

Features

- For Switching and AF Amplifier Applications
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 320°C/W Junction to Solder-point (Note2)
- Thermal Resistance: 403°C/W Junction to Ambient (Note2)

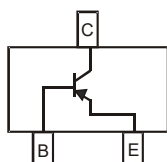
| Parameter | Symbol | Rating | Unit |
|--|-----------|--------|------|
| Collector-Base Voltage | V_{CBO} | -30 | V |
| Collector-Emitter Voltage | V_{CEO} | -30 | V |
| Emitter-Base Voltage | V_{EBO} | -5 | V |
| Collector Current | I_C | -100 | mA |
| Peak Collector Current | I_{CM} | -200 | mA |
| Peak Emitter Current | I_{EM} | -200 | mA |
| Power Dissipation $T_S=50^\circ\text{C}$ (Note2) | P_D | 310 | mW |

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Package Mounted 1.0*1.0mm Pad Layout 1oz Copper That is On a Single-sided FR4 PCB.

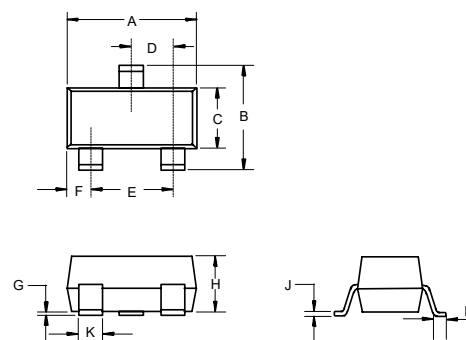
| Part Number | BC858A | BC858B | BC858C |
|-------------|--------|--------|--------|
| Marking | 3J | 3K | 3L |

Internal Structure



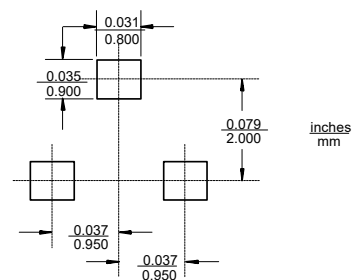
PNP Small Signal Transistor

SOT-23



| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | 0.110 | 0.120 | 2.80 | 3.04 | |
| B | 0.083 | 0.104 | 2.10 | 2.64 | |
| C | 0.047 | 0.055 | 1.20 | 1.40 | |
| D | 0.034 | 0.041 | 0.85 | 1.05 | |
| E | 0.067 | 0.083 | 1.70 | 2.10 | |
| F | 0.018 | 0.024 | 0.45 | 0.60 | |
| G | 0.0004 | 0.006 | 0.01 | 0.15 | |
| H | 0.035 | 0.043 | 0.90 | 1.10 | |
| J | 0.003 | 0.007 | 0.08 | 0.18 | |
| K | 0.014 | 0.020 | 0.35 | 0.51 | |
| L | 0.007 | 0.020 | 0.20 | 0.50 | |

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

| Parameter | | Symbol | Min | Typ | Max | Units | Conditions |
|---|---------|----------------------|------|----------------------|------|-------|---|
| Collector-Base Breakdown Voltage ^(Note3) | | V _{(BR)CBO} | -30 | | | V | I _C =-10μA, I _E =0 |
| Collector-Emitter Breakdown Voltage ^(Note3) | | V _{(BR)CEO} | -30 | | | V | I _C =-10mA, I _B =0 |
| Emitter-Base Breakdown Voltage ^(Note3) | | V _{(BR)EBO} | -5 | | | V | I _E =-1μA, I _C =0 |
| Collector-Cutoff Current ^(Note3) | | I _{CES} | | | -15 | nA | V _{CE} =-30V |
| | | I _{CBO} | | | -15 | nA | V _{CB} =-30V |
| | | | | | -4 | μA | V _{CB} =-30V, T _A =150°C |
| DC Current Gain ^(Note3) | BC858 A | h _{FE} | 125 | 180 | 250 | | V _{CE} =-5Vdc, I _C =-2mA |
| | BC858 B | | 220 | 290 | 475 | | |
| | BC858 C | | 420 | 520 | 800 | | |
| Small Signal Current Gain | BC858 A | h _{fe} | | 200 | | | V _{CE} =-5V I _C =-2mA f=1KHz |
| | BC858 B | | | 330 | | | |
| | BC858 C | | | 600 | | | |
| Input Impedance | BC858 A | h _{ie} | | 2.7 | | KΩ | |
| | BC858 B | | | 4.5 | | | |
| | BC858 C | | | 8.7 | | | |
| Output Admittance | BC858 A | h _{oe} | | 18 | | μS | |
| | BC858 B | | | 30 | | | |
| | BC858 C | | | 60 | | | |
| Reverse Voltage Transfer Ratio | BC858 A | h _{re} | | 1.5x10 ⁻⁴ | | | |
| | BC858 B | | | 2x10 ⁻⁴ | | | |
| | BC858 C | | | 3x10 ⁻⁴ | | | |
| Collector-Emitter Saturation Voltage ^(Note3) | | V _{CE(sat)} | | -75 | -300 | mV | I _C =-10mA, I _B =-0.5mA |
| | | | | -250 | -650 | mV | I _C =-100mA, I _B =-5mA |
| Base-Emitter Saturation Voltage ^(Note3) | | V _{BE(sat)} | | -700 | | mV | I _C =-10mA, I _B =-0.5mA |
| | | | | -850 | | mV | I _C =-100mA, I _B =-5mA |
| Base-Emitter Voltage ^(Note3) | | V _{BE} | -600 | -650 | -750 | mV | V _{CE} =-5V, I _C =-2mA |
| | | | | | -820 | mV | V _{CE} =-5V, I _C =-10mA |
| Current Gain-Bandwidth Product | | f _T | 100 | 200 | | MHz | V _{CE} =-5V, I _C =-10mA, f=100MHz |
| Collector-Base Capacitance | | C _{CBO} | | 3 | | pF | V _{CB} =-10V, f=1MHz |
| Noise Figure | | NF | | 2 | 10 | dB | V _{CE} =-5V, I _C =-200μA R _S =2KΩ, f=1KHz, Δf=200Hz |

Note: 3. Short Duration Pulse Test to Minimize Self-heating Effect.

Curve Characteristics

Fig. 1 - Static Characteristics

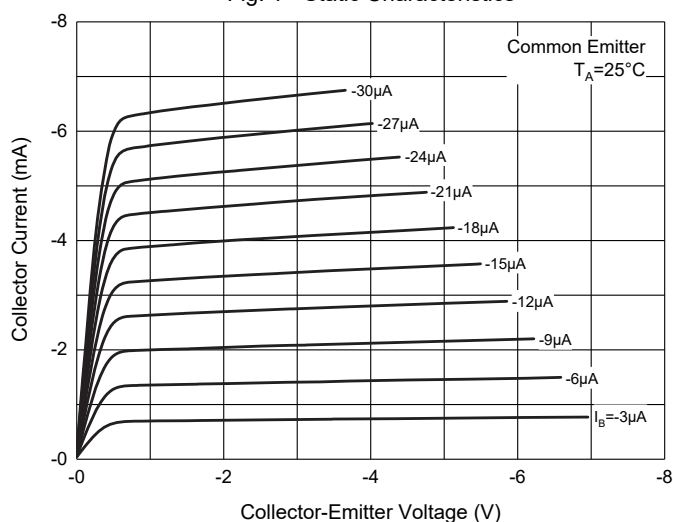


Fig. 2 - DC Current Gain Characteristics

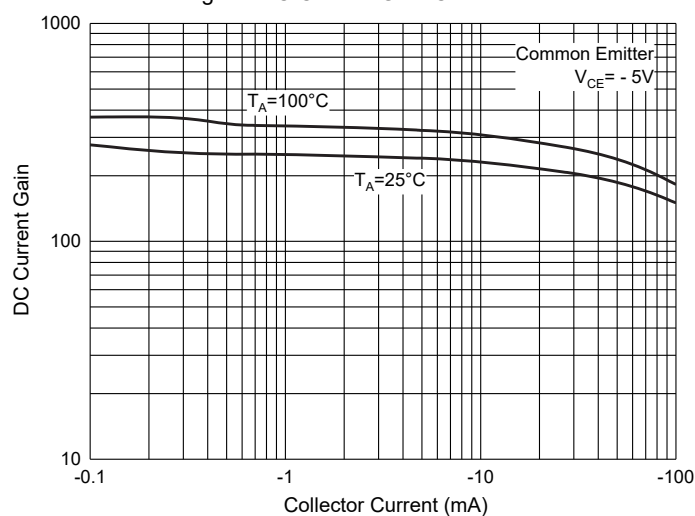


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

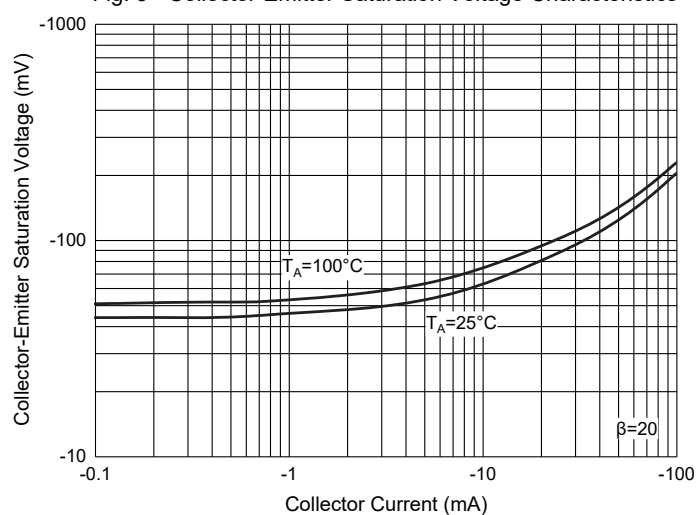


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

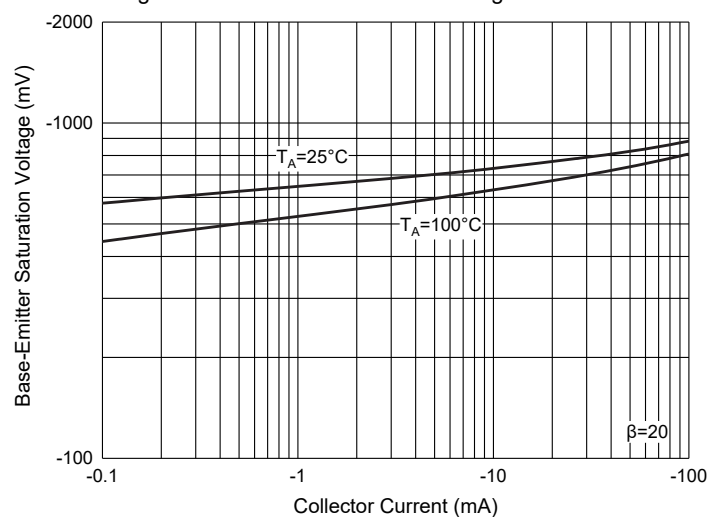


Fig. 5 - Base-Emitter Voltage Characteristics

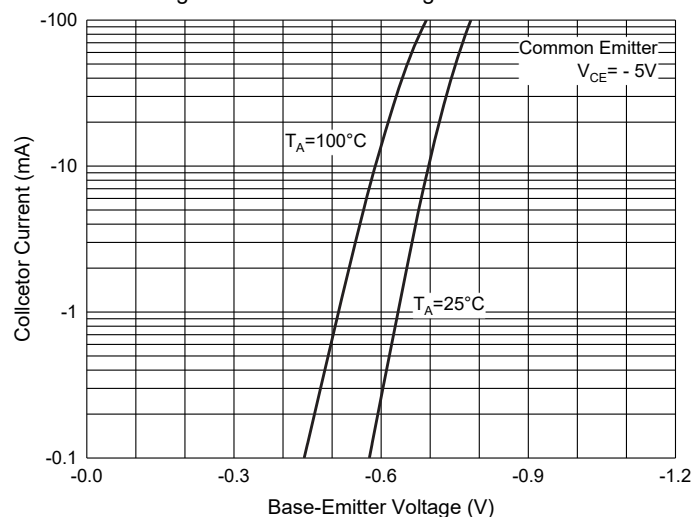
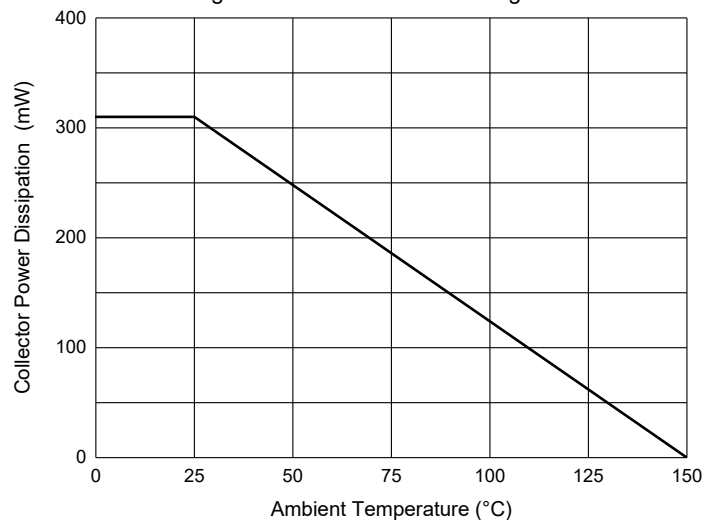


Fig. 6 - Collector Power Derating Curve



Ordering Information

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

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