



Micro Commercial Components



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BC846BPN

Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
Low collector capacitance
Low collector-emitter saturation voltage
Epoxy meets UL 94 V-0 flammability rating
Moisure Sensitivity Level 1
Halogen free available upon request by adding suffix "-HF"

Mechanical Data

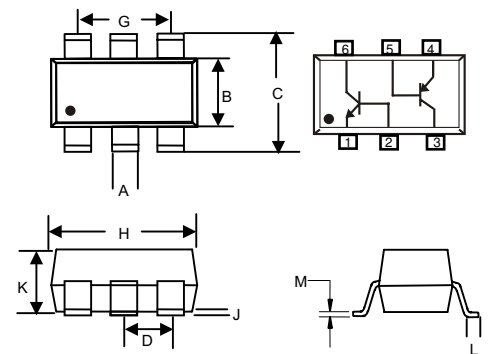
- Case: SOT-363, Molded Plastic
MAKING: PJ

Maximum Ratings @ 25°C Unless Otherwise Specified

Table with 4 columns: Symbol, Parameter, Value, Units. Rows include OFF CHARACTERISTICS, Ic, Icm, Pd, Tj, Tstg.

PNP and NPN Small Signal Transistor 200mW

SOT-363



DIMENSIONS table with columns for DIM, INCHES (MIN, MAX), MM (MIN, MAX), and NOTE. Rows include dimensions A through M.

## Electrical Characteristics Of TR1 NPN Transistor @ Ta=25°C unless otherwise specified

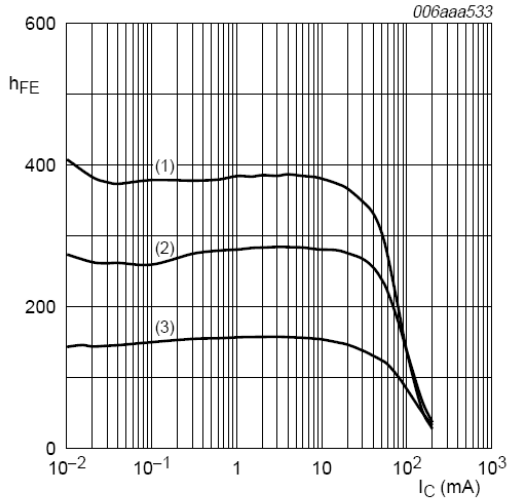
Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	80			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=50V, I_E=0$			15	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=6V, I_C=0$			100	nA
DC current gain	$h_{FE1}$	$V_{CE}=5V, I_C=2mA$	200		450	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=0.5mA$		0.05	0.1	V
	$V_{CE(sat)}$	$I_C=100mA, I_B=5mA$		0.2	0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=10mA, I_B=0.5mA$		0.755	0.85	V
	$V_{BE(sat)}$	$I_C=100mA, I_B=5mA$		1.0		V
Base-emitter voltage	$V_{BE(on)}$	$V_{CE}=5V, I_C=2mA$	0.58	0.65	0.7	V
	$V_{BE(on)}$	$V_{CE}=5V, I_C=10mA$			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

## Electrical Characteristics Of TR2 PNP Transistor @ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-80			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-10mA, I_B=0$	-65			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-50V, I_E=0$			-15	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-6V, I_C=0$			-100	nA
DC current gain	$h_{FE}$	$V_{CE}=-5V, I_C=-10\mu A$		280		
		$V_{CE}=-5V, I_C=-2mA$	200	290	450	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-10mA, I_B=-0.5mA$		-0.055	-0.1	V
		$I_C=-100mA, I_B=-5mA$		-0.2	-0.3	
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=-10mA, I_C=-0.5mA$		-0.755	-0.85	V
		$I_C=-100mA, I_C=-5mA$		-0.9		
Base-emitter on voltage	$V_{BE(on)}$	$V_{CE}=-5V, I_B=-2.0mA$	-0.6	-0.65	-0.75	V
		$V_{CE}=-5V, I_B=-10mA$			-0.82	
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

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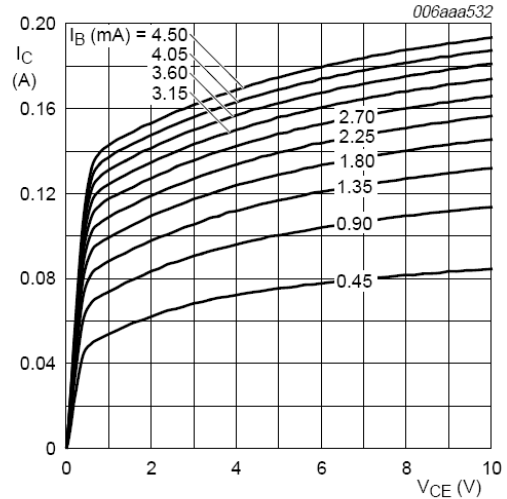
TYPICAL CHARACTERISTICS @  $T_a=25^\circ\text{C}$  unless otherwise specified



$V_{CE} = 5\text{ V}$

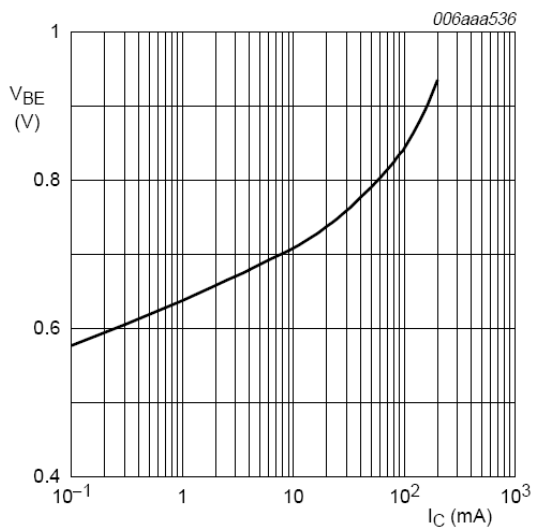
- (1)  $T_{amb} = 100^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = -55^\circ\text{C}$

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



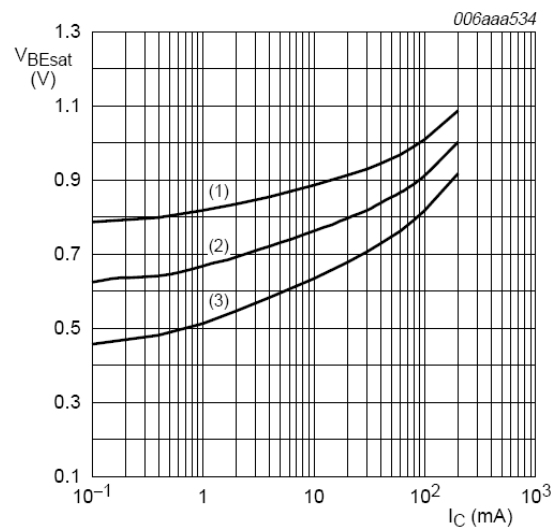
$T_{amb} = 25^\circ\text{C}$

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



$V_{CE} = 5\text{ V}; T_{amb} = 25^\circ\text{C}$

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

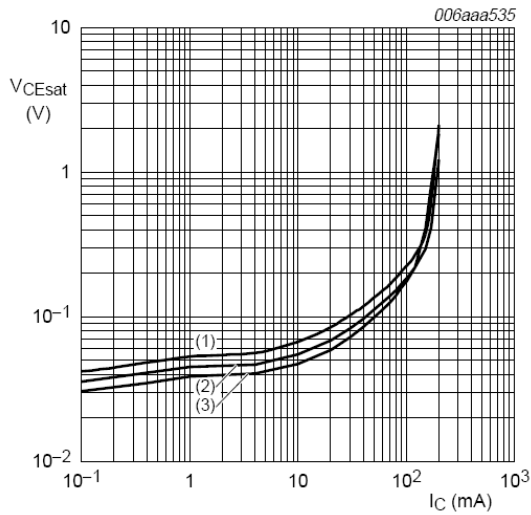


$I_C/I_B = 20$

- (1)  $T_{amb} = -55^\circ\text{C}$
- (2)  $T_{amb} = 25^\circ\text{C}$
- (3)  $T_{amb} = 100^\circ\text{C}$

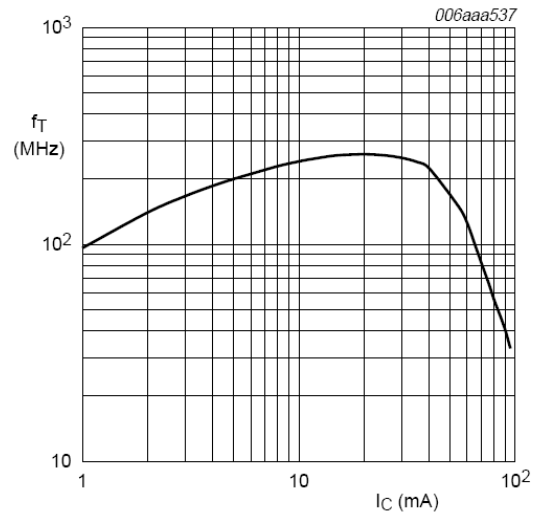
**Fig 4. TR1 (NPN): Base-emitter saturation voltage as a function of collector current; typical values**

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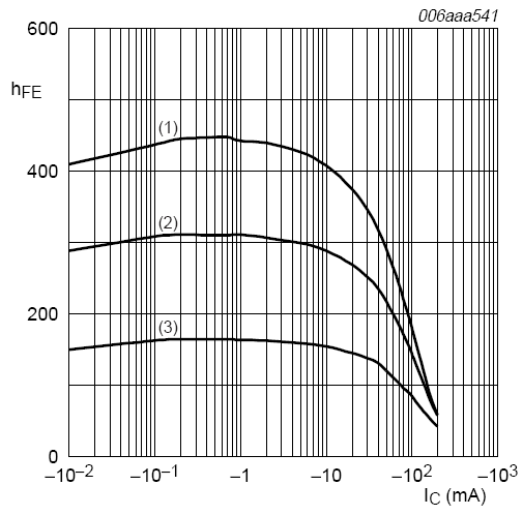
- $I_C/I_B = 20$
- (1)  $T_{amb} = 100\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = -55\text{ }^\circ\text{C}$

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



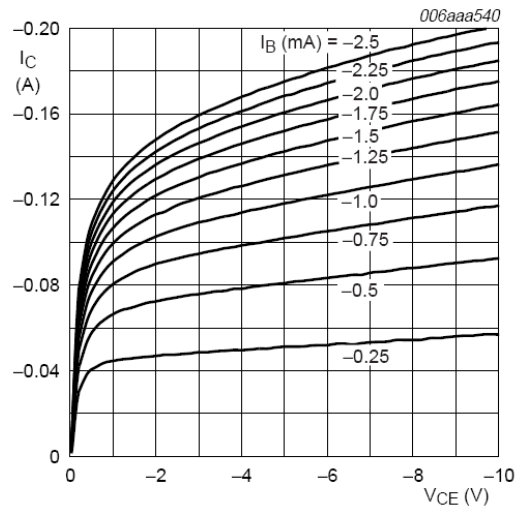
$V_{CE} = 5\text{ V}; T_{amb} = 25\text{ }^\circ\text{C}$

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



- $V_{CE} = -5\text{ V}$
- (1)  $T_{amb} = 100\text{ }^\circ\text{C}$
  - (2)  $T_{amb} = 25\text{ }^\circ\text{C}$
  - (3)  $T_{amb} = -55\text{ }^\circ\text{C}$

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



$T_{amb} = 25\text{ }^\circ\text{C}$

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



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### Ordering Information :

Device	Packing
Part Number-TP	Tape & Reel; 3 Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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