# DDTA144TCA-7-F Datasheet


https://www.DiGi-Electronics.com

| | |
|---|---|
| DiGi Electronics Part Number | DDTA144TCA-7-F-DG |
| Manufacturer | Diodes Incorporated |
| Manufacturer Product Number | DDTA144TCA-7-F |
| Description | TRANS PREBIAS PNP 50V SOT23-3 |
| Detailed Description | Pre-Biased Bipolar Transistor (BJT) PNP - Pre-Biased 50 V 100 mA 250 MHz 200 mW Surface Mount SOT-23-3 |

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

## Purchase and inquiry

| Manufacturer Product Number: | Manufacturer: |
| --- | --- |
| DDTA144TCA-7-F | Diodes Incorporated |
| Series: | Product Status: |
| - | Active |
| Transistor Type: | Current - Collector (Ic) (Max): |
| PNP - 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: |
| 200 mW | Surface Mount |
| Package / Case: | Supplier Device Package: |
| TO-236-3, SC-59, SOT-23-3 | SOT-23-3 |
| Base Product Number: | |
| DDTA144 | |

## Environmental & Export classification

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

NEW PRODUCT

# DDTA (R1≠R2 SERIES) UA

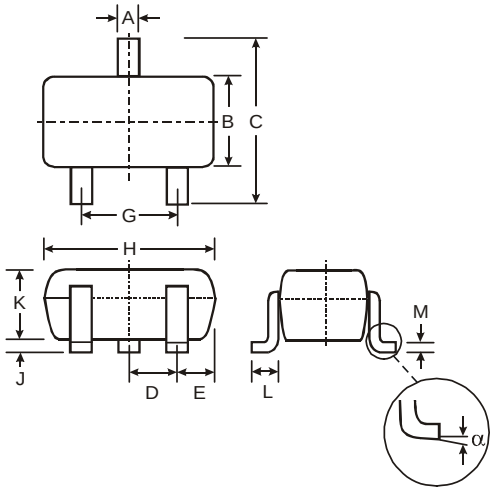
**PNP PRE-BIASED SMALL SIGNAL SURFACE MOUNT TRANSISTOR**

## Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1≠R2
- **Lead Free/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2 & 3)**

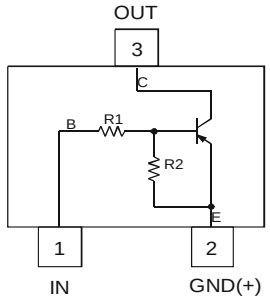
## Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 3. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- 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 Page 4
- Type Code: See Table Below
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)

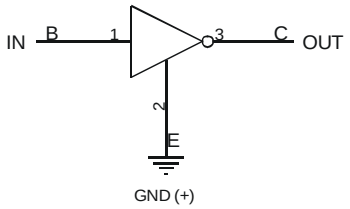



| SOT-323 | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 0.25 | 0.40 |
| **B** | 1.15 | 1.35 |
| **C** | 2.00 | 2.20 |
| **D** | 0.65 Nominal | |
| **E** | 0.30 | 0.40 |
| **G** | 1.20 | 1.40 |
| **H** | 1.80 | 2.20 |
| **J** | 0.0 | 0.10 |
| **K** | 0.90 | 1.00 |
| **L** | 0.25 | 0.40 |
| **M** | 0.10 | 0.18 |
| **α** | 0° | 8° |
| **All Dimensions in mm** | | |

| P/N | R1 (NOM) | R2 (NOM) | Type Code |
|---|---|---|---|
| DDTA113ZUA | 1KΩ | 10KΩ | P02 |
| DDTA123YUA | 2.2KΩ | 10KΩ | P05 |
| DDTA123JUA | 2.2KΩ | 47KΩ | P06 |
| DDTA143XUA | 4.7KΩ | 10KΩ | P09 |
| DDTA143FUA | 4.7KΩ | 22KΩ | P10 |
| DDTA143ZUA | 4.7KΩ | 47KΩ | P11 |
| DDTA114YUA | 10KΩ | 47KΩ | P14 |
| DDTA114WUA | 10KΩ | 4.7KΩ | P15 |
| DDTA124XUA | 22KΩ | 47KΩ | P18 |
| DDTA144VUA | 47KΩ | 10KΩ | P21 |
| DDTA144WUA | 47KΩ | 22KΩ | P22 |




Schematic and Pin Configuration




Equivalent Inverter Circuit

## 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) | DDTA113ZUA | $V_{IN}$ | +5 to -10 | V |
| | DDTA123YUA | | +5 to -12 | |
| | DDTA123JUA | | +5 to -12 | |
| | DDTA143XUA | | +7 to -20 | |
| | DDTA143FUA | | +6 to -30 | |
| | DDTA143ZUA | | +5 to -30 | |
| | DDTA114YUA | | +6 to -40 | |
| | DDTA114WUA | | +10 to -30 | |
| | DDTA124XUA | | +10 to -40 | |
| | DDTA144VUA | | +15 to -40 | |
| | DDTA144WUA | | +10 to -40 | |
| Output Current | DDTA113ZUA | $I_O$ | -100 | mA |
| | DDTA123YUA | | -100 | |
| | DDTA123JUA | | -100 | |
| | DDTA143XUA | | -100 | |
| | DDTA143FUA | | -100 | |
| | DDTA143ZUA | | -100 | |
| | DDTA114YUA | | -70 | |
| | DDTA114WUA | | -100 | |
| | DDTA124XUA | | -50 | |
| | DDTA144VUA | | -30 | |
| | DDTA144WUA | | -30 | |

Notes:
1. No purposefully added lead.
2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
3. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

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## Maximum Ratings (continued) @$T_A$ = 25°C unless otherwise specified

| Characteristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Output Current | All | $I_C$ (Max) | -100 | mA |
| Power Dissipation | | $P_d$ | 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: 4. Mounted on FR4 PC Board with recommended pad layout as shown on Diodes Inc., suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf

## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|---|
| | DDTA113ZUA | $V_{I(off)}$ | -0.3 | — | — | V | $V_{CC}$ = 5V, $I_O$ = 100μA |
| | DDTA123YUA | | -0.3 | | | | |
| | DDTA123JUA | | -0.5 | | | | |
| | DDTA143XUA | | -0.3 | | | | |
| | DDTA143FUA | | -0.3 | | | | |
| | DDTA143ZUA | | -0.5 | | | | |
| | DDTA114YUA | | -0.3 | | | | |
| | DDTA114WUA | | -0.8 | | | | |
| | DDTA124XUA | | -0.4 | | | | |
| | DDTA144VUA | | -1.0 | | | | |
| | DDTA144WUA | | -0.8 | | | | |
| Input Voltage | DDTA113ZUA | $V_{I(on)}$ | — | — | -3.0 | | $V_O$ = -0.3V, $I_O$ = -20mA |
| | DDTA123YUA | | | | -3.0 | | $V_O$ = -0.3V, $I_O$ = -20mA |
| | DDTA123JUA | | | | -1.1 | | $V_O$ = -0.3V, $I_O$ = -5mA |
| | DDTA143XUA | | | | -2.5 | | $V_O$ = -0.3V, $I_O$ = -20mA |
| | DDTA143FUA | | | | -1.3 | | $V_O$ = -0.3V, $I_O$ = -3mA |
| | DDTA143ZUA | | | | -1.3 | | $V_O$ = -0.3V, $I_O$ = -5mA |
| | DDTA114YUA | | | | -1.4 | | $V_O$ = -0.3V, $I_O$ = -1mA |
| | DDTA114WUA | | | | -3.0 | | $V_O$ = -0.3V, $I_O$ = -2mA |
| | DDTA124XUA | | | | -2.5 | | $V_O$ = -0.3V, $I_O$ = -2mA |
| | DDTA144VUA | | | | -5.0 | | $V_O$ = -0.3V, $I_O$ = -2mA |
| | DDTA144WUA | | | | -4.0 | | $V_O$ = -0.3V, $I_O$ = -2mA |
| Output Voltage | | $V_{O(on)}$ | — | -0.1 | -0.3 | V | $I_O/I_I$ = -5mA/-0.25mA DDTA123JUA<br>$I_O/I_I$ = -5mA/-0.25mA DDTA143ZUA<br>$I_O/I_I$ = -5mA/-0.25mA DDTA114YUA<br>$I_O/I_I$ = -10mA/-0.5mA All Others |
| | DDTA113ZUA | $I_I$ | — | — | -7.2 | mA | $V_I$ = -5V |
| | DDTA123YUA | | | | -3.8 | | |
| | DDTA123JUA | | | | -3.6 | | |
| | DDTA143XUA | | | | -1.8 | | |
| | DDTA143FUA | | | | -1.8 | | |
| Input Current | DDTA143ZUA | | | | -1.8 | | |
| | DDTA114YUA | | | | -0.88 | | |
| | DDTA114WUA | | | | -0.88 | | |
| | DDTA124XUA | | | | -0.36 | | |
| | DDTA144VUA | | | | -0.16 | | |
| | DDTA144WUA | | | | -0.16 | | |
| Output Current | | $I_{O(off)}$ | — | — | -0.5 | μA | $V_{CC}$ = -50V, $V_I$ = 0V |
| | DDTA113ZUA | $G_I$ | -33 | — | — | — | $V_O$ = -5V, $I_O$ = -10mA |
| | DDTA123YUA | | -33 | | | | |
| | DDTA123JUA | | -80 | | | | |
| | DDTA143XUA | | -30 | | | | |
| | DDTA143FUA | | -68 | | | | |
| DC Current Gain | DDTA143ZUA | | -80 | | | | |
| | DDTA114YUA | | -68 | | | | |
| | DDTA114WUA | | -24 | | | | |
| | DDTA124XUA | | -68 | | | | |
| | DDTA144VUA | | -33 | | | | |
| | DDTA144WUA | | -56 | | | | |
| Input Resistor Tolerance | | $\Delta R_1$ | -30 | — | +30 | % | — |
| Resistance Ratio Tolerance | | $\Delta R_2/R_1$ | -20 | — | +20 | % | — |
| Gain-Bandwidth Product* | | $f_T$ | — | 250 | — | MHz | $V_{CE}$ = -10V, $I_E$ = 5mA, f = 100MHz |

* Transistor - For Reference Only

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## Typical Curves – DDTA123JUA

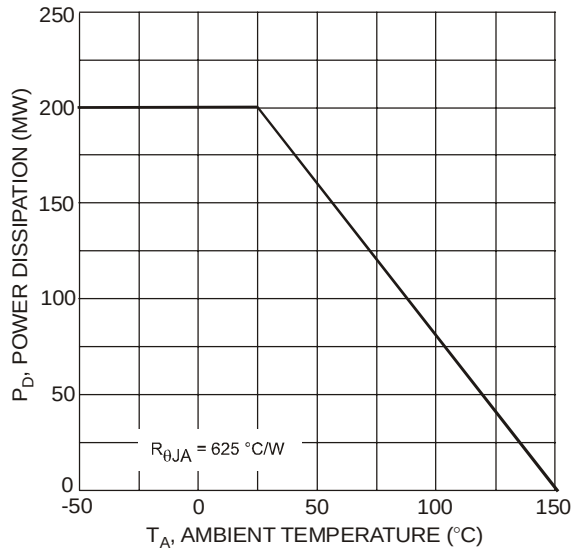

Fig. 1 Derating Curve

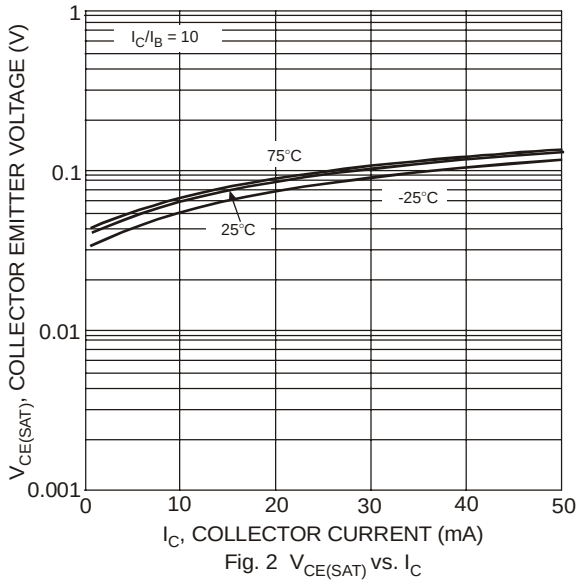

Fig. 2 $V_{CE(SAT)}$ vs. $I_C$

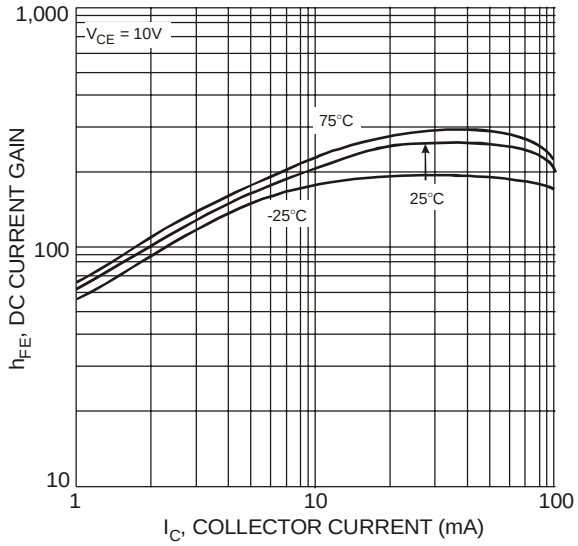

Fig. 3 DC Current Gain

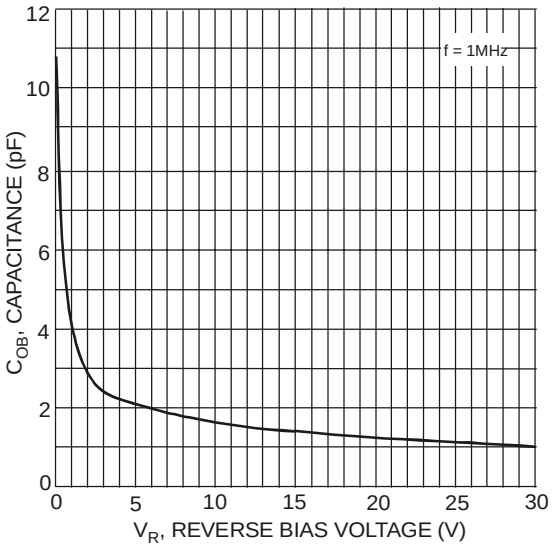

Fig. 4 Output Capacitance

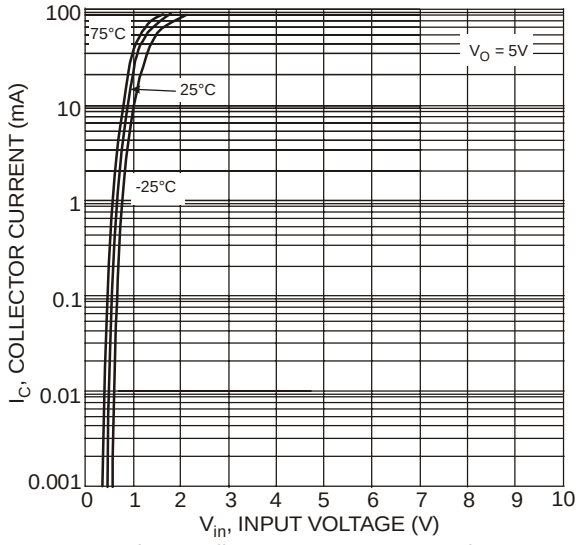

Fig. 5 Collector Current vs. Input Voltage

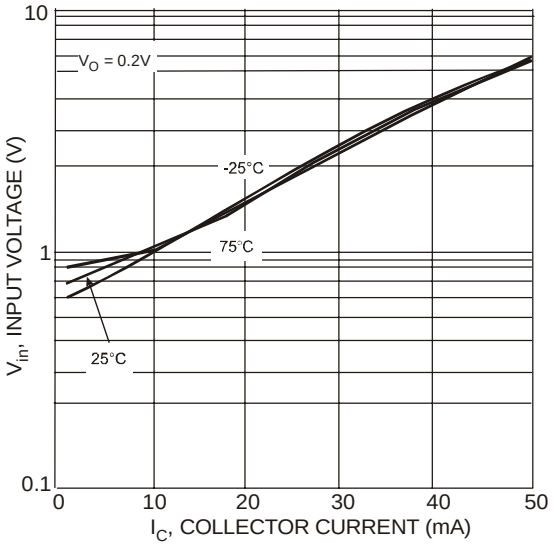

Fig. 6 Input Voltage vs. Collector Current

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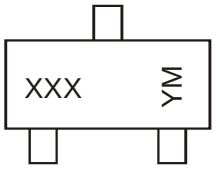
## Ordering Information (Note 3 & 5)

| Device | Packaging | Shipping |
|---|---|---|
| DDTA113ZUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA123YUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA123JUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA143XUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA143FUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA143ZUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA114YUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA114WUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA124XUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA144VUA-7-F | SOT-323 | 3000/Tape & Reel |
| DDTA144WUA-7-F | SOT-323 | 3000/Tape & Reel |

Notes: 5. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## Marking Information




XXX = Product Type Marking Code, See Table on Page 1
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

| Year | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|
| Code | T | U | V | W | X | Y | Z |

| 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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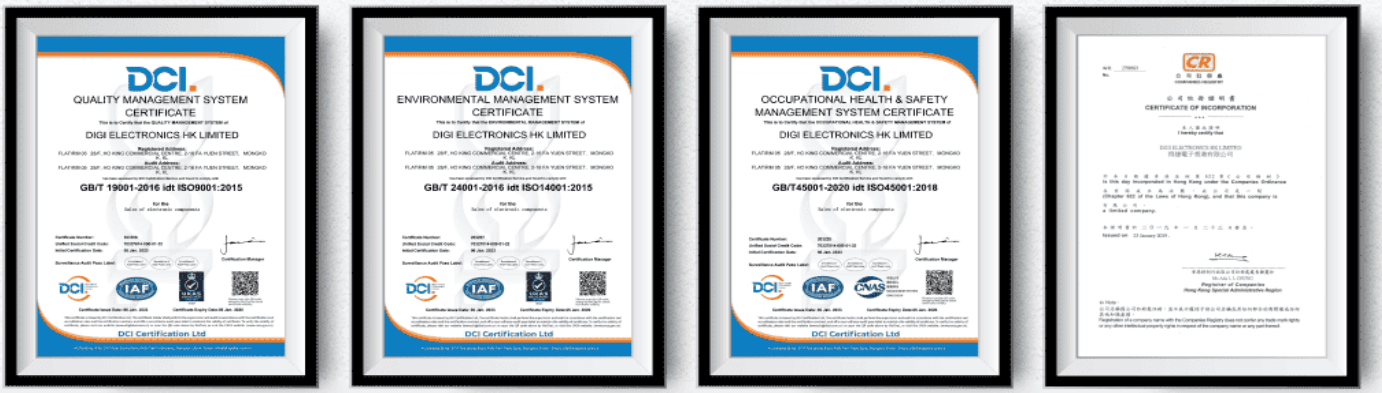



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