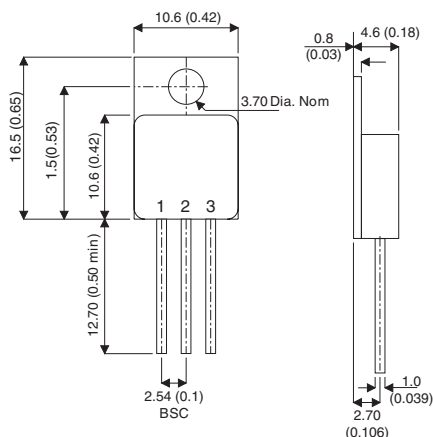


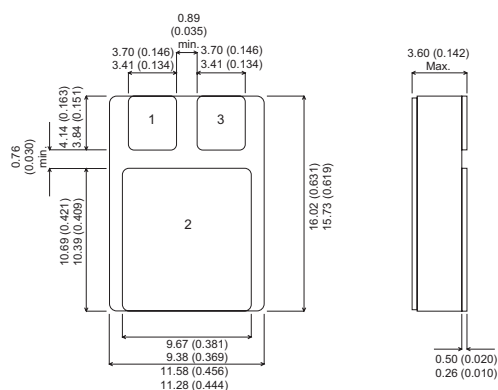
SILICON NPN EPITAXIAL BASE IN TO220 METAL AND CERAMIC SURFACE MOUNT PACKAGES

MECHANICAL DATA

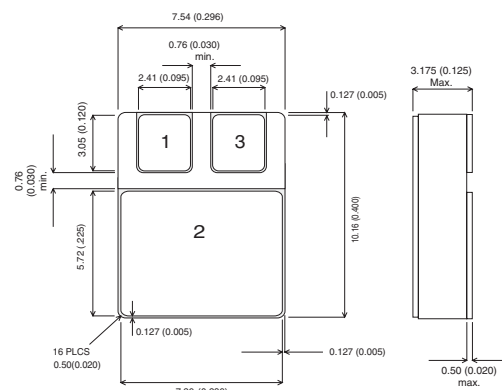
Dimensions in mm(inches)



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)

		BDS10	BDS11	BDS12
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 ($I_E = 0$)	BDS10 $V_{CB} = 60V$			500	μA
	BDS11 $V_{CB} = 80V$			500	
	BDS12 $V_{CB} = 100V$			500	
I_{CEO} Collector cut-off current ($I_B = 0$)	BDS10 $V_{CE} = 30V$			1.0	mA
	BDS11 $V_{CE} = 40V$			1.0	
	BDS12 $V_{CE} = 50V$			1.0	
I_{EBO} Emitter cut-off current ($I_C = 0$)	$V_{EB} = 5V$			1.0	mA
$V_{CEO(sus)^{*}}$ Collector - Emitter sustaining voltage ($I_B = 0$)	BDS10	60			V
	BDS11 $I_C = 100mA$	80			
	BDS12	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		250	
	$I_C = 5A$ $V_{CE} = 4V$	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 μs , 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	μs
t_s Storage Time	$I_C = 4A$ $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.4A$	1.0	μs
t_r Fall Time		0.8	μs

THERMAL CHARACTERISTICS

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

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