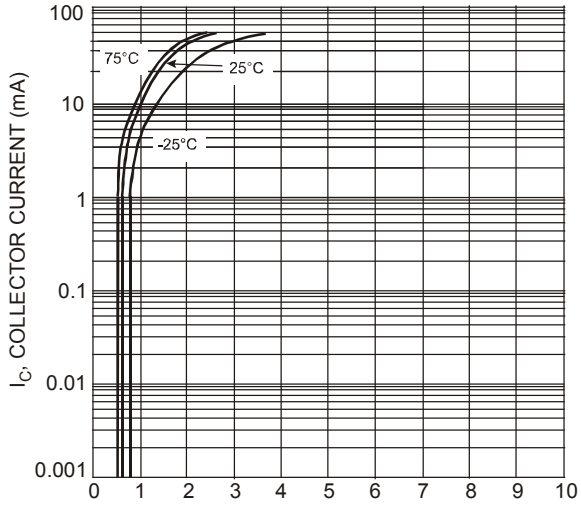


Fig. 5 Collector Current vs. Input Voltage

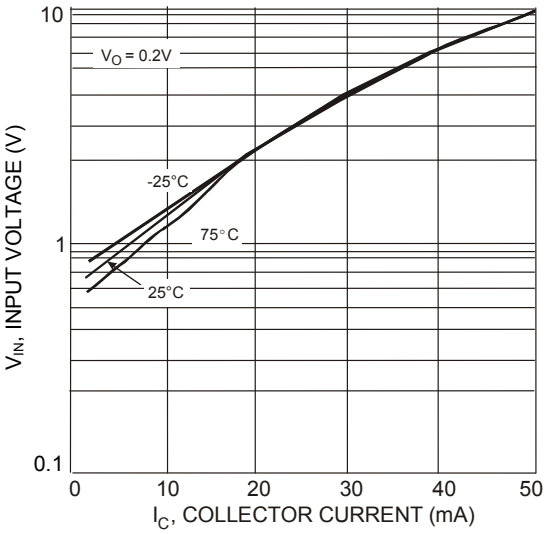
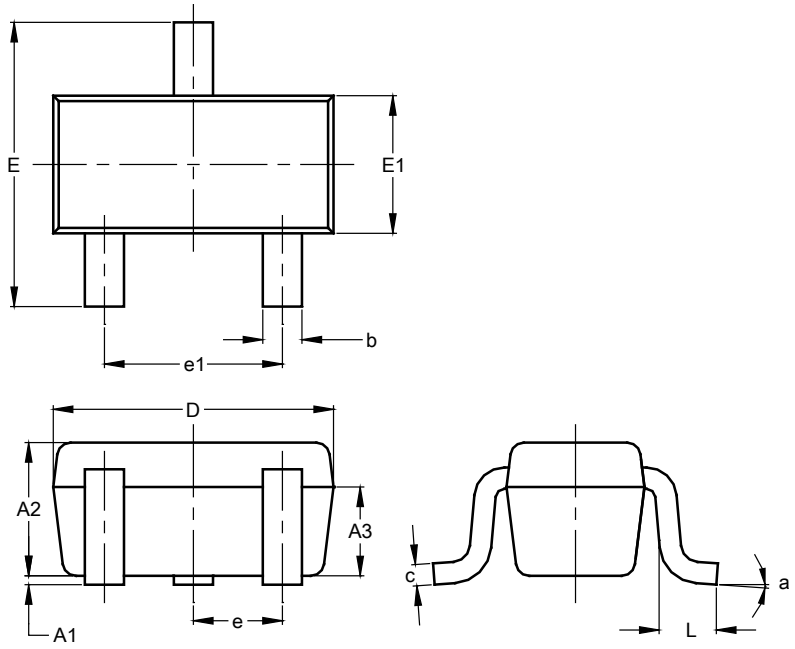


Fig. 6 Input Voltage vs. Collector Current

Package Outline Dimensions

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

SOT523



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.

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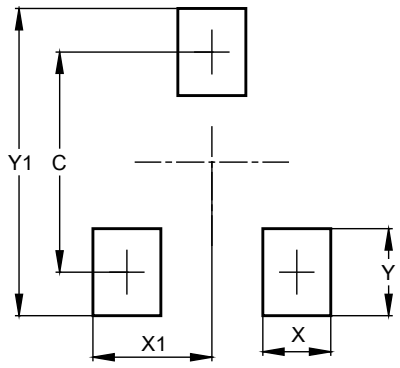

Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

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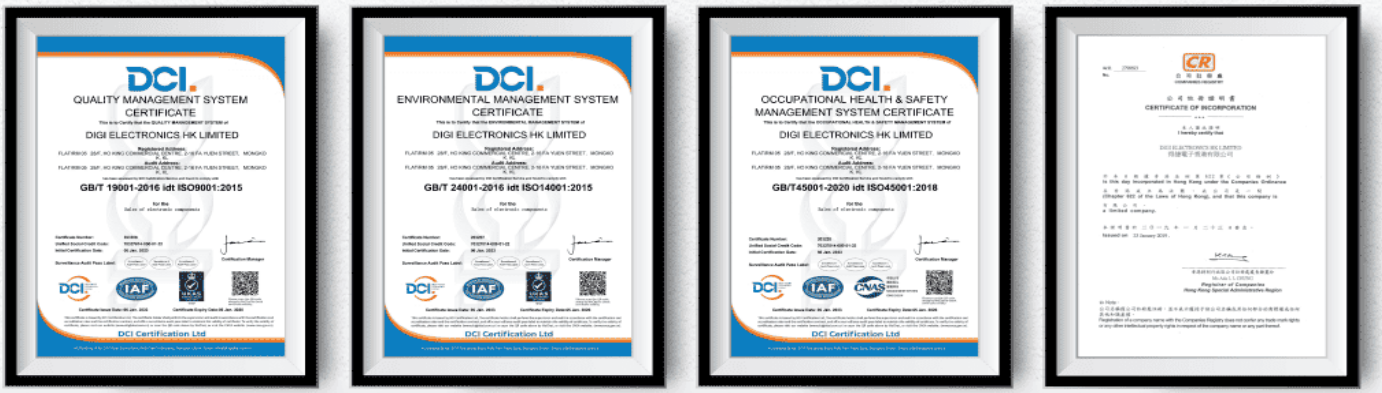

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