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1 Maximum Ratings

Table 1 Maximum Rating at T_A = 25 °C, unless otherwise specified

Parameter	Symbol	Values	Unit	Note or Test Condition
Collector-emitter voltage	V_{CEO}	15	V	–
Collector-base voltage	V_{CBO}	25		–
Emitter-base voltage	V_{EBO}	2.5		–
Collector current	I_C	25	mA	–
Peak collector current	I_{CM}	50		
Total power dissipation [1)]	P_{tot}	280	mW	$T_S \leq 95$ °C
Junction temperature	T_j	150	°C	–
Ambient temperature	T_A	-65 ... 150		
Storage temperature	T_{Stg}	-65 ... 150		–

2 Thermal Resistance

Table 2 Thermal resistance

Parameter	Symbol	Values	Unit	Note or Test Condition
Junction - soldering point	R_{thJS}	≤ 195	K/W	–

Note: For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

1 T_S is measured on the collector lead at the soldering point to the pcb

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3 Electrical Characteristics

Table 3 DC Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit	Note or Test Condition
		Min.	Typ.	Max.		
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	15	–	–	V	I_C = 1 mA, I_B = 0
Collector-base cutoff current	I_{CBO}	–	–	0.05	µA	V_{CB} = 10 V, I_E = 0
		–	–	10		V_{CB} = 25 V, I_E = 0
Emitter-base cutoff current	I_{EBO}	–	–	100	µA	V_{EB} = 2.5 V, I_C = 0
DC current gain	h_{FE}	40	–	150	–	I_C = 2 mA, V_{CE} = 1 V pulse measured
		20	70	–		I_C = 25 mA, V_{CE} = 1 V pulse measured
Collector-emitter saturation voltage	V_{CEsat}	–	0.1	0.4	V	I_C = 10 mA, I_B = 1 mA

Table 4 AC Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit	Note or Test Condition
		Min.	Typ.	Max.		
Transition frequency	f_T	1	1.4	–	GHz	I_C = 2 mA, V_{CE} = 5 V, f = 200 MHz
		1.3	2.5	–		I_C = 25 mA, V_{CE} = 5 V, f = 200 MHz
Collector-base capacitance	C_{cb}	–	0.55	0.8	pF	V_{CB} = 5 V, f = 1 MHz, V_{BE} = 0 , emitter grounded
Collector emitter capacitance	C_{ce}	–	0.27		pF	V_{CE} = 5 V, f = 1 MHz, V_{BE} = 0 , base grounded
Emitter-base capacitance	C_{eb}	–	0.9	1.45	pF	V_{EB} = 0.5 V, f = 1 MHz, V_{CB} = 0 , collector grounded
Minimum noise figure	NF_{min}	–	3.5	5	dB	I_C = 2 mA, V_{CE} = 5 V, Z_S = 50Ω, f = 800 MHz
Transducer gain	$\|S_{21e}\|^2$	–	13	–	dB	I_C = 20 mA, V_{CE} = 5 V, Z_S = Z_L = 50Ω, f = 500 MHz
Third order intercept point at output	OIP_3	–	21.5	–	dBm	V_{CE} = 5 V, I_C = 20 mA, f = 800 MHz, Z_S = Z_{Sopt}, Z_L = Z_{Lopt}
1dB compression point	P_{-1dB}	–	10	–	dBm	I_C = 20 mA, V_{CE} = 5 V, Z_S = Z_L = 50Ω, f = 800 MHz

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4 Typical characteristics diagrams

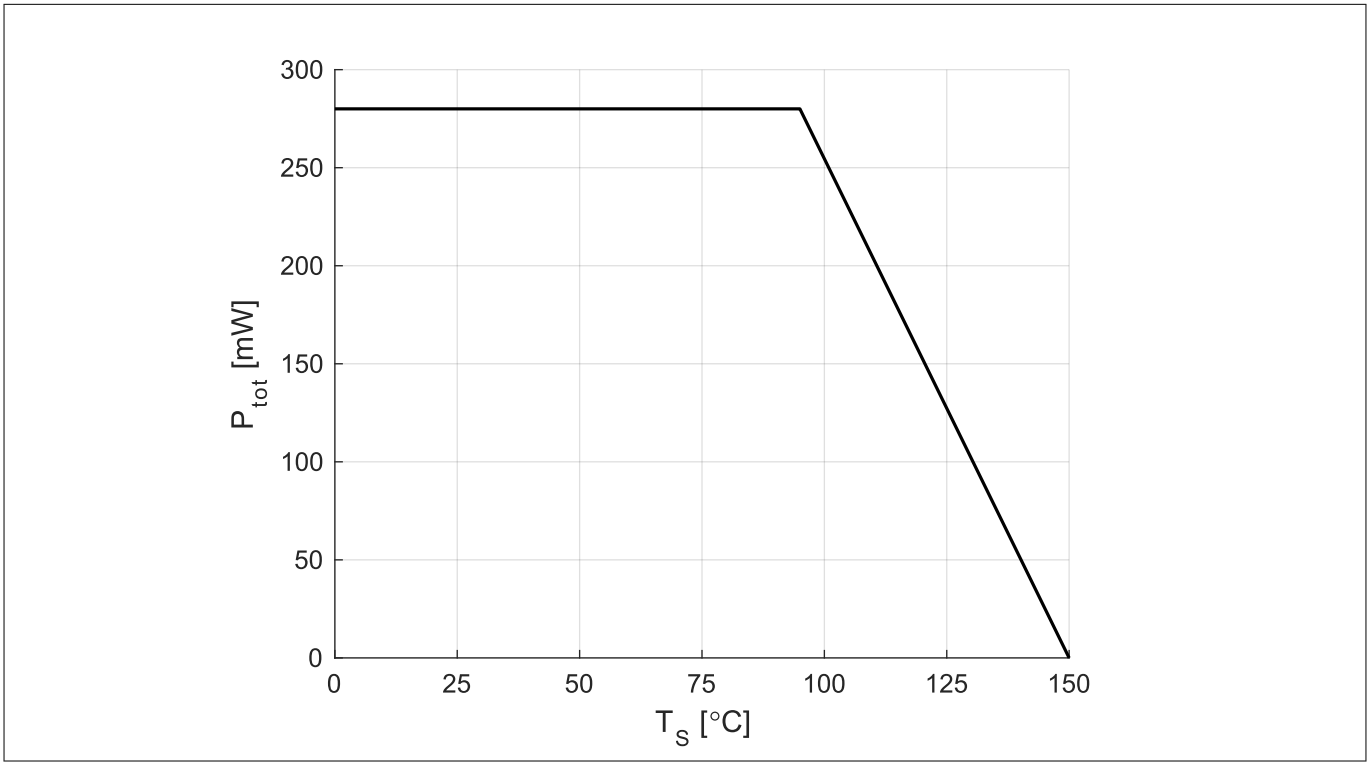

Figure 1 Total Power Dissipation

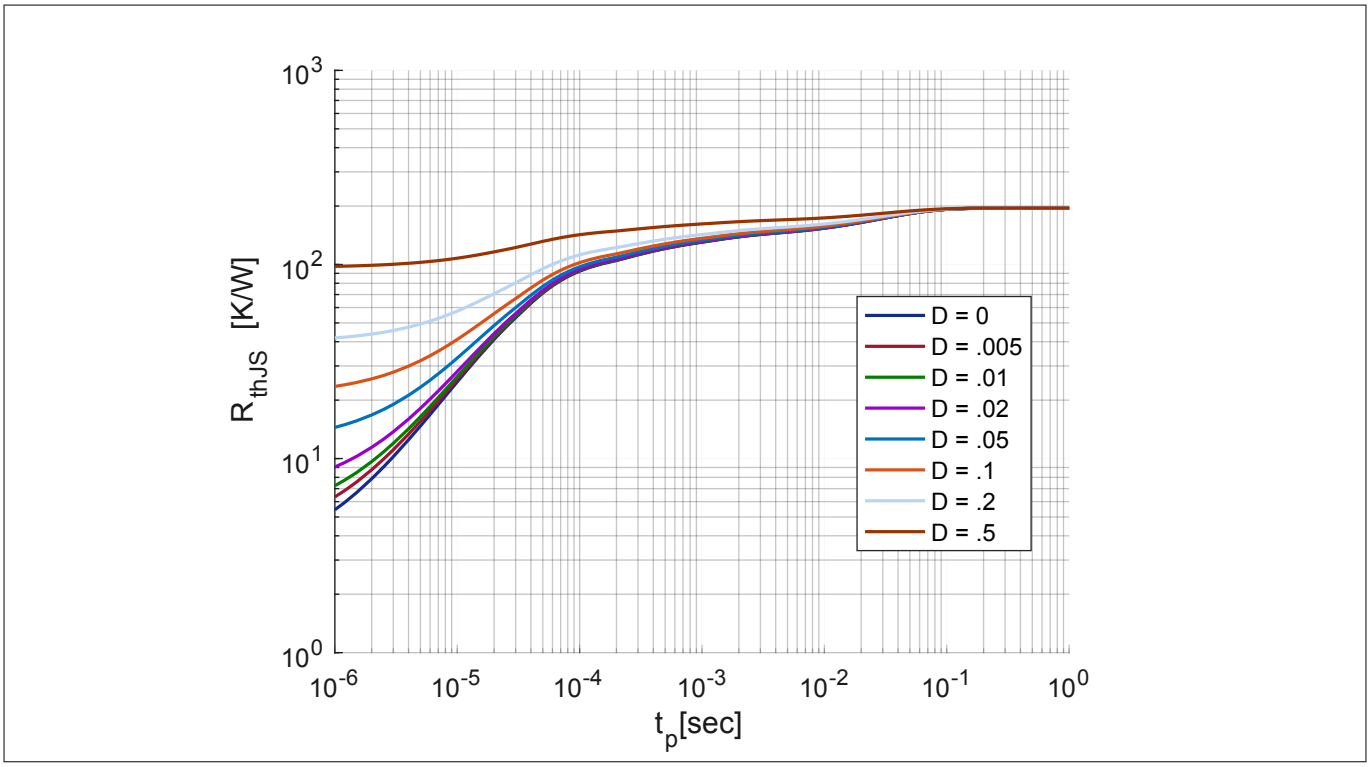

Figure 2 Permissible Pulse Load $R_{thJS} = f(t_p)$

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Typical characteristics diagrams

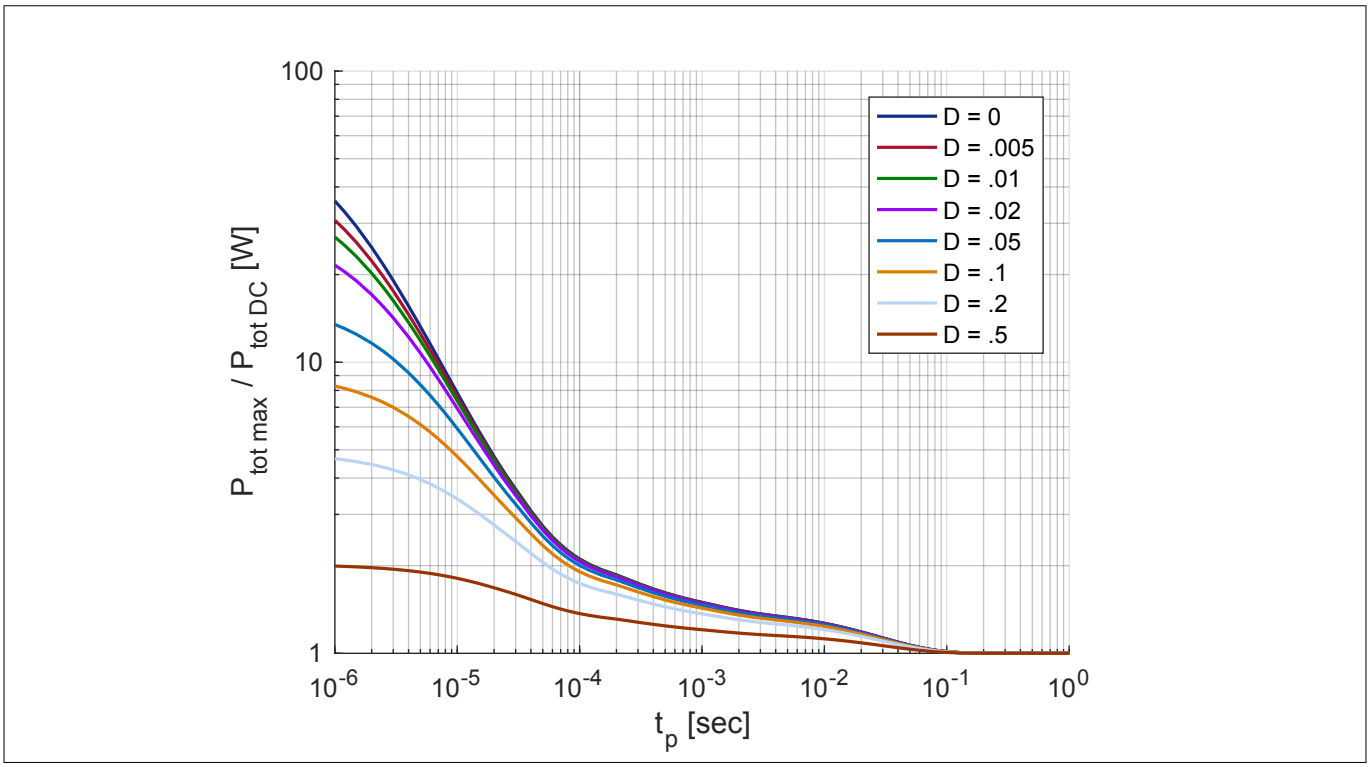

Figure 3 Permissible Pulse Load P_{totmax} / P_{totDC} = f (t_p)

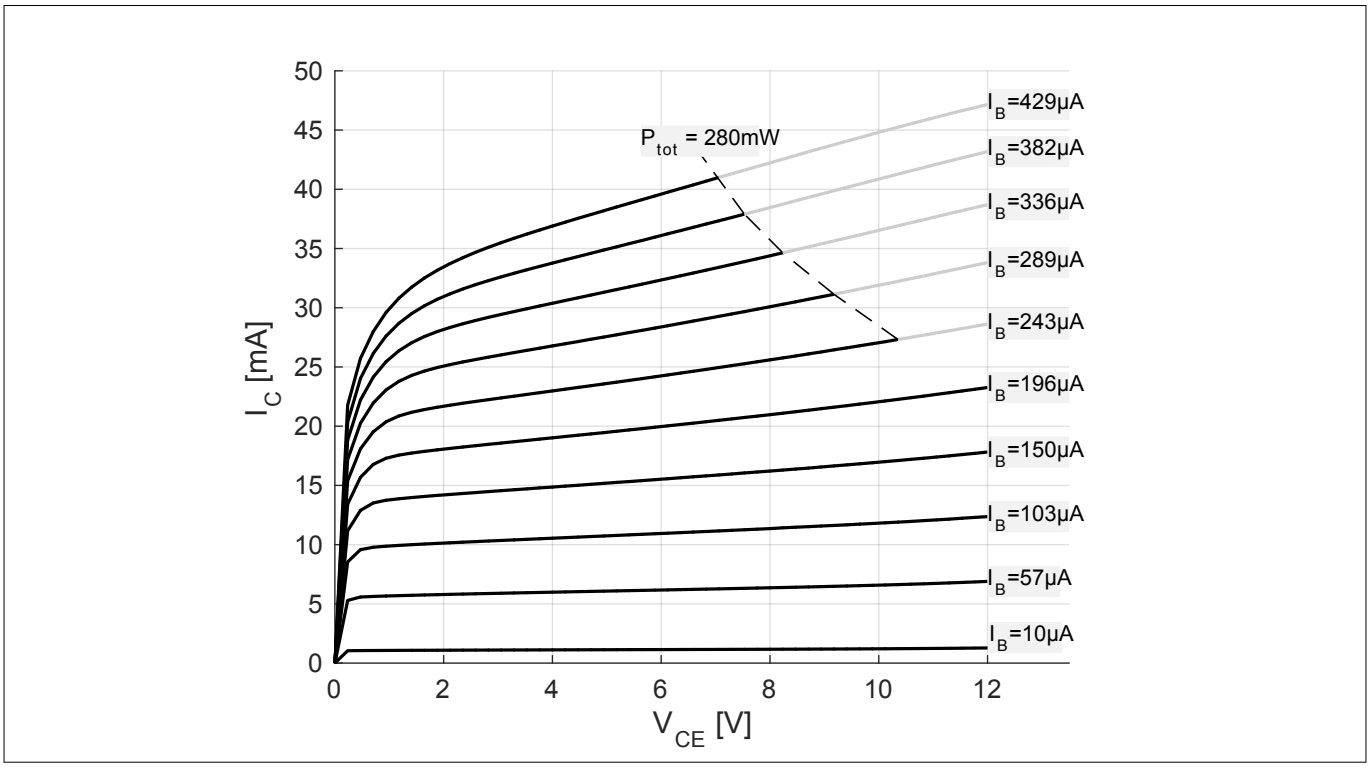

Figure 4 Collector current I_C = f(V_{CE}), I_B = parameter

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Typical characteristics diagrams

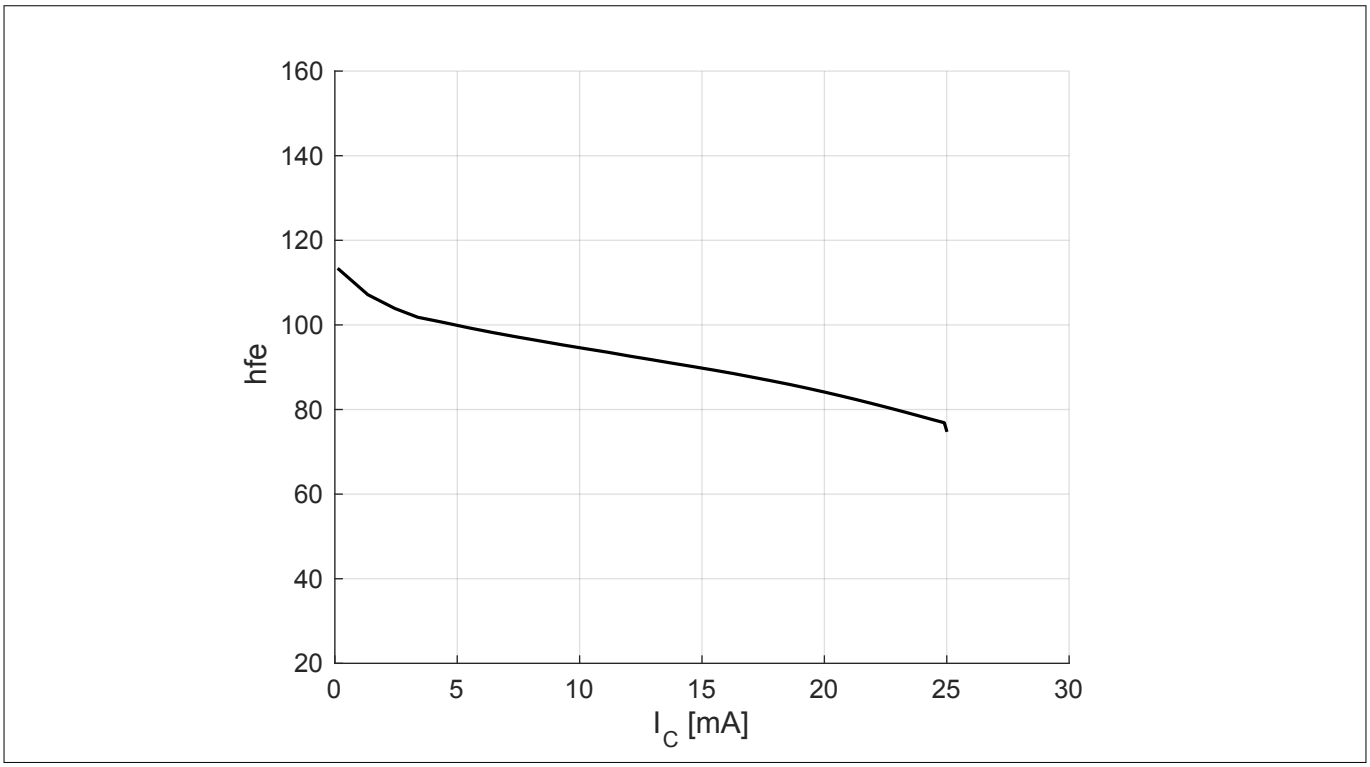

Figure 5 Current gain h_{FE}= f(I_C), V_{CE} = 8 V

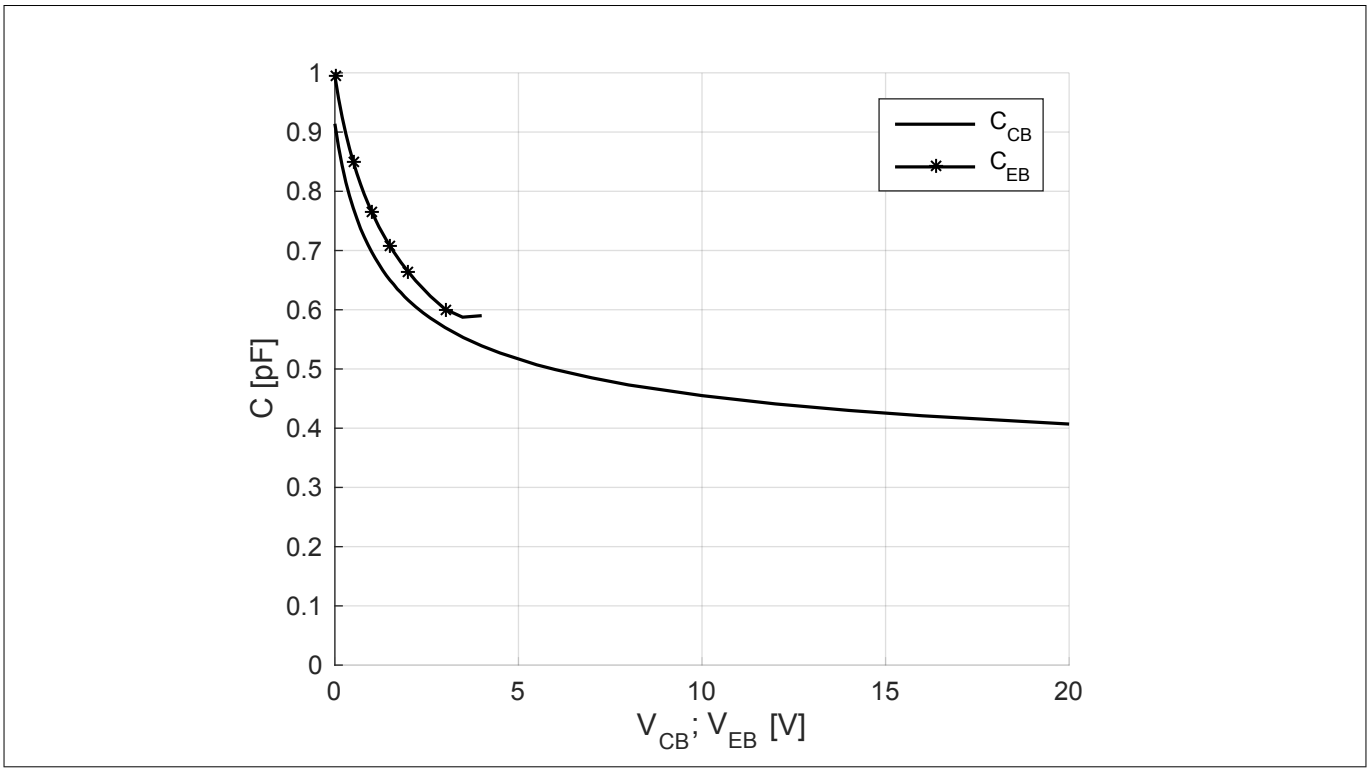

Figure 6 Collector-Base C_{CB}=f(V_{CB}); Emitter-Base Capacitance C_{EB}=f(V_{EB})

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Typical characteristics diagrams

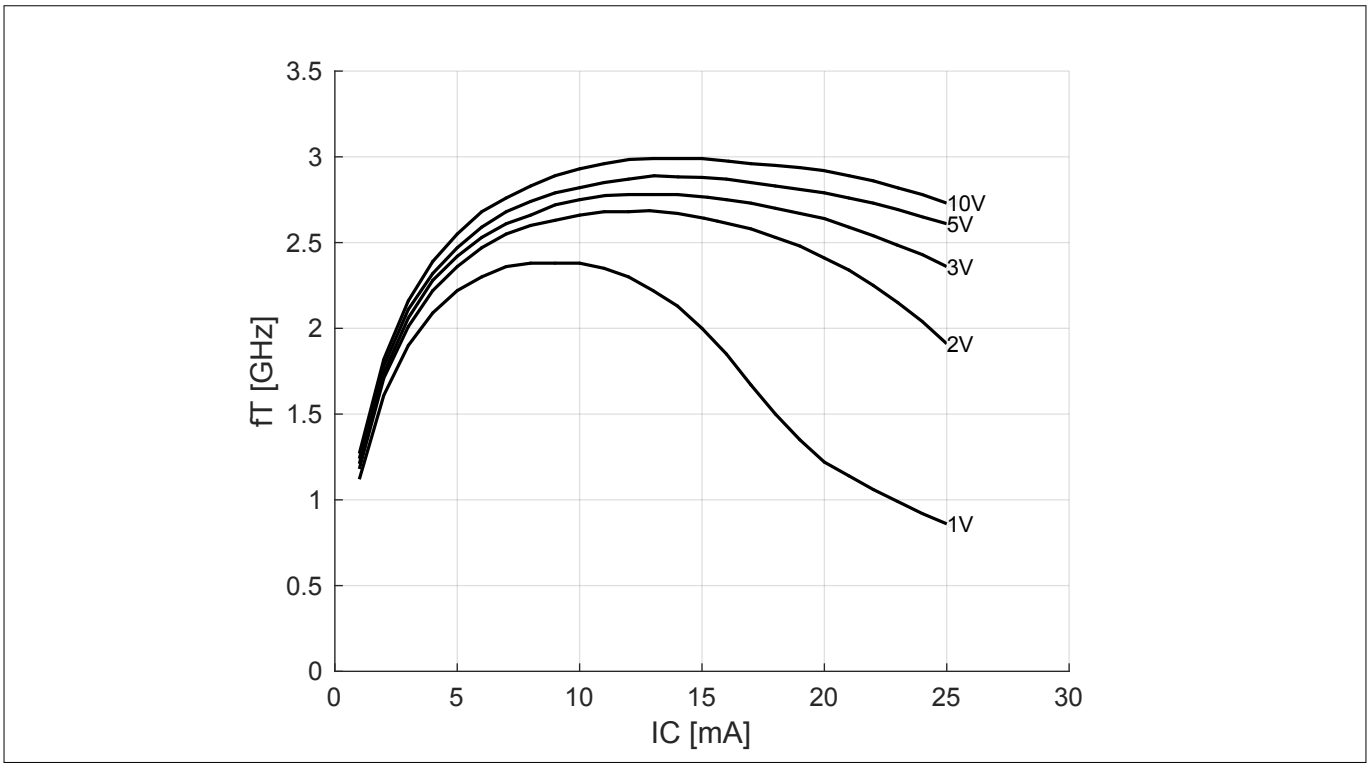

Figure 7 Transition frequency $f_T = f(I_C)$, V_{CE} = parameter

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5 Package information

5.1 SOT23 package

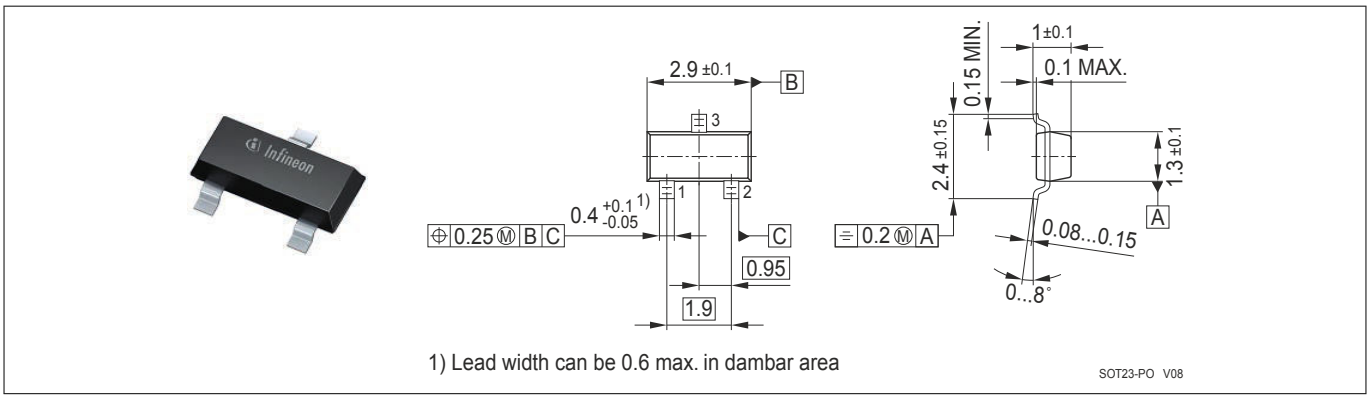

Figure 8 SOT23 package outline

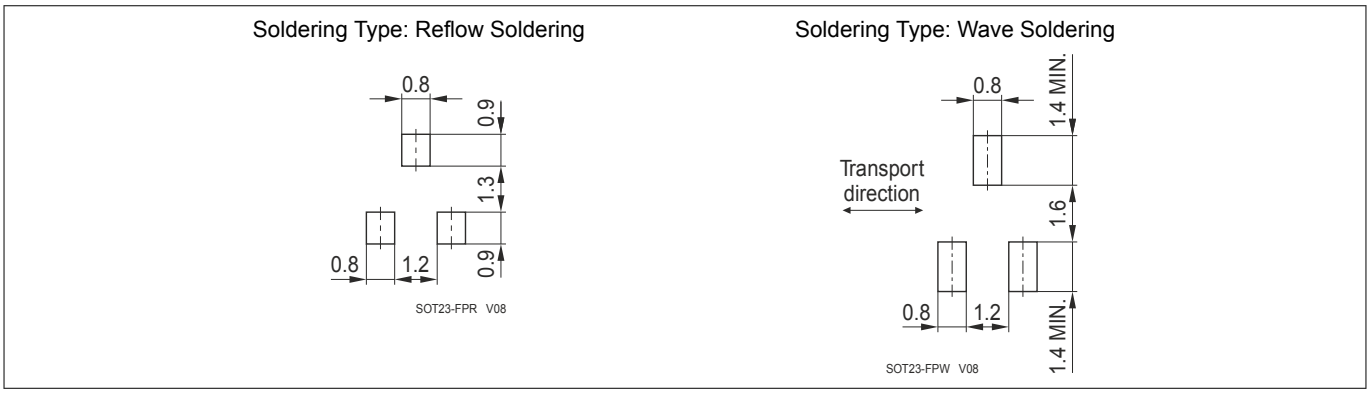

Figure 9 SOT23 foot frint

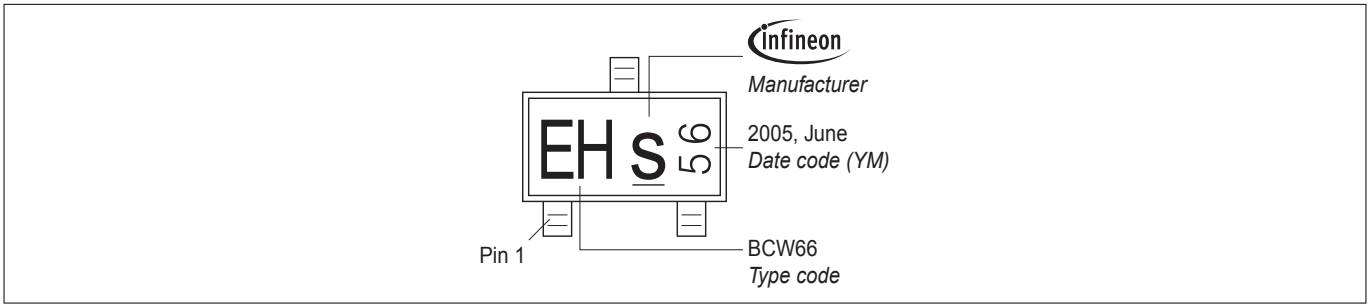

Figure 10 SOT23 marking layout (example)

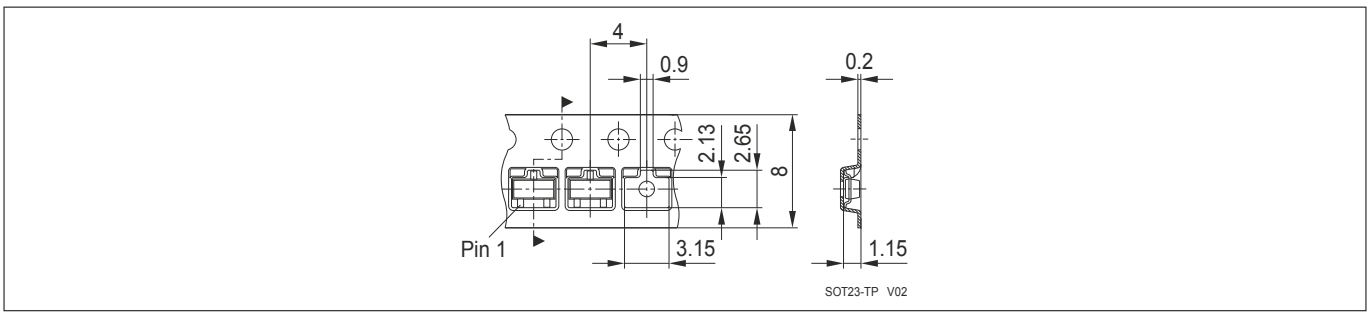

Figure 11 SOT23 tape and reel

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Revision History

Major changes since previous revision

Revision History

Reference	Description
All pages	2017-06-01: Conversion to new document template
R_{thJS}	2017-06-01: Update of value

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