

Rochester Electronics Manufactured Components

Rochester branded components are manufactured using either die/wafers purchased from the original suppliers or Rochester wafers recreated from the original IP. All recreations are done with the approval of the OCM.

Parts are tested using original factory test programs or Rochester developed test solutions to guarantee product meets or exceed the OCM data sheet.

Quality Overview

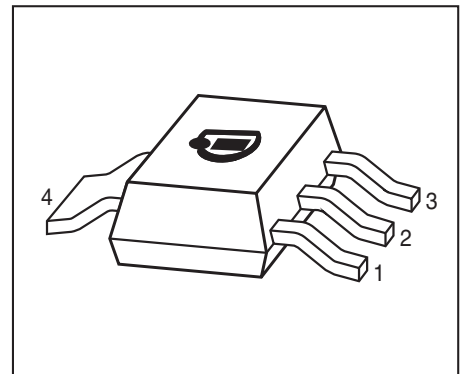
- ISO-9001
- AS9120 certification
- Qualified Manufacturers List (QML) MIL-PRF-35835
 - Class Q Military
 - Class V Space Level
- Qualified Suppliers List of Distributors (QSLD)
 - Rochester is a critical supplier to DLA and meets all industry and DLA standards.

Rochester Electronics, LLC is committed to supplying products that satisfy customer expectations for quality and are equal to those originally supplied by industry manufacturers.

The original manufacturer's datasheet accompanying this document reflects the performance and specifications of the Rochester manufactured version of this device. Rochester Electronics guarantees the performance of its semiconductor products to the original OEM specifications. 'Typical' values are for reference purposes only. Certain minimum or maximum ratings may be based on product characterization, design, simulation, or sample testing.

NPN Silicon AF Transistors

- For AF driver and output stages
- High collector current
- Low collector-emitter saturation voltage
- Complementary types: BCP51...BCP53 (PNP)
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101



Type	Marking	Pin Configuration						Package
BCP54	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP54-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP55	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP55-16	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP56-10	*	1=B	2=C	3=E	4=C	-	-	SOT223
BCP56-16	*	1=B	2=C	3=E	4=C	-	-	SOT223

* Marking is the same as the type-name

¹⁾Pb-containing package may be available upon special request

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	45 60 80	V
BCP54			
BCP55			
BCP56			
Collector-emitter voltage	V_{CER}	45 60 100	
BCP54			
BCP55			
BCP56			
Collector-base voltage	V_{CBO}	45 60 100	
BCP54			
BCP55			
BCP56			
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	1	A
Peak collector current, $t_p \leq 10$ ms	I_{CM}	1.5	
Base current	I_B	100	mA
Peak base current	I_{BM}	200	
Total power dissipation- $T_S \leq 120^\circ\text{C}$	P_{tot}	2	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point ¹⁾	R_{thJS}	≤ 15	K/W

¹For calculation of R_{thJA} please refer to Application Note Thermal Resistance

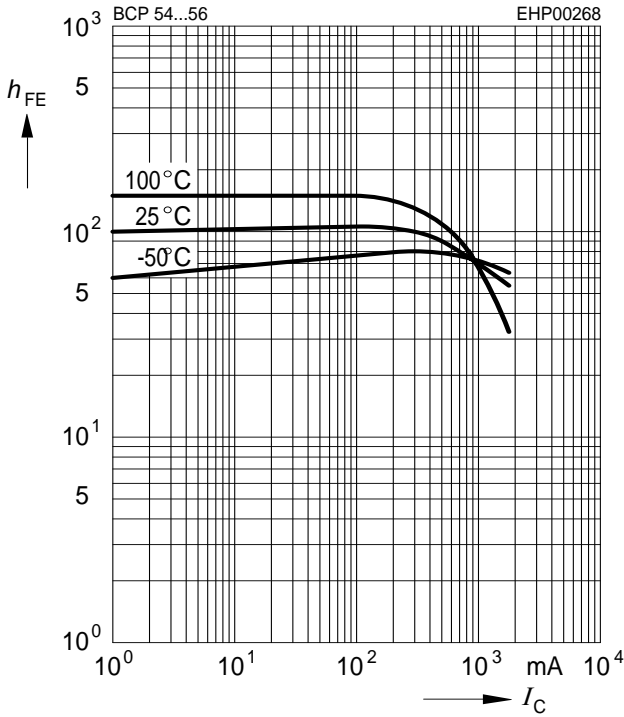
Electrical Characteristics at $T_A = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage $I_C = 10\text{ mA}$, $I_B = 0$, BCP54... $I_C = 10\text{ mA}$, $I_B = 0$, BCP55... $I_C = 10\text{ mA}$, $I_B = 0$, BCP56-10, -16	$V_{(BR)CEO}$	45 60 80	- - -	- - -	V
Collector-base breakdown voltage $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCP54... $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCP55... $I_C = 100\text{ }\mu\text{A}$, $I_E = 0$, BCP56-10, -16	$V_{(BR)CBO}$	45 60 100	- - -	- - -	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$, $I_C = 0$	$V_{(BR)EBO}$	5	-	-	
Collector-base cutoff current $V_{CB} = 30\text{ V}$, $I_E = 0$ $V_{CB} = 30\text{ V}$, $I_E = 0$, $T_A = 150\text{ }^\circ\text{C}$	I_{CBO}	- -	- -	0.1 20	μA
DC current gain ¹⁾ $I_C = 5\text{ mA}$, $V_{CE} = 2\text{ V}$ $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCP54/BCP55 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCP56-10 $I_C = 150\text{ mA}$, $V_{CE} = 2\text{ V}$, BCP54-16...BCP56-16 $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	h_{FE}	25 40 63 100 25	- - 100 160 -	- 250 160 250 -	-
Collector-emitter saturation voltage ¹⁾ $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$	V_{CEsat}	-	-	0.5	V
Base-emitter voltage ¹⁾ $I_C = 500\text{ mA}$, $V_{CE} = 2\text{ V}$	$V_{BE(ON)}$	-	-	1	
AC Characteristics					
Transition frequency $I_C = 50\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$	f_T	-	100	-	MHz

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

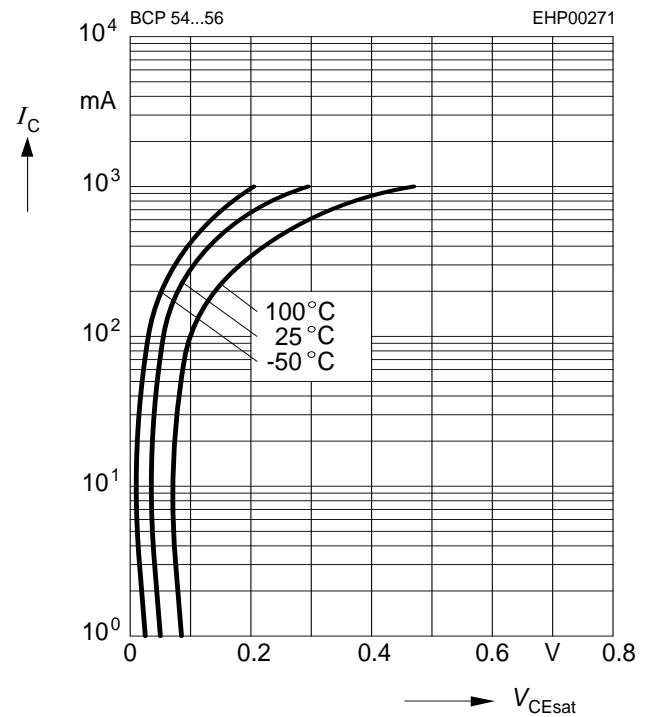
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 2\text{ V}$



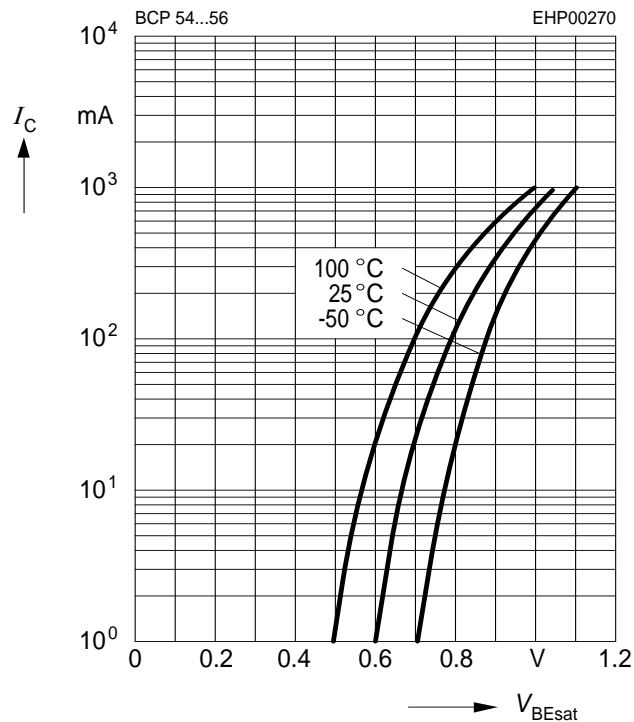
Collector-emitter saturation voltage

$I_C = f(V_{CEsat}), h_{FE} = 10$



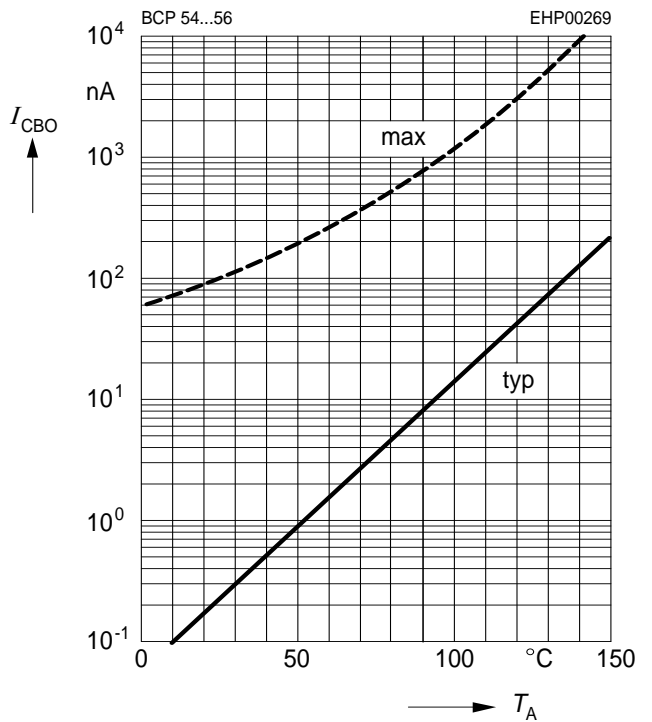
Base-emitter saturation voltage

$I_C = f(V_{BEsat}), h_{FE} = 10$



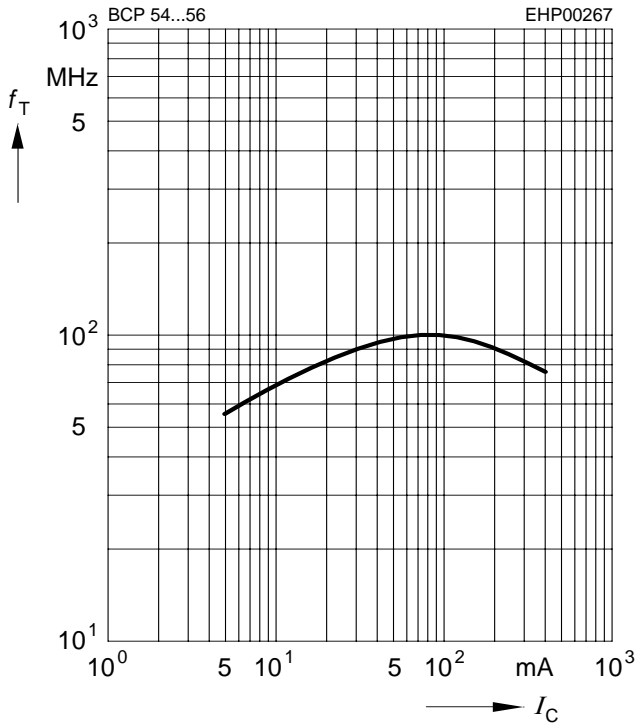
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 30\text{ V}$

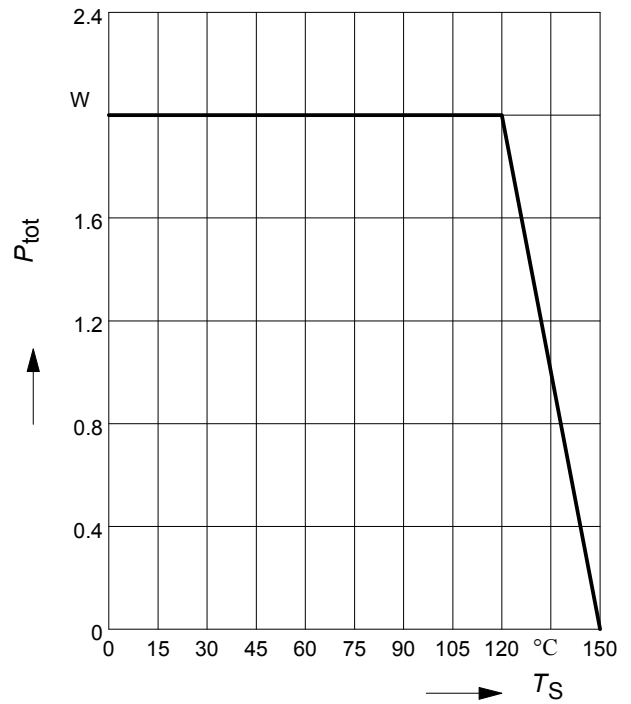


Transition frequency $f_T = f(I_C)$

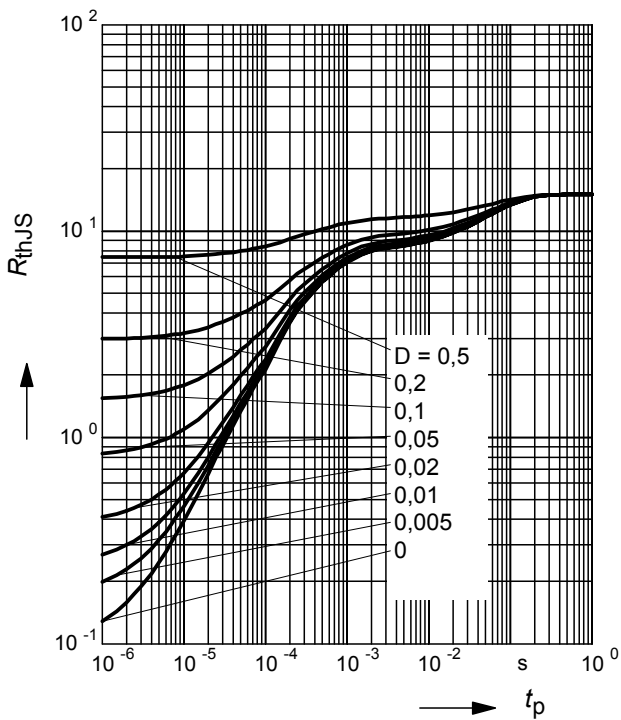
$V_{CE} = 10\text{ V}$



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

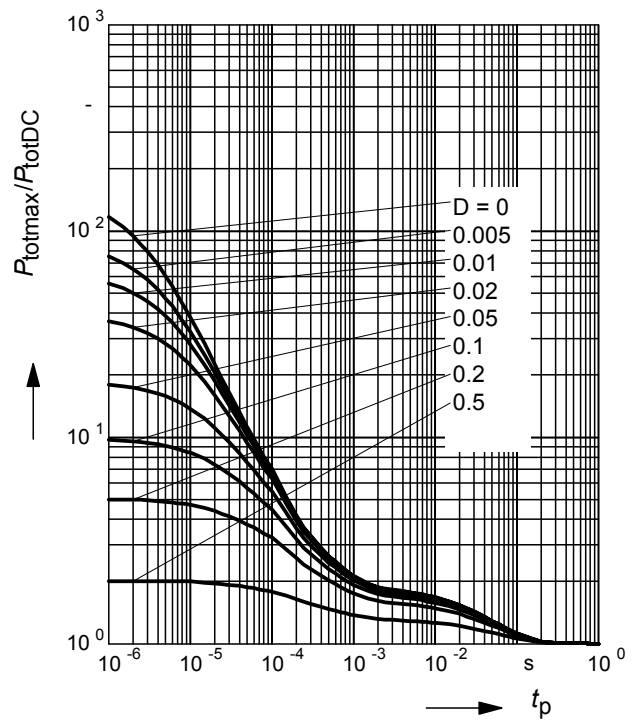


Permissible Pulse Load $R_{thJS} = f(t_p)$

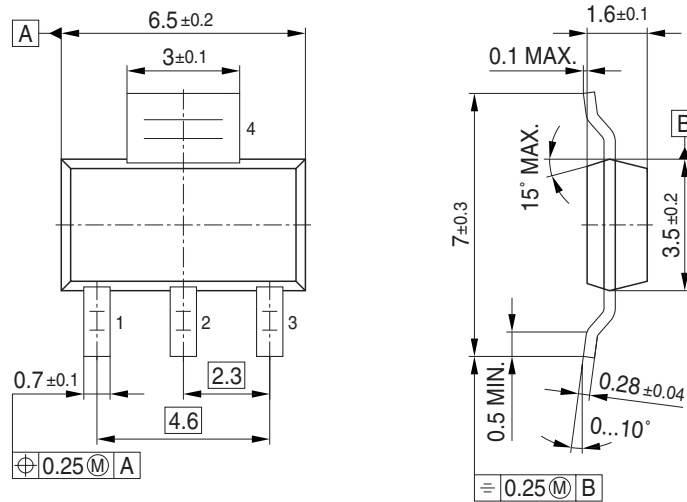


Permissible Pulse Load

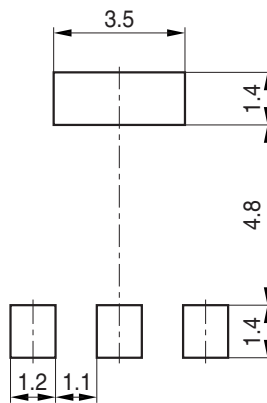
$P_{totmax}/P_{totDC} = f(t_p)$



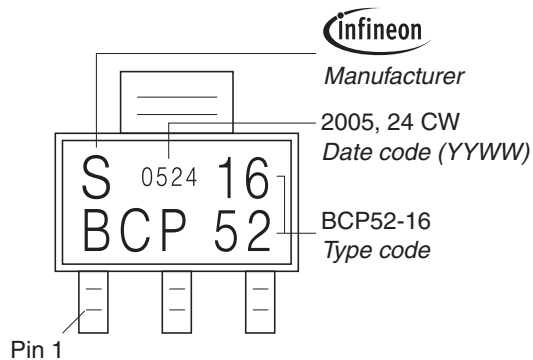
Package Outline



Foot Print

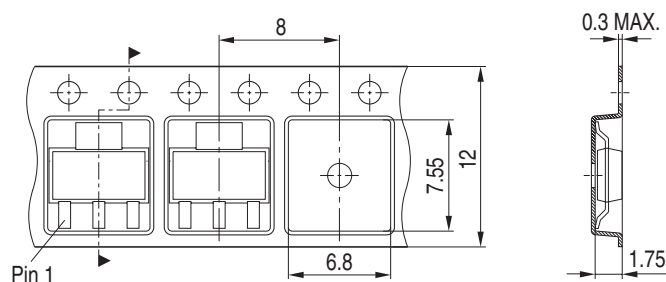


Marking Layout (Example)



Packing

Reel $\varnothing 180$ mm = 1.000 Pieces/Reel
 Reel $\varnothing 330$ mm = 4.000 Pieces/Reel



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