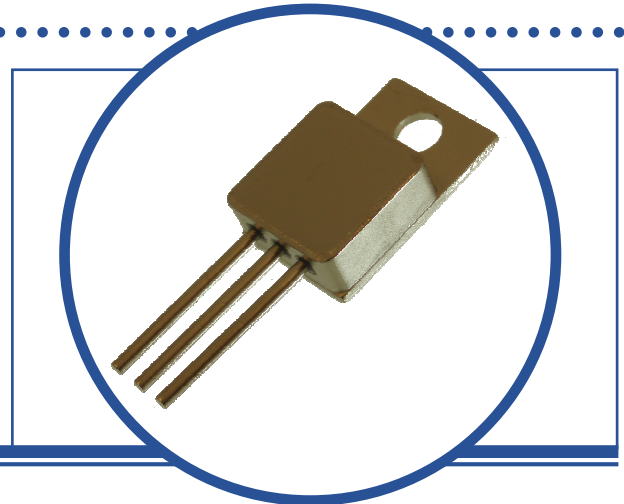


SILICON EPIBASE NPN DARLINGTON TRANSISTOR

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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
I_{CBO}	Collector-Cut-Off Current	$V_{CB} = 80\text{V}$ $I_E = 0$			0.2	mA
		$V_{CB} = 60\text{V}$ $I_E = 0$ $T_C = 150^\circ\text{C}$			1.0	
I_{CEO}	Collector-Cut-Off Current	$V_{CE} = 40\text{V}$ $I_B = 0$			0.5	
I_{EBO}	Emitter-Cut-Off Current	$V_{EB} = 5\text{V}$ $I_C = 0$			2	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 0.5\text{A}$ $V_{CE} = 3\text{V}$	1000			
		$I_C = 3\text{A}$ $V_{CE} = 3\text{V}$	1000			
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 3\text{A}$ $I_B = 12\text{mA}$			2	V
		$I_C = 5\text{A}$ $I_B = 20\text{mA}$			4	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 5\text{A}$ $I_B = 20\text{mA}$			2.8	
$V_{BE(on)}^{(1)}$	Base-Emitter On Voltage	$I_C = 3\text{A}$ $V_{CE} = 3\text{V}$			3.5	

DYNAMIC CHARACTERISTICS

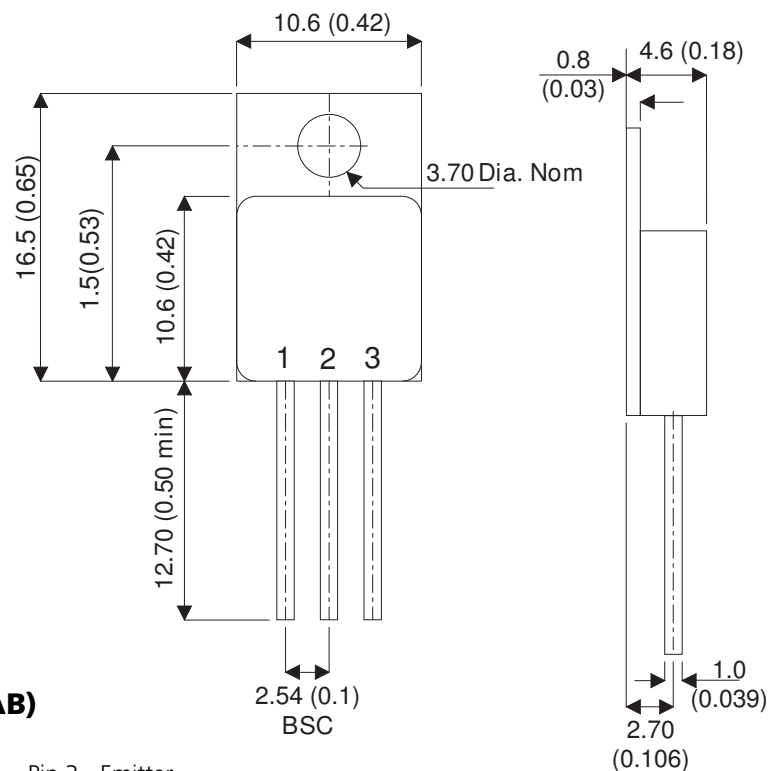
f_T	Transition Frequency	$I_C = 0.5\text{A}$ $V_{CE} = 4\text{V}$ $f = 2\text{MHz}$	8			MHz
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Notes

(1) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

MECHANICAL DATA

Dimensions in mm (inches)



TO220M(TO-257AB)

Pin 1 – Base

Pin 2 – Collector

Pin 3 - Emitter