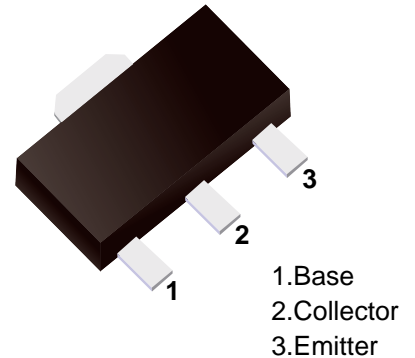


■ NPN Transistors

■ Features

- Low Collector-Emitter Saturation Voltage
- Large Collector Power Dissipation and Current
- Mini Power Type Package



■ Simplified outline(SOT-89)

■ Absolute Maximum Ratings Ta = 25°C

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V _{CB0}	40	V
Collector - Emitter Voltage	V _{CE0}	20	
Emitter - Base Voltage	V _{EB0}	7	
Collector Current - Continuous	I _c	5	A
Collector Power Dissipation	P _c	750	mW
Thermal Resistance From Junction To Ambient	R _{θJA}	167	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{stg}	-55 to 150	

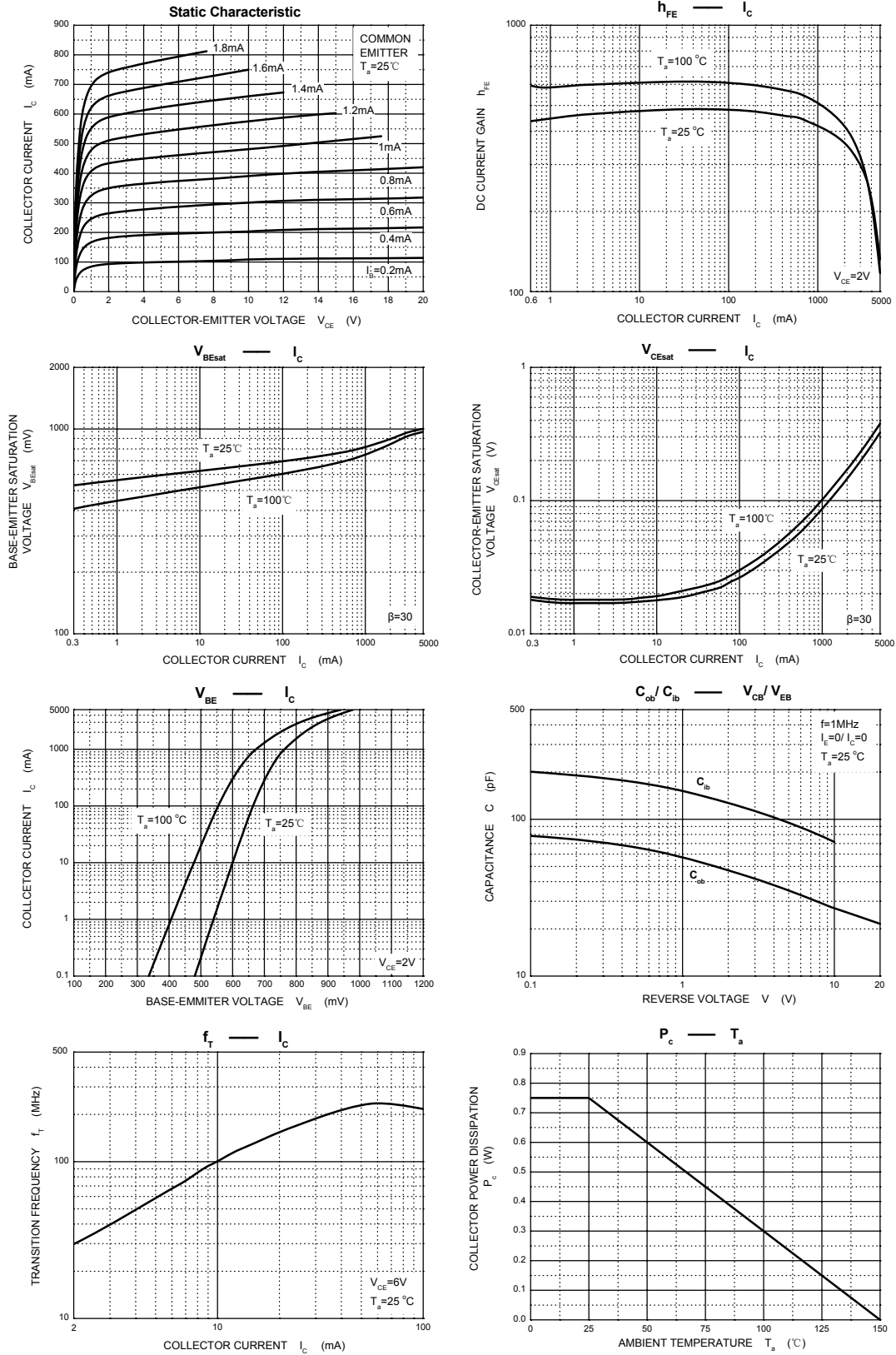
■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V _{CB0}	I _c = 100 μA, I _E = 0	40			V
Collector- emitter breakdown voltage	V _{CE0}	I _c = 1 mA, I _B = 0	20			
Emitter - base breakdown voltage	V _{EB0}	I _E = 100 μA, I _c = 0	7			
Collector-base cut-off current	I _{CB0}	V _{CB} = 10 V, I _E = 0			100	nA
Emitter cut-off current	I _{EB0}	V _{EB} = 7V, I _c =0			100	
Collector-emitter saturation voltage	V _{CE(sat)}	I _c =3 A, I _B =100mA			1	V
Base - emitter saturation voltage	V _{BE(sat)}	I _c =3 A, I _B =100mA			1.2	
DC current gain	h _{FE(1)}	V _{CE} = 2V, I _c = 1mA		200		
	h _{FE(2)}	V _{CE} = 2V, I _c = 500mA	230		950	
	h _{FE(3)}	V _{CE} = 2V, I _c = 2A	150			
Collector output capacitance	C _{ob}	V _{CB} = 20V, I _E = 0, f=1MHz			50	pF
Transition frequency	f _t	V _{CE} = 6V, I _c = 50mA, f=200MHz		150		MHz

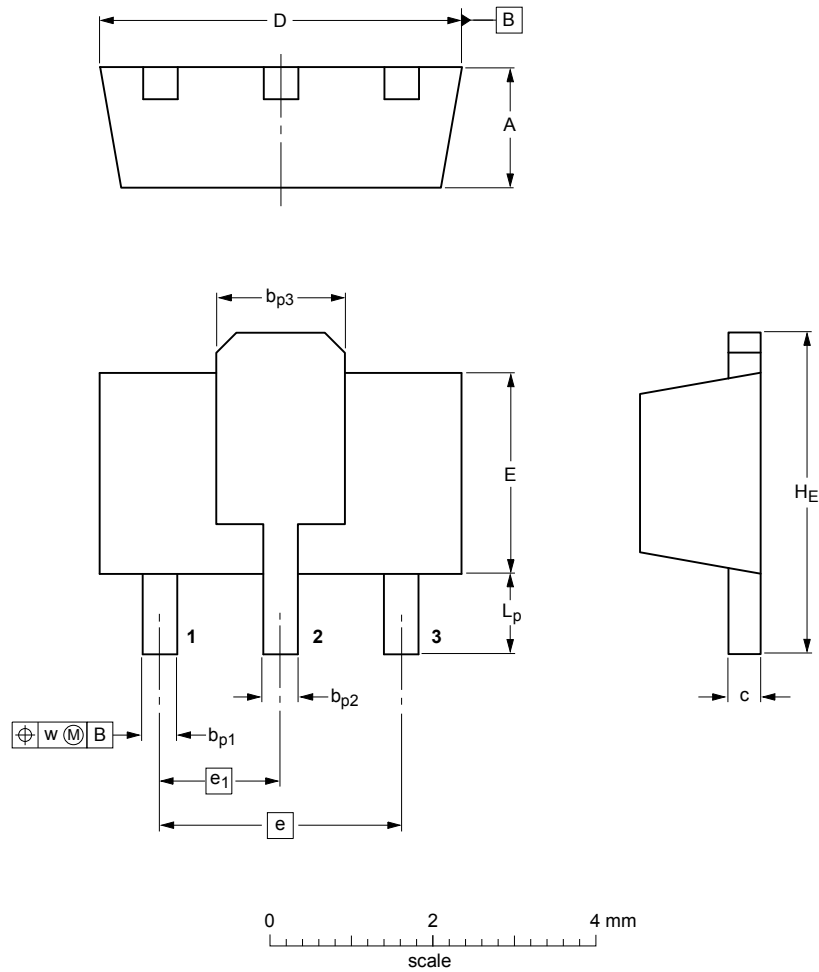
■ Classification of h_{fe}(2)

Type	2SD965-Q	2SD965-R	2SD965-S	2SD965-T
Range	230-380	340-600	560-800	560-950
Marking	965Q	965R	965S	965T

■ Typical Characteristics



■ SOT-89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	w
mm	1.6	0.48	0.53	1.8	0.44	4.6	2.6	3.0	1.5	4.25	1.2	0.13
	1.4	0.35	0.40	1.4	0.23	4.4	2.4		3.75	0.8		