



DDTA (R1 = R2 SERIES) KA

PNP PRE-BIASED SMALL SIGNAL SC-59 SURFACE MOUNT TRANSISTOR

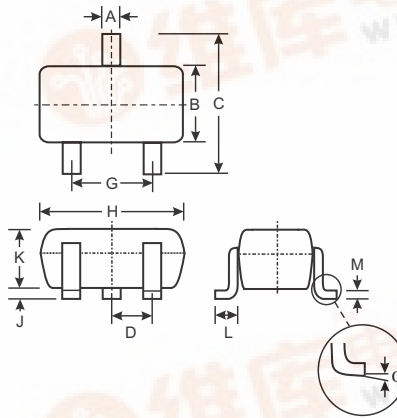
Features

- Epitaxial Planar Die Construction
- Complementary NPN Types Available (DDTC)
- Built-In Biasing Resistors, R1 = R2
- **Lead Free/RoHS Compliant (Note 2)**
- "Green" Device, Note 3 and 4

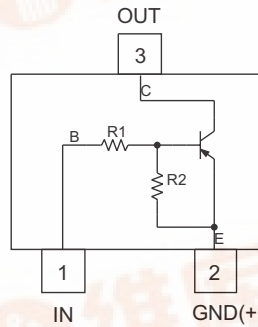
Mechanical Data

- Case: SC-59
- Case Material: Molded Plastic, "Green" Molding Compound, Note 4. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Copper leadframe).
- Terminal Connections: See Diagram
- Marking: Date Code and Type Code (See Table Below & Page 2)
- Ordering Information (See Page 2)
- Weight: 0.008 grams (approximate)

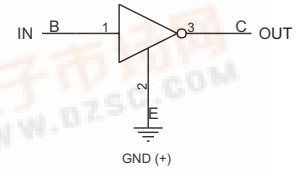
| P/N | R1, R2 (NOM) | Type Code |
|------------|--------------|-----------|
| DDTA123EKA | 2.2KΩ | P04 |
| DDTA143EKA | 4.7KΩ | P08 |
| DDTA114EKA | 10KΩ | P13 |
| DDTA124EKA | 22KΩ | P17 |
| DDTA144EKA | 47KΩ | P20 |
| DDTA115EKA | 100KΩ | P24 |



| SC-59 | | |
|----------------------|-------|------|
| Dim | Min | Max |
| A | 0.35 | 0.50 |
| B | 1.50 | 1.70 |
| C | 2.70 | 3.00 |
| D | 0.95 | |
| G | 1.90 | |
| H | 2.90 | 3.10 |
| J | 0.013 | 0.10 |
| K | 1.00 | 1.30 |
| L | 0.35 | 0.55 |
| M | 0.10 | 0.20 |
| α | 0° | 8° |
| All Dimensions in mm | | |



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) | V _{IN} | +10 to -12 +10 to -30 +10 to -40 +10 to -40 +10 to -40 +10 to -40 | V |
| Output Current | I _O | -100 -100 -50 -30 -30 -100 -20 | mA |
| Output Current | I _C (Max) | -100 | mA |
| Power Dissipation | P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 1) | R _{θJA} | 625 | °C/W |
| Operating and Storage and Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Note: 1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.

2. No purposefully added lead.

3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.



Electrical Characteristics @ T_A = 25°C unless otherwise specified

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|--|--------------------------------|----------------------------------|------|--|------|---|
| Input Voltage | | V _{I(off)} | -0.5 | -1.1 | — | V | V _{CC} = -5V, I _O = -100μA |
| | | V _{I(on)} | — | -1.9 | -3 | | V _O = -0.3V, I _O = -20mA, DDTA123EKA V _O = -0.3V, I _O = -20mA, DDTA143EKA V _O = -0.3V, I _O = -10mA, DDTA114EKA V _O = -0.3V, I _O = -5mA, DDTA124EKA V _O = -0.3V, I _O = -2mA, DDTA144EKA V _O = -0.3V, I _O = -1mA, DDTA115EKA |
| Output Voltage | | V _{O(on)} | — | -0.1 | -0.3 | V | I _O /I _I = -10mA/-0.5mA, DDTA123EKA I _O /I _I = -10mA/-0.5mA, DDTA143EKA I _O /I _I = -10mA/-0.5mA, DDTA114EKA I _O /I _I = -10mA/-0.5mA, DDTA124EKA I _O /I _I = -10mA/-0.5mA, DDTA144EKA I _O /I _I = -5mA/-0.25mA, DDTA115EKA |
| Input Current | DDTA123EKA DDTA143EKA DDTA114EKA DDTA124EKA DDTA144EKA DDTA115EKA | I _I | — | — | -3.8 -1.8 -0.88 -0.36 -0.18 -0.15 | mA | V _I = -5V |
| Output Current | | I _{O(off)} | — | — | -0.5 | μA | V _{CC} = -50V, V _I = 0V |
| DC Current Gain | DDTA123EKA DDTA143EKA DDTA114EKA DDTA124EKA DDTA144EKA DDTA115EKA | G _I | 20 20 30 56 68 82 | — | — | — | V _O = -5V, I _O = -20mA V _O = -5V, I _O = -10mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA V _O = -5V, I _O = -5mA |
| Input Resistor (R ₁) Tolerance | | ΔR ₁ | -30 | — | +30 | % | — |
| Resistance Ratio | | R ₂ /R ₁ | 0.8 | 1 | 1.2 | — | — |
| Gain-Bandwidth Product* | | f _T | — | 250 | — | MHz | V _{CE} = -10V, I _E = 5mA, f = 100MHz |

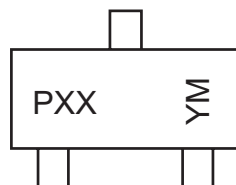
* Transistor - For Reference Only

Ordering Information (Note 4 & 5)

| Device | Packaging | Shipping |
|----------------|-----------|------------------|
| DDTA123EKA-7-F | SC-59 | 3000/Tape & Reel |
| DDTA143EKA-7-F | SC-59 | 3000/Tape & Reel |
| DDTA114EKA-7-F | SC-59 | 3000/Tape & Reel |
| DDTA124EKA-7-F | SC-59 | 3000/Tape & Reel |
| DDTA144EKA-7-F | SC-59 | 3000/Tape & Reel |
| DDTA115EKA-7-F | SC-59 | 3000/Tape & Reel |

- Notes: 4. Product manufactured with Date Code 0609 (week 9, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0609 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.
5. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



PXX = 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 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | N | P | R | S | 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 |

TYPICAL CURVES - DDTA143EKA

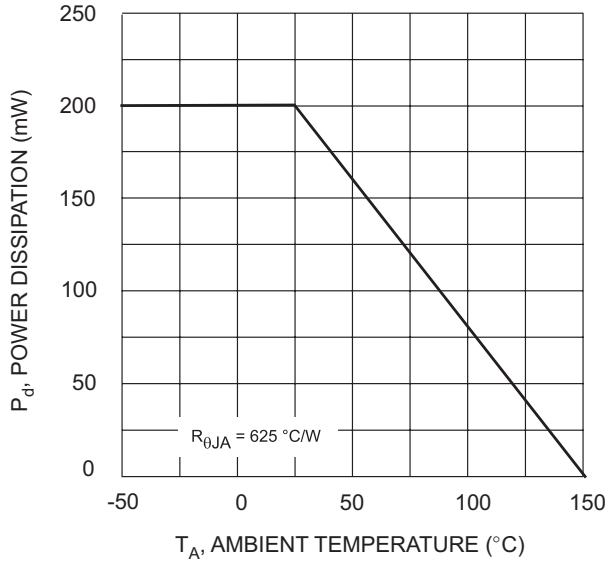


Fig. 1 Derating Curve

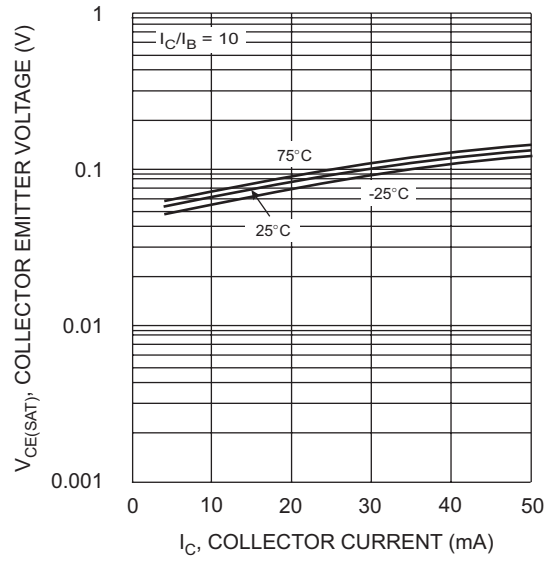


Fig. 2 $V_{CE(SAT)}$ vs. I_C

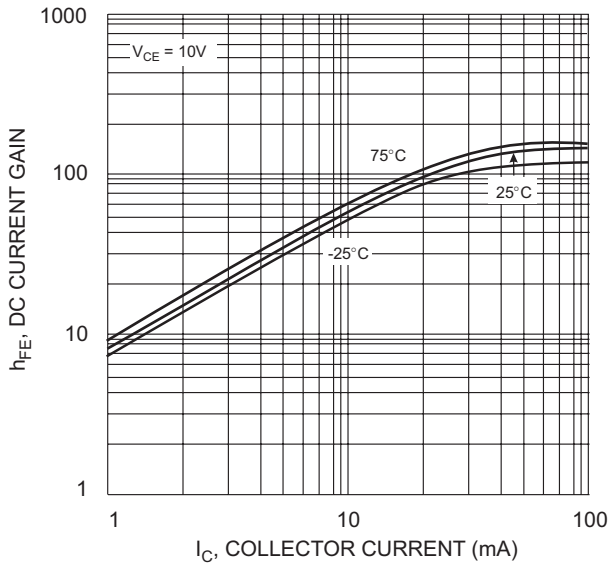


Fig. 3 DC CURRENT GAIN

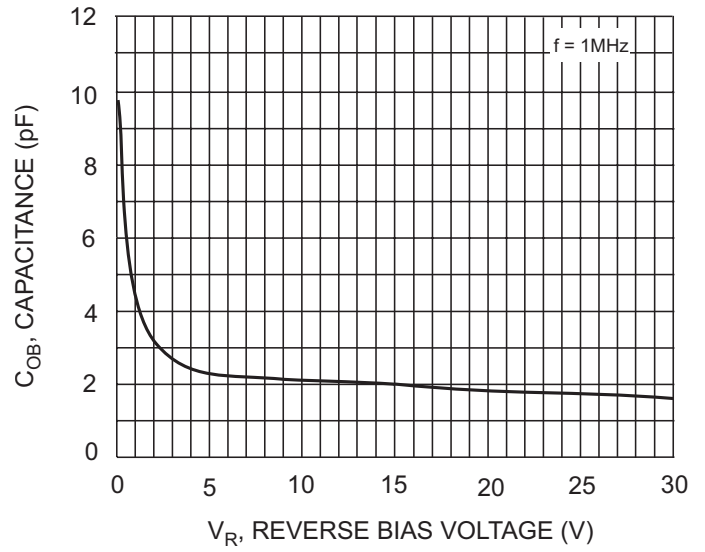


Fig. 4 Output Capacitance

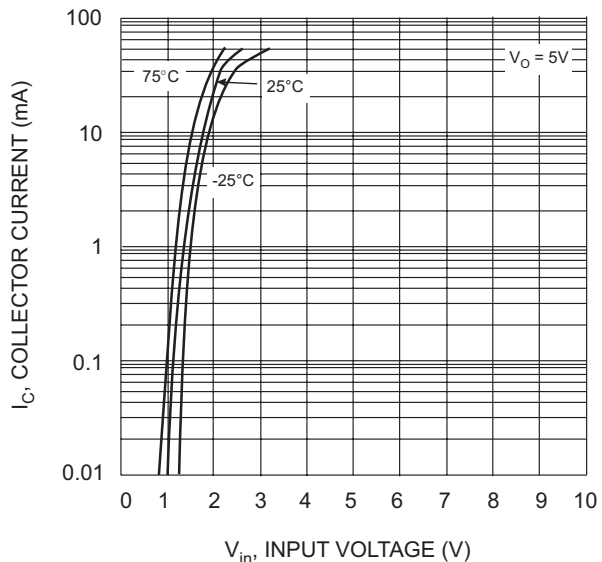


Fig. 5 Collector Current Vs. Input Voltage

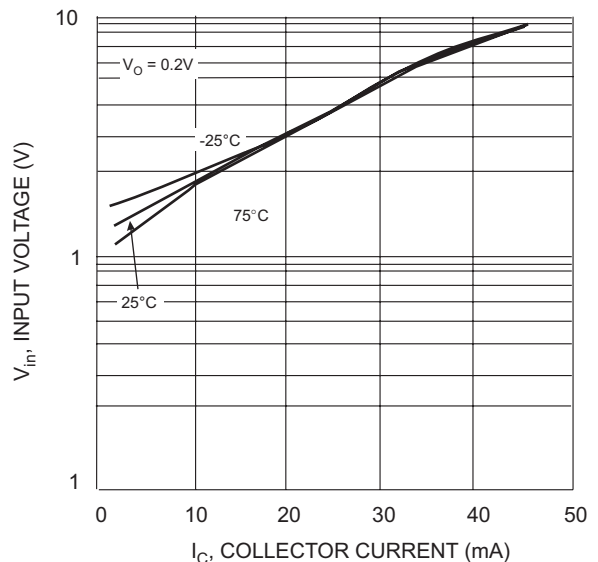


Fig. 6 Input Voltage vs. Collector Current



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