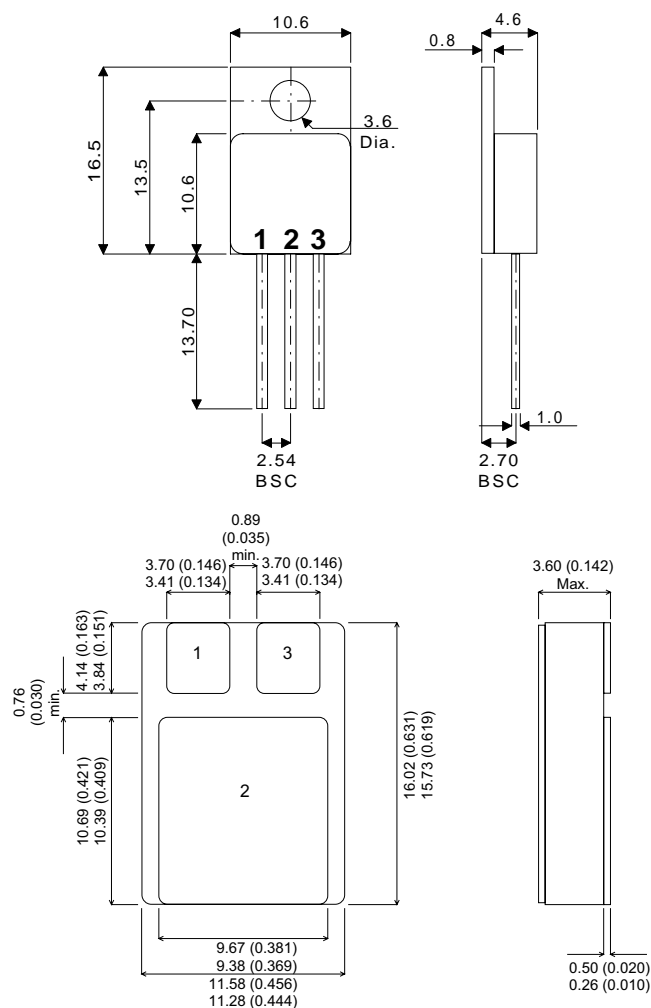


**MECHANICAL DATA**

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

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{case}=25^{\circ}C$ unless otherwise stated)		<b>BDS20 NPN</b>	<b>BDS21 PNP</b>
$V_{CBO}$	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 $T_{case} \leq 75^{\circ}C$	50W	
$T_{stg}$	Storage Temperature	-65 to 200°C	
$T_j$	Junction Temperature	200°C	

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

	<b>Parameter</b>	<b>Test Conditions</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
$I_{CBO}$	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	$I_C = 3A \quad I_B = 12mA$ $I_C = 5A \quad I_B = 20mA$			2 4	V
$V_{BE(on)*}$	Base - Emitter voltage	$I_C = 3A \quad V_{CE} = 3V$			2.5	V
$h_{FE*}$	DC Current gain	$I_C = 0.5A \quad V_{CE} = 3V$ $I_C = 3A \quad V_{CE} = 3V$	1000 1000			

\*Pulsed : Pulse duration = 300  $\mu s$  , duty cycle = 1.5%

**THERMAL DATA**

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