

SPECIFICATION SHEET

| | | |
|---|---|---|
| SPECIFICATION SHEET NO. | R0618- BC858CS2000S3L | |
| DATE | June 18, 2024 | |
| REVISION | A0 | Updated With Most Recent Data- Official First Release |
| DESCRIPTION AND MAIN PARAMETRICS | <p>SMD Plastic-Encapsulate Transistors, 3 Pads, Case SOT-23</p> <p>BC85 Series, Transistor Type PNP,</p> <p>hFE Rank Range (3L) 420~800</p> <p>Collector-Base Voltage -30V Max. Collector Current -0.1A Max.</p> <p>Operating Temp. Range -65°C ~+150°C</p> <p>Package in Tape/Reel, 3000pcs/Reel</p> <p>RoHS III/REACH Compliant and Halogen Free (HF)</p> | |
| CUSTOMER | | |
| CUSTOMER PART NO. | | |
| CROSS REF. PART NO. | | |
| ORIGINAL MFG/PART NO. | MDD Diodes/BC858C-3L | |
| PART CODE | BC858CS2000S3L | |

VENDOR APPROVE

Issued/Checked/Approved



DATE: June 18, 2024

CUSTOMER APPROVE

DATE:

SMD TRANSISTORS BC85 SERIES CASE SOT-23

MAIN FEATURE

- Low current.(max.100mA) and Low voltage.(max.65v)
- DC Current Gain: $h_{FE}=125\sim 800$ @ $V_{CE}=-5V$, $I_C=-2mA$
- Surface Mount Package Ideally Suited for Automatic Insertion
- REACH/RoHS III Complaint and Halogen Free
- Cross Main Competitor Parts in Market



APPLICATION

- For Switching and AF Amplifier Applications

ELECTRICAL CHARACTERISTICS

- See Page 4~ Page 6 For Different Part Code

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate Pat Code When You Order Or RFQ For Custom Specification

RFQ
Request For Quotation

PART CODE GUIDE

| CODE | NAME | KEY SPECIFICATION OPTION |
|------|-----------------------|---|
| BC85 | Product Series Code | SMD Plastic-Encapsulate Transistors BC85 series |
| 8C | Specification Code | For Original Part Number BC858C-3L |
| S2 | Case Code | S2: Case SOT-23 |
| 000S | Internal Control Code | Custom letter A~Z, a-z or Digits (0-9) |
| 3L | Marking Code | Custom letter A~Z, a-z or Digits (0-9), For different Part Code, see Page 6 |

SMD TRANSISTORS BC85 SERIES CASE SOT-23

DIMENSION (Unit: Inch/mm)

Image for reference

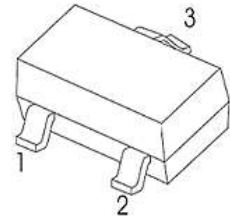
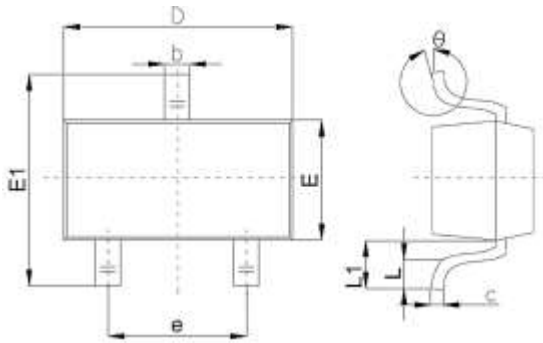


Marking:

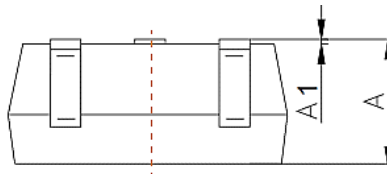
See Page 6 - Marking List

For different Part code

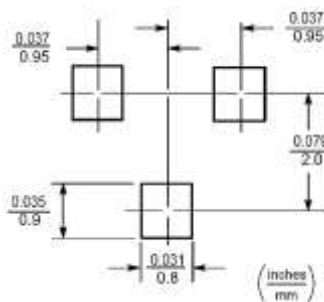
SOT-23



- 1. Base
- 2. Emitter
- 3. Collector



Recommend Pad Layout



| Symbol | Value (mm) | | |
|--------|-------------|------|------|
| | Min. | Typ. | Max. |
| A | 0.9 | | 1.4 |
| A1 | | | 0.10 |
| b | 0.30 | | 0.50 |
| c | 0.08 | | 0.20 |
| D | 2.80 | 2.90 | 3.10 |
| E | 1.20 | | 1.60 |
| E1 | 2.25 | | 2.80 |
| e | 1.8 | 1.9 | 2.00 |
| L | 0.10 | | 0.50 |
| L1 | 0.40 | | 0.55 |
| θ | 0° | | 10° |

SMD TRANSISTORS BC85 SERIES CASE SOT-23
MAXIMUM RATINGS - @ 25 °C

| PARAMETER | SYMBOLS | VALUE | UNITS |
|-------------------------------|---------|------------|-------|
| Emitter-Base Voltage | VEBO | -5.0 | V |
| Collector Current -Continuous | IC | -0.1 | A |
| Collector Power Dissipation | PC | 250 | mW |
| Junction Temperature | TJ | +150 | °C |
| Storage Temperature Range | T STG | -65 ~ +150 | °C |

MAXIMUM RATINGS - @ 25 °C

| PART CODE | Collector-Base Voltage | Collector-Emitter Voltage |
|-----------------------|------------------------|---------------------------|
| | VCBO | VCEO |
| | V | V |
| BC856AS2000S3A | -80 | -65 |
| BC856BS2000S3B | -80 | -65 |
| BC857AS2000S3E | -50 | -45 |
| BC857BS2000S3F | -50 | -45 |
| BC857CS2000S3G | -50 | -45 |
| BC858AS2000S3J | -30 | -30 |
| BC858BS2000S3K | -30 | -30 |
| BC858CS2000S3L | -30 | -30 |

SMD TRANSISTORS BC85 SERIES CASE SOT-23
ELECTRICAL MAXIMUM RATINGS - @ 25 °C

| PARAMETER | SYMBOLS | VALUE | | | UNIT | TEST CONDITION |
|--------------------------------------|----------|-------|------|------|------|-------------------------------|
| | | MIN. | TYP. | MAX | | |
| Emitter-Base Breakdown Voltage | VEBO | -5.0 | | | V | IE= -1μA, IC=0 |
| Emitter Cut-off Current | IEBO | | | -0.1 | μA | VEB=- 5V, IC=0 |
| Collector-emitter Saturation Voltage | VCE(sat) | | | -0.5 | V | IC=-100mA, IB=-5mA |
| Base-emitter Saturation Voltage | VBE(sat) | | | -1.1 | V | IC=-100mA, IB=-5mA |
| Transition Frequency | fr | 100 | | | MHz | VCE=-5V, IC=-10mA f=100MHz |
| Collector Output Capacitance | Cob | | | 4.5 | pF | VCB=-10V, f=1MHz |

ELECTRICAL MAXIMUM RATINGS - @ 25 °C

| PART CODE | Min. Collector-Base Breakdown Voltage | Min. Collector-Emitter Breakdown Voltage | DC Current Gain Range |
|-----------------------|---|--|-----------------------|
| | @ IC=-10μA, IE=0 | @ IC=-10mA, IB=0 | @VCE=-5V, IC=-2mA |
| | VCBO | VCEO | hFE |
| | V | V | |
| BC856AS2000S3A | -80 | -65 | 125~250 |
| BC856BS2000S3B | -80 | -65 | 220~475 |
| BC857AS2000S3E | -50 | -45 | 125~250 |
| BC857BS2000S3F | -50 | -45 | 220~475 |
| BC857CS2000S3G | -50 | -45 | 420~800 |
| BC858AS2000S3J | -30 | -30 | 125~250 |
| BC858BS2000S3K | -30 | -30 | 220~475 |
| BC858CS2000S3L | -30 | -30 | 420~800 |

SMD TRANSISTORS BC85 SERIES CASE SOT-23

ELECTRICAL MAXIMUM RATINGS - @ 25 °C

| PART CODE | Max. Collector Cut-off Current | | | Marking List |
|-----------------------|--|--|--|--------------|
| | V _{CB} =-70V I _E =0 | V _{CB} =-45V I _E =0 | V _{CB} =-25V I _E =0 | |
| | I _{CBO} | | | |
| | μA | | | |
| BC856AS2000S3A | -0.1 | -0.1 | -0.1 | 3A |
| BC856BS2000S3B | -0.1 | -0.1 | -0.1 | 3B |
| BC857AS2000S3E | -0.1 | -0.1 | -0.1 | 3E |
| BC857BS2000S3F | -0.1 | -0.1 | -0.1 | 3F |
| BC857CS2000S3G | -0.1 | -0.1 | -0.1 | 3G |
| BC858AS2000S3J | -0.1 | -0.1 | -0.1 | 3J |
| BC858BS2000S3K | -0.1 | -0.1 | -0.1 | 3K |
| BC858CS2000S3L | -0.1 | -0.1 | -0.1 | 3L |

SMD TRANSISTORS BC85 SERIES CASE SOT-23

TYPICAL CHARACTERISTIC CURVES - For Reference Only

Fig.1

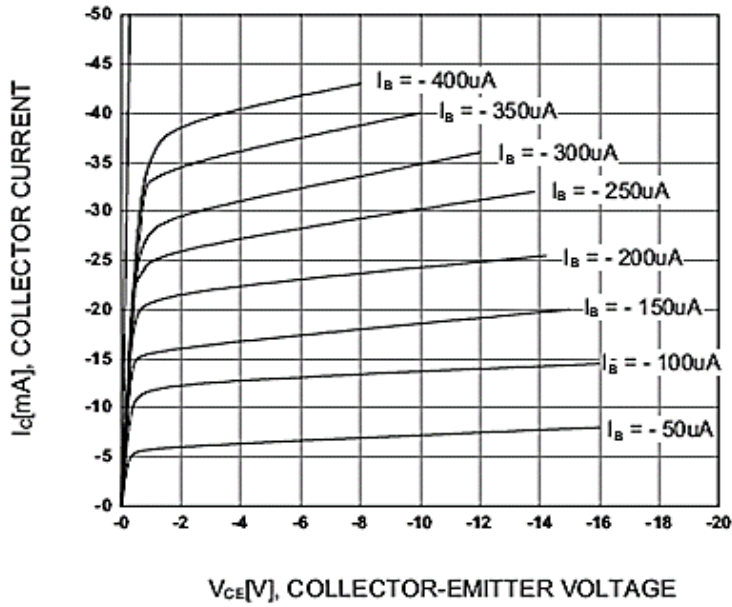
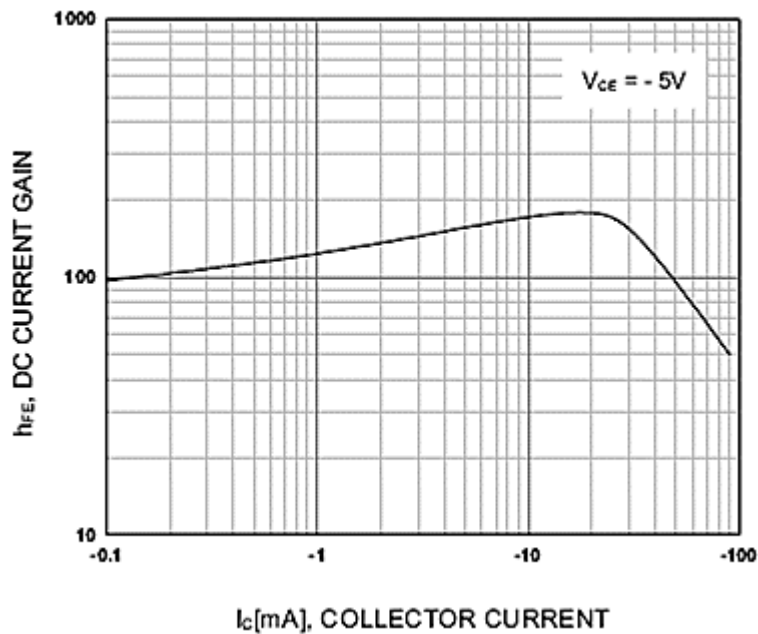


Fig.2



SMD TRANSISTORS BC85 SERIES CASE SOT-23

TYPICAL CHARACTERISTIC CURVES - For Reference Only

Fig.3

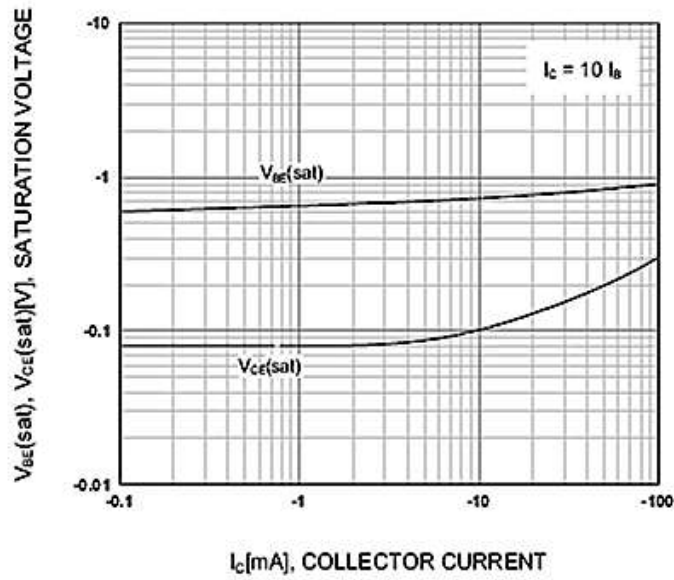
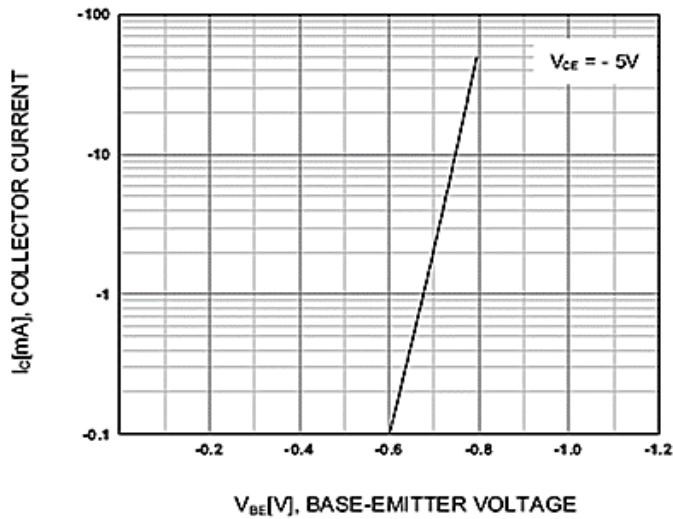


Fig.4



SMD TRANSISTORS BC85 SERIES CASE SOT-23

TYPICAL CHARACTERISTIC CURVES - For Reference Only

Fig.5

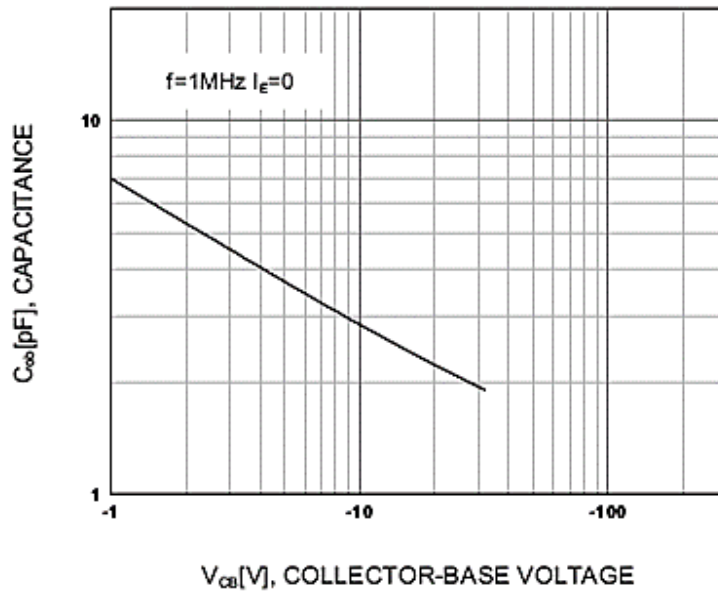
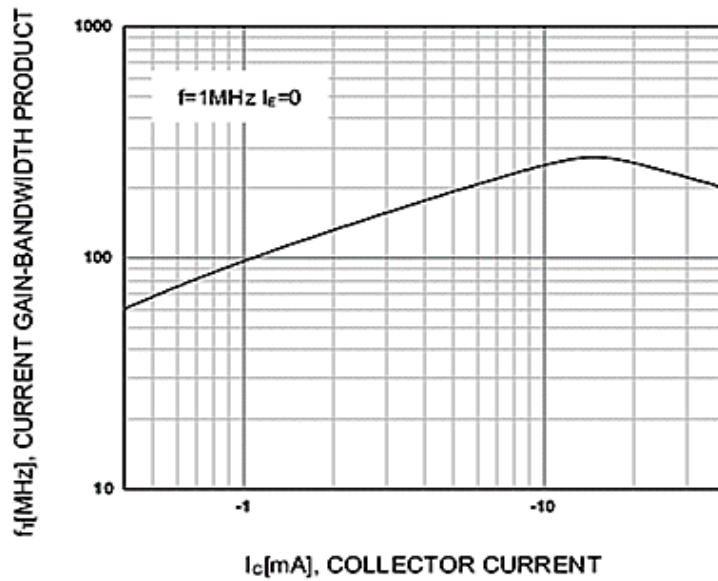
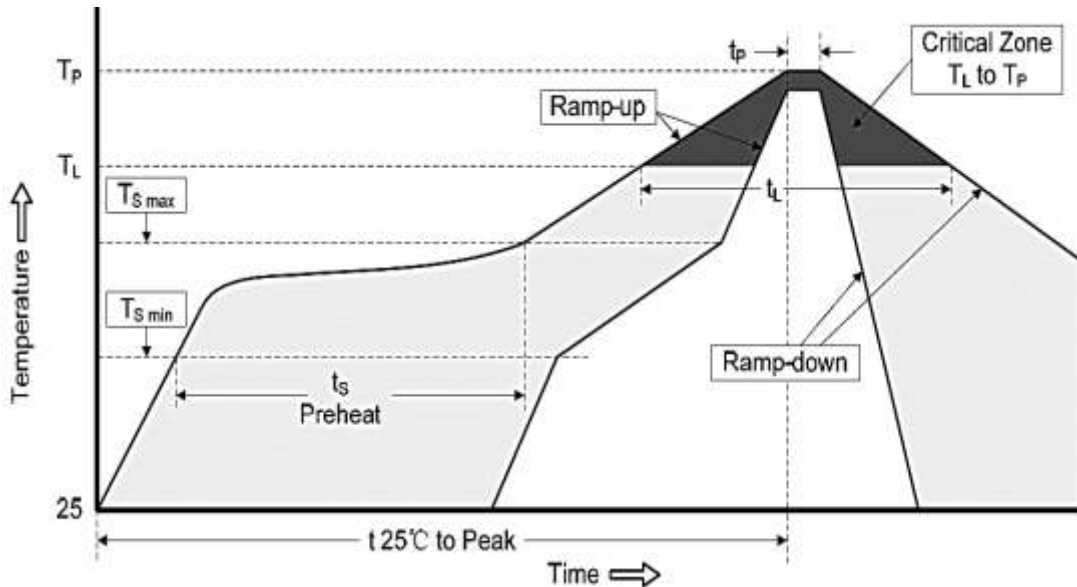


Fig.6



SMD TRANSISTORS BC85 SERIES CASE SOT-23
RELIABILITY

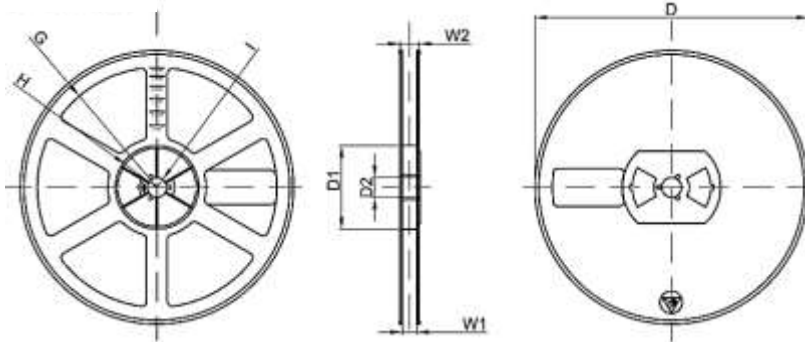
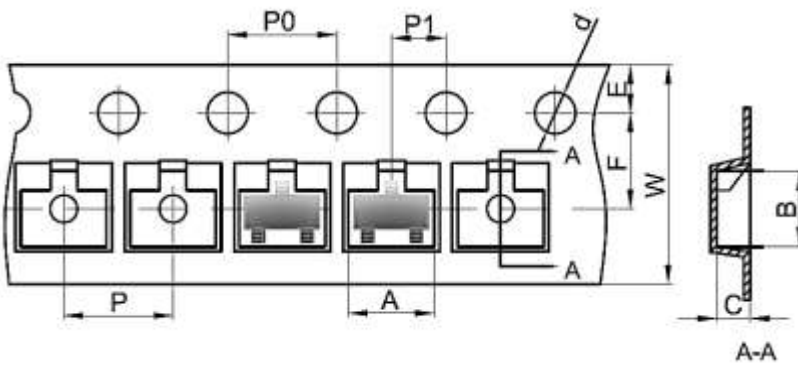
| Number | Experiment Items | Experiment Method And Conditions | Reference Documents |
|--------|------------------------------------|--|---------------------------------|
| 1 | Solder Resistance Test | Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32" | MIL-STD-750D METHOD-2031.2 |
| 2 | Solderability Test | 230°C ±5°C for 5 sec. | MIL-STD-750D METHOD-2026.1 0 |
| 3 | Pull Test | 1 kg in axial lead direction for 10 sec. | MIL-STD-750D METHOD-2036.4 |
| 4 | Bend Test | 0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times | MIL-STD-750D METHOD-2036.4 |
| 5 | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80% Rated VR | MIL-STD-750D METHOD-1038.4 |
| 6 | Forward Operation Life Test | TA=25°C Rated Average Rectified Current | MIL-STD-750D METHOD-1027.3 |
| 7 | Intermittent Operation Life Test | On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles. | MIL-STD-750D METHOD-1036.3 |
| 8 | Pressure Cooker Test | 15 PSIG, TA=121°C, 4 hours | MIL-S-19500 APPENOIXC |
| 9 | Temperature Cycling Test | -55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles. | MIL-STD-750D METHOD-1051.7 |
| 10 | Thermal Shock Test | 0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles | MIL-STD-750D METHOD-1056.7 |
| 11 | Forward Surge Test | 8.3ms Single Sale Sine-wave One Surge. | MIL-STD-750D METHOD-4066.4 |
| 12 | Humidity Test | TA=65°C, RH=98% for 1000 hours. | MIL-STD-750D METHOD-1021.3 |
| 13 | High Temperature Storage life Test | 150°C for 1000 Hours | MIL-STD-750D METHOD-1031.5 |

SMD TRANSISTORS BC85 SERIES CASE SOT-23
SUGGESTED REFLOW PROFILE - For Reference Only


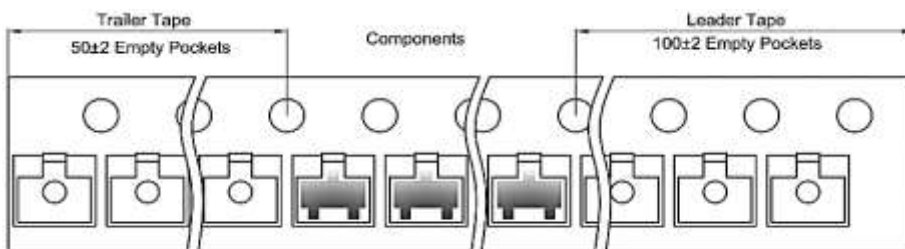
| PROFILE FEATURE | | PB-FREE ASSEMBLY |
|---|---------------------------|-------------------|
| Average Ramp-up Rate (Ts Max to Tp) | | 3°C/second Max |
| Preheat | Temperature Min (Ts Min.) | 150°C |
| | Temperature Max (Ts Max.) | 200°C |
| | Time (ts Min. to ts Max.) | 60~180 seconds |
| Time maintained above | Temperature (Tl) | 217°C |
| | Time (tl) | 60~150 seconds |
| Peak/Classification Temperature (Tp) | | 260 °C |
| Time within 5°C of actual Peak Temperature (tp) | | 20~40 seconds |
| Ramp-down rate | | 6 °C /Second Max. |
| Time 25 °C to Peak Temperature | | 8 minutes Max. |
| Suggest reflow times | | 3 Times Max. |

SMD TRANSISTORS BC85 SERIES CASE SOT-23
TAPE/REEL - Unit: mm

All Devices are packed in accordance with EIA standard RS-481-A and specifications. SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).



| Symbol | Dimension (mm) |
|--------|----------------|
| A | 3.15±0.1 |
| B | 2.77±0.1 |
| C | 1.22±0.1 |
| d | φ1.50±0.1 |
| E | 1.75±0.1 |
| F | 3.50±0.1 |
| P0 | 4.00±0.1 |
| P | 4.00±0.1 |
| P1 | 2.00±0.1 |
| W | 8.00±0.1 |
| D | φ178±2 |
| D1 | 54.4±1 |
| D2 | 13.0±1 |
| G | R78±1 |
| H | R25.6±1 |
| I | R6.5±1 |
| W1 | 9.5±1 |
| W2 | 12.3±1 |

TAPE LEADER AND TRAILER


SMD TRANSISTORS BC85 SERIES CASE SOT-23

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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7. *NextGen* products are not authorized for use as critical components in life support devices or systems without express written approval by *NextGen*.
8. *NextGen* requires that customers first obtain an RMA (Returned Merchandise Authorization) number prior to returning any products. Returns must be made within 30 days of the date of invoice, be in the original packaging, unused and like-new condition. At the time of quoting or purchasing, a product may say that it is Non-Cancelable/ Non-Returnable (NCNR). These products are not returnable and not refundable.