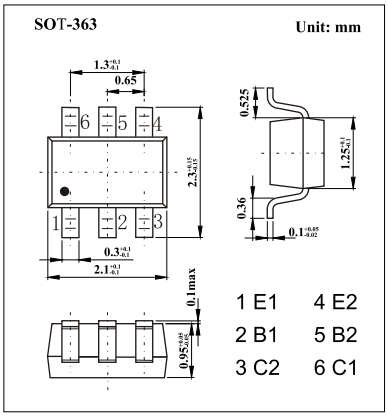
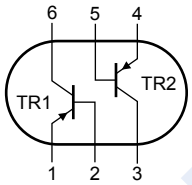
PNP Transistors

BC856BS (KC856BS)



■ Features

- Low collector capacitance
- Low collector-emitter saturation voltage
- Closely matched current gain
- Reduces number of components and board space



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	-80	V
Collector - Emitter Voltage	V_{CEO}	-65	
Emitter - Base Voltage	V_{EBO}	-6	
Collector Current - Continuous	I_C	-100	mA
Peak Collector Current single pulse: tp ≤ 1 ms	I_{CM}	-200	
Peak Base Current single pulse: tp ≤ 1 ms	I_{BM}	-200	
Collector Power Dissipation (Per transistor) *1	P_C	200	mW
(Per device) *1		300	
Thermal Resistance From Junction To Ambient (Per transistor) *1	$R_{\theta JA}$	625	℃/W
Thermal Resistance From Junction To Ambient (Per device) *1		416	
Thermal Resistance From Junction To Solder Point	$R_{\theta JSP}$	230	
Junction Temperature	T_J	150	℃
Storage Temperature range	T_{stg}	-65 to 150	

*1: Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

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■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= -100 μA， I_E=0	-80			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= -1 mA， I_B=0	-65			
Emitter - base breakdown voltage	V_{EBO}	I_E= -100 μA， I_C=0	-6			
Collector-base cut-off current	I_{CBO}	V_{CB}= -50 V , I_E=0			-15	nA
		V_{CB}= -30 V , I_E=0,T_J=150℃			-5	uA
Emitter cut-off current	I_{EBO}	V_{EB}= -6V , I_C=0			-100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-10 mA, I_B=-0.5mA		-55	-100	mV
		I_C=-100 mA, I_B=-5mA		-200	-300	
Base - emitter saturation voltage	$V_{BE(sat)}$	I_C=-10 mA, I_B=-0.5mA		-755	-850	
		I_C=-100 mA, I_B=-5mA		-900		
Base - emitter voltage	V_{BE}	V_{CE}= -5V, I_C= -2mA	-600	-650	-750	
		V_{CE}= -5V, I_C= -10mA			-820	
DC current gain	$h_{FE(1)}$	V_{CE}= -5V, I_C= -10uA		270		
	$h_{FE(2)}$	V_{CE}=- 5V, I_C= -2mA	200	290	450	
Collector capacitance	C_c	V_{CB}= -10V, I_E=ie=0,f=1MHz		2.3		pF
Emitter capacitance	C_e	V_{EB}= -0.5V, I_C=ic=0,f=1MHz		10		
Noise figure	NF	V_{CE} = -5 V; I_C = -0.2 mA; R_S = 2 kΩ; f = 10 Hz to 15.7 KHz		1.6		dB
		V_{CE} = -5 V; I_C = -0.2 mA; R_S = 2 kΩ; f = 1 KHz ,B=200Hz		2.9		
Transition frequency	f_T	V_{CE}= -5V, I_C= -10mA,f=100MHz	100			MHz

■ Marking

Marking	*E6

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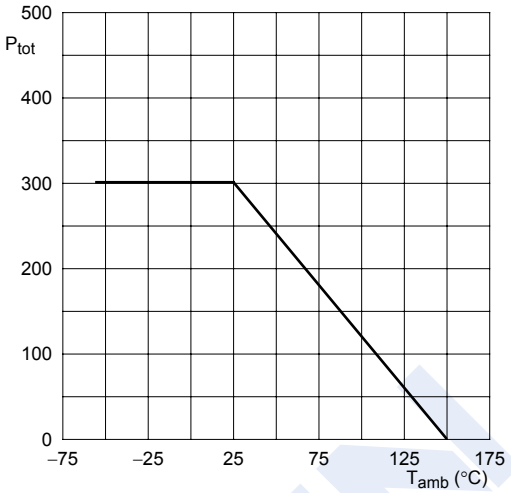
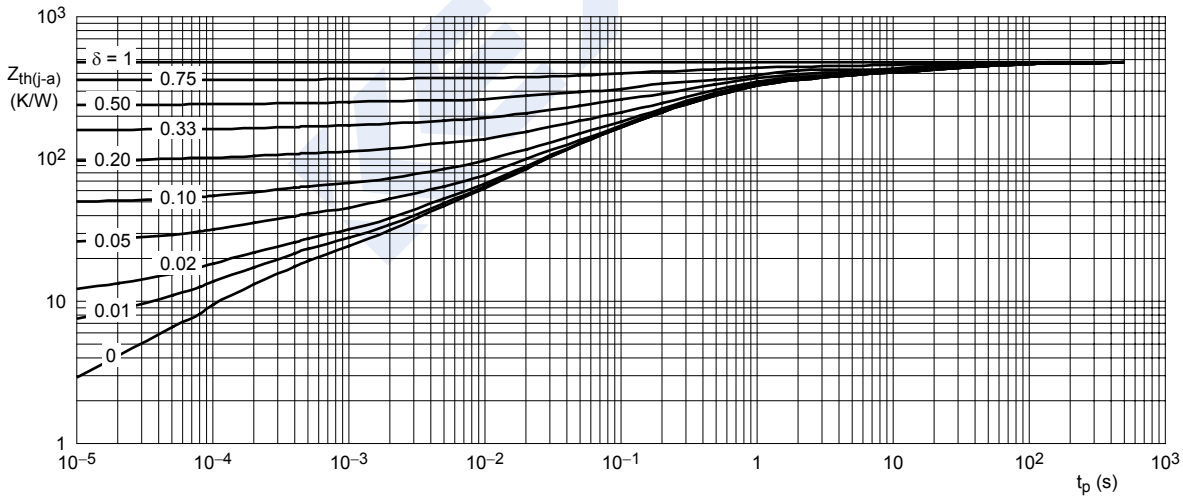
■ Typical Characterisitics



FR4 PCB, standard footprint

Fig 1. Per device: Power derating curve SOT363



FR4 PCB, standard footprint

Fig 2. Per transistor: Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

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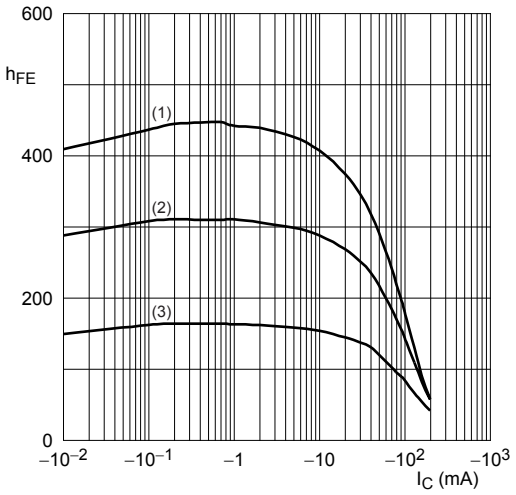
■ Typical Characterisitics



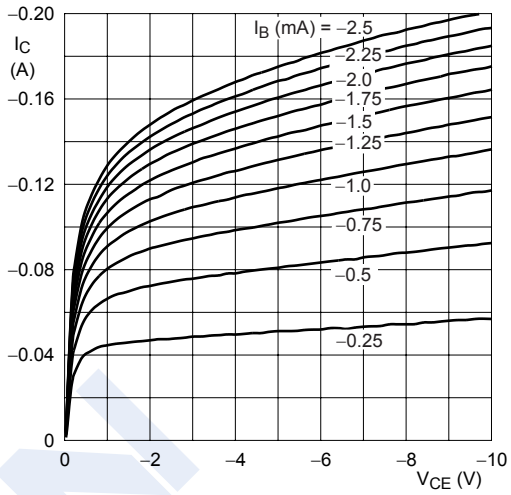
V_{CE} = −5 V

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

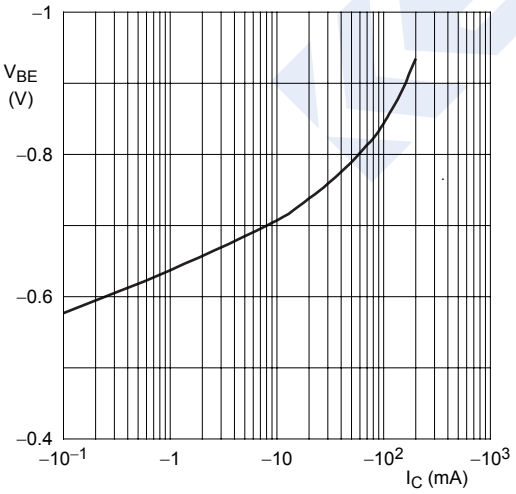
(3) T_{amb} = −55 °C

Fig 3. Per transistor: DC current gain as a function of collector current; typical values



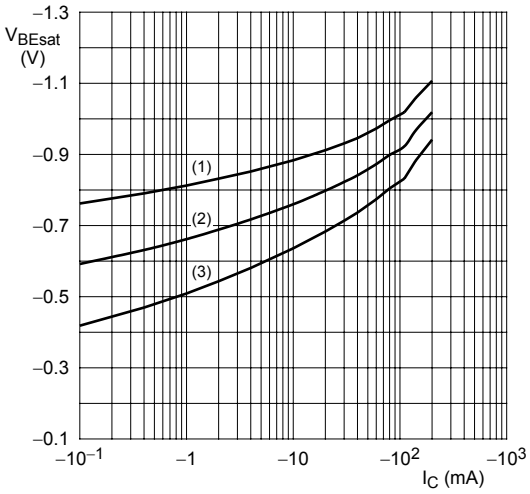
T_{amb} = 25 °C

Fig 4. Per transistor: Collector current as a function of collector-emitter voltage; typical values



V_{CE} = −5 V; T_{amb} = 25 °C

Fig 5. Per transistor: Base-emitter voltage as a function of collector current; typical values



I_C/I_B = 20

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 100 °C

Fig 6. Per transistor: Base-emitter saturation voltage as a function of collector current; typical values

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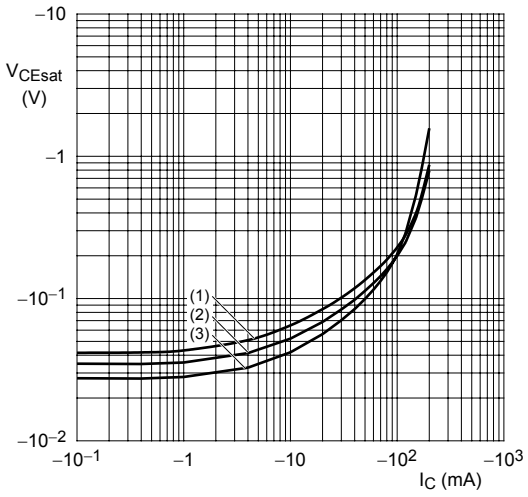
■ Typical Characterisitics



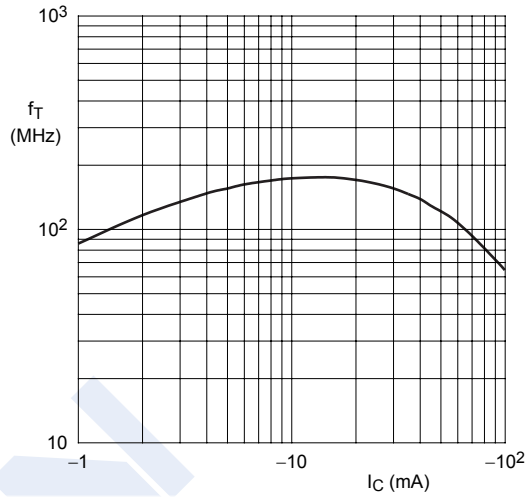
I_C/I_B = 20

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

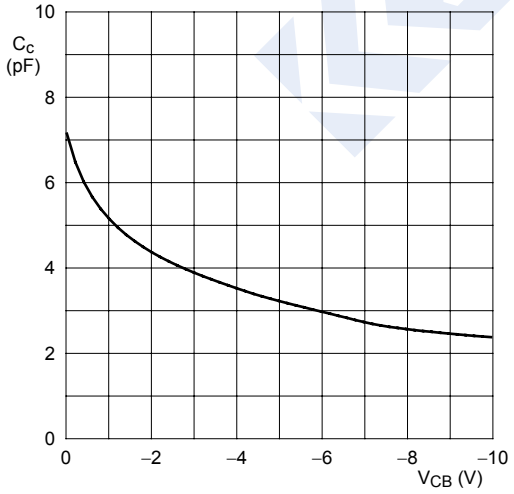
(3) T_{amb} = −55 °C

Fig 7. Per transistor: Collector-emitter saturation voltage as a function of collector current; typical values



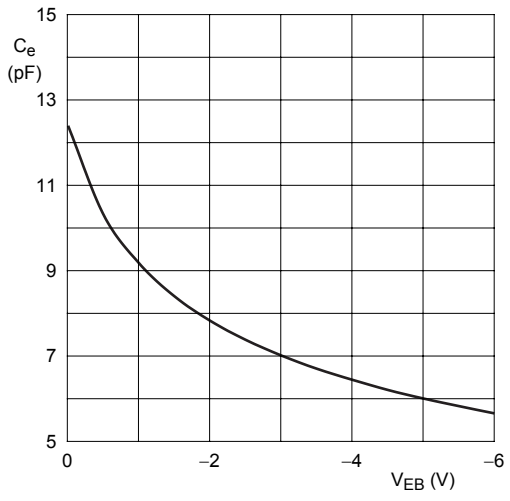
V_{CE} = −5 V; T_{amb} = 25 °C

Fig 8. Per transistor: Transition frequency as a function of collector current; typical values



f = 1 MHz; T_{amb} = 25 °C

Fig 9. Per transistor: Collector capacitance as a function of collector-base voltage; typical values



f = 1 MHz; T_{amb} = 25 °C

Fig 10. Per transistor: Emitter capacitance as a function of emitter-base voltage; typical values