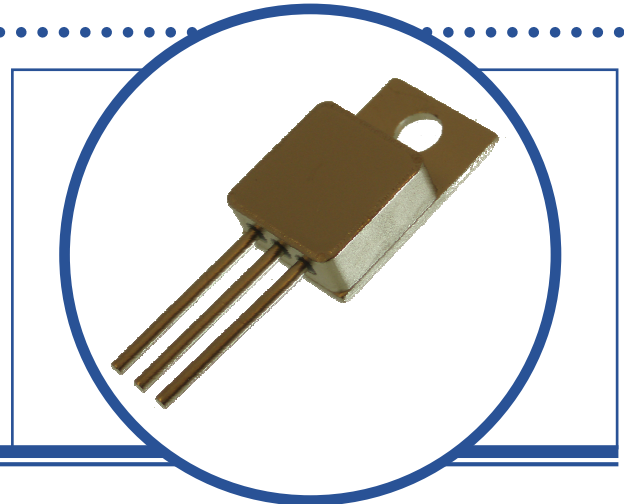


SILICON EPIBASE NPN DARLINGTON TRANSISTOR

BDS20

- High DC Current Gain
- Hermetic Metal TO-220 Package
- Designed For General Purpose Amplifiers and Low Speed Switching Applications
- Screening Options Available



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

| | | |
|-----------|--|-------------------------------|
| V_{CBO} | Collector – Base Voltage | 80V |
| V_{CEO} | Collector – Emitter Voltage | 80V |
| V_{EBO} | Emitter – Base Voltage | 5V |
| I_C | Continuous Collector Current | 5A |
| I_B | Base Current | 0.1A |
| P_D | Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C | 35W 0.2W/ $^\circ\text{C}$ |
| T_J | Junction Temperature Range | -65 to $+200^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | -65 to $+200^\circ\text{C}$ |

THERMAL PROPERTIES

| Symbols | Parameters | Min. | Typ. | Max. | Units |
|-----------------|--------------------------------------|------|------|------|--------------------|
| $R_{\theta JC}$ | Thermal Resistance, Junction To Case | | | 5 | $^\circ\text{C/W}$ |

** This datasheet supersedes document 7603

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

SILICON EPIBASE NPN DARLINGTON TRANSISTOR BDS20

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

| Symbols | Parameters | Test Conditions | Min. | Typ | Max. | Units |
|-------------------------------------|--------------------------------------|--|------|-----|------|-------|
| I _{CBO} | Collector-Cut-Off Current | V _{CB} = 80V I _E = 0 | | | 0.2 | mA |
| | | V _{CB} = 60V I _E = 0 T _C = 150°C | | | 1.0 | |
| I _{CEO} | Collector-Cut-Off Current | V _{CE} = 40V I _B = 0 | | | 0.5 | |
| I _{EBO} | Emitter-Cut-Off Current | V _{EB} = 5V I _C = 0 | | | 2 | |
| h _{FE} ⁽¹⁾ | Forward-current transfer ratio | I _C = 0.5A V _{CE} = 3V | 1000 | | | |
| | | I _C = 3A V _{CE} = 3V | 1000 | | | |
| V _{CE(sat)} ⁽¹⁾ | Collector-Emitter Saturation Voltage | I _C = 3A I _B = 12mA | | | 2 | V |
| | | I _C = 5A I _B = 20mA | | | 4 | |
| V _{BE(sat)} ⁽¹⁾ | Base-Emitter Saturation Voltage | I _C = 5A I _B = 20mA | | | 2.8 | |
| V _{BE(on)} ⁽¹⁾ | Base-Emitter On Voltage | I _C = 3A V _{CE} = 3V | | | 3.5 | |

DYNAMIC CHARACTERISTICS

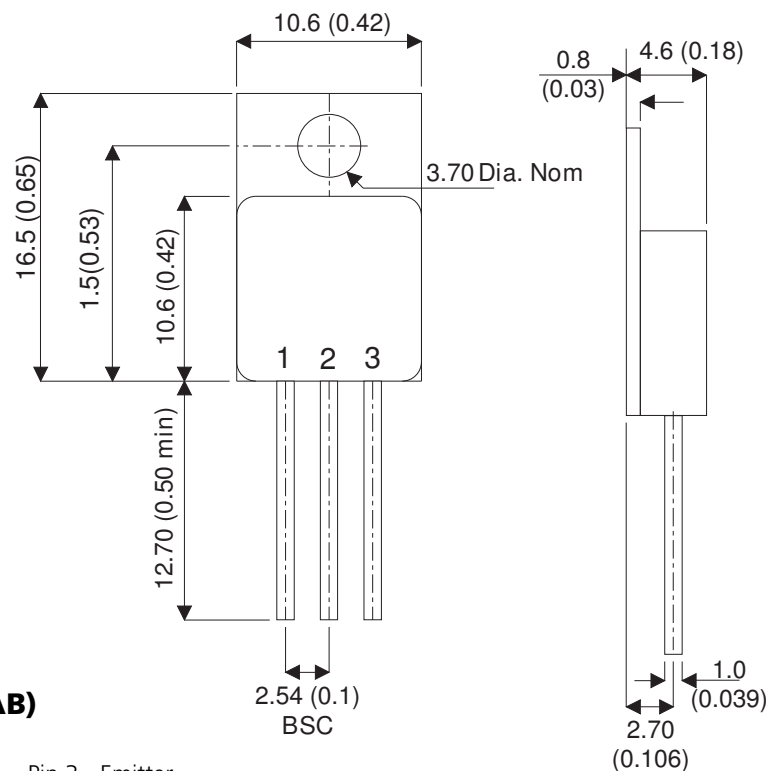
| | | | | | | | |
|----------------|----------------------|-----------------------------------|----------------------|---|--|--|-----|
| f _T | Transition Frequency | I _C = 0.5A f = 2MHz | V _{CE} = 4V | 8 | | | MHz |
|----------------|----------------------|-----------------------------------|----------------------|---|--|--|-----|

Notes

(1) Pulse Width ≤ 300us, δ ≤ 2%

MECHANICAL DATA

Dimensions in mm (inches)



TO220M(TO-257AB)

Pin 1 – Base

Pin 2 – Collector

Pin 3 - Emitter