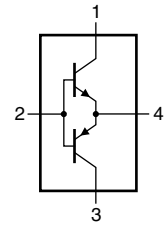
NPN/PNP general-purpose transistor

1. Product profile

1.1 General description

NPN/PNP general-purpose transistor in a small SOT143 Surface-Mounted Device (SMD) plastic package.



1.2 Features and benefits

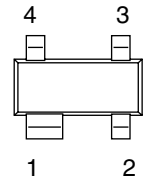
Low current (max. 100 mA)

Low voltage (max. 30 V)

Matched pair

Small SMD plastic package

Marking : 97W 62



1, 3 collector

2 common base

4 common emitter

1.3 Applications

General-purpose switching and amplification

1.4 Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CEO}	collector-emitter voltage	open base	-	-	30	V
I_C	collector current		-	-	100	mA
h_{FE}	DC current gain	V_{CE} = 5 V; I_C = 2 mA	75	-	800	

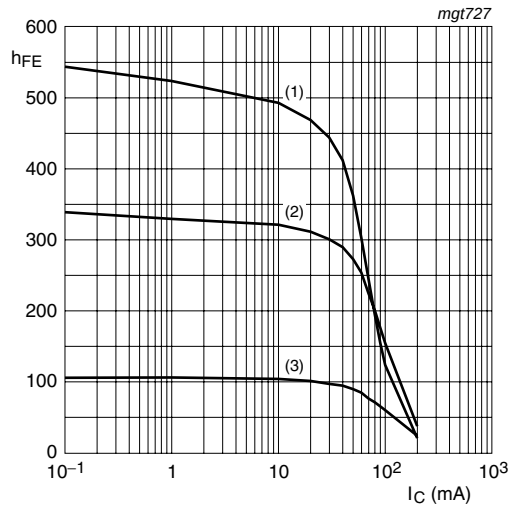
2. Limiting values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{CBO}	collector-base voltage	open emitter	-	30	V
V_{CEO}	collector-emitter voltage	open base	-	30	V
I_C	collector current		-	100	mA
I_{CM}	peak collector current		-	200	mA
I_{BM}	peak base current		-	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	-	250	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		–65	+150	°C
T_{stg}	storage temperature		–65	+150	°C

3. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	collector-base cut-off current	V_{CB} = 30 V; I_E = 0 A	-	-	15	nA
		V_{CB} = 30 V; I_E = 0 A; T_j = 150 °C	-	-	5	µA
h_{FE}	DC current gain	V_{CE} = 5 V; I_C = 2 mA	75	-	800	
V_{CEsat}	collector-emitter saturation voltage	I_C = 10 mA; I_B = 0.5 mA	-	90	300	mV
		I_C = 100 mA; I_B = 5 mA	-	250	650	mV
V_{BEsat}	base-emitter saturation voltage	I_C = 10 mA; I_B = 0.5 mA	-	700	-	mV
		I_C = 100 mA; I_B = 5 mA	-	900	-	mV
V_{BE}	base-emitter voltage	I_C = 2 mA; V_{CE} = 5 V	580	650	750	mV
		I_C = 10 mA; V_{CE} = 5 V	-	-	820	mV



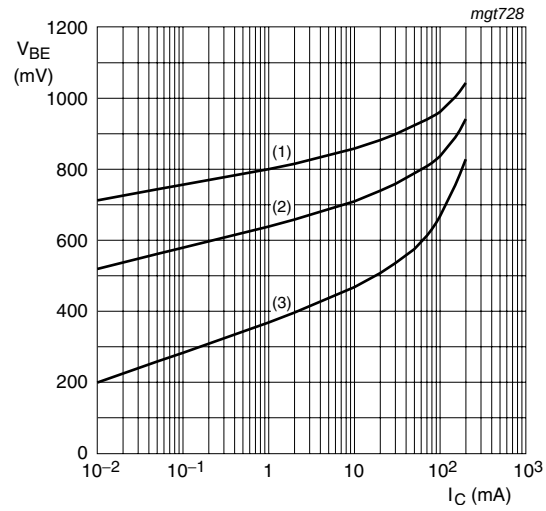
V_{CE} = 5 V

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig 1. TR1 (NPN): DC current gain as a function of collector current; typical values



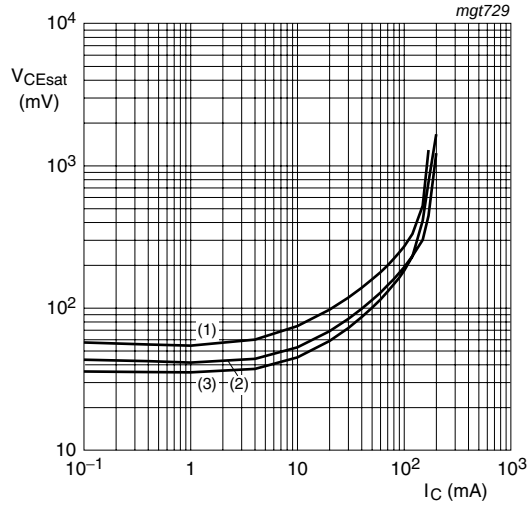
V_{CE} = 5 V

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 150 °C

Fig 2. TR1 (NPN): Base-emitter voltage as a function of collector current; typical values



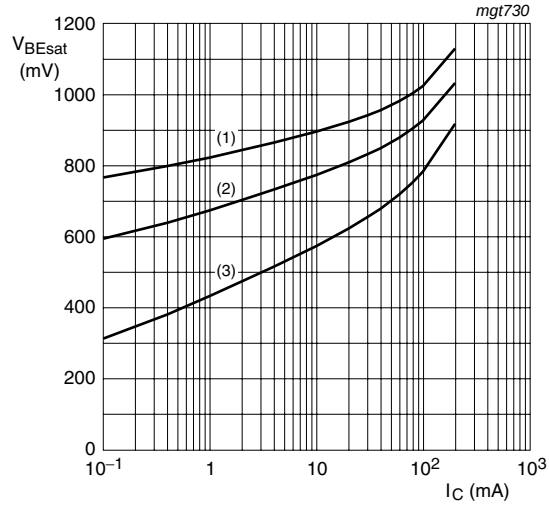
I_C/I_B = 20

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig 3. TR1 (NPN): Collector-emitter saturation voltage as a function of collector current; typical values



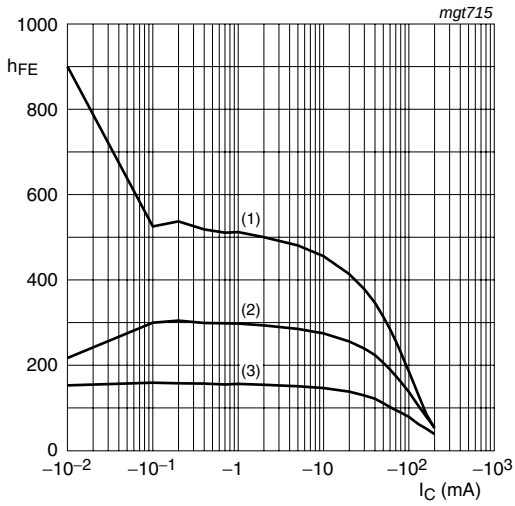
I_C/I_B = 10

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 150 °C

Fig 4. TR1 (NPN): Base-emitter saturation voltage as a function of collector current; typical values



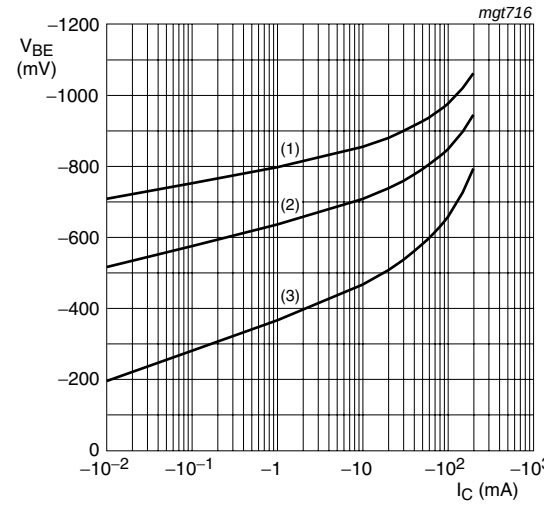
V_{CE} = −5 V

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig 5. TR2 (PNP): DC current gain as a function of collector current; typical values



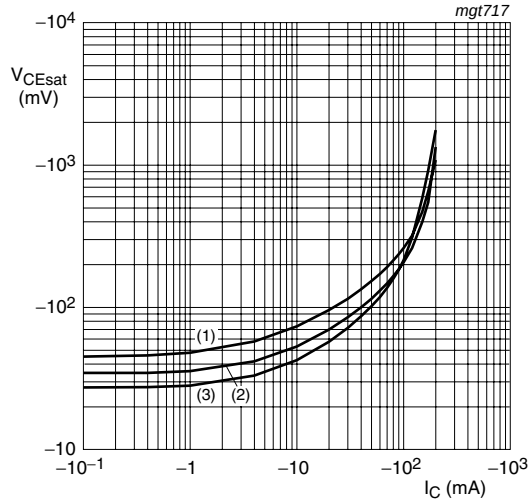
V_{CE} = −5 V

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 150 °C

Fig 6. TR2 (PNP): Base-emitter voltage as a function of collector current; typical values



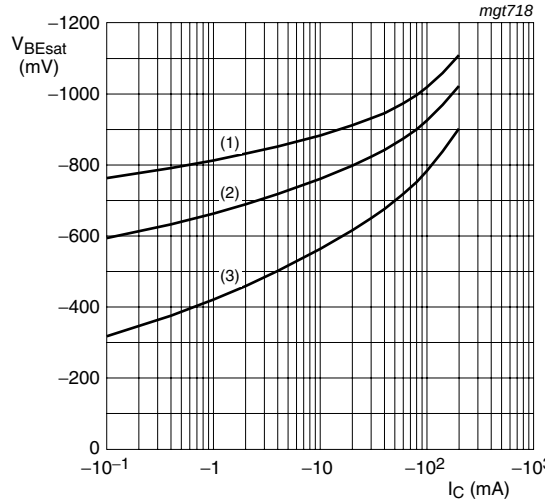
I_C/I_B = 20

(1) T_{amb} = 150 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig 7. TR2 (PNP): Collector-emitter saturation voltage as a function of collector current; typical values



I_C/I_B = 20

(1) T_{amb} = −55 °C

(2) T_{amb} = 25 °C

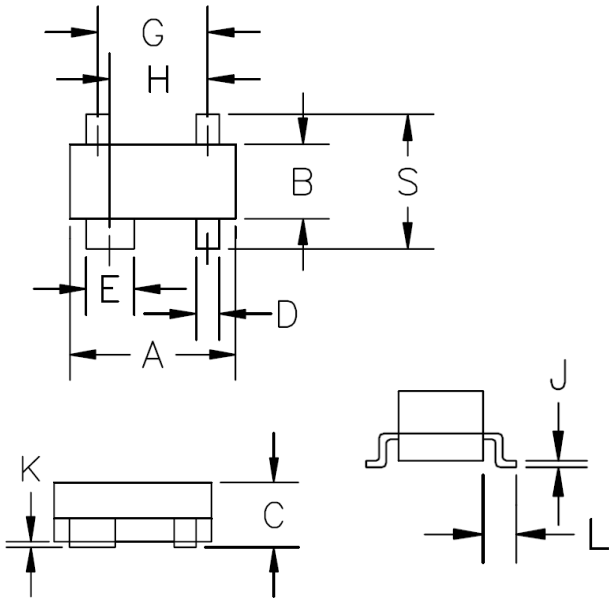
(3) T_{amb} = 150 °C

Fig 8. TR2 (PNP): Base-emitter saturation voltage as a function of collector current; typical values

Package Outline

Plastic surface mounted package

SOT-143



DIMENSIONS					
DIMᴺ	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	–
B	.047	.055	1.20	1.40	–
C	.031	.047	.80	1.20	–
D	.014	.018	.37	.510	–
E	.030	.035	.76	.940	–
G	.076 BSC		1.92 BSC		–
H	.068 BSC		1.72 BSC		–
J	.003	.005	.085	.180	–
K	.002	.005	.013	0.10	–
L	.010	.022	–	.55	REF
S	.082	.104	2.10	2.64	–