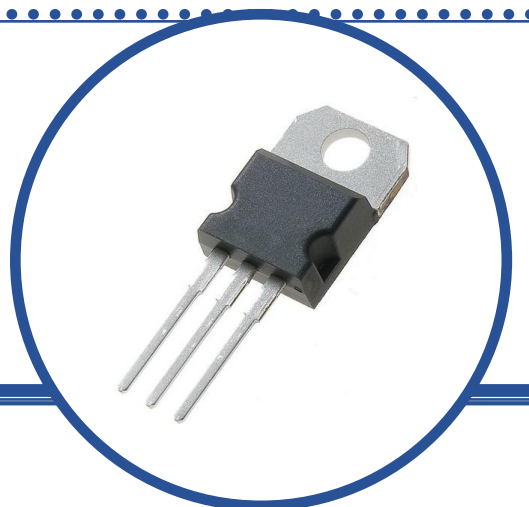


# SILICON NPN POWER DARLINGTON TRANSISTOR



## BDT63CX-MAG.R

- NPN Epitaxial base transistor
- Monolithic Darlington circuit
- Applications include audio output stages, general purposes amplifiers and switching

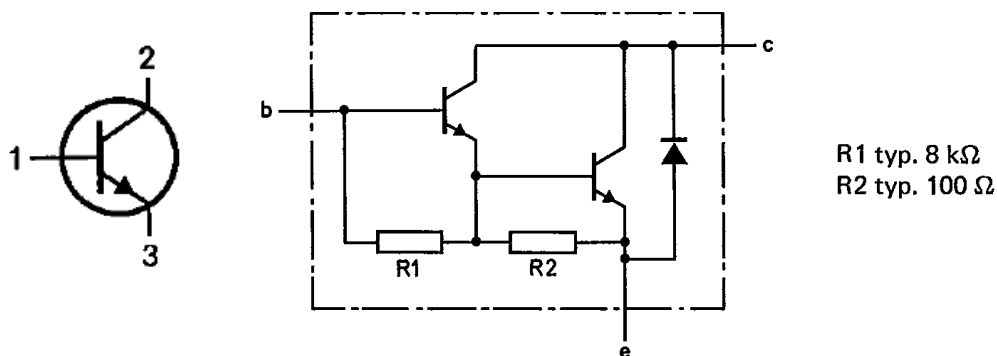


## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise stated)

|           |                           |            | Unit             |
|-----------|---------------------------|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage    | 115        | V                |
| $V_{CEO}$ | Collector-Emitter Voltage | 115        | V                |
| $V_{EBO}$ | Emitter-Base Voltage      | 5          | V                |
| $I_C$     | Collector Current (DC)    | 10         | A                |
| $I_{CM}$  | Collector Current (Peak)  | 15         | A                |
| $I_B$     | Base Current (DC)         | 250        | mA               |
| $P_D$     | Total Device Dissipation  | 90         | W                |
| $T_J$     | Junction Temperature      | 150        | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature       | -65 to 150 | $^\circ\text{C}$ |

## SCHEMATIC

And equivalent circuit



R1 typ. 8 k $\Omega$   
R2 typ. 100  $\Omega$

Magnatec reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Magnatec is believed to be both accurate and reliable at the time of going to press. However Magnatec assumes no responsibility for any errors or omissions discovered in its use. Magnatec encourages customers to verify that datasheets are current before placing orders.

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Document Number 9873

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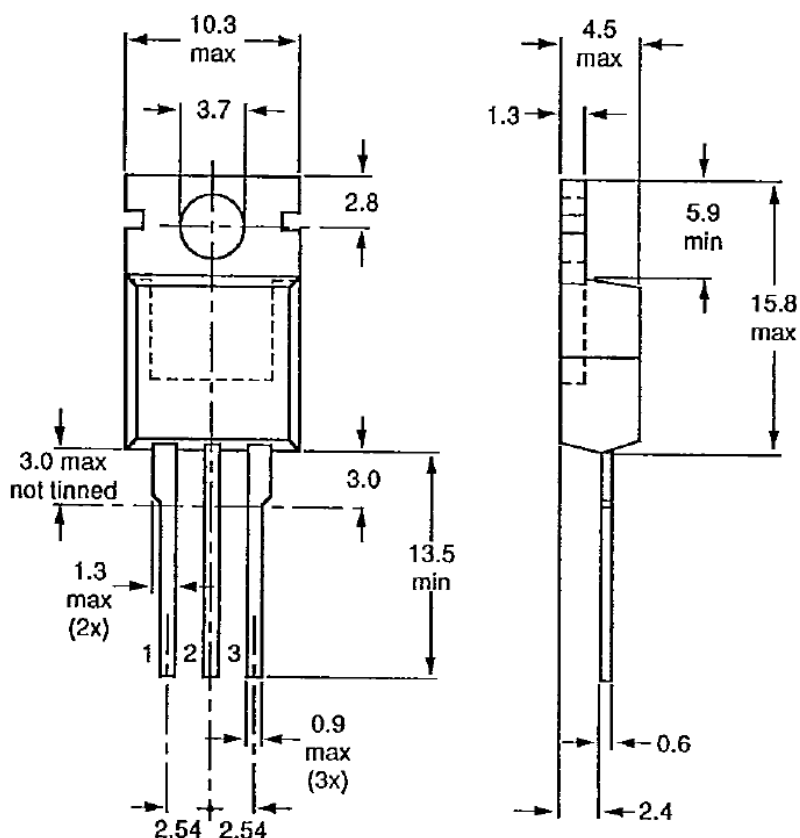
# SILICON NPN POWER TRANSISTOR BDT63CX-MAG.R

## ELECTRICAL CHARACTERISTICS ( $T_j = 25^\circ\text{C}$ unless otherwise stated)

| Symbols       | Parameters                                      | Test Conditions                                                       | Min  | Typ  | Max  | Units   |
|---------------|-------------------------------------------------|-----------------------------------------------------------------------|------|------|------|---------|
| $I_{CBO}$     | Collector cut-off Current                       | $V_{CB} = V_{CB0max}$ $I_E = 0$                                       |      |      | 0.2  | mA      |
|               |                                                 | $V_{CB} = \frac{1}{2} V_{CB0max}$ $I_E = 0$ $T_j = 150^\circ\text{C}$ |      |      | 2.0  |         |
| $I_{CEO}$     | Collector cut-off Current                       | $V_{CE} = \frac{1}{2} V_{CE0max}$ $I_B = 0$                           |      |      | 0.5  |         |
| $I_{EBO}$     | Emitter cut-off Current                         | $V_{EB} = 5V$ $I_C = 0$                                               |      |      | 5.0  |         |
| $I_{(SB)}$    | Forward bias second breakdown collector current | $V_{CE} = 60V$ (without heatsink) $I_E = 0$ $t = 0.1s$                | 1.5  |      |      | A       |
| $h_{FE}$      | DC Current Gain                                 | $I_C = 3A$ $V_{CE} = 3V$                                              | 1000 |      |      |         |
|               |                                                 | $I_C = 10A$ $V_{CE} = 3V$                                             |      | 3000 |      |         |
| $V_{BE}$      | Base-Emitter Voltage                            | $I_C = 3A$ $V_{CE} = 3V$                                              |      |      | 2.5  | V       |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage            | $I_C = 3A$ $I_B = 12mA$                                               |      |      | 2    |         |
|               |                                                 | $I_C = 8A$ $I_B = 80mA$                                               |      |      | 2.5  |         |
| $V_F$         | Forward Voltage                                 | $I_F = 3A$                                                            |      |      | 2    |         |
| $C_{ob}$      | Collector Capacitance                           | $V_{CB} = 10V$ $I_E = I_e = 0$                                        |      | 100  |      | pF      |
| $t_{on}$      | Switching times                                 | $I_{Con} = 3A$                                                        |      | 1.0  | 2.5  | $\mu s$ |
| $t_{off}$     |                                                 | $I_{Bon} = -I_{Boff} = 12mA$                                          |      | 5.0  | 10.0 |         |
| $h_{fe}$      | Small signal current gain                       | $I_C = 3A$ ; $V_{CE} = 3V$ ; $f = 1MHz$                               | 25   |      |      |         |

## MECHANICAL

Dimensions in mm



**Package Type TO220**