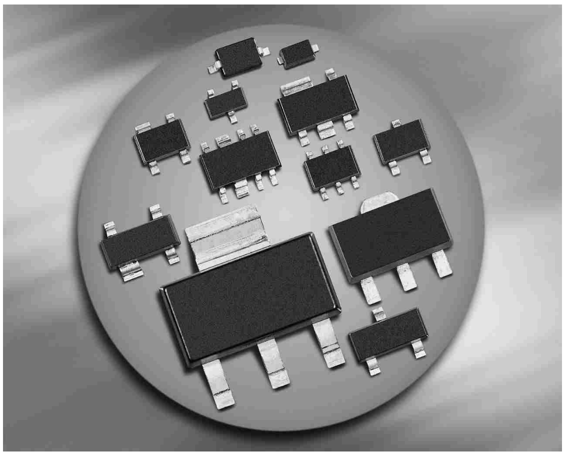
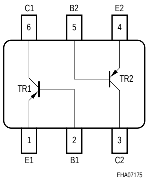
PNP Silicon AF Transistor Arrays



- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Two (galvanic) internal isolated transistor with good matching in one package
- BC856S / U, BC857S: For orientation in reel see package information below
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101

BC856S/U
BC857S



Type	Marking	Pin Configuration						Package
BC856S	3Ds	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363
BC856U	3Ds	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SC74
BC857S	3Cs	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		-
BC856S/U		65	
BC857S		45	
Collector-base voltage	V_{CBO}		V
BC856S, BC856U		80	
BC857S		50	
Emitter-base voltage	V_{EBO}	5	
Collector current	I_C	100	mA
Peak collector current, $t_p \leq 10$ ms	I_{CM}	200	
Total power dissipation-	P_{tot}		-
$T_S \leq 115$ °C, BC856S		250	
$T_S \leq 118$ °C, BC856U, BC857U		250	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	-65 ... 150	

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point1)	R_{thJS}		K/W
BC856S, BC857S		≤ 140	
BC856U		≤ 130	

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

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	**Symbol**	**Values**			**Unit**
		min.	**typ.**	**max.**	
DC Characteristics					
Collector-emitter breakdown voltage	$V_{(BR)CEO}$				-
I_C = 10 mA, I_B = 0 , BC856S/U		65	-	-	
I_C = 10 mA, I_B = 0 , BC857S		45	-	-	
Collector-base breakdown voltage	$V_{(BR)CBO}$				
I_C = 10 µA, I_E = 0 , BC856S/U		80	-	-	
I_C = 10 µA, I_E = 0 , BC857S		50	-	-	
Emitter-base breakdown voltage	$V_{(BR)EBO}$	5	-	-	V
I_E = 10 µA, I_C = 0					
Collector-base cutoff current	I_{CBO}				µA
V_{CB} = 45 V, I_E = 0		-	-	0.015	
V_{CB} = 45 V, I_E = 0 , T_A = 150 °C		-	-	5	
DC current gain1)	h_{FE}				-
I_C = 10 µA, V_{CE} = 5 V		-	250	-	
I_C = 2 mA, V_{CE} = 5 V		200	290	630	
Collector-emitter saturation voltage1)	V_{CEsat}				mV
I_C = 10 mA, I_B = 0.5 mA		-	75	300	
I_C = 100 mA, I_B = 5 mA		-	250	650	
Base emitter saturation voltage1)	V_{BEsat}				-
I_C = 10 mA, I_B = 0.5 mA		-	700	-	
I_C = 100 mA, I_B = 5 mA		-	850	-	
Base-emitter voltage1)	$V_{BE(ON)}$				mV
I_C = 2 mA, V_{CE} = 5 V		600	650	750	
I_C = 10 mA, V_{CE} = 5 V		-	-	820	

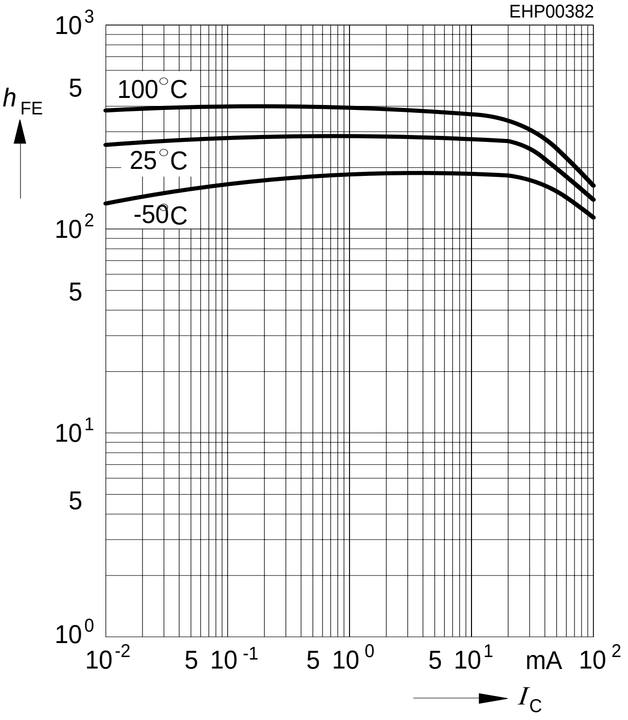
[1] Pulse test: t < 300µs; D < 2%

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C = 20 mA, V_{CE} = 5 V, f = 100 MHz	f_T	-	250	-	MHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	-	1.5	-	pF
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	-	8	-	
Short-circuit input impedance I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{11e}	-	4.5	-	kΩ
Open-circuit reverse voltage transf. ratio I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{12e}	-	2	-	10^{-4}
Short-circuit forward current transf. ratio I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{21e}	-	330	-	-
Open-circuit output admittance I_C = 2 mA, V_{CE} = 5 V, f = 1 kHz	h_{22e}	-	30	-	µS
Noise figure I_C = 200 µA, V_{CE} = 5 V, f = 1 kHz, Δf = 200 Hz, R_S = 2 kΩ	F	-	-	10	dB

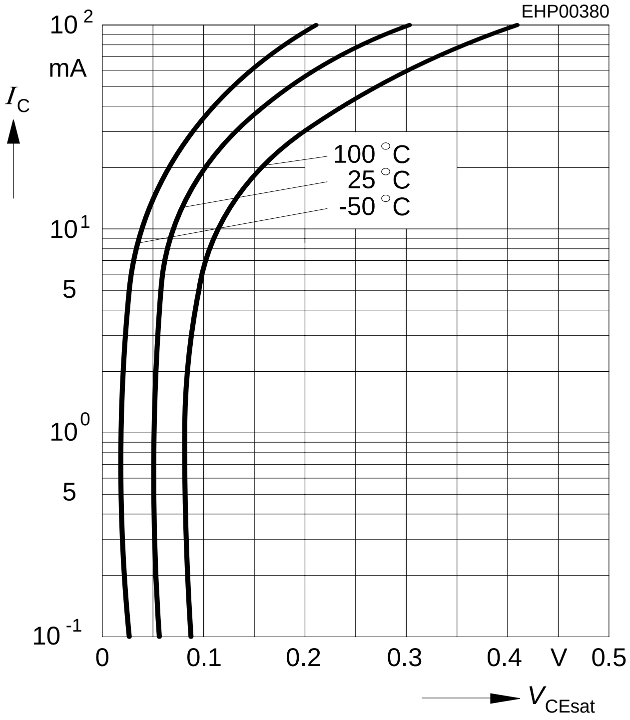
DC current gain $h_{FE} = f(I_C)$

$V_{CE} = 5$ V



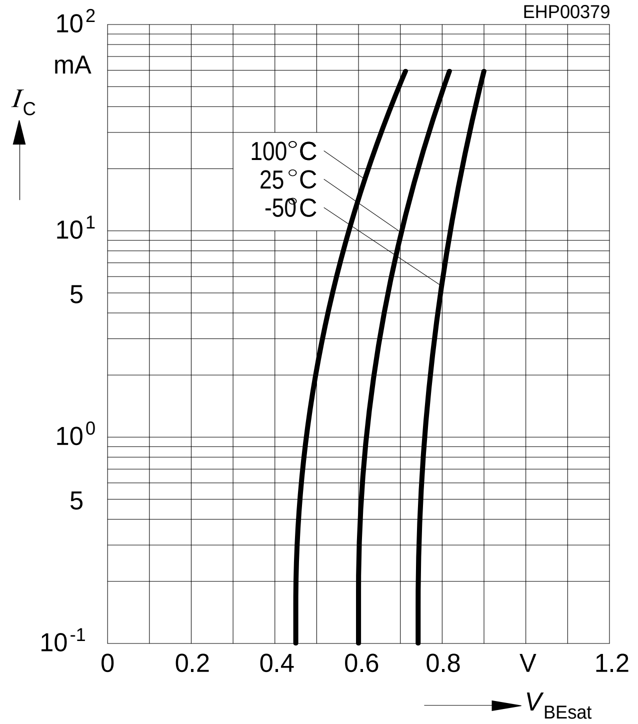
Collector-emitter saturation voltage

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



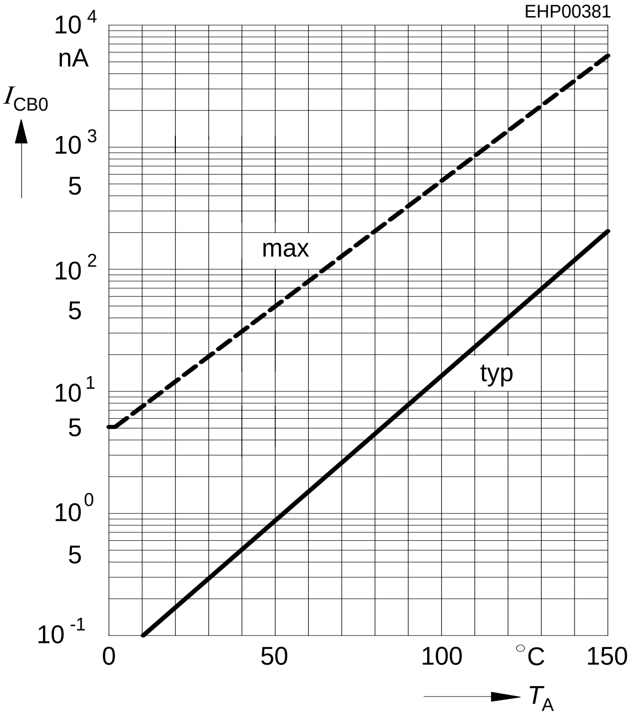
Base-emitter saturation voltage

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



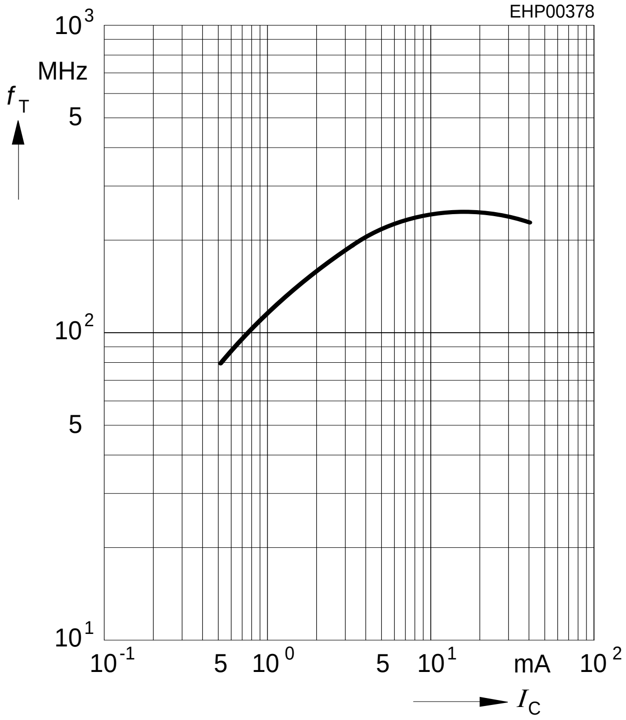
Collector cutoff current $I_{CBO} = f(T_A)$

$V_{CBO} = 30$ V



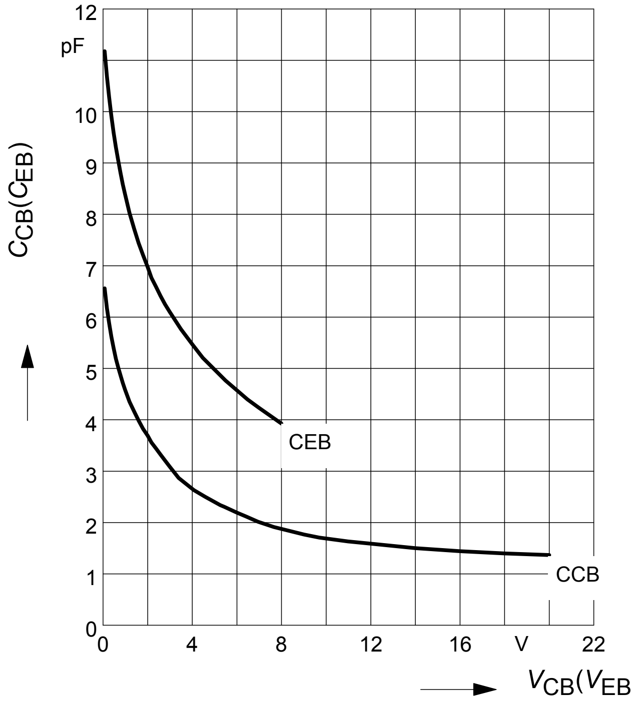
Transition frequency $f_T = f(I_C)$

V_{CE} = 5 V



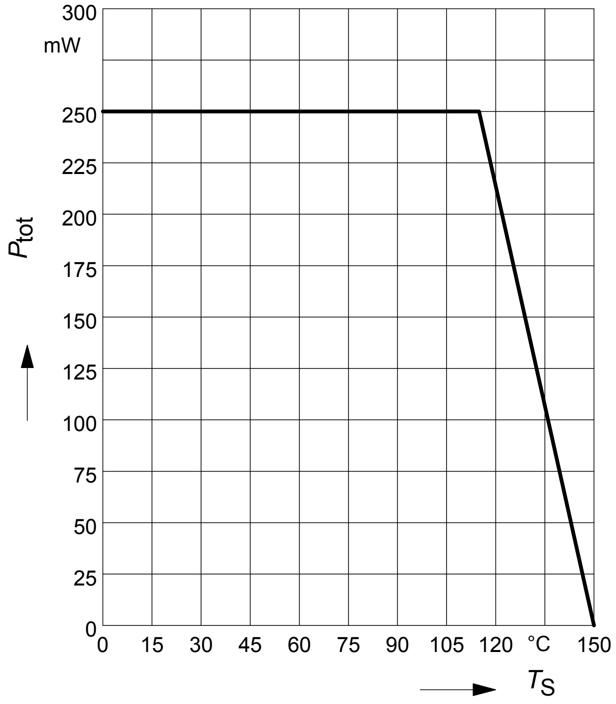
Collector-base capacitance $C_{cb} = f(V_{CB})$

Emitter-base capacitance $C_{eb} = f(V_{EB})$



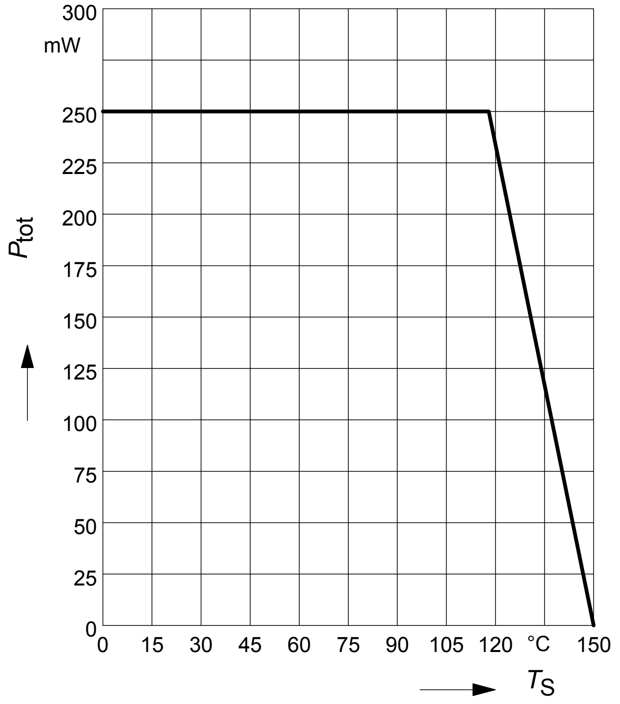
Total power dissipation $P_{tot} = f(T_S)$

BC856S, BC857S



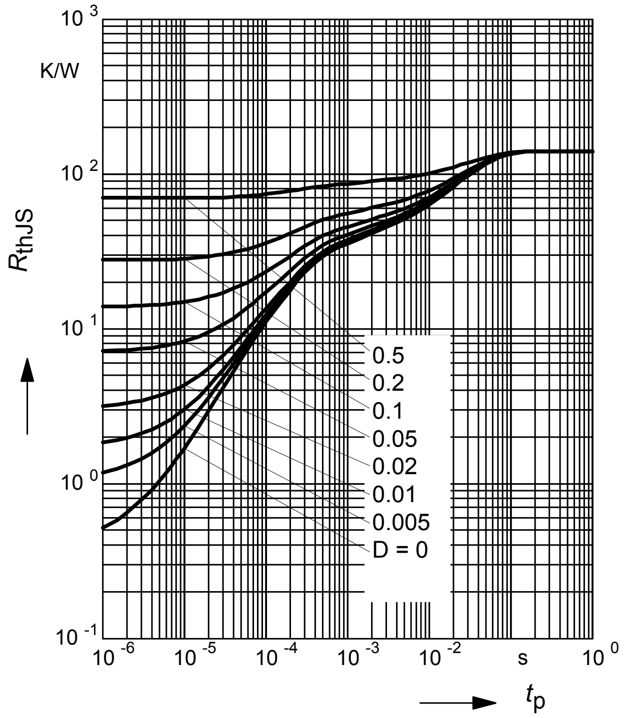
Total power dissipation $P_{tot} = f(T_S)$

BC856U



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

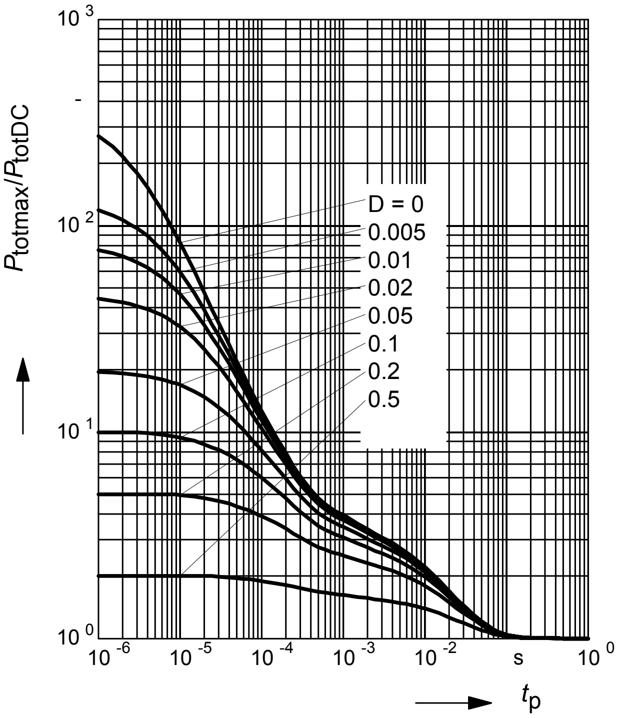
BC856S; BC857S



Permissible Pulse Load

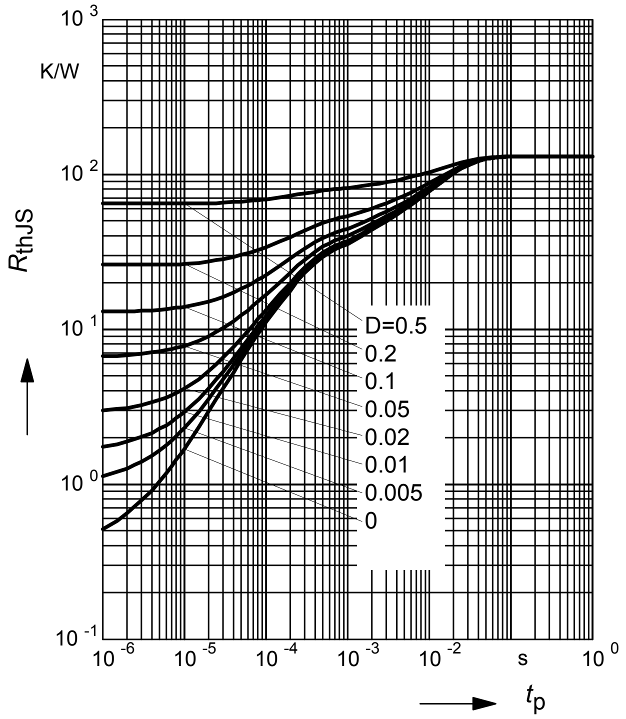
$P_{totmax}/P_{totDC} = f(t_p)$

BC856S, BC857S



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

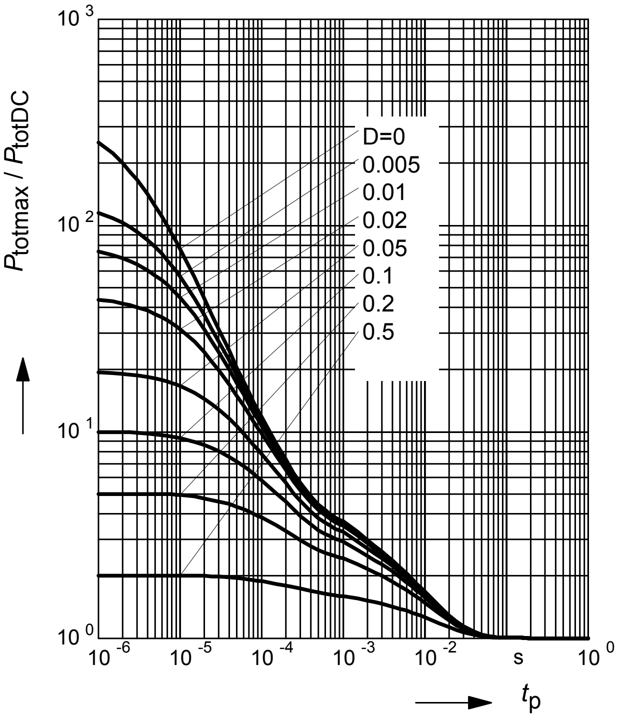
BC856U



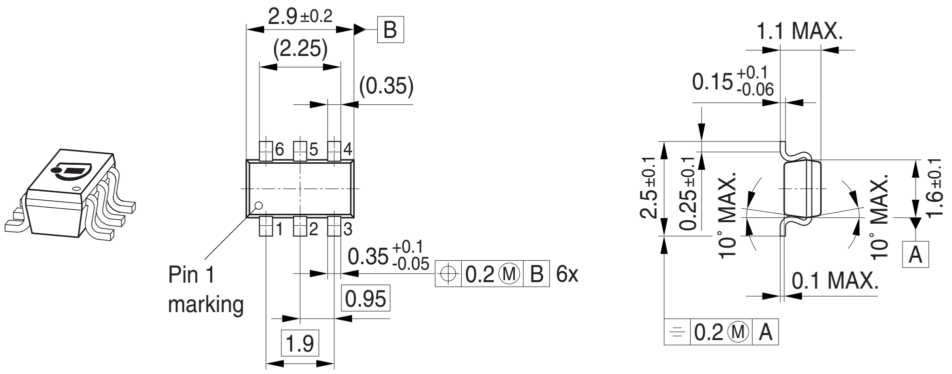
Permissible Pulse Load

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

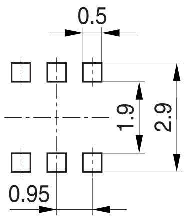
BC856U



Package Outline

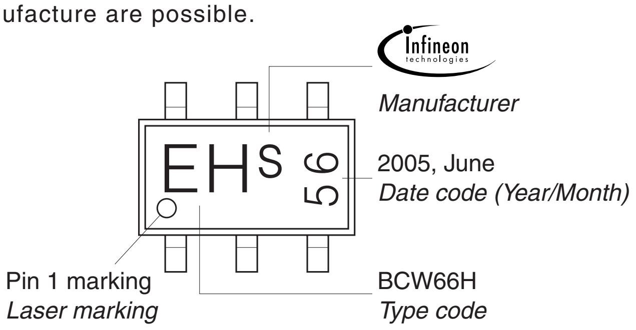


Foot Print



Marking Layout (Example)

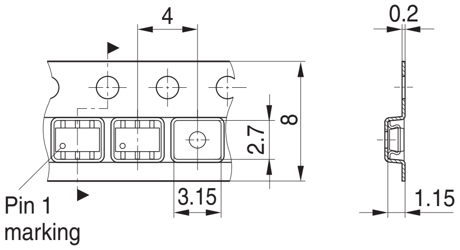
Small variations in positioning of
Date code, Type code and Manufacture are possible.



Standard Packing

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

For symmetric types no defined Pin 1 orientation in reel.



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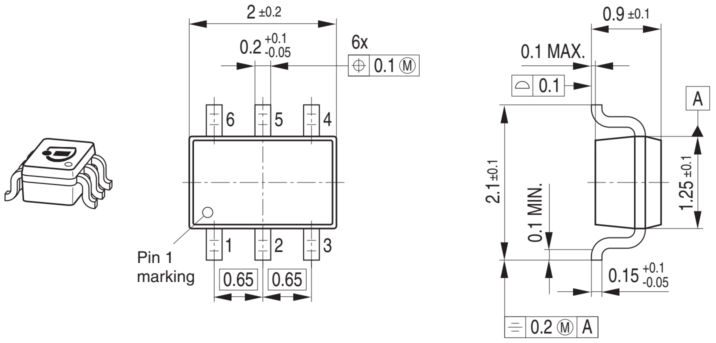

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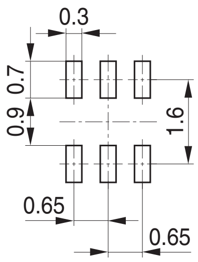

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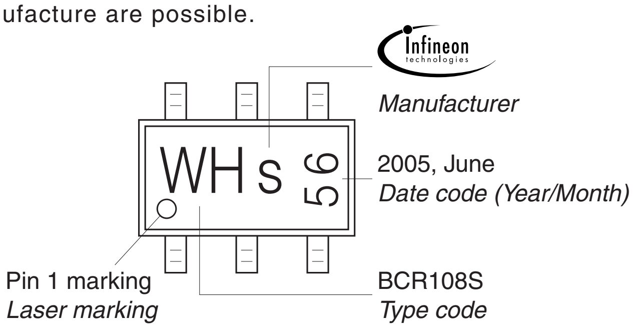

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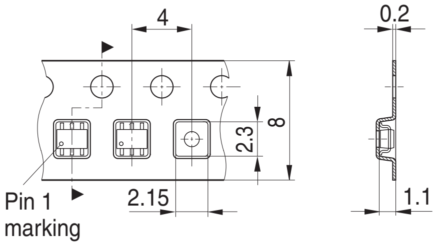

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