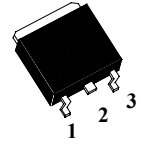


NPN PLASTIC ENCAPSULATE TRANSISTORS

 Lead(Pb)-Free

1.BASE
2.COLLECTOR
3.EMITTER



D-PAK(TO-252)

ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

| Rating | Symbol | Limits | Unit |
|-----------------------------|------------------|-------------|------|
| Collector-Base Voltage | V _{CBO} | 60 | V |
| Collector-Emitter Voltage | V _{CEO} | 50 | V |
| Emitter-Base Voltage | V _{EBO} | 6.0 | V |
| Collector Current | I _C | 3.0 | μA |
| Collector Power Dissipation | P _D | 1.0 | W |
| Junction Temperature | T _j | -55 to +150 | °C |
| Storage Temperature Range | T _{stg} | -55 to +150 | °C |

ELECTRICAL CHARACTERISTICS(T_A=25°C unless otherwise noted)

| Parameter | Symbol | Min | Typ | Max | Unit |
|--|-------------------|-----|-----|-----|------|
| Collector-Base Breakdown Voltage I _C =10μA | BV _{CBO} | 60 | - | - | V |
| Collector-Emitter Breakdown Voltage I _C =1.0mA | BV _{CEO} | 50 | - | - | V |
| Emitter-Base Breakdown Voltage I _E =10μA | BV _{EBO} | 6.0 | - | - | V |
| Collector Cutoff Current V _{CB} =40V | I _{CBO} | - | - | 1.0 | μA |
| Collector Cutoff Current V _{EB} =4.0V | I _{EBO} | - | - | 1.0 | μA |

ON CHARACTERISTICS

| | | | | | |
|---|----------------------------|-----------|--------|----------|--------|
| DC Current Gain $V_{CE}=2V, I_C=0.1A$ $V_{CE}=2V, I_C=3.0A$ | $h_{FE(1)}$ $h_{FE(2)}$ | 100 35 | - - | 560 - | - - |
| Collector-Emitter Saturation Voltage $I_C=2A, I_B=0.1A$ | $V_{CE(sat)}$ | - | - | 0.5 | V |
| Base-Emitter Saturation Voltage $I_C=2A, I_B=0.1A$ | $V_{BE(sat)}$ | - | - | 1.2 | V |

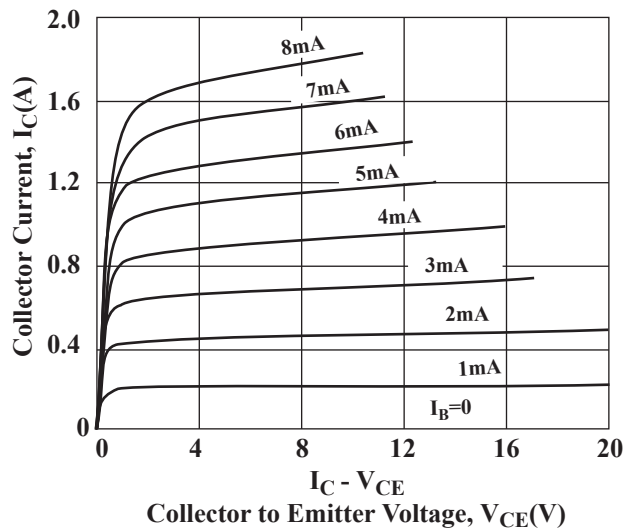
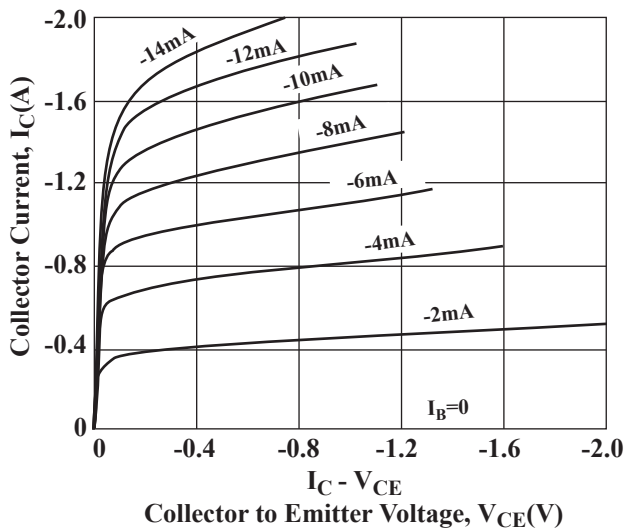
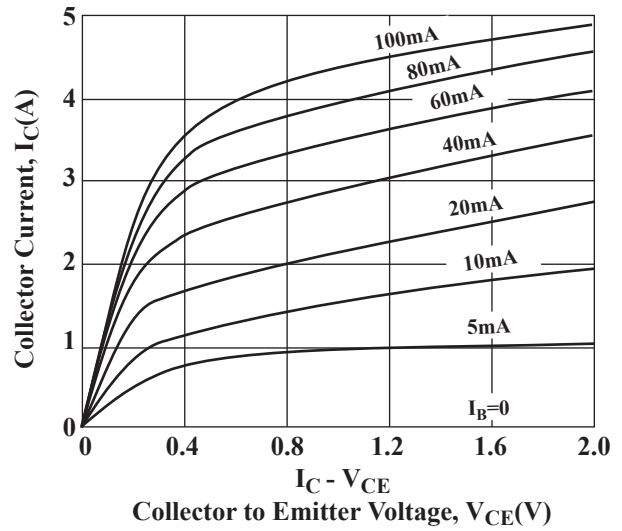
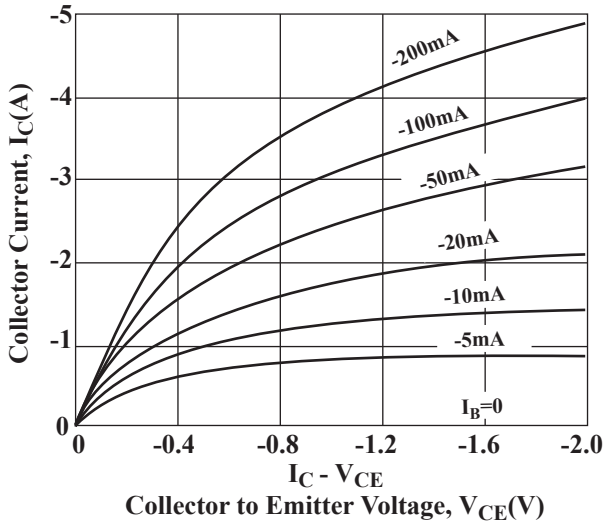
DYNAMIC CHARACTERISTICS

| | | | | | |
|--|----------|---|-----|---|-----|
| Transition Frequency $V_{CE}=10V, I_C=50mA$ | f_T | - | 150 | - | MHz |
| Output Capacitance $V_{CB}=10V, I_E=0, f=1.0MHz$ | C_{ob} | - | 25 | - | pF |
| Turn-off time $V_{CC}=25V, I_C=1A, I_{B1}=-I_{B2}=0.1A$ | t_{on} | - | 70 | - | nS |
| Fall time $V_{CC}=25V, I_C=1A, I_{B1}=-I_{B2}=0.1A$ | t_f | - | 650 | - | |
| Storage time $V_{CC}=25V, I_C=1A, I_{B1}=-I_{B2}=0.1A$ | t_s | - | 35 | - | |

CLASSIFICATION OF $h_{FE(1)}$

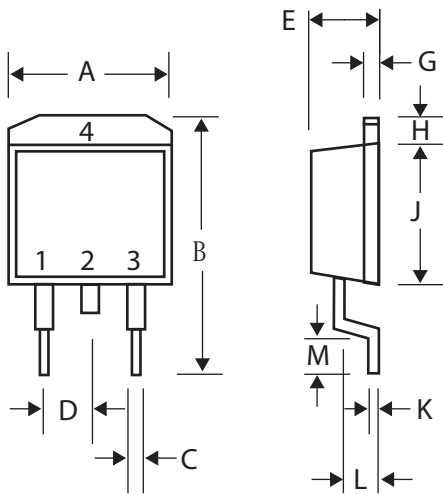
| Rank | R | S | T | U |
|-------|-----------|-----------|-----------|-----------|
| Range | 100 - 200 | 140 - 280 | 200 - 400 | 280 - 560 |

Typical Characteristics



TO-252 Outline Dimensions

unit:mm



| TO-252 | | |
|--------|------|-------|
| Dim | Min | Max |
| A | 6.40 | 6.80 |
| B | 9.00 | 10.00 |
| C | 0.50 | 0.80 |
| D | - | 2.30 |
| E | 2.20 | 2.50 |
| G | 0.45 | 0.55 |
| H | 1.00 | 1.60 |
| J | 5.40 | 5.80 |
| K | 0.30 | 0.64 |
| L | 0.70 | 1.70 |
| M | 0.90 | 1.50 |