



TO-92



Pin Definition:

1. Emitter
2. Base
3. Collector

PRODUCT SUMMARY

| | |
|----------------------------|--|
| BV_{CBO} | 150V |
| BV_{CEO} | 60V |
| I_C | 6A |
| V_{CE(SAT)} | 0.55V @ I _C / I _B = 6A / 300mA |

Features

- Excellent gain characteristics specified up to 10A

Structure

- Epitaxial Planar Type

Ordering Information

| Part No. | Package | Packing |
|--------------|---------|--------------|
| TSC5988CT B0 | TO-92 | 1Kpcs / Bulk |
| TSC5988CT A3 | TO-92 | 2Kpcs / Ammo |

Absolute Maximum Rating (Ta = 25°C unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|--|------------------|--------------|------|
| Collector-Base Voltage | V _{CBO} | 150 | V |
| Collector-Emitter Voltage | V _{CEO} | 60 | V |
| Emitter-Base Voltage | V _{EBO} | 6 | V |
| Collector Current | I _C | DC | 5 |
| | | Pulse | 20 |
| Total Power Dissipation | P _{TOT} | 1.0 | W |
| Operating Junction Temperature | T _J | +150 | °C |
| Operating Junction and Storage Temperature Range | T _{STG} | - 55 to +150 | °C |

Electrical Specifications (Ta = 25°C unless otherwise noted)

| Parameter | Conditions | Symbol | Min | Typ | Max | Unit |
|--------------------------------------|--|------------------------|-----|-----|------|------|
| Collector-Base Breakdown Voltage | I _C = 100uA, I _E = 0 | BV _{CBO} | 150 | 170 | -- | V |
| Collector-Emitter Breakdown Voltage | I _C = 10mA, I _B = 0 | BV _{CEO} | 60 | 70 | -- | V |
| Emitter-Base Breakdown Voltage | I _E = 100uA, I _C = 0 | BV _{EBO} | 6 | 8 | -- | V |
| Collector Cutoff Current | V _{CB} = 120V, I _E = 0 | I _{CBO} | -- | -- | 50 | nA |
| | V _{CB} = 120V, T _A = 100°C | | -- | -- | 1 | uA |
| Emitter Cutoff Current | V _{EB} = 6V, I _C = 0 | I _{EBO} | -- | -- | 10 | nA |
| Collector-Emitter Saturation Voltage | I _C = 100mA, I _B = 5mA | V _{CE(SAT)} 1 | -- | 20 | 50 | mV |
| | I _C = 1A, I _B = 50mA | V _{CE(SAT)} 2 | -- | 50 | 100 | |
| | I _C = 2A, I _B = 50mA | V _{CE(SAT)} 3 | -- | 125 | 150 | |
| | I _C = 5A, I _B = 200mA | V _{CE(SAT)} 4 | -- | 260 | 350 | |
| Base-Emitter Saturation Voltage | I _C = 4A, I _B = 200mA | V _{BE(SAT)} | -- | 920 | 1050 | mV |
| Base-Emitter on Voltage | V _{CE} = 1V, I _C = 4A | V _{BE(ON)} | -- | 840 | 950 | mV |
| DC Current Transfer Ratio | V _{CE} = 1V, I _C = 10mA | h _{FE} 1 | 100 | -- | -- | |
| | V _{CE} = 1V, I _C = 2A | h _{FE} 2 | 120 | 200 | 300 | |
| | V _{CE} = 1V, I _C = 5A | h _{FE} 3 | 75 | 140 | -- | |
| | V _{CE} = 1V, I _C = 10A | h _{FE} 4 | -- | 70 | -- | |
| Transition Frequency | V _{CE} = 10V, I _C = 100mA | f _T | -- | 130 | -- | MHz |
| Output Capacitance | V _{CB} = 10V, f = 1MHz | Cob | -- | 72 | -- | pF |

Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Figure 1. DC Current Gain vs. Collector Current

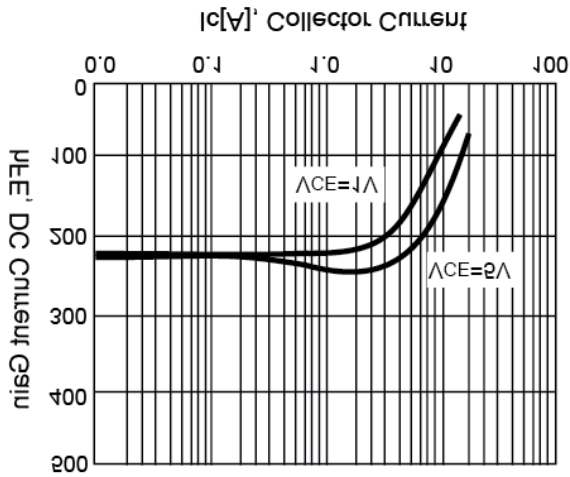


Figure 2. $V_{CE(SAT)}$ vs. Collector Current

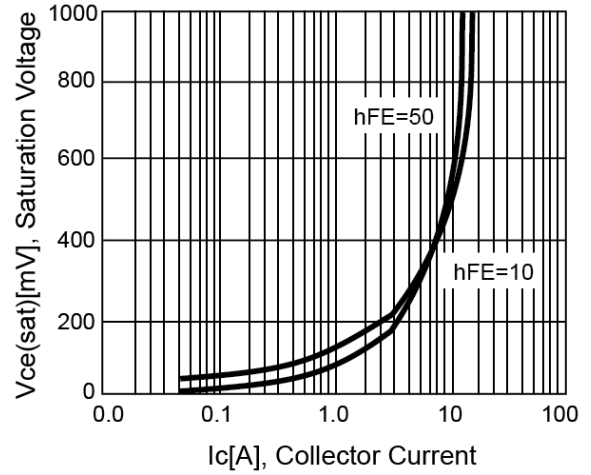


Figure 3. $V_{BE(SAT)}$ vs. Collector Current

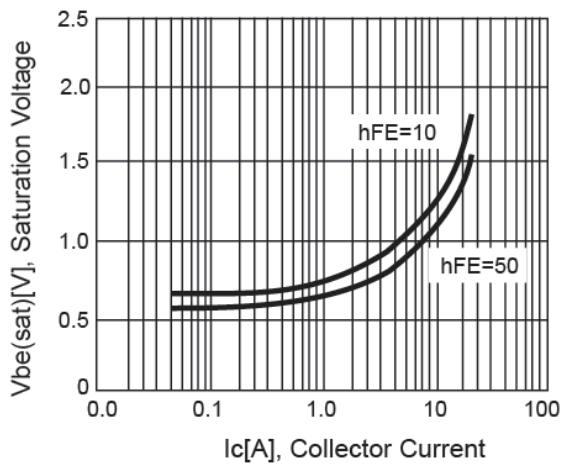


Figure 4. f_T vs. Emitter Current

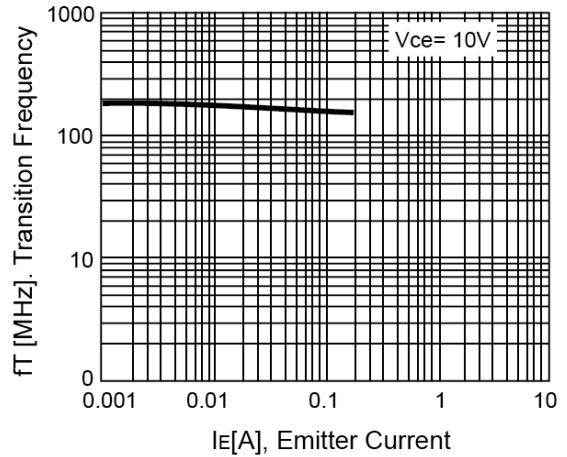


Figure 5. C_{ob} vs. Collector-Base Voltage

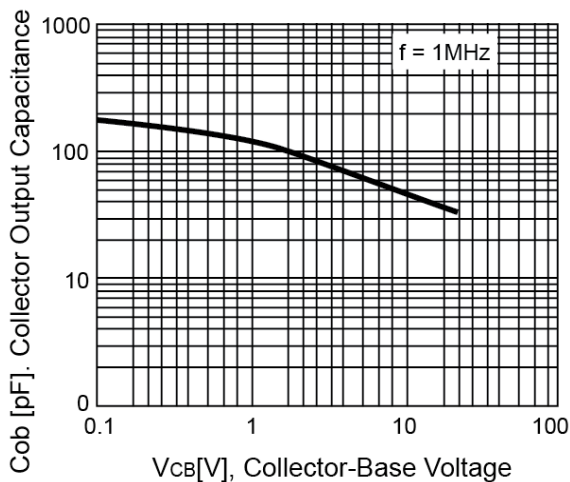
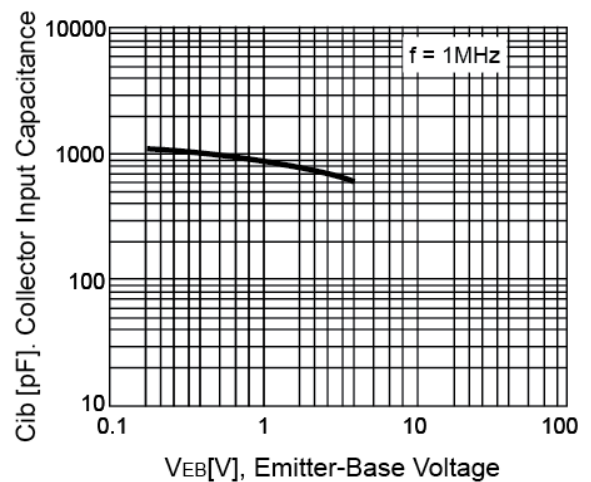


Figure 6. C_{ib} vs. Emitter-Base Voltage



Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

Figure 7. Safety Operation Area

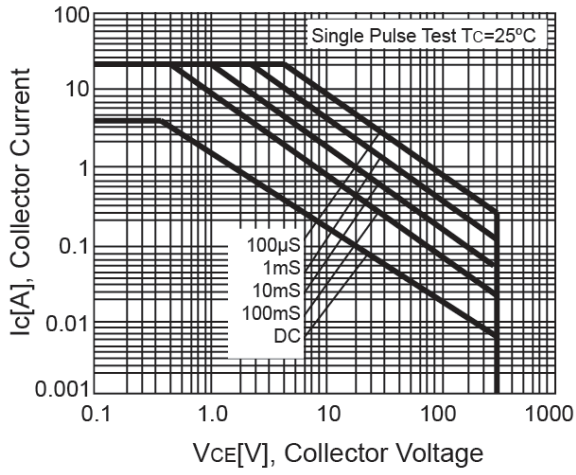
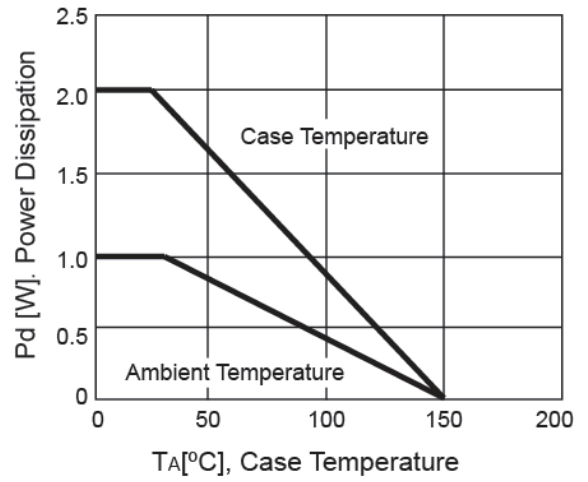
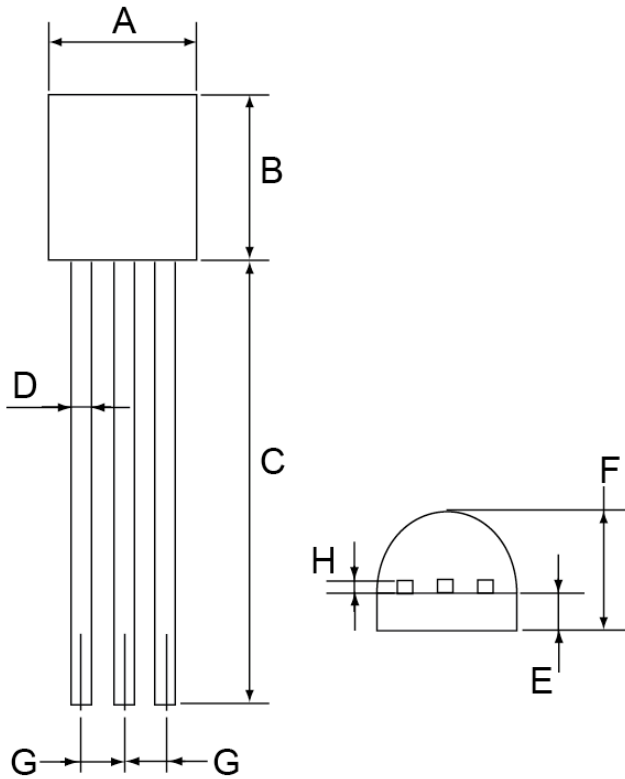


Figure 8. Derating Curve

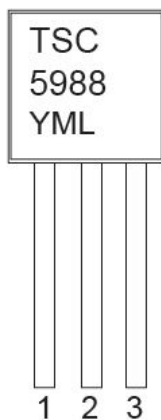


TO-92 Mechanical Drawing



| TO-92 DIMENSION | | | | |
|-----------------|-------------|------|------------|-------|
| DIM | MILLIMETERS | | INCHES | |
| | MIN | MAX | MIN | MAX |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| B | 4.30 | 4.70 | 0.169 | 0.185 |
| C | 14.30(typ) | | 0.563(typ) | |
| D | 0.43 | 0.49 | 0.017 | 0.019 |
| E | 1.18 | 1.28 | 0.046 | 0.050 |
| F | 3.30 | 3.70 | 0.130 | 0.146 |
| G | 1.27 | 1.31 | 0.05 | 0.051 |
| H | 0.37 | 0.43 | 0.015 | 0.017 |

Marking Diagram



- Y** = Year Code
- M** = Month Code
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
- L** = Lot Code

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