

BD743 – A – B – C

SILICON POWER TRANSISTORS

The BD743 series are NPN power transistors in a TO-220 envelope. They are intended for use in power linear and switching application. High current capability and high power dissipation. PNP complements are BD744-A-B-C
Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit | |
|-----------|---------------------------------------|--------------------|-------------|----|
| V_{CBO} | Collector-Base Voltage ($I_E=0$) | BD743 | 50 | V |
| | | BD743A | 70 | |
| | | BD743B | 900 | |
| | | BD743C | 110 | |
| V_{CEO} | Collector-Emitter Voltage ($I_B=0$) | BD743 | 45 | V |
| | | BD743A | 60 | |
| | | BD743B | 80 | |
| | | BD743C | 100 | |
| V_{EBO} | Emitter-Base Voltage ($I_C=0$) | BD743 | 5 | V |
| | | BD743A | | |
| | | BD743B | | |
| | | BD743C | | |
| I_C | Collector Current | BD743 | 15 | A |
| | | BD743A | | |
| | | BD743B | | |
| | | BD743C | | |
| I_{CM} | Collector Peak Current | BD743 | 20 | A |
| | | BD743A | | |
| | | BD743B | | |
| | | BD743C | | |
| I_B | Base Current | BD743 | 5 | A |
| | | BD743A | | |
| | | BD743B | | |
| | | BD743C | | |
| P_T | Power Dissipation | $T_C = 25^\circ C$ | 90 | W |
| | | $T_A = 25^\circ C$ | 2 | |
| T_J | Junction Temperature | | 150 | °C |
| T_s | Storage Temperature range | | -65 to +150 | |

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THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|--------------|---|-------|------|
| R_{thJ-MB} | Junction To Case Thermal Resistance | 1.4 | °C/W |
| R_{thJ-A} | Junction To Free Air Thermal Resistance | 62.5 | °C/W |

ELECTRICAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$ unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit | | | |
|-----------|---|-------------------------------------|---------------------------|---------------------------------|-----|------|--------|-----|--------|
| I_{CBO} | Collector Cutoff Current | $V_{BE}=0$ $V_{CB}=50\text{ V}$ | $T_C=25^{\circ}\text{C}$ | - | - | 0.1 | BD743 | | |
| | | $V_{BE}=0$ $V_{CB}=70\text{ V}$ | | | | | BD743A | | |
| | | $V_{BE}=0$ $V_{CB}=90\text{ V}$ | | | | | BD743B | | |
| | | $V_{BE}=0$ $V_{CB}=100\text{ V}$ | | | | | BD743C | | |
| | | $V_{BE}=0$ $V_{CB}=50\text{ V}$ | $T_C=125^{\circ}\text{C}$ | - | - | 5 | BD743 | | |
| | | $V_{BE}=0$ $V_{CB}=70\text{ V}$ | | | | | BD743A | | |
| | | $V_{BE}=0$ $V_{CB}=90\text{ V}$ | | | | | BD743B | | |
| | | $V_{BE}=0$ $V_{CB}=100\text{ V}$ | | | | | BD743C | | |
| | | I_{CEO} | Collector Cutoff Current | $I_B=0$ $V_{CE}=30\text{ V}$ | | - | - | 0.1 | BD743 |
| | | | | $I_B=0$ $V_{CE}=60\text{ V}$ | | | | | BD743A |
| | BD743B | | | | | | | | |
| | BD743C | | | | | | | | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5\text{ V}, I_C=0$ | | - | - | 0.5 | BD743 | | |
| | | | | | | | BD743A | | |
| | | | | | | | BD743B | | |
| | | | | | | | BD743C | | |
| V_{CEO} | Collector-Emitter Breakdown Voltage (*) | $I_C=30\text{ mA}, I_B=0$ | | | | | BD743 | | |
| | | | | | | | BD743A | | |
| | | | | | | | BD743B | | |
| | | | | | | | BD743C | | |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | | | Value | | | Unit |
|---------------|--|--|--------|-------|-----|-----|------|
| | | | | Min | Typ | Max | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C = 5\text{ A}, I_B = 500\text{ mA}$ | BD743 | - | - | 1 | V |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| | | $I_C = 15\text{ A}, I_B = 5\text{ A}$ | BD743 | - | - | 3 | |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| $V_{BE(on)}$ | Base-Emitter Voltage (*) | $I_C = 5\text{ A}, V_{CE} = 4\text{ V}$ | BD743 | - | - | 1 | V |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| | | $I_C = 15\text{ A}, V_{CE} = 4\text{ V}$ | BD743 | - | - | 3 | |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| h_{FE} | DC Current Gain (*) | $I_C = 1\text{ A}, V_{CE} = 4\text{ V}$ | BD743 | 40 | - | - | - |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| | | $I_C = 5\text{ A}, V_{CE} = 4\text{ V}$ | BD743 | 20 | - | 150 | |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |
| | | $I_C = 15\text{ A}, V_{CE} = 4\text{ V}$ | BD743 | 5 | - | - | |
| | | | BD743A | | | | |
| | | | BD743B | | | | |
| | | | BD743C | | | | |

SWITCHING TIMES

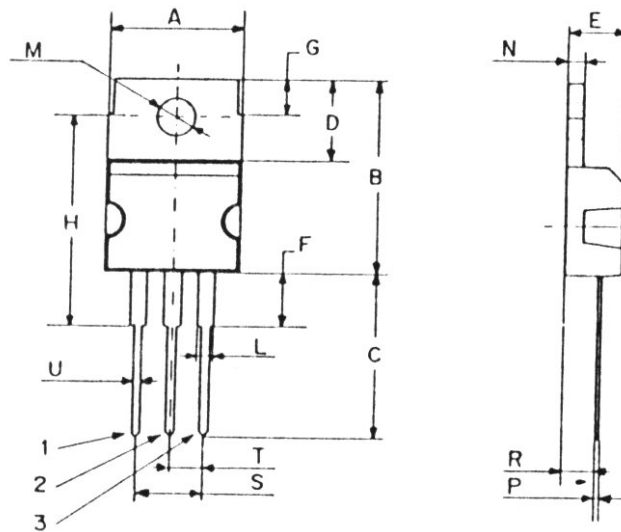
| Symbol | Ratings | Test Condition(s) | Value | | | Unit |
|--------|--------------|--|-------|-----|-----|------|
| | | | Min | Typ | Max | |
| t_d | Delay time | $I_C = 5\text{ A}, V_{be} = -4.2\text{ V}$ $I_{B(on)} = -I_{B(off)} = 0.5\text{ A}$ $R_L = 6\ \Omega, t_p = 20\ \mu\text{s}$ | - | 20 | - | ns |
| t_r | Rise time | | - | 350 | - | |
| t_s | Storage time | | - | 500 | - | |
| t_f | Fall time | | - | 400 | - | |

(*) Pulse Width $\approx 300\ \mu\text{s}$, Duty Cycle $\angle 2.0\%$

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MECHANICAL DATA CASE TO-220

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 9,90 | 10,30 |
| B | 15,65 | 15,90 |
| C | 13,20 | 13,40 |
| D | 6,45 | 6,65 |
| E | 4,30 | 4,50 |
| F | 2,70 | 3,15 |
| G | 2,60 | 3,00 |
| H | 15,75 | 17,15 |
| L | 1,15 | 1,40 |
| M | 3,50 | 3,70 |
| N | - | 1,37 |
| P | 0,46 | 0,55 |
| R | 2,50 | 2,70 |
| S | 4,98 | 5,08 |
| T | 2,49 | 2,54 |
| U | 0,70 | 0,90 |



| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Collector |
| Pin 3 : | Emitter |
| Package | Collector |

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