



TO-220 Plastic-Encapsulate Transistors

3DD13007 TRANSISTOR (NPN)

FEATURES

Power dissipation

$$P_{CM} : 2 \text{ W (} T_{amb}=25 \text{)}$$

Collector current

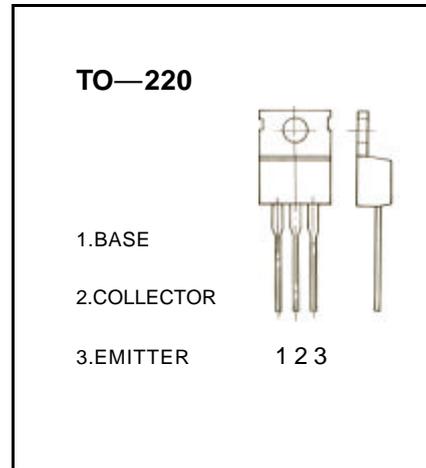
$$I_{CM} : 8 \text{ A}$$

Collector-base voltage

$$V_{(BR)CBO} : 700 \text{ V}$$

Operating and storage junction temperature range

$$T_J, T_{stg} : -55 \text{ to } +150$$



ELECTRICAL CHARACTERISTICS ($T_{amb}=25$ unless otherwise specified)

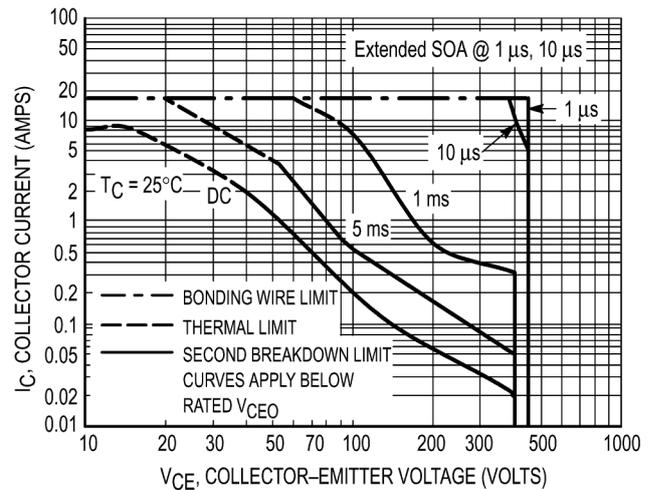
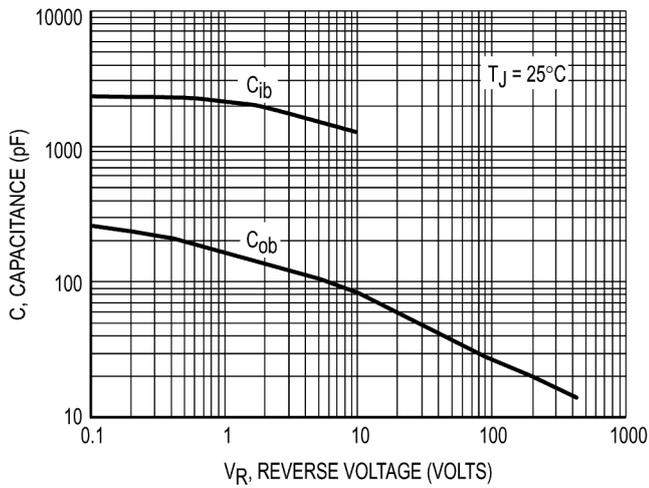
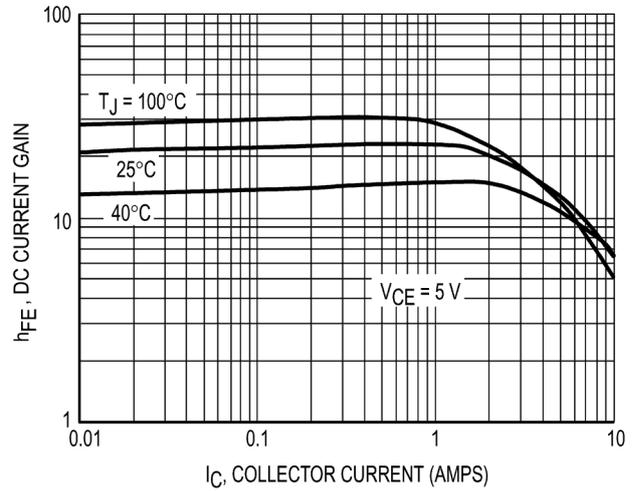
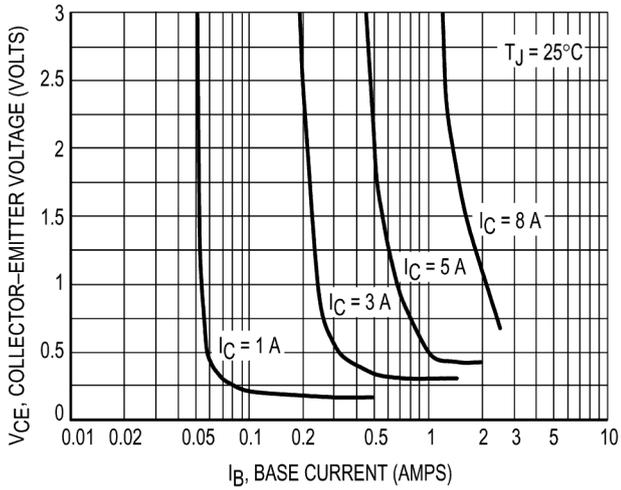
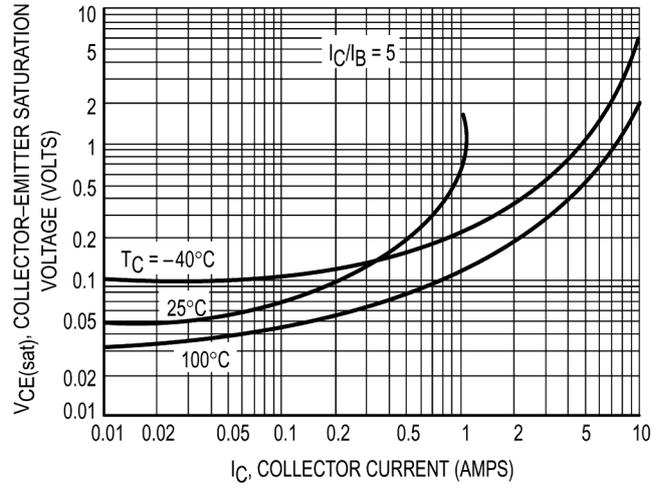
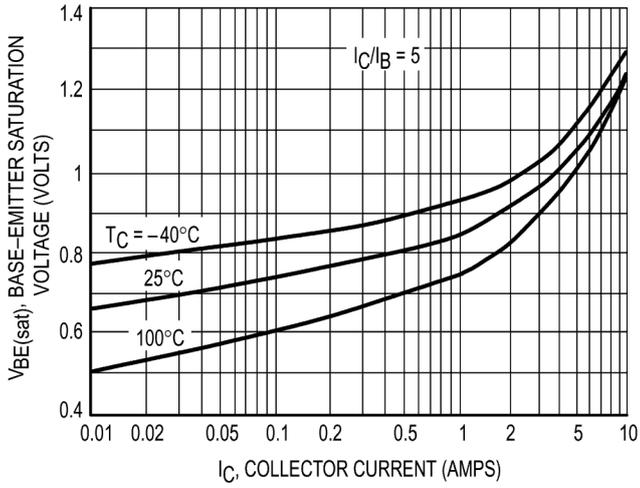
| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|--|-----|-----|-----|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=1\text{mA}, I_E=0$ | 700 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=10\text{mA}, I_B=0$ | 400 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=1\text{mA}, I_C=0$ | 9 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=700\text{V}, I_E=0$ | | | 1 | mA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=9\text{V}, I_C=0$ | | | 100 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=5\text{V}, I_C=2\text{A}$ | 8 | | 40 | |
| | $h_{FE(2)}$ | $V_{CE}=5\text{V}, I_C=5\text{A}$ | 5 | | 30 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=2\text{A}, I_B=0.4\text{A}$ | | | 1 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C=2\text{A}, I_B=0.4\text{A}$ | | | 1.2 | V |
| Transition frequency | f_T | $I_C=500\text{mA}, V_{CE}=10\text{V}$ $f=1\text{MHz}$ | 4 | | | MHz |
| Collector output capacitance | C_{ob} | $V_{CE}=10, I_E=0, f=0.1\text{MHz}$ | | 80 | | pF |
| Fall time | t_f | $V_{CC}=125\text{V}, I_C=5\text{A}$ | | | 0.7 | μs |
| Storage time | t_s | $I_{B1}=-I_{B2}=1\text{A}$ | | | 3 | μs |

CLASSIFICATION OF $h_{FE(1)}$

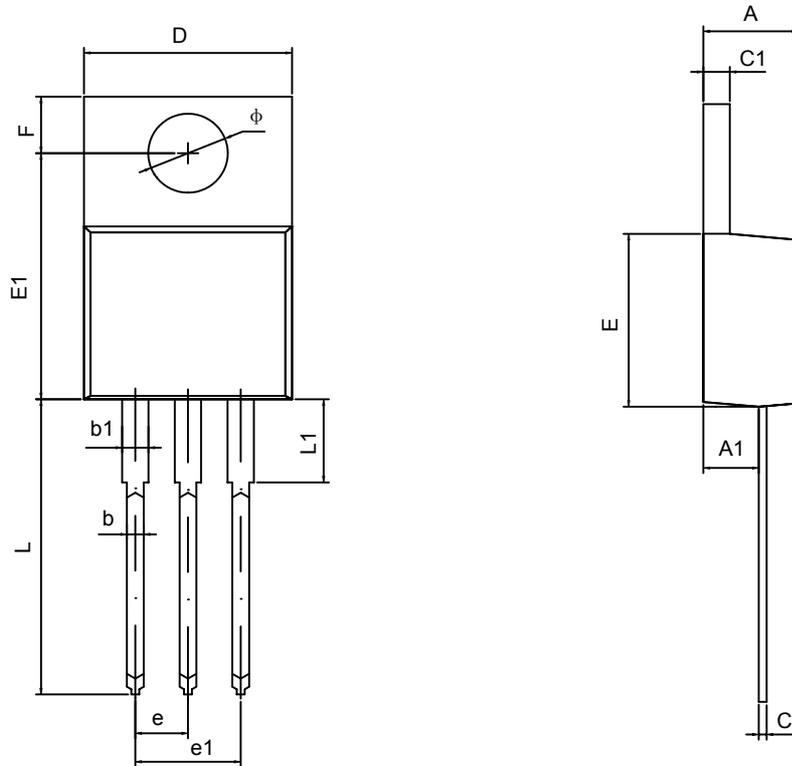
| Rank | | | | | | |
|-------|------|-------|-------|-------|-------|-------|
| Range | 8-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |

Typical Characteristics

3DD13007



TO-220-3L PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.470 | 4.670 | 1.176 | 0.184 |
| A1 | 2.520 | 2.820 | 0.099 | 0.111 |
| b | 0.710 | 0.910 | 0.028 | 0.036 |
| b1 | 1.170 | 1.370 | 0.046 | 0.054 |
| c | 0.310 | 0.530 | 0.012 | 0.021 |
| c1 | 1.710 | 1.370 | 0.046 | 0.054 |
| D | 10.010 | 10.310 | 0.394 | 0.406 |
| E | 8.500 | 8.900 | 0.335 | 0.350 |
| E1 | 12.060 | 12.460 | 0.475 | 0.491 |
| e | 2.540TYP | | 0.100TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.590 | 2.890 | 0.102 | 0.114 |
| L | 13.400 | 13.800 | 0.528 | 0.543 |
| L1 | 3.560 | 3.960 | 0.140 | 0.156 |
| ϕ | 3.790 | 3.890 | 0.149 | 0.153 |