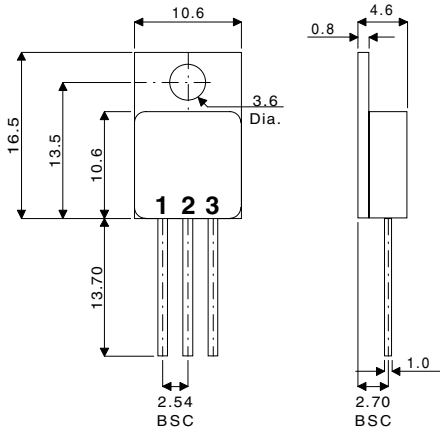


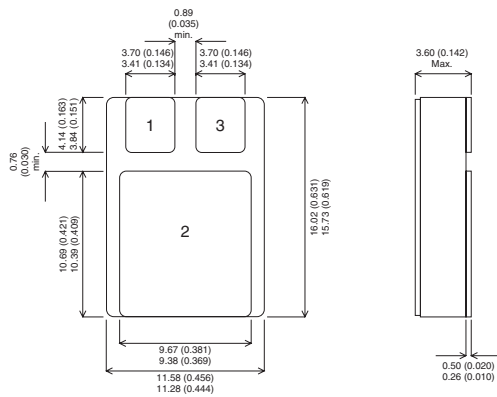
**SILICON PNP EPITAXIAL  
 BASE IN TO220 METAL AND  
 CERAMIC SURFACE  
 MOUNT PACKAGES**

**MECHANICAL DATA**

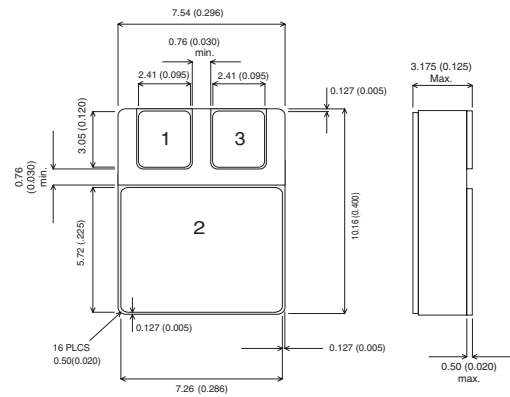
Dimensions in mm(inches)



**TO220M - TO220 Metal Package - Isolated (TO-257AB)**



**SMD1 - Ceramic Surface Mount Package (TO-276AB)**



**SMD05 - Ceramic Surface Mount Package (TO-276AA)**

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

**ABSOLUTE MAXIMUM RATINGS** ( $T_{case}=25^{\circ}C$  unless otherwise stated)

		<b>BDS13</b>	<b>BDS14</b>	<b>BDS15</b>
$V_{CBO}$	Collector - Base voltage ( $I_E = 0$ )	- 60V	- 80V	- 100V
$V_{CEO}$	Collector - Emitter voltage ( $I_B = 0$ )	- 60V	- 80V	- 100V
$V_{EBO}$	Emitter - Base voltage ( $I_C = 0$ )		- 5V	
$I_E, I_C$	Emitter, Collector current		- 15A	
$I_B$	Base current		- 5A	
$P_{tot}$	Total power dissipation at $T_{case} = 25^{\circ}C$		43.75W	
$T_{stg}$	Storage Temperature		-65 to 200°C	
$T_j$	Junction Temperature		200°C	

Semelab Plc 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.

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$ Collector cut-off current ( $I_E = 0$ )	<b>BDS13</b> $V_{CB} = -60V$			- 500	$\mu A$
	<b>BDS14</b> $V_{CB} = -80V$			- 500	
	<b>BDS15</b> $V_{CB} = -100V$			- 500	
$I_{CEO}$ Collector cut-off current ( $I_B = 0$ )	<b>BDS13</b> $V_{CE} = -30V$			- 1.0	mA
	<b>BDS14</b> $V_{CE} = -40V$			- 1.0	
	<b>BDS15</b> $V_{CE} = -50V$			- 1.0	
$I_{EBO}$ Emitter cut-off current ( $I_C = 0$ )	$V_{EB} = -5V$			- 1.0	mA
$V_{CEO(sus)^*}$ Collector - Emitter sustaining voltage ( $I_B = 0$ )	<b>BDS13</b>	- 60			V
	<b>BDS14</b> $I_C = -100mA$	- 80			
	<b>BDS15</b>	- 100			
$V_{CE(sat)^*}$ Collector - Emitter saturation voltage	$I_C = -5A$ $I_B = -0.5A$			- 1.0	V
	$I_C = -10A$ $I_B = -2.5A$			- 3	
$V_{BE(sat)^*}$ Base - Emitter saturation voltage	$I_C = -10A$ $I_B = -2.5A$			- 2.5	V
$V_{BE}^*$ Base - Emitter voltage	$I_C = -5A$ $V_{CE} = -4V$			- 1.5	V
$h_{FE}^*$ DC Current Gain	$I_C = -0.5A$ $V_{CE} = -4V$	40		300	
	$I_C = -5A$ $V_{CE} = -4V$	15		150	
	$I_C = -10A$ $V_{CE} = -4V$	5			
$f_T$ Transition frequency	$I_C = -0.5A$ $V_{CE} = -4V$ $f = 1MHz$	3			MHz

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

**SWITCHING CHARACTERISTICS**

Parameter	Test Conditions	Max.	Unit
$t_{on}$ On Time ( $t_d + t_r$ )	$I_C = -4A$ $V_{CC} = -30V$ $I_{B1} = -0.4A$	0.7	$\mu s$
$t_s$ Storage Time	$I_C = -4A$ $V_{CC} = -30V$	1.0	$\mu s$
$t_r$ Fall Time	$I_{B1} = -I_{B2} = 0.4A$	0.8	$\mu s$

**THERMAL CHARACTERISTICS**

Parameter	Test Conditions	Max.	Unit
$R_{\theta J-C}$ Thermal Resistance Junction to Case		4.0	$^{\circ}C/W$

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