

# 500mW, NPN Small Signal Transistor

## **FEATURES**

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- RoHS Compliant

## **APPLICATIONS**

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- On-board DC/DC converter

## **MECHANICAL DATA**

- Case: TO-92
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 190mg (approximately)

KEY PARAMETERS					
PARAMETER	VALUE	UNIT			
V <sub>CBO</sub>	30 - 80	V			
V <sub>CEO</sub>	30 - 65	<b>V</b>			
$V_{EBO}$	6	V			
I <sub>C</sub>	100	mA			
h <sub>FE</sub>	220 - 800				
Package	TO-92				
Configuration	Single Die				





1: Collector 2: Base 3: Emitter

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)					
PARAMETER SYMBOL VALUE					
Marking code on the device <sup>(1)</sup>		BC5xA/B/C			
Power dissipation	P <sub>D</sub>	500	mW		
Junction temperature	T <sub>J</sub>	-65 to +150	°C		
Storage temperature	T <sub>STG</sub>	-65 to +150	°C		

## Notes:

1. "x" is device code from "46" to "50", "MARKING" should follow the "PART NO."



ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C unless otherwise noted)					
PARAMETER		SYMBOL	VALUE	UNIT	
	BC546		80	V	
Collector-base voltage, emitter open	BC547,BC550	V <sub>CBO</sub>	50	V	
	BC548,BC549		30	V	
	BC546		65	V	
Collector-emitter voltage, base open	BC547,BC550	V <sub>CEO</sub>	45	V	
	BC548,BC549		30	V	
	BC546		6	V	
Emitter-base voltage, collector open	BC547,BC550	$V_{EBO}$	6	V	
	BC548,BC549		6	V	
Collector current		I <sub>C</sub>	100	mA	
Peak collector current		I <sub>CM</sub>	200	mA	

PARAMETER	C	ONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Collector cutoff current, emitter open	V <sub>CB</sub> = 30V		I <sub>CBO</sub>	-	-	15	nA
Emitter cutoff current, collector open	V <sub>EB</sub> = 5V		I <sub>EBO</sub>	-	-	100	nA
Oallantan bassa saltana		BC546	$V_{CBO}$	80	-	-	V
Collector-base voltage,	I <sub>C</sub> = 100μA	BC547,BC550		50	-	-	V
emitter open		BC548,BC549		30	-	-	V
Callagtar amittar	I <sub>C</sub> = 10mA B	BC546	$V_{CEO}$	65	-	-	V
Collector-emitter voltage, base open		BC547,BC550		45	-	-	V
		BC548,BC549		30	-	-	V
Cresitter has a valtage		BC546		6	-	-	V
Emitter-base voltage, collector open	I <sub>E</sub> = 100μA	BC547,BC550	$V_{EBO}$	6	-	-	V
		BC548,BC549		6	-	-	V
	$V_{CE} = 5V$ , $I_{C} = 2mA$	Current gain group :A	h <sub>FE</sub>	110	-	220	
DC current gain		В		200	-	450	
		С		420	-	800	

ORDERING INFORMATION				
ORDERING CODE <sup>(1)(2)</sup>	PACKAGE	PACKING		
BC5xA/B/C A1G	TO-92	4,000 / Ammo Box		
BC5xA/B/C B1G	TO-92	5,000 / Bulk		
BC5xA/B/C A1	TO-92	4,000 / Ammo Box		
BC5xA/B/C B1	TO-92	5,000 / Bulk		

## Notes:

- 1. "x" is device code from "46" to "50"
- 2. "G" is means green compound (halogen free)



## **CHARACTERISTICS CURVES**

(T<sub>A</sub> = 25°C unless otherwise noted)

Fig.1 Static Characteristic 100  $I_{B} = 400 \mu A$ • I<sub>R</sub> = 350µA Ic[mA], Collector Current 80  $I_{B} = 300 \mu A$  $I_B = 250 \mu A$ 60  $I_{B} = 200 \mu A$ <sub>s</sub> = 150µA 40 = 100µA 20  $I_{\rm B} = 50 \mu A$ 0 0 8 16 20 12 V<sub>CE</sub>(V), Collector Emitter Voltage

Fig.2 Transfer Characteristic

100

V<sub>CE</sub>=5V

V<sub>CE</sub>=5V

0

0.4

0.6

0.8

1.0

V<sub>BE</sub>(V), Base Emitter Voltage

Fig.3 DC Current Gain

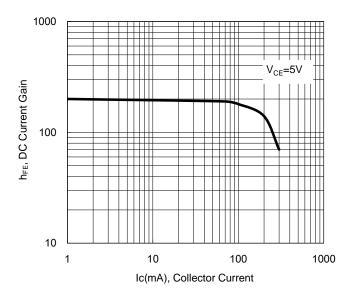
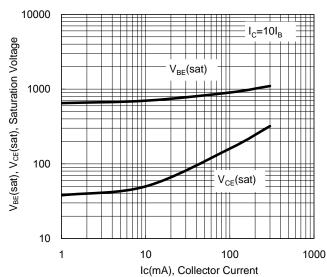


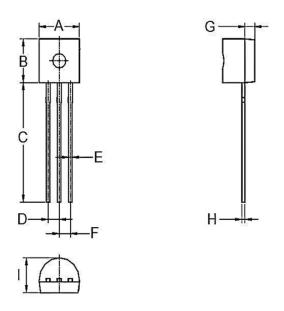
Fig.4 Base Emitter Saturation Voltage Collector Emitter Saturation Voltage





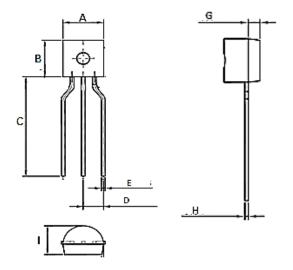
## **PACKAGE OUTLINE DIMENSION**

TO-92 Bulk



DIM	DIM. Unit(mm)		Unit(inch)	
DIW.	Min	Max	Min	Max
Α	4.40	5.10	0.173	0.201
В	4.30	4.70	0.169	0.185
С	12.50	14.50	0.492	-
D	1.17	1.37	0.046	0.054
E	0.35	0.55	0.014	0.022
F	1.17	1.37	0.046	0.054
G	0.59	1.40	0.023	0.055
Н	0.29	0.51	0.011	0.020
ı	3.30	4.10	0.130	0.161

TO-92 Ammo



DIM.	Unit(mm)		Unit(inch)		
DIN.	Min	Мах	Min	Max	
Α	4.30	4.70	0.169	0.185	
В	4.30	4.70	0.169	0.185	
С	12.50	-	0.492	-	
D	2.20	2.80	0.087	0.110	
E	0.35	0.55	0.014	0.022	
G	1.00	1.20	0.039	0.047	
Н	0.29	0.51	0.011	0.020	
I	3.30	3.70	0.130	0.146	



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