

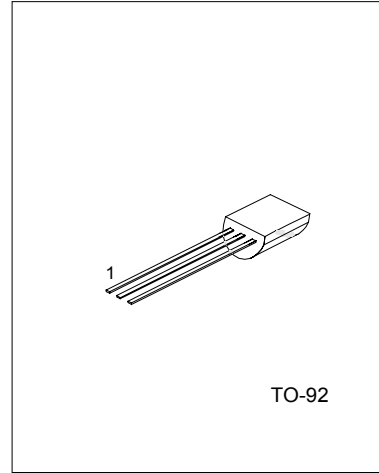
UTC 2N3904

NPN EPITAXIAL SILICON TRANSISTOR

GENERAL PURPOSE APPLIATION

FEATURES

- *Collector-Emitter Voltage: $V_{CE0}=40V$
- *Collector Dissipation: $P_c(\max)=625mW$
- *Complementary to 2N3906



1:EMITTER 2:BASE 3:COLLECTOR

ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$,unless otherwise specified)

| PARAMETER | SYMBOL | RATING | UNIT |
|---------------------------|-----------|------------|-------------|
| Collector-base voltage | V_{CB0} | 60 | V |
| Collector-emitter voltage | V_{CE0} | 40 | V |
| Emitter-base voltage | V_{EB0} | 6 | V |
| Collector current | I_c | 200 | mA |
| Collector dissipation | P_c | 625 | mW |
| Junction Temperature | T_j | 150 | $^{\circ}C$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | $^{\circ}C$ |

ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}C$,unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|----------------|----------------------------------|------|-----|------|------|
| Collector Cut-off Current | I_{CEX} | $V_{CE}=30V, V_{EB}=3V$ | | | 50 | nA |
| Base Cut-off Current | I_{BL} | $V_{CE}=30V, V_{EB}=3V$ | | | 50 | nA |
| Collector-base breakdown voltage | V_{CB0} | $I_c=10\mu A, I_E=0$ | 60 | | | V |
| Collector-emitter breakdown voltage (note) | V_{CE0} | $I_c=1mA, I_B=0$ | 40 | | | V |
| Emitter-base breakdown voltage | V_{EB0} | $I_E=10\mu A, I_c=0$ | 6 | | | V |
| DC current gain (note) | $hFE1$ | $V_{CE}=1V, I_c=0.1mA$ | 40 | | | |
| | $hFE2$ | $V_{CE}=1V, I_c=1mA$ | 70 | | | |
| | $hFE3$ | $V_{CE}=1V, I_c=10mA$ | 100 | | 300 | |
| | $hFE4$ | $V_{CE}=1V, I_c=50mA$ | 60 | | | |
| | $hFE5$ | $V_{CE}=1V, I_c=100mA$ | 30 | | | |
| Collector-emitter saturation voltage (note) | $V_{CE(sat)1}$ | $I_c=10mA, I_B=1mA$ | | | 0.2 | V |
| | $V_{CE(sat)2}$ | $I_c=50mA, I_B=5mA$ | | | 0.3 | V |
| Base-emitter saturation voltage (note) | $V_{BE(sat)1}$ | $I_c=10mA, I_B=1mA$ | 0.65 | | 0.85 | V |
| | $V_{BE(sat)2}$ | $I_c=50mA, I_B=5mA$ | | | 0.95 | V |
| Current gain bandwidth product | f_T | $V_{CE}=20V, I_c=10mA, f=100MHz$ | 300 | | | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=5V, I_E=0, f=1MHz$ | | | 4 | pF |

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| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---------------|------------------|--|-----|-----|-----|------|
| Turn on time | t _{ON} | V _{CC} =3V, V _{BE} =0.5V, I _C =10mA, I _{B1} =1mA | | | 70 | ns |
| Turn off time | t _{OFF} | I _{B1} =I _{B2} =1mA | | | 250 | ns |

Note: Pulse test: PW<=300μs, Duty Cycle<=2%

