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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

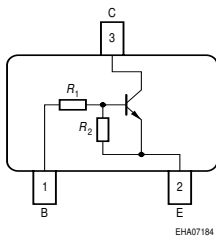
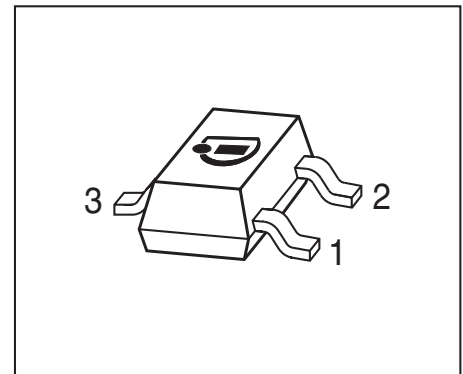
Email & Skype: [info@chipsmall.com](mailto:info@chipsmall.com) Web: [www.chipsmall.com](http://www.chipsmall.com)

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## NPN Silicon Digital Transistor

- Built in bias resistor ( $R_1 = 10\text{ k}\Omega$ ,  $R_2 = 10\text{ k}\Omega$ )
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101



Type	Marking	Pin Configuration			Package
BCR533	XCs	1=B	2=E	3=C	SOT23

### Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	$V_{CEO}$	50	V
Collector-base voltage	$V_{CBO}$	50	
Input forward voltage	$V_{i(fwd)}$	50	
Input reverse voltage	$V_{i(rev)}$	10	
Collector current	$I_C$	500	mA
Total power dissipation- $T_S \leq 79\text{ }^\circ\text{C}$	$P_{tot}$	330	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-65 ... 150	

### Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point <sup>1)</sup>	$R_{thJS}$	$\leq 215$	K/W

<sup>1)</sup>For calculation of  $R_{thJA}$  please refer to Application Note AN077 (Thermal Resistance Calculation)

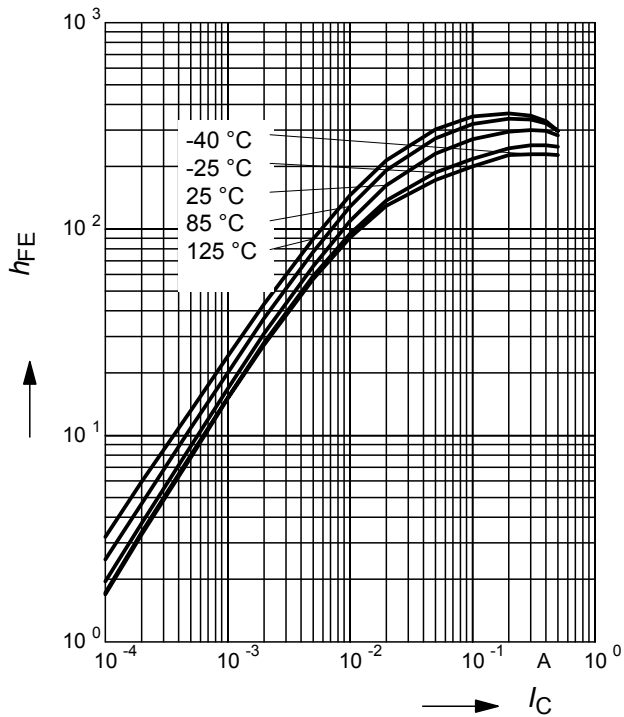
**Electrical Characteristics** at  $T_A = 25^\circ\text{C}$ , unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 100\ \mu\text{A}$ , $I_B = 0$	$V_{(\text{BR})\text{CEO}}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10\ \mu\text{A}$ , $I_E = 0$	$V_{(\text{BR})\text{CBO}}$	50	-	-	
Collector-base cutoff current $V_{\text{CB}} = 50\ \text{V}$ , $I_E = 0$	$I_{\text{CBO}}$	-	-	100	nA
Emitter-base cutoff current $V_{\text{EB}} = 10\ \text{V}$ , $I_C = 0$	$I_{\text{EBO}}$	-	-	0.75	mA
DC current gain- $I_C = 50\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$	$h_{\text{FE}}$	70	-	-	-
Collector-emitter saturation voltage <sup>1)</sup> $I_C = 50\ \text{mA}$ , $I_B = 2.5\ \text{mA}$	$V_{\text{CEsat}}$	-	-	0.3	V
Input off voltage $I_C = 100\ \mu\text{A}$ , $V_{\text{CE}} = 5\ \text{V}$	$V_{\text{i(off)}}$	0.6	-	1.5	
Input on voltage $I_C = 10\ \text{mA}$ , $V_{\text{CE}} = 0.3\ \text{V}$	$V_{\text{i(on)}}$	1	-	2.5	
Input resistor	$R_1$	7	10	13	kΩ
Resistor ratio	$R_1/R_2$	0.9	1	1.1	-
AC Characteristics					
Transition frequency $I_C = 50\ \text{mA}$ , $V_{\text{CE}} = 5\ \text{V}$ , $f = 100\ \text{MHz}$	$f_{\text{T}}$	-	100	-	MHz

<sup>1)</sup>Pulse test:  $t < 300\ \mu\text{s}$ ;  $D < 2\%$

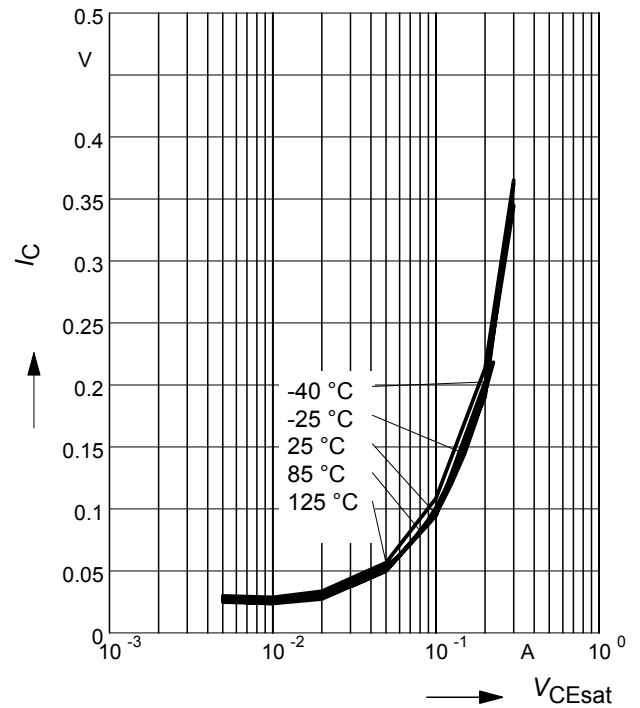
### DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5 \text{ V}$  (common emitter configuration)



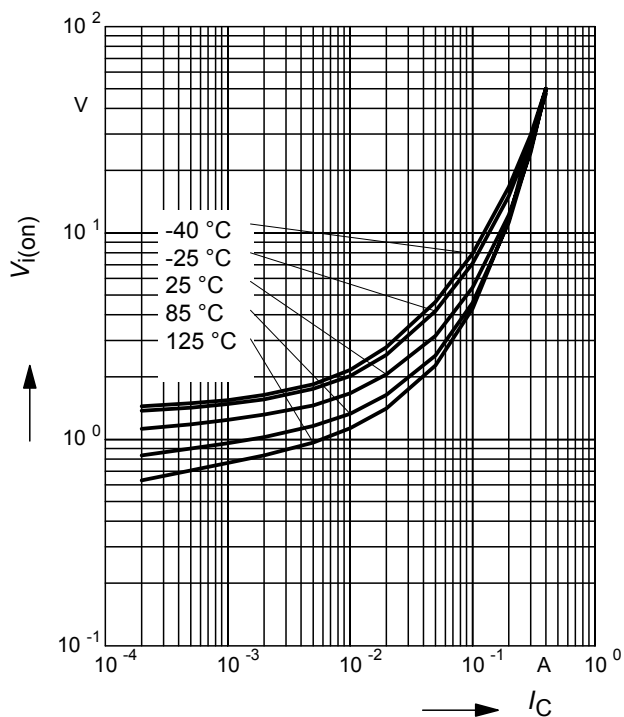
### Collector-emitter saturation voltage

$V_{CEsat} = f(I_C), h_{FE} = 20$



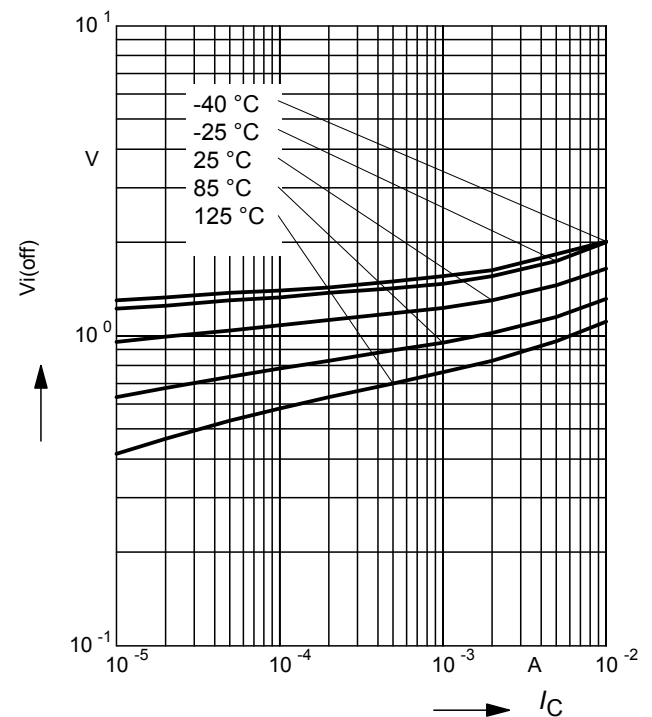
### Input on Voltage $V_{i(on)} = f(I_C)$

$V_{CE} = 0.3 \text{ V}$  (common emitter configuration)



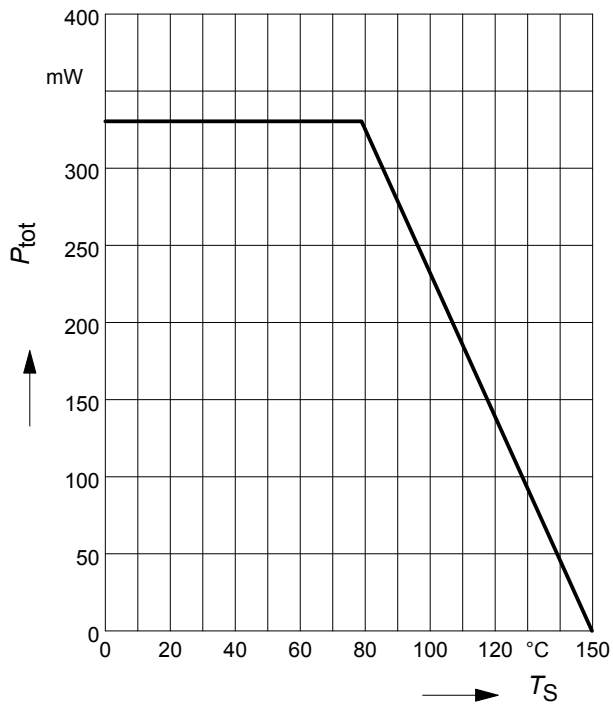
### Input off voltage $V_{i(off)} = f(I_C)$

$V_{CE} = 5 \text{ V}$  (common emitter configuration)

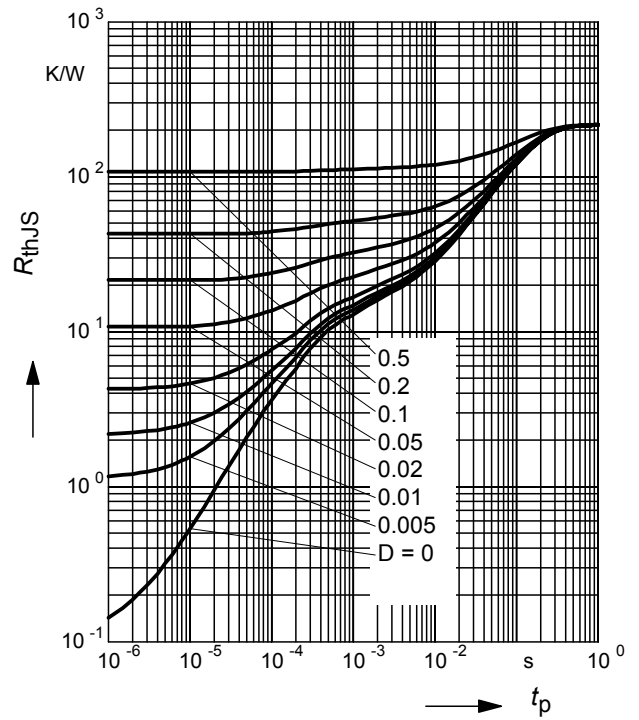




**Total power dissipation**  $P_{\text{tot}} = f(T_S)$

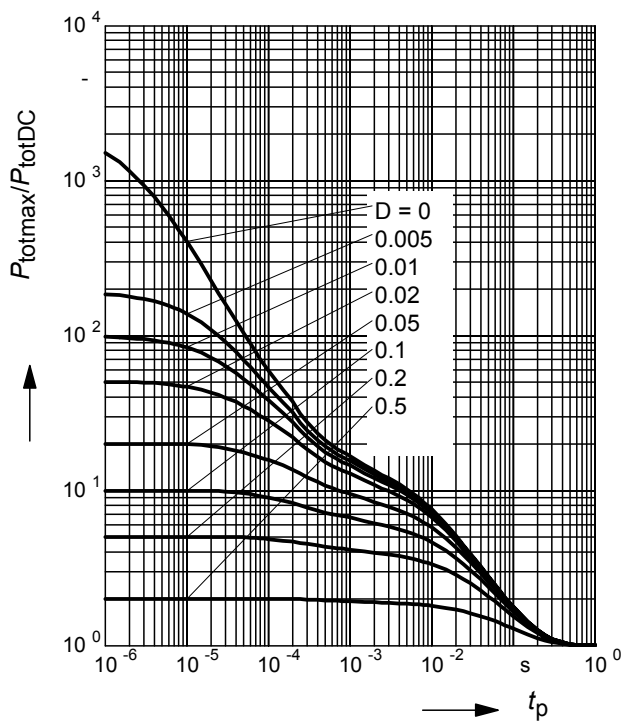


**Permissible Pulse Load**  $R_{\text{thJS}} = f(t_p)$

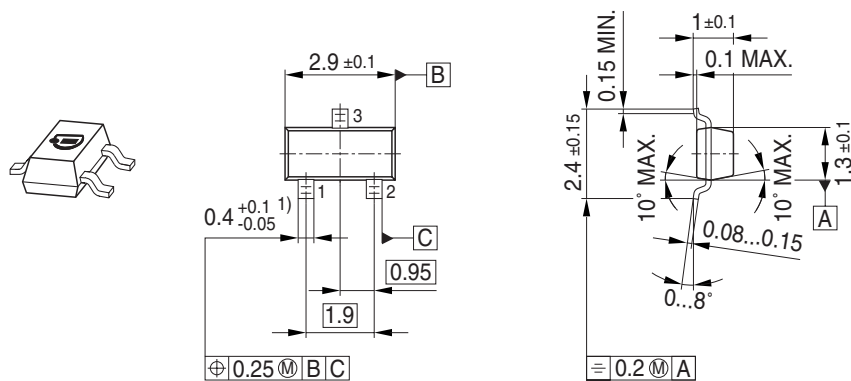


**Permissible Pulse Load**

$P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$

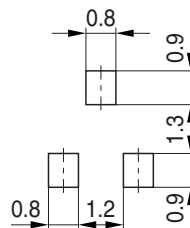


## Package Outline

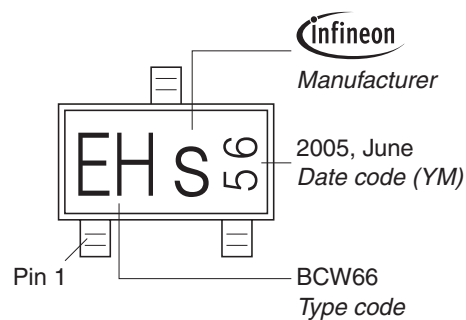


1) Lead width can be 0.6 max. in dambar area

## Foot Print

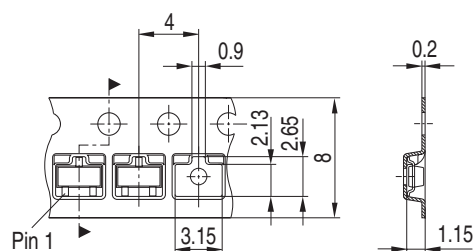


## Marking Layout (Example)



## Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel  
Reel ø330 mm = 10.000 Pieces/Reel



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