

Small Signal Product

TO-92 NPN Bipolar Transistor

FEATURES

- The transistor is subdivided into four groups according to its DC current gain: O, Y, GR, BL
- Pb free and RoHS compliant

MECHANICAL DATA

- Case: TO-92 small outline plastic package
- High temperature soldering guaranteed: 260°C/10s
- Weight: 195mg (approximately)

APPLICATION

- General purpose switching and AF amplifier application



1. Emitter
2. Collector
3. Base



TO-92

| MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$ unless otherwise noted) | | | |
|--|-----------------|--------------|--------------------|
| PARAMETER | SYMBOL | VALUE | UNIT |
| Collector Power Dissipation | P_C | 0.5 | W |
| Collector-Base Voltage | V_{CBO} | 60 | V |
| Collector-Emitter Voltage | V_{CEO} | 50 | V |
| Emitter-Base Voltage | V_{EBO} | 5 | V |
| Collector Current | I_C | 0.15 | A |
| Thermal Resistance From Junction to Ambient | $R_{\theta JA}$ | 250 | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | $^\circ\text{C}$ |

| PARAMETER | SYMBOL | MIN | MAX | UNIT |
|---|---------------|-----|------|---------------|
| Collector Cut-off Current $V_{CB}=60\text{V}, I_E=0$ | I_{CBO} | - | 0.1 | μA |
| Emitter Cut-off Current $V_{EB}=5\text{V}, I_C=0$ | I_{EBO} | - | 0.1 | μA |
| DC Current Gain $V_{CE}=6\text{V}, I_C=2\text{mA}$ | $h_{FE(1)}$ | 70 | 700 | |
| | $h_{FE(2)}$ | 25 | | |
| Collector-Emitter Saturation Voltage $I_C=100\text{mA}, I_B=10\text{mA}$ | $V_{CE(sat)}$ | | 0.25 | V |
| Base-Emitter Saturation Voltage $I_C=100\text{mA}, I_B=10\text{mA}$ | $V_{BE(sat)}$ | | 1 | V |
| Transition Frequency $V_{CE}=10\text{V}, I_C=1\text{mA}$ | f_T | 80 | | MHz |
| Collector Output Capacitance $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ | C_{ob} | | 3.5 | pF |

CLASSIFICATION OF h_{FE}

| RANK | O | Y | GR | BL |
|-------|--------|---------|---------|---------|
| RANGE | 70-140 | 120-240 | 200-400 | 300-700 |

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RATINGS AND CHARACTERISTICS CURVES

($T_A=25^\circ\text{C}$ unless otherwise noted)

FIG.1 Static Characteristic

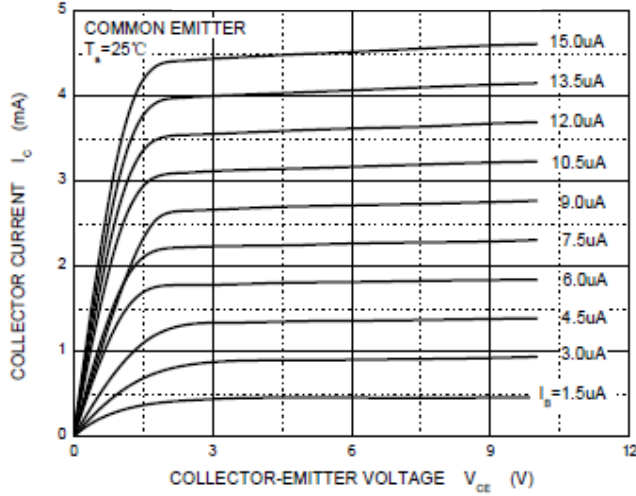


FIG.2 h_{FE} vs. I_C

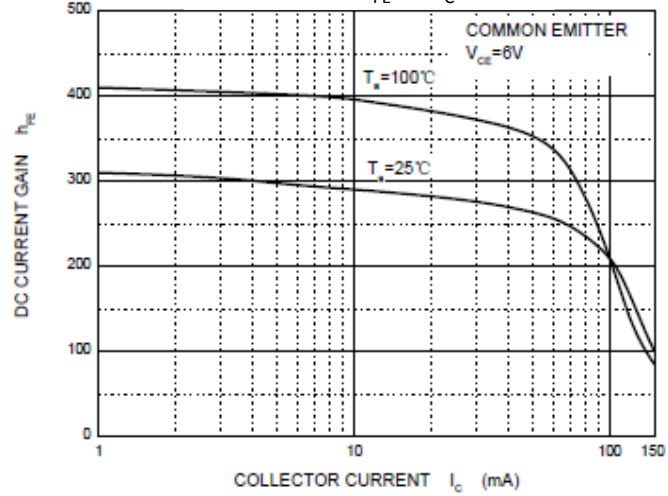


FIG.3 $V_{CE(sat)}$ vs. I_C

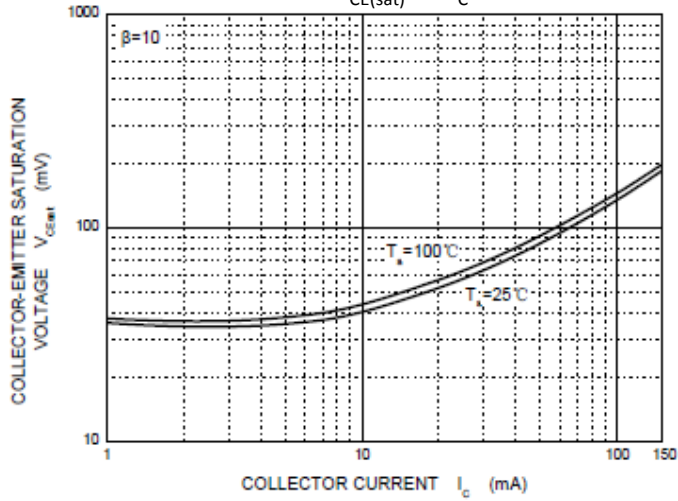


FIG.4 $V_{BE(sat)}$ vs. I_C

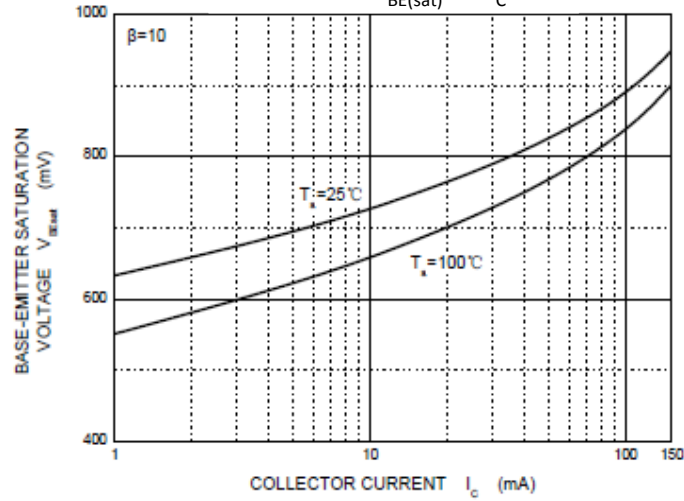


FIG.5 C_{ob} / C_{ib} vs. V_{CB} / V_{Eb}

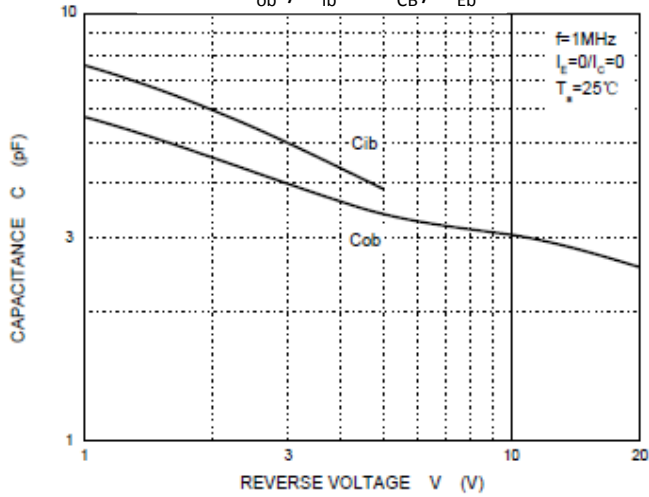
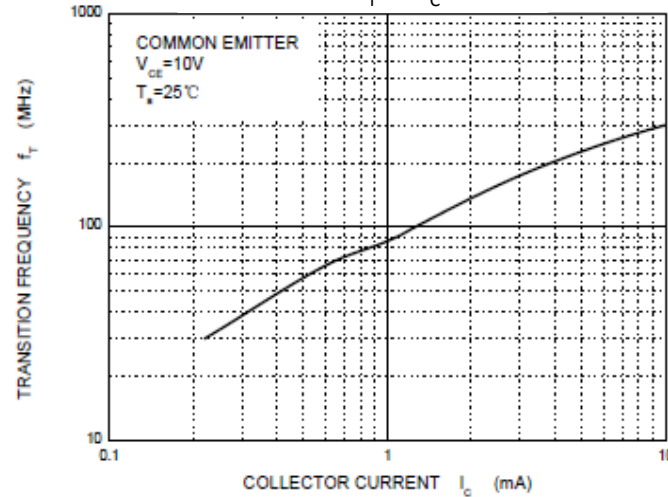


FIG.6 f_T vs. I_C



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| ORDERING INFORMATION | | | | | | |
|-----------------------------|-------------------------|---------------------|----------------------------|----------------|----------------|---------------------------------|
| PART NO. | MANUFACTURE CODE | PACKING CODE | GREEN COMPOUND CODE | PACKAGE | PACKING | MARKING |
| KTC3198-xx (Note2) | (Note1) | A1 | G | TO-92 | 4K / Ammo | KTC 3198 xx021 (Note3) |
| | | B1 | G | TO-92 | 5K / Bulk | |
| | | A2 | G | TO-92 | 2K / Ammo | |
| | | B2 | G | TO-92 | 10K / Bulk | |
| KTC3198-xx (Note2) | B0 | A1 | G | TO-92 | 4K / Ammo | KTC 3198 xx021 (Note3) |
| KTC3198-xx (Note2) | B0 | B1 | G | TO-92 | 5K / Bulk | |
| KTC3198-xx (Note2) | M0 | A2 | G | TO-92 | 2K / Ammo | |
| KTC3198-xx (Note2) | M0 | B2 | G | TO-92 | 10K / Bulk | |

Note1: Indicator of manufacturing site for manufacture special control, if empty means no special control requirement

Note2: "xx" means device code of "O", "Y", "GR", "BL"

Note3: "MARKING" should follow the "PART NO.", for example, if "PART NO." is KTC3198-O, which

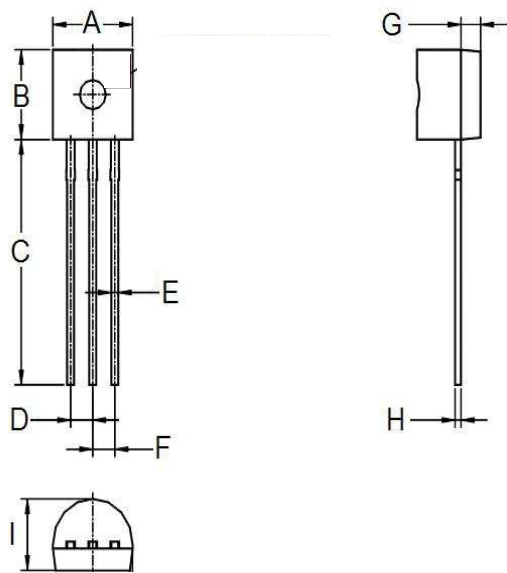
"MARKING" is KTC
3198
O021

| EXAMPLE | | | | | |
|----------------------|-----------------|-------------------------|---------------------|----------------------------|--------------------|
| PREFERRED P/N | PART NO. | MANUFACTURE CODE | PACKING CODE | GREEN COMPOUND CODE | DESCRIPTION |
| KTC3198-O A1G | KTC3198-O | | A1 | G | Green compound |
| KTC3198-O-B0 A1G | KTC3198-O | B0 | A1 | G | Green compound |
| KTC3198-O-B0 B1G | KTC3198-O | B0 | B1 | G | Green compound |
| KTC3198-O-M0 A2G | KTC3198-O | M0 | A2 | G | Green compound |
| KTC3198-O-M0 B2G | KTC3198-O | M0 | B2 | G | Green compound |

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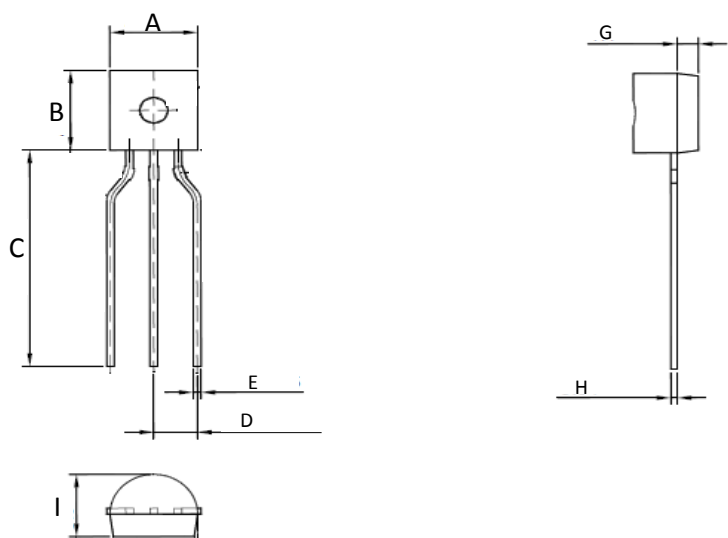
PACKAGE OUTLINE DIMENSIONS

TO-92 Bulk



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|-------|-------------|-------|
| | Min | Max | Min | Max |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| B | 4.30 | 4.70 | 0.169 | 0.185 |
| C | 12.50 | 14.50 | 0.492 | 0.571 |
| 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 | 1.20 | 0.023 | 0.047 |
| H | 0.29 | 0.51 | 0.011 | 0.020 |
| I | 3.30 | 3.70 | 0.130 | 0.146 |

TO-92 Ammo



| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min | Max | Min | Max |
| A | 4.30 | 4.70 | 0.169 | 0.185 |
| B | 4.30 | 4.70 | 0.169 | 0.185 |
| C | 12.50 | - | 0.492 | - |
| D | 2.20 | 2.80 | 0.087 | 0.110 |
| E | 0.35 | 0.55 | 0.014 | 0.022 |
| G | 0.59 | 1.20 | 0.023 | 0.047 |
| H | 0.29 | 0.51 | 0.011 | 0.020 |
| I | 3.30 | 3.70 | 0.130 | 0.146 |

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- Техническая поддержка проекта;
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