

TO-220-3L Plastic-Encapsulate Transistors

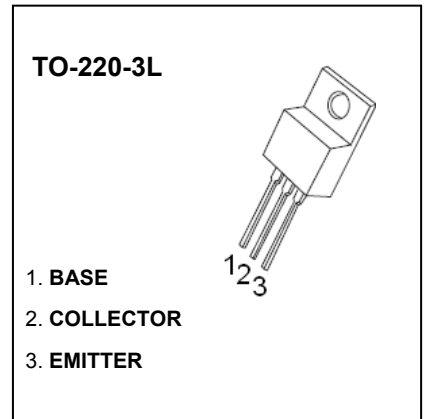
2SA1012 TRANSISTOR (PNP)

FEATURES

- High Current Switching Applications
- Low Collector Saturation Voltage
- High Speed Swithing Time

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|------------------|--|----------|------|
| V _{CB0} | Collector-Base Voltage | -60 | V |
| V _{CEO} | Collector-Emitter Voltage | -50 | V |
| V _{EBO} | Emitter-Base Voltage | -5 | V |
| I _c | Collector Current -Continuous | -5 | A |
| P _c | Collector Power Dissipation | 2 | W |
| R _{θJA} | Thermal Resistance Junction to Ambient | 62.5 | °C/W |
| T _j | Junction Temperature | 150 | °C |
| T _{stg} | Storage Temperature Range | -55~+150 | °C |



ELECTRICAL CHARACTERISTICS(T_a=25°C unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|------------------------|--|-----|-----|------|------|
| Collector-base breakdown voltage | V _{(BR)CBO} | I _C = -0.1mA, I _E = 0 | -60 | | | V |
| Collector-emitter breakdown voltage | V _{(BR)CEO} * | I _C = -10mA, I _B = 0 | -50 | | | V |
| Emitter-base breakdown voltage | V _{(BR)EBO} | I _E = -100μA, I _C = 0 | -5 | | | V |
| Collector cut-off current | I _{CB0} | V _{CB} = -50V, I _E = 0 | | | -1 | μA |
| Emitter cut-off current | I _{EBO} | V _{EB} = -5V, I _C = 0 | | | -1 | μA |
| DC current gain | h _{FE(1)} | V _{CE} = -1V, I _C = -1A | 70 | | 240 | |
| | h _{FE(2)} * | V _{CE} = -1V, I _C = -3A | 30 | | | |
| Collector-emitter saturation voltage | V _{CE(sat)} * | I _C = -3A, I _B = -150mA | | | -0.4 | V |
| Base-emitter saturation voltage | V _{BE(sat)} * | I _C = -3A, I _B = -150mA | | | -1.2 | V |
| Transition frequency | f _T | V _{CE} = -4V, I _C = -1A | | 60 | | MHz |
| Collector output capacitance | C _{ob} | V _{CB} = -10V, I _E = 0, f = 1MHz | | 170 | | pF |
| Turn-on Time | t _{on} | V _{CC} = -30V, I _C = -3A, I _{B1} = -I _{B2} = -0.15A | | 0.1 | | μs |
| Storage Time | t _s | | | 1.0 | | |
| Fall Time | t _f | | | 0.1 | | |

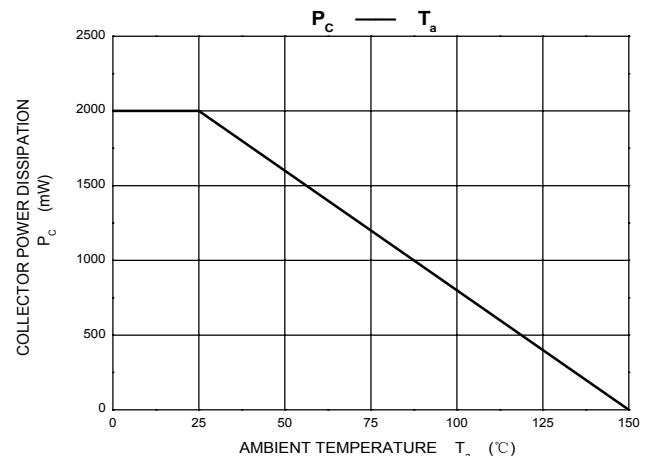
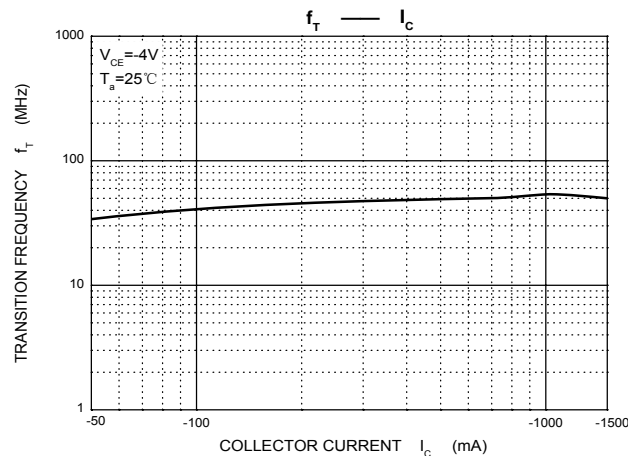
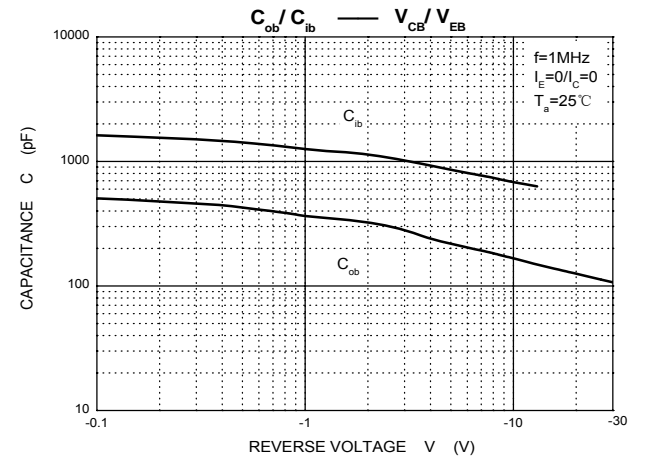
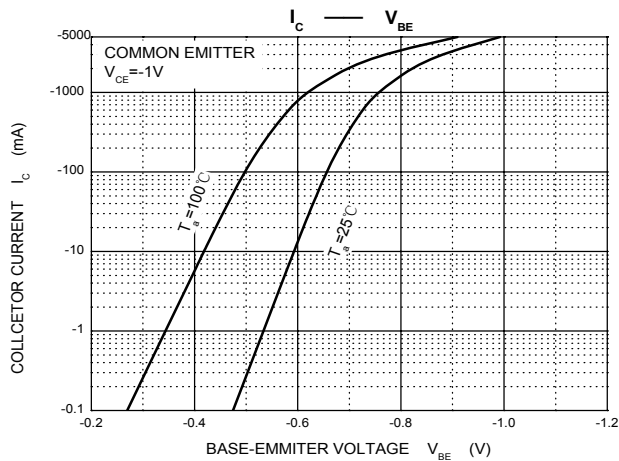
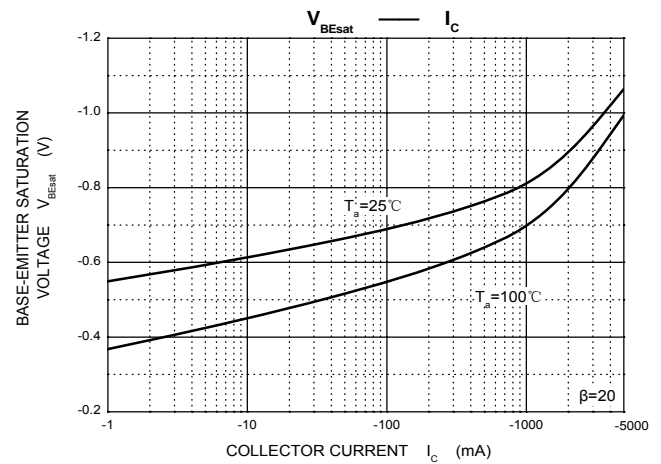
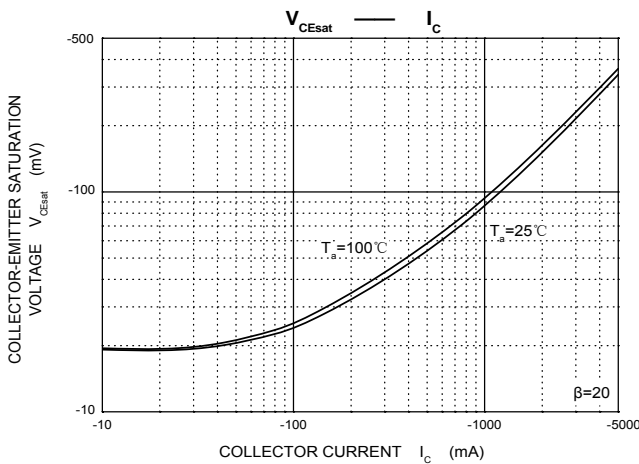
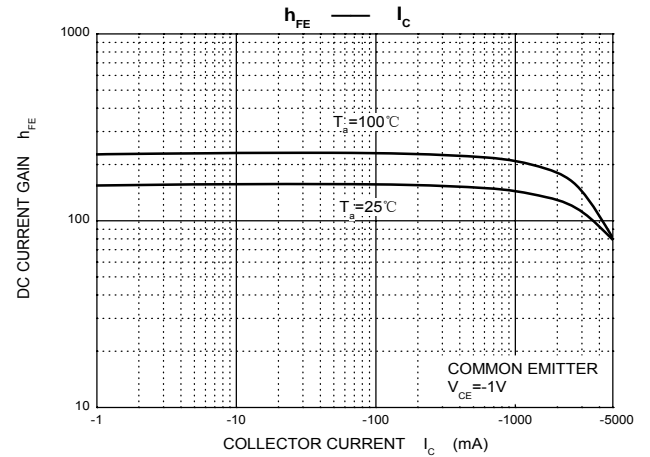
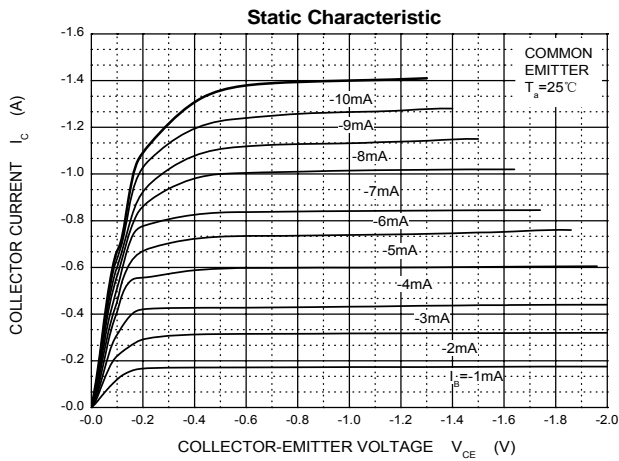
*Pulse test: t_p ≤ 300μs, δ ≤ 0.02.

CLASSIFICATION of h_{FE(1)}

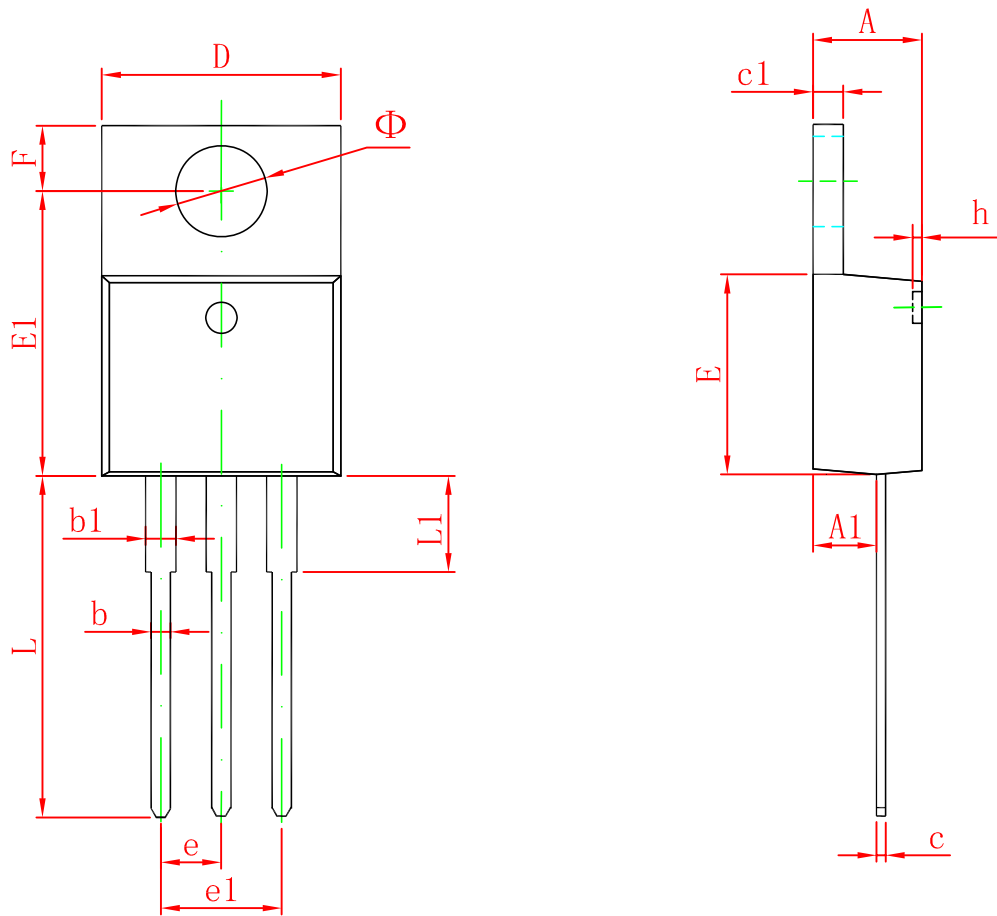
| Rank | O | Y |
|-------|--------|---------|
| Range | 70-140 | 120-240 |

Typical Characteristics

2SA1012



TO-220-3L Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|--------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 4.470 | 4.670 | 0.176 | 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 | 1.170 | 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 | 2.540 TYP | | 0.100 TYP | |
| e1 | 4.980 | 5.180 | 0.196 | 0.204 |
| F | 2.590 | 2.890 | 0.102 | 0.114 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| L | 13.400 | 13.800 | 0.528 | 0.543 |
| L1 | 3.560 | 3.960 | 0.140 | 0.156 |
| Φ | 3.735 | 3.935 | 0.147 | 0.155 |

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