

# SILICON EPIBASE NPN DARLINGTON TRANSISTOR

## BDS20SMD

- High DC Current Gain
- Hermetic Ceramic Surface Mount 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 $25^\circ\text{C}$	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 BDS20SMD

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
I <sub>CBO</sub>	Collector-Cut-Off Current	V <sub>CB</sub> = 80V I <sub>E</sub> = 0			0.2	mA
		V <sub>CB</sub> = 60V I <sub>E</sub> = 0 T <sub>C</sub> = 150°C			1.0	
I <sub>CEO</sub>	Collector-Cut-Off Current	V <sub>CE</sub> = 40V I <sub>B</sub> = 0			0.5	
I <sub>EBO</sub>	Emitter-Cut-Off Current	V <sub>EB</sub> = 5V I <sub>C</sub> = 0			2	
h <sub>FE</sub> <sup>(1)</sup>	Forward-current transfer ratio	I <sub>C</sub> = 0.5A V <sub>CE</sub> = 3V	1000			
		I <sub>C</sub> = 3A V <sub>CE</sub> = 3V	1000			
V <sub>CE(sat)</sub> <sup>(1)</sup>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 3A I <sub>B</sub> = 12mA			2	V
		I <sub>C</sub> = 5A I <sub>B</sub> = 20mA			4	
V <sub>BE(sat)</sub> <sup>(1)</sup>	Base-Emitter Saturation Voltage	I <sub>C</sub> = 5A I <sub>B</sub> = 20mA			2.8	
V <sub>BE(on)</sub> <sup>(1)</sup>	Base-Emitter On Voltage	I <sub>C</sub> = 3A V <sub>CE</sub> = 3V			3.5	

## DYNAMIC CHARACTERISTICS

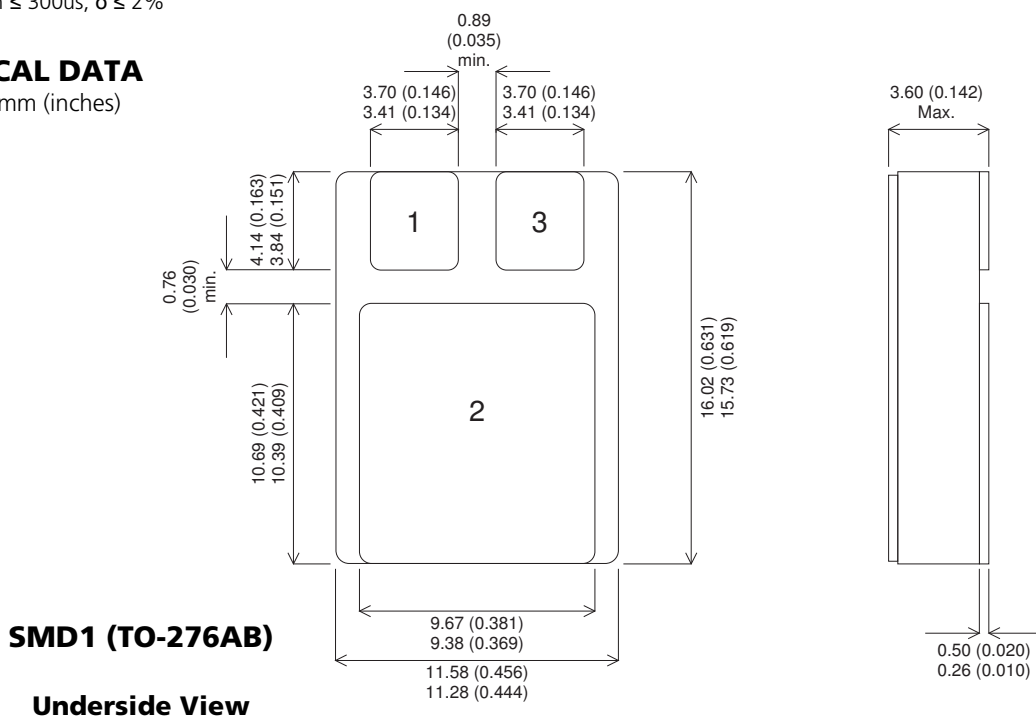
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 0.5A f = 2MHz	V <sub>CE</sub> = 4V	8			MHz
----------------	----------------------	-----------------------------------	----------------------	---	--	--	-----

### Notes

(1) Pulse Width ≤ 300us, δ ≤ 2%

## MECHANICAL DATA

Dimensions in mm (inches)



Pad 1 – Base

Pad 2 – Collector

Pad 3 - Emitter