



## C945 TRANSISTOR (NPN)

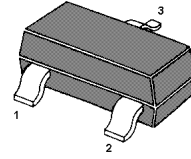
### FEATURE

Excellent  $h_{FE}$  Linearity

Low noise

Complementary to A733

### SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

MARKING: CR

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

| Symbol    | Parameter                     | Value   | Units            |
|-----------|-------------------------------|---------|------------------|
| $V_{CBO}$ | Collector-Base Voltage        | 60      | V                |
| $V_{CEO}$ | Collector-Emitter Voltage     | 50      | V                |
| $V_{EBO}$ | Emitter-Base Voltage          | 5       | V                |
| $I_C$     | Collector Current -Continuous | 150     | mA               |
| $P_C$     | Collector Power Dissipation   | 200     | mW               |
| $T_J$     | Junction Temperature          | 150     | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature           | -55-150 | $^\circ\text{C}$ |

### ELECTRICAL CHARACTERISTICS ( $T_{amb}=25^\circ\text{C}$ unless otherwise specified)

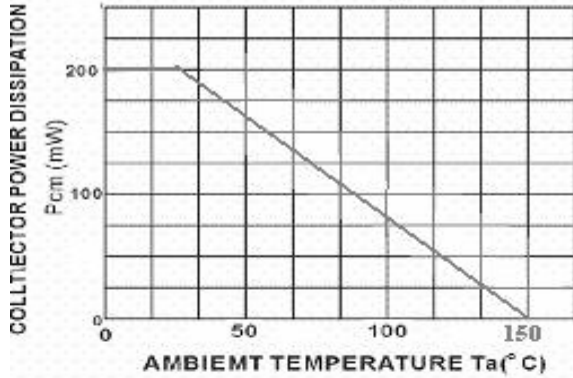
| Parameter                            | Symbol        | Test conditions   | MIN | TYP | MAX | UNIT          |
|--------------------------------------|---------------|---|-----|-----|-----|---------------|
| Collector-base breakdown voltage     | $V(BR)_{CBO}$ | $I_C=100\mu\text{A}$ , $I_E=0$  | 60  |     |     | V             |
| Collector-emitter breakdown voltage  | $V(BR)_{CEO}$ | $I_C=1\text{mA}$ , $I_B=0$  | 50  |     |     | V             |
| Emitter-base breakdown voltage       | $V(BR)_{EBO}$ | $I_E=0.1\text{mA}$ , $I_C=0$  | 5   |     |     | V             |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=60\text{V}$ , $I_E=0$   |     |     | 0.1 | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CER}$     | $V_{CE}=55\text{V}$ , $R=10\text{M}\Omega$  |     |     | 0.1 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5\text{V}$ , $I_C=0$  |     |     | 0.1 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$   | $V_{CE}=6\text{V}$ , $I_C=1\text{mA}$   | 200 |     | 400 |               |
|                                      | $h_{FE(2)}$   | $V_{CE}=6\text{V}$ , $I_C=0.1\text{mA}$   | 40  |     |     |               |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=100\text{mA}$ , $I_B=10\text{mA}$  |     |     | 0.3 | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=100\text{mA}$ , $I_B=10\text{mA}$  |     |     | 1   | V             |
| Transition frequency                 | $f_T$         | $V_{CE}=6\text{V}$ , $I_C=10\text{mA}$ , $f=30\text{MHz}$                           | 150 |     |     | MHz           |
| Collector output capacitance         | $C_{ob}$      | $V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$                                     |     |     | 3.0 | pF            |
| Noise figure                         | NF            | $V_{CE}=6\text{V}$ , $I_C=0.1\text{mA}$<br>$R_g=10\text{k}\Omega$ , $f=1\text{kHz}$ |     | 4   | 10  | dB            |



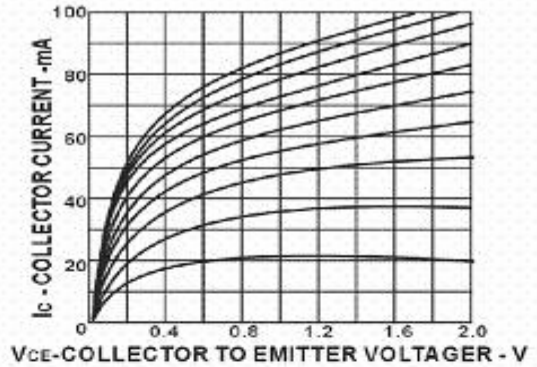
# Typical Characteristics

# C945

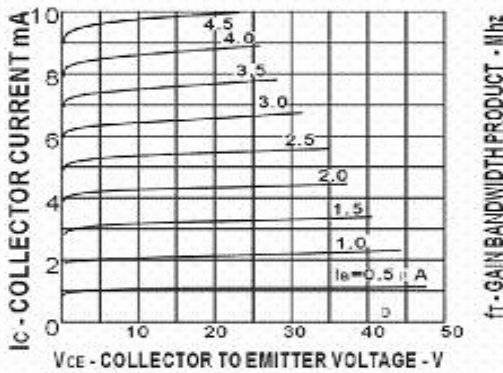
### TOTAL Power Dissipation vs AMBIENT Temperature



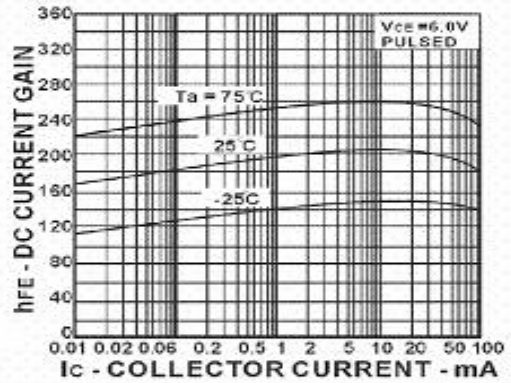
### COLLECTOR CURRENT vs COLLECTOR TO EMITTER VOLTAGE



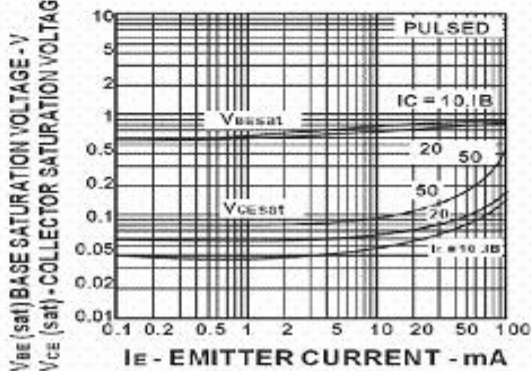
### COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



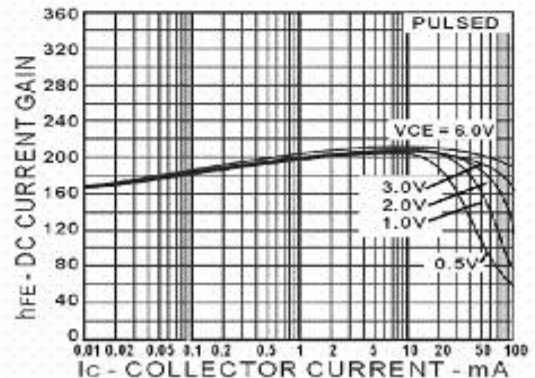
### DC CURRENT GAIN vs. COLLECTOR CURRENT



### COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



### DC CURRENT GAIN vs. COLLECTOR CURRENT

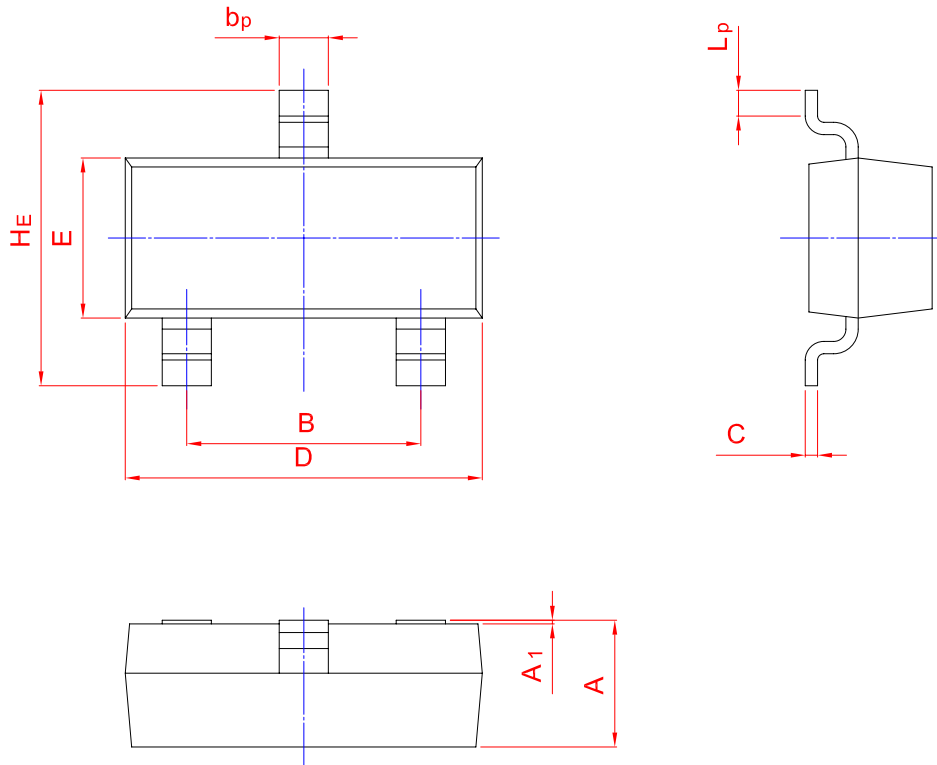
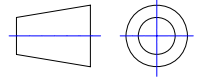




## PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



| UNIT | A    | B    | bp   | C    | D    | E    | Hε   | A1    | Lp   |
|------|------|------|------|------|------|------|------|-------|------|
| mm   | 1.40 | 2.04 | 0.50 | 0.19 | 3.10 | 1.65 | 3.00 | 0.100 | 0.50 |
|      | 0.95 | 1.78 | 0.35 | 0.08 | 2.70 | 1.20 | 2.20 | 0.013 | 0.20 |

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