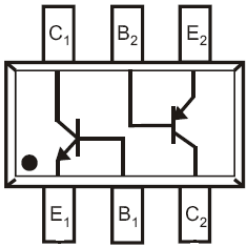
Small Surface Mount Transistor TBC846BPN

FEATURES

- Low collector capacitance
- Low collector-emitter saturation voltage
- Closely matched current gain
- Reduces number of components and board space
- No mutual interference between the transistors
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF



SOT-363

APPLICATIONS

- General-purpose switching and amplification

ORDERING INFORMATION

Type No.	Marking	Package Code
TBC846BPN	PJ	SOT-363

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	NPN	PNP	Unit
V_{CBO}	Collector-Base Voltage	80	-80	V
V_{CEO}	Collector-Emitter Voltage	65	-65	V
V_{EBO}	Emitter-Base Voltage	6	-6	V
I_C	Collector Current -Continuous	100	-100	mA
I_{CM}	Collector Current -Peak	200	-200	mA
I_{BM}	Base Current -Peak	200	-200	mA
P_D	Power Dissipation	200		mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	625		℃/W
T_j, T_{stg}	Operating and Storage Temperature	-65 to +150		℃

Small Surface Mount Transistor TBC846BPN

Electrical Characteristics Of TR1 NPN Transistor @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN.	TYP.	MAX.	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 10mA, I_E = 0	80	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 10mA, I_B = 0	65	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0	6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 50V, I_E = 0, T_J = 25°C	-	-	15	nA
		V_{CB} = 50V, I_E = 0, T_J = 100°C	-	-	0.5	μA
		V_{CB} = 50V, I_E = 0, T_J = 125°C	-	-	1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 6V, I_C = 0, T_J = 25°C			100	nA
		V_{EB} = 6V, I_C = 0, T_J = 100°C	-	-	1	μA
		V_{EB} = 6V, I_C = 0, T_J = 125°C	-	-	2	μA
DC current gain	h_{FE}	V_{CE} = 5V, I_C = 10uA V_{CE} = 5V, I_C = 2mA	- 200	280 290	- 450	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5mA	- -	0.05 0.2	0.1 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 10mA, I_B = 0.5mA I_C = 100mA, I_B = 5mA	- -	0.755 1	0.85 -	V
Base-emitter voltage	$V_{BE(on)}$	V_{CE} = 5V, I_C = 2mA V_{CE} = 5V, I_C = 10mA	0.58 -	0.65 -	0.7 0.77	V
Transition frequency	f_T	V_{CE}=5V, I_C=10mA ,f=100MHz	100	-	-	MHz
collector capacitance	C_c	V_{CB} = 10V, f = 1.0MHz	-	1.9	-	pF
emitter capacitance	C_e	V_{CB} = 0.5V, f = 1.0MHz	-	11	-	pF

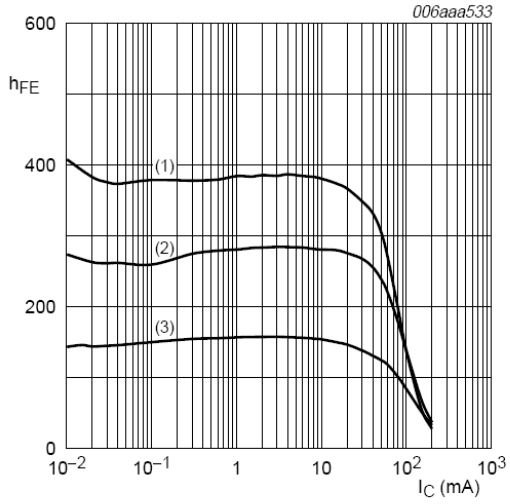
Small Surface Mount Transistor TBC846BPN

Electrical Characteristics Of TR2 PNP Transistor @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = -10μA, I_E = 0	-80	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = -10mA, I_B = 0	-65	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = -10μA, I_C = 0	-6	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = -50V, I_E = 0, T_J = 25°C	-	-	-15	nA
		V_{CB} = -50V, I_E = 0, T_J = 100°C	-	-	-0.5	μA
		V_{CB} = -50V, I_E = 0, T_J = 125°C	-	-	-1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = -6V, I_C = 0, T_J = 25°C			-100	nA
		V_{EB} = -6V, I_C = 0, T_J = 100°C	-	-	-1	μA
		V_{EB} = -6V, I_C = 0, T_J = 125°C	-	-	-2	μA
DC current gain	h_{FE}	V_{CE} = -5V, I_C = -10uA V_{CE} = -5V, I_C = -2mA	- 200	280 290	- 450	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5mA	- -	-0.055 -0.2	-0.1 -0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = -10mA, I_B = -0.5mA I_C = -100mA, I_B = -5mA	- -	-0.755 -0.9	-0.85	V
Base-emitter on voltage	$V_{BE(on)}$	V_{CE} = -5V, I_C = -2mA V_{CE} = -5V, I_C = -10mA	-0.6 -	-0.65 -	-0.75 -0.82	V
Transition frequency	f_T	V_{CE}=-5V,I_C=-10mA ,f=100MHz	100	-	-	MHz
collector capacitance	C_c	V_{CB} = -10V, f = 1.0MHz	-	2.3	-	pF
emitter capacitance	C_e	V_{CB} = -0.5V, f = 1.0MHz	-	10	-	pF

Small Surface Mount Transistor TBC846BPN

TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified



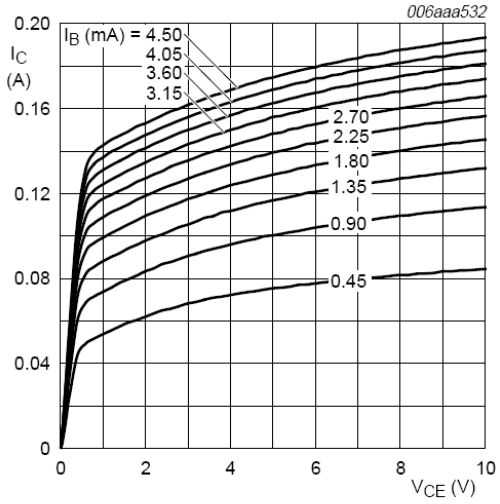
V_{CE} = 5 V

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

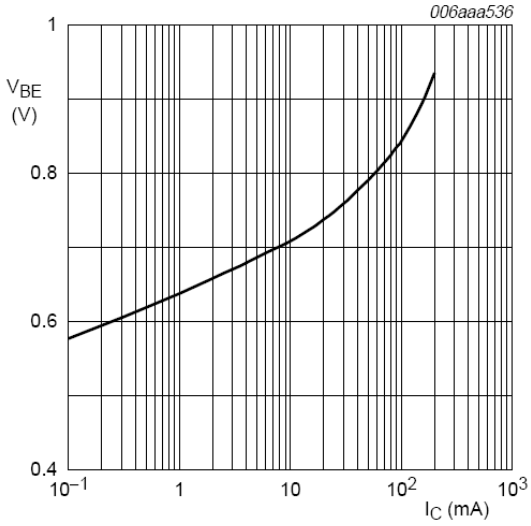
(3) T_{amb} = –55 °C

Fig1 . TR1（NPN）:DC current gain as a function of collector current; typical values



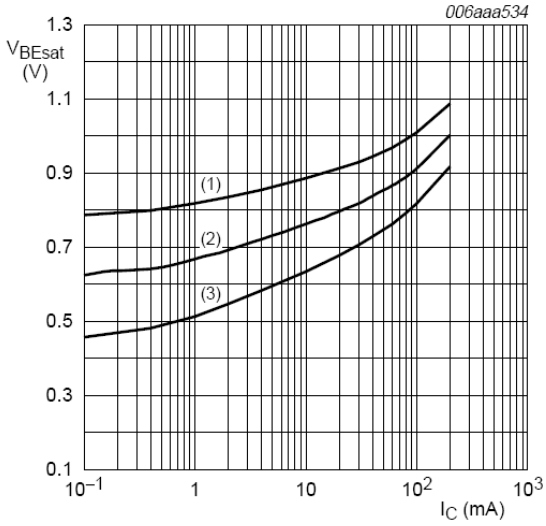
T_{amb} = 25 °C

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



V_{CE} = 5 V; T_{amb} = 25 °C

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



I_C/I_B = 20

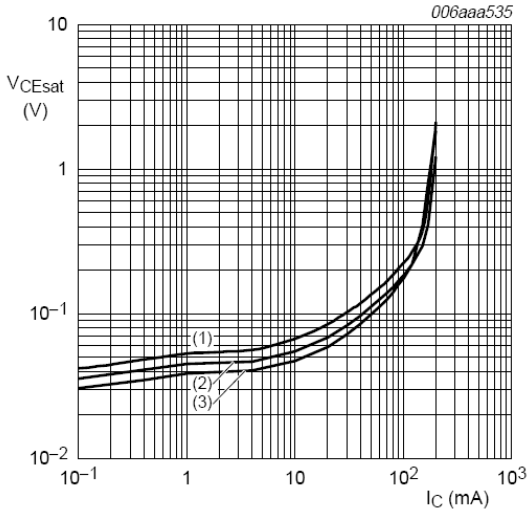
(1) T_{amb} = –55 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = 100 °C

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

Small Surface Mount Transistor TBC846BPN



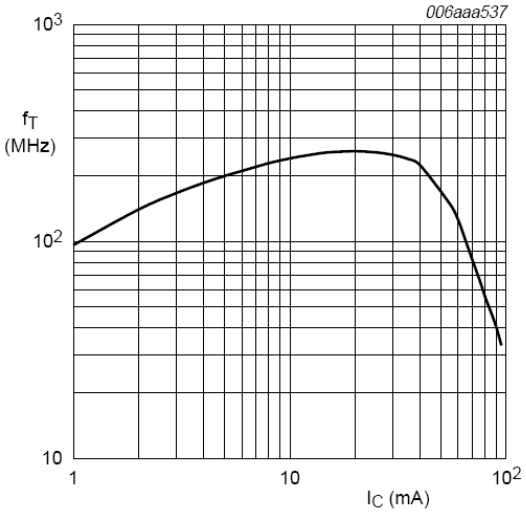
I_C/I_B = 20

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

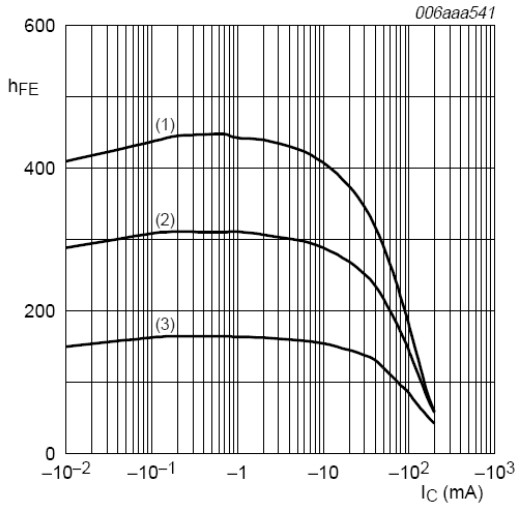
(3) T_{amb} = −55 °C

Fig 5. TR1 (NPN): Collector-emitter saturation voltage as a function of collector current; typical values



V_{CE} = 5 V; T_{amb} = 25 °C

Fig 6. TR1 (NPN): Transition frequency as a function of collector current; typical values



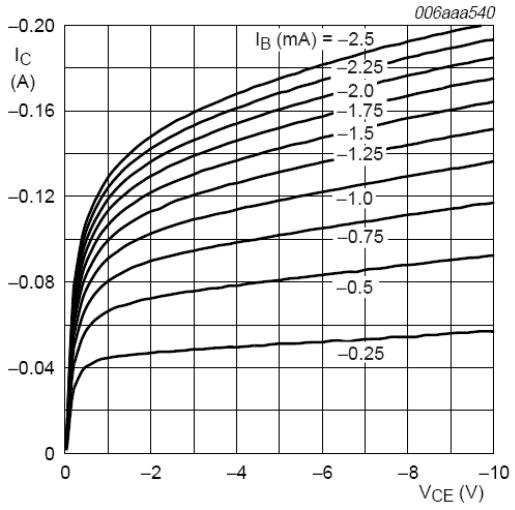
V_{CE} = −5 V

(1) T_{amb} = 100 °C

(2) T_{amb} = 25 °C

(3) T_{amb} = −55 °C

Fig 7. TR2 (PNP): DC current gain as a function of collector current; typical values



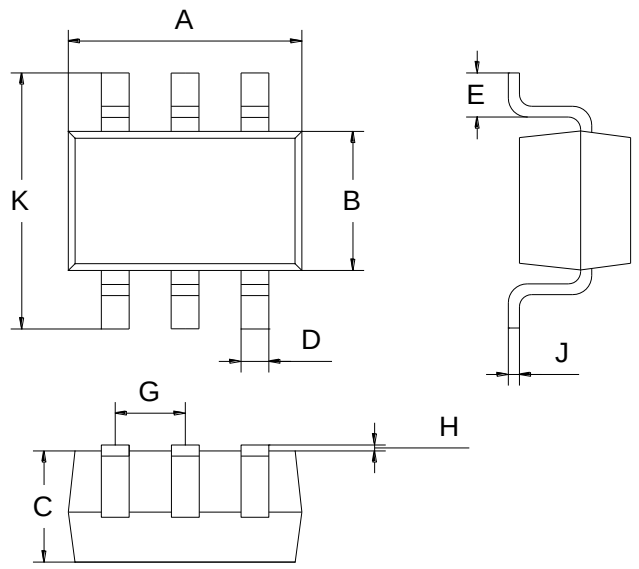
T_{amb} = 25 °C

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

Small Surface Mount Transistor TBC846BPN

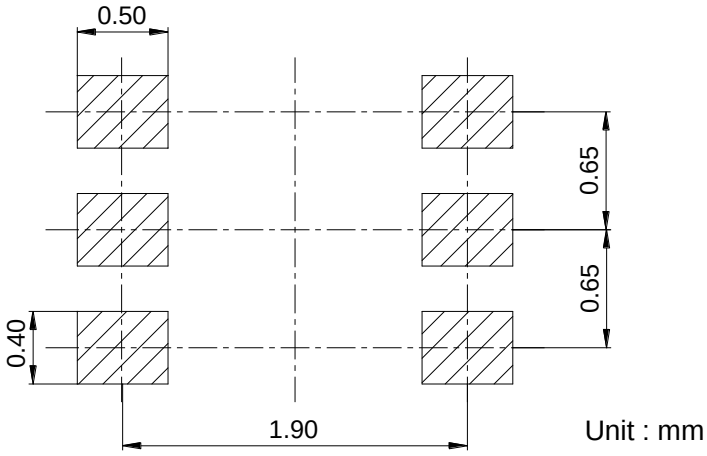
PACKAGE OUTLINE

Plastic surface mounted package SOT-363



SOT-363		
Dim	Min	Max
A	2.00	2.20
B	1.15	1.35
C	0.85	1.05
D	0.15	0.35
E	0.25	0.40
G	0.60	0.70
H	0.02	0.10
J	0.05	0.15
K	2.20	2.40
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
TBC846BPN	SOT-363	3000 pcs / Tape & Reel