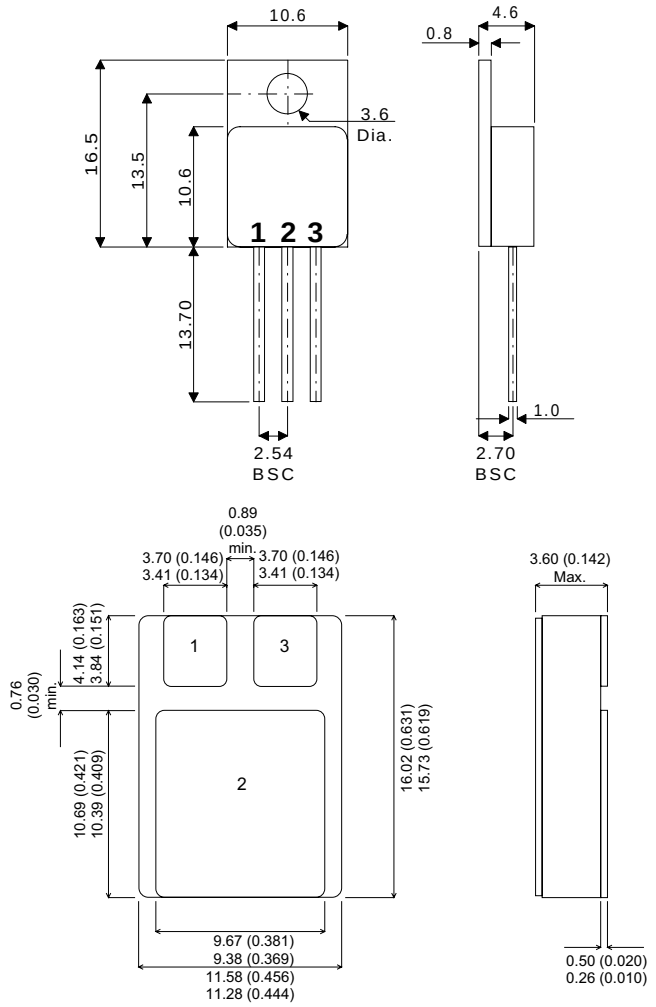
# BDS20 BDS20SMD
# BDS21 BDS21SMD

**MECHANICAL DATA**
Dimensions in mm




**TO220M** - TO220 Metal Package - Isolated
**SMD1** - Ceramic Surface Mount Package

**Pin 1** – Base **Pin 2** – Collector **Pin 3** – Emitter

# SILICON PNP EPITAXIAL BASE IN TO220 METAL AND SMD1 CERAMIC SURFACE MOUNT PACKAGES

## FEATURES

- **HERMETIC METAL OR CERAMIC PACKAGES**
- **HIGH RELIABILITY**
- **MILITARY AND SPACE OPTIONS**
- **SCREENING TO CECC LEVELS**
- **FULLY ISOLATED (METAL VERSION)**

## APPLICATIONS

- **POWER LINEAR AND SWITCHING APPLICATIONS**
- **GENERAL PURPOSE POWER**

| **ABSOLUTE MAXIMUM RATINGS** ($T_{case}$=25°C unless otherwise stated) | | **BDS20 NPN** | **BDS21 PNP** |
|---|---|---|---|
| $V_{CBO}$ | Collector - Base voltage ($I_E$ = 0) | 80V | –80V |
| $V_{CEO}$ | Collector - Emitter voltage ($I_B$ = 0) | 80V | –80V |
| $V_{EBO}$ | Emitter - Base voltage ($I_C$ = 0) | 5V | –5V |
| $I_{C(PK)}$ | Peak collector current | 5A | –5A |
| $I_B$ | Base current | 0.1A | –0.1A |
| $P_{tot}$ | Total power dissipation at $T_{case} \leq 75°C$ | 50W | |
| $T_{stg}$ | Storage Temperature | –65 to 200°C | |
| $T_j$ | Junction Temperature | 200°C | |

**Semelab plc.** Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

Prelim. 7/00

**ELECTRICAL CHARACTERISTICS** ($T_{case}$ = 25°C unless otherwise stated)

| | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_{CBO}$ | Collector cut-off current ($I_E$ = 0) | $V_{CB}$ = 80V | | | 0.2 | mA |
| $I_{CEO}$ | Collector cut-off current ($I_B$ = 0) | $V_{CE}$ = 40V | | | 0.5 | mA |
| $I_{EBO}$ | Emitter cut-off current ($I_C$ = 0) | $V_{EB}$ = 5V | | | 2 | mA |
| $V_{CEO(sus)}$* | Collector - Emitter sustaining voltage ($I_B$ = 0) | $I_C$ = 30mA | 120 | | | V |
| $V_{CE(sat)}$* | Collector - Emitter saturation voltage | $I_C$ = 3A $I_B$ = 12mA<br>$I_C$ = 5A $I_B$ = 20mA | | | 2<br>4 | V |
| $V_{BE(on)}$* | Base - Emitter voltage | $I_C$ = 3A $V_{CE}$ = 3V | | | 2.5 | V |
| $h_{FE}$* | DC Current gain | $I_C$ = 0.5A $V_{CE}$ = 3V<br>$I_C$ = 3A $V_{CE}$ = 3V | 1000<br>1000 | | | |

*Pulsed : Pulse duration = 300 μs , duty cycle = 1.5%

**THERMAL DATA**

| | | |
|---|---|---|
| $R_{THj\text{-}case}$ | Thermal resistance junction - case | Max. 2.5°C/W |
| $R_{THj\text{-}a}$ | Thermal resistance junction - ambient | Max. 62.5°C/W |

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