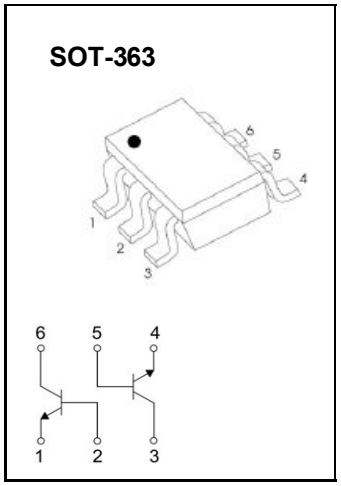
KEEN SIDE electronics

# BC847BS

DUAL TRANSISTOR (NPN+NPN)

# SOT-363 Plastic-Encapsulate Transistors




## FEATURES

- Two transistors in one package
- Reduces number of components and board space
- No mutual interference between the tr ansistors

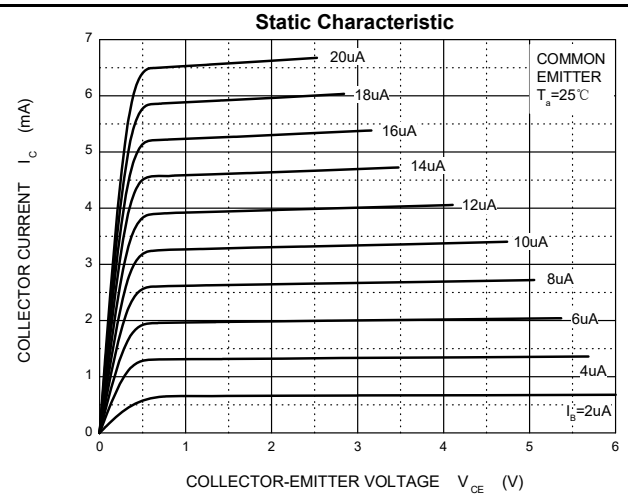
**MARKING:** BC847AS 1E
BC847BS 1F
BC847CS 1G

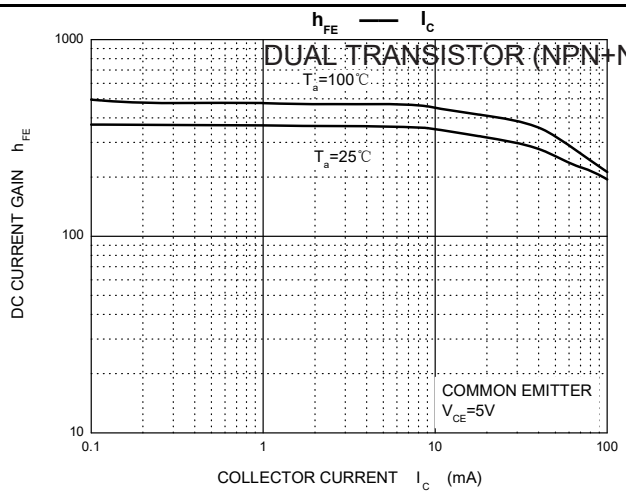
## MAXIMUM RATINGS($T_a$=25℃ unless otherwise noted)

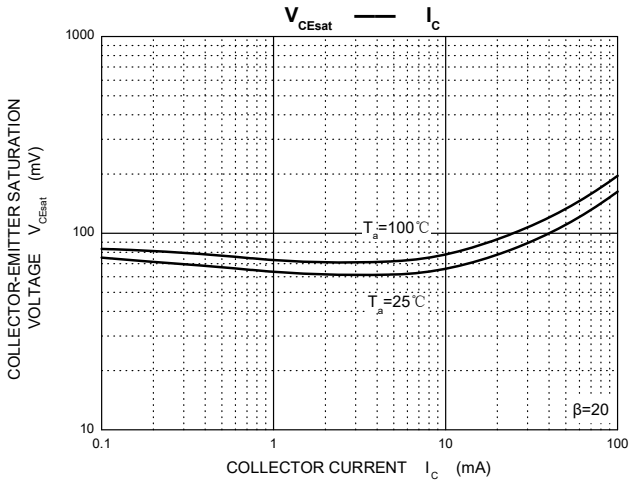
| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 50 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | 45 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6 | V |
| $I_C$ | Collector Current –Continuous | 0.1 | A |
| $P_C$ | Collector Dissipation | 200 | mW |
| $T_J$ | Junction Temperature | 150 | ℃ |
| $T_{stg}$ | Storage Temperature | -55-150 | ℃ |

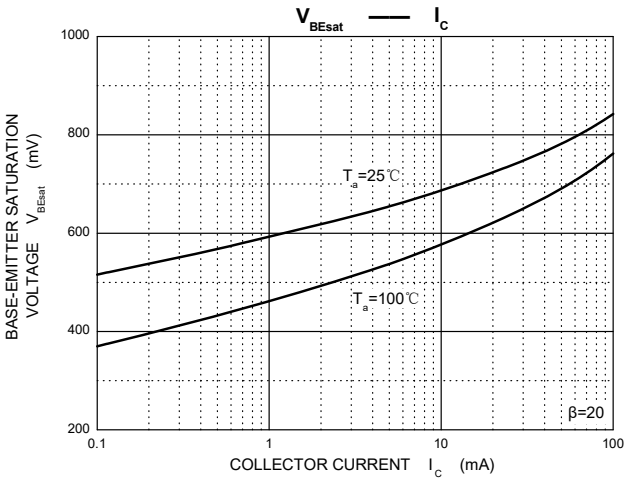
## ELECTRICAL CHARACTERISTICS ( Ta=25℃ unless otherwise specified)

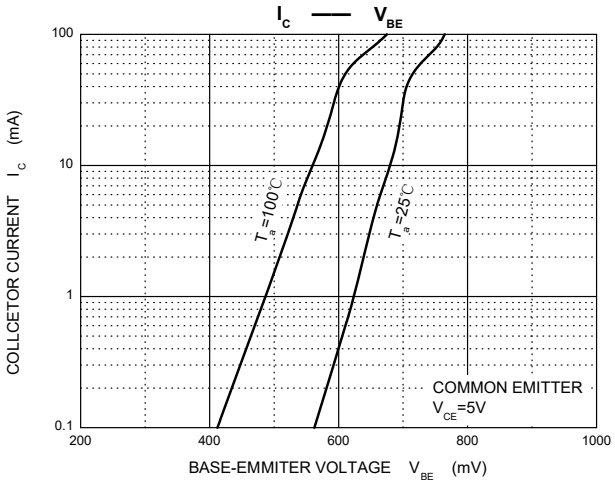
| Parameter | | Symbol | Test conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | | $V_{(BR)CBO}$ | $I_C$=10μA,$I_E$=0 | 50 | | | V |
| Collector-emitter breakdown voltage | | $V_{(BR)CEO}$ | $I_C$=10mA,$I_B$=0 | 45 | | | V |
| Emitter-base breakdown voltage | | $V_{(BR)EBO}$ | $I_E$=10μA,$I_C$=0 | 6 | | | V |
| Collector cut-off current | | $I_{CBO}$ | $V_{CB}$=30V,$I_E$=0 | | | 15 | nA |
| Emitter cut-off current | | $I_{EBO}$ | $I_C$=0, $V_{EB}$=5V | | | 5 | μA |
| DC current gain Group | BC847AS | $h_{FE}$ | $V_{CE}$=5V,$I_C$=2mA | 110 | | 220 | |
| | BC847BS | | | 200 | | 450 | |
| | BC847CS | | | 420 | | 800 | |
| Collector-emitter saturation voltage | | $V_{CE(sat)(1)}$ | $I_C$=10mA,$I_B$=0.5mA | | | 0.1 | V |
| | | $V_{CE(sat)(2)}$ | $I_C$=100mA,$I_B$=5mA | | | 0.3 | V |
| Base-emitter saturation voltage | | $V_{BE(sat)}$ | $I_C$=10mA,$I_B$=0.5mA | | 0.77 | | V |
| Transition frequency | | $f_T$ | $V_{CB}$=5V,$I_E$=10mA,f=100MHz | 100 | | | MHz |
| Collector output capacitance | | $C_{ob}$ | $V_{CB}$=10V,$I_E$=0,f=1MHz | | | 1.5 | pF |

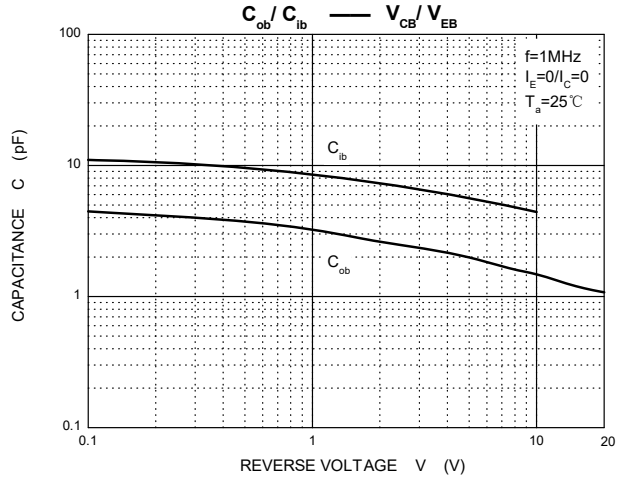

Static Characteristic
COLLECTOR CURRENT $I_C$ (mA)
COLLECTOR-EMITTER VOLTAGE $V_{CE}$ (V)
20uA
18uA
16uA
14uA
12uA
10uA
8uA
6uA
4uA
$I_B$=2uA
COMMON EMITTER
$T_a$=25℃

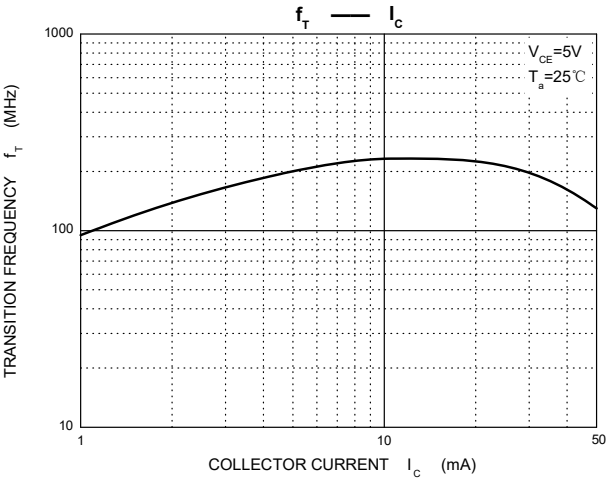

$h_{FE}$ — $I_C$
DC CURRENT GAIN $h_{FE}$
COLLECTOR CURRENT $I_C$ (mA)
$T_a$=100℃
$T_a$=25℃
COMMON EMITTER
$V_{CE}$=5V

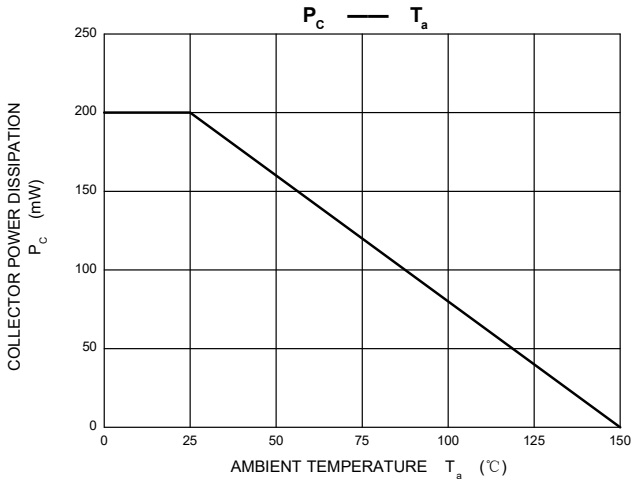

$V_{CEsat}$ — $I_C$
COLLECTOR-EMITTER SATURATION VOLTAGE $V_{CEsat}$ (mV)
COLLECTOR CURRENT $I_C$ (mA)
$T_a$=100℃
$T_a$=25℃
β=20


$V_{BEsat}$ — $I_C$
BASE-EMITTER SATURATION VOLTAGE $V_{BEsat}$ (mV)
COLLECTOR CURRENT $I_C$ (mA)
$T_a$=25℃
$T_a$=100℃
β=20


$I_C$ — $V_{BE}$
COLLCETOR CURRENT $I_C$ (mA)
BASE-EMMITER VOLTAGE $V_{BE}$ (mV)
$T_a$=100℃
$T_a$=25℃
COMMON EMITTER
$V_{CE}$=5V

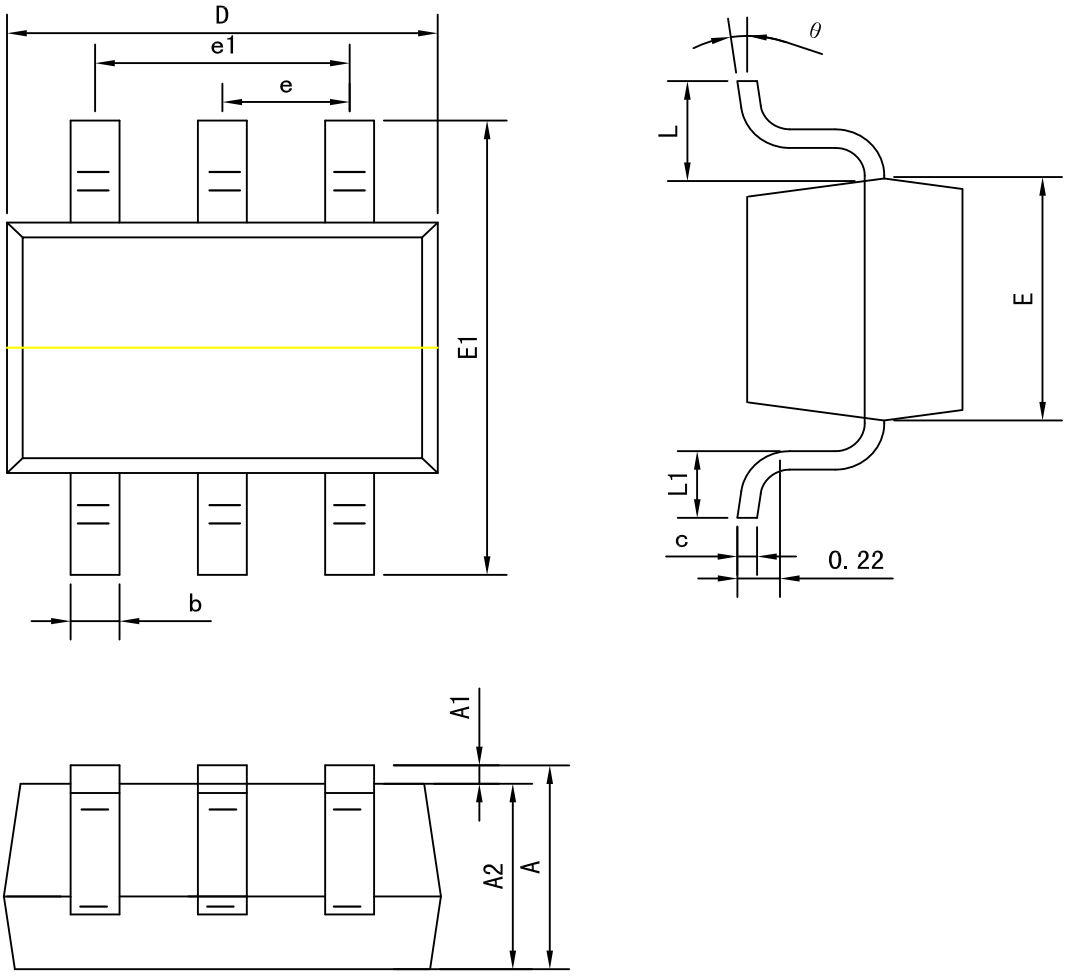

$C_{ob}$ / $C_{ib}$ — $V_{CB}$ / $V_{EB}$
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)
f=1MHz
$I_E$=0/$I_C$=0
$T_a$=25℃
$C_{ib}$
$C_{ob}$


$f_T$ — $I_C$
TRANSITION FREQUENCY $f_T$ (MHz)
COLLECTOR CURRENT $I_C$ (mA)
$V_{CE}$=5V
$T_a$=25℃


$P_C$ — $T_a$
COLLECTOR POWER DISSIPATION $P_C$ (mW)
AMBIENT TEMPERATURE $T_a$ (℃)

## Package outline dimensions

**SOT-363**




| Symbol | Dimension in Millimeters | |
|---|---|---|
| | **Min** | **Max** |
| A | 0.900 | 1.100 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.000 |
| b | 0.150 | 0.350 |
| c | 0.080 | 0.150 |
| D | 2.000 | 2.200 |
| E | 1.150 | 1.350 |
| E1 | 2.150 | 2.450 |
| e | 0.650 TYP | |
| e1 | 1.200 | 1.400 |
| L | 0.525 REF | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |