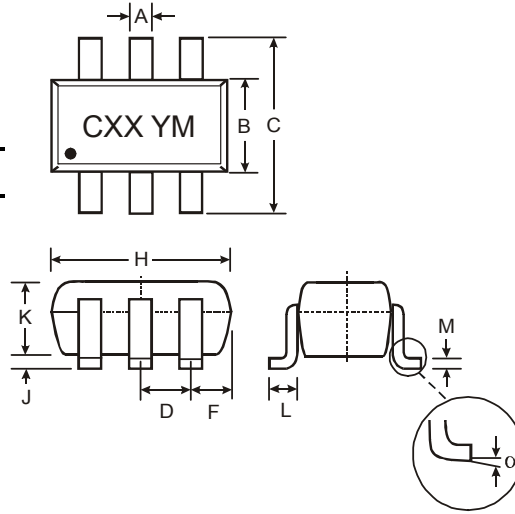


Features

- Epitaxial Planar Die Construction
- Built-In Biasing Resistors
- **Lead Free/RoHS Compliant (Note 3)**
- **"Green" Device (Note 4 and 5)**

Mechanical Data

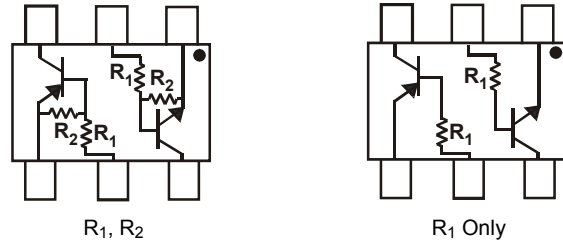
- Case: SOT-363
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Terminal Connections: See Diagram
- Marking Information: See Page 4
- Type Code: See Table Below
- Ordering Information: See Page 4
- Weight: 0.006 grams (approximate)



| SOT-363 | | |
|----------|--------------|------|
| Dim | Min | Max |
| A | 0.10 | 0.30 |
| B | 1.15 | 1.35 |
| C | 2.00 | 2.20 |
| D | 0.65 Nominal | |
| F | 0.30 | 0.40 |
| H | 1.80 | 2.20 |
| J | — | 0.10 |
| K | 0.90 | 1.00 |
| L | 0.25 | 0.40 |
| M | 0.10 | 0.25 |
| α | 0° | 8° |

All Dimensions in mm

| P/N | R1 (NOM) | R2 (NOM) | Type Code |
|----------|----------|----------|-----------|
| DCX122LU | 0.22K | 10K | C81 |
| DCX142JU | 0.47K | 10K | C82 |
| DCX122TU | 0.22K | OPEN | C83 |
| DCX142TU | 0.47K | OPEN | C84 |



SCHEMATIC DIAGRAM

Maximum Ratings NPN Section

@T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|--|-------------|------|
| Supply Voltage | V _{CC} | 50 | V |
| Input Voltage | DCX122LU DCX142JU V _{IN} | -5 to +6 | V |
| Input Voltage | DCX122TU DCX142TU V _{EBO (MAX)} | 5 | V |
| Output Current | All I _C | 100 | mA |
| Power Dissipation | (Note 1, 2) P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air | (Note 2) R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -55 to +150 | °C |

- Notes:
1. Mounted on FR4 PC Board with recommended pad layout at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. 150mW per element must not be exceeded.
 3. No purposefully added lead.
 4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 5. Product manufactured with Date Code UO (week 40, 2007) and newer are built with Green Molding Compound. Product manufactured prior to Date Code UO are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

Maximum Ratings PNP Section @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|--|----------------------|------|
| Supply Voltage | V _{CC} | -50 | V |
| Input Voltage | DCX122LU DCX142JU V _{IN} | +5 to -6 +5 to -6 | V |
| Input Voltage | DCX122TU DCX142TU V _{EBO (MAX)} | -5 | V |
| Output Current | All I _C | -100 | mA |
| Power Dissipation | (Note 1,2) P _d | 200 | mW |
| Thermal Resistance, Junction to Ambient Air | (Note 1,2) R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics NPN Section @T_A = 25°C unless otherwise specified **R1, R2 Types**

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|---|------------|-----|------------|------|--|
| Input Voltage | DCX122LU DCX142JU V _{I(off)} | 0.3 0.3 | — | — | V | V _{CC} = 5V, I _O = 100μA |
| | DCX122LU DCX142JU 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 = 5mA/0.25mA |
| Input Current | DCX122LU DCX142JU 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 | DCX122LU DCX142JU G _I | 56 56 | — | — | — | V _O = 5V, I _O = 10mA |
| Gain-Bandwidth Product* | f _T | — | 200 | — | MHz | V _{CE} = 10V, I _E = 5mA, f = 100MHz |

* Transistor - For Reference Only

Electrical Characteristics NPN Section @T_A = 25°C unless otherwise specified **R1 Only**

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------------|---|------------|------------|------------|------|--|
| Collector-Base Breakdown Voltage | BV _{CB0} | 50 | — | — | V | I _C = 50μA |
| Collector-Emitter Breakdown Voltage | BV _{CEO} | 40 | — | — | V | I _C = 1mA |
| Emitter-Base Breakdown Voltage | DCX122TU DCX142TU BV _{EBO} | 5 | — | — | V | I _E = 50μA I _E = 50μA |
| Collector Cutoff Current | I _{CBO} | — | — | 0.5 | μA | V _{CB} = 50V |
| Emitter Cutoff Current | DCX122TU DCX142TU 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 | DCX122TU DCX142TU h _{FE} | 100 100 | 250 250 | 600 600 | — | I _C = 1mA, V _{CE} = 5V |
| Gain-Bandwidth Product* | f _T | — | 200 | — | MHz | V _{CE} = 10V, I _E = -5mA, f = 100MHz |

* Transistor - For Reference Only

Electrical Characteristics PNP Section @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1, R2 Types**

| Characteristic | | Symbol | Min | Typ | Max | Unit | Test Condition |
|-------------------------|----------------------|--------------|--------------|-----|--------------|---------|--|
| Input Voltage | DCX122LU DCX142JU | $V_{I(off)}$ | -0.3 -0.3 | — | — | V | $V_{CC} = -5V, I_O = -100\mu A$ |
| | DCX122LU DCX142JU | $V_{I(on)}$ | — | — | -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 | $I_O/I_I = -5mA/-0.25mA$ |
| Input Current | DCX122LU DCX142JU | 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 | DCX122LU DCX142JU | G_I | 56 56 | — | — | — | $V_O = -5V, I_O = -10mA$ |
| Gain-Bandwidth Product* | | f_T | — | 200 | — | MHZ | $V_{CE} = -10V, I_E = -5mA, f = 100MHz$ |

* Transistor - For Reference Only

Electrical Characteristics PNP Section @ $T_A = 25^\circ\text{C}$ unless otherwise specified **R1 Only Types**

| 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 | DCX122TU DCX142TU | BV_{EBO} | -5 | — | — | V | $I_E = -50\mu A$ $I_E = -50\mu A$ |
| Collector Cutoff Current | | I_{CBO} | — | — | -0.5 | μA | $V_{CB} = -50V$ |
| Emitter Cutoff Current | DCX122TU DCX142TU | 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 | DCX122TU DCX142TU | h_{FE} | 100 100 | 250 250 | 600 600 | — | $I_C = -1mA, V_{CE} = -5V$ |
| Gain-Bandwidth Product* | | f_T | — | 200 | — | MHZ | $V_{CE} = -10V, I_E = 5mA, f = 100MHz$ |

* Transistor - For Reference Only

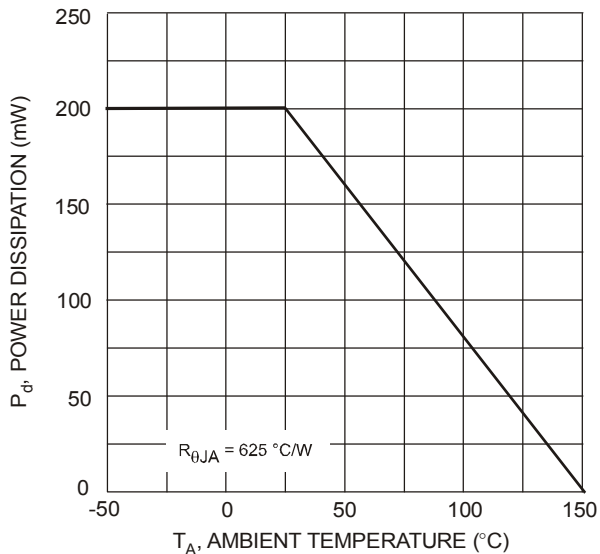


Fig. 1 Power Derating Curve

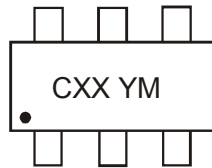
(150mW per element must not be exceeded).

Ordering Information (Note 6)

| Device | Packaging | Shipping |
|--------------|-----------|------------------|
| DCX122LU-7-F | SOT-363 | 3000/Tape & Reel |
| DCX142JU-7-F | SOT-363 | 3000/Tape & Reel |
| DCX122TU-7-F | SOT-363 | 3000/Tape & Reel |
| DCX142TU-7-F | SOT-363 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



CXX = Product Type Marking Code, See Table on Page 1
 YM = Date Code Marking
 Y = Year ex: N = 2002
 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 |

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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