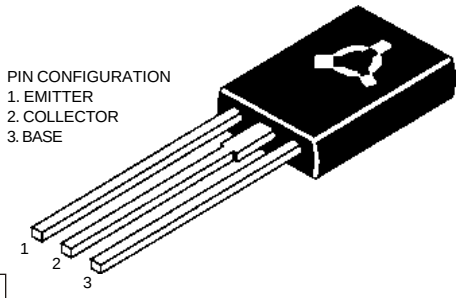
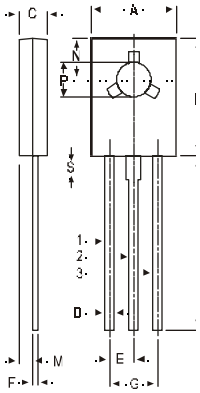
**TO-126 (SOT-32) Plastic Package**

**CSB631, CSB631K**
**CSD600, CSD600K**

*CSB631, 631K PNP PLASTIC POWER TRANSISTORS*
*CSD600, 600K NPN PLASTIC POWER TRANSISTORS*

*Low frequency Power Amplifier and Medium Speed Switching Applications*




| DIM | MIN. | MAX. |
|---|---|---|
| A | 7.4 | 7.8 |
| B | 10.5 | 10.8 |
| C | 2.4 | 2.7 |
| D | 0.7 | 0.9 |
| E | 2.25 TYP. | |
| F | 0.49 | 0.75 |
| G | 4.5 TYP. | |
| L | 15.7 TYP. | |
| M | 1.27 TYP. | |
| N | 3.75 TYP. | |
| P | 3.0 | 3.2 |
| S | 2.5 TYP. | |

ALL DIMENSIONS IN MM

***ABSOLUTE MAXIMUM RATINGS***

| | | | ***631 600*** | ***631K 600K*** | |
|---|---|---|---|---|---|
| *Collector-base voltage (open emitter)* | $V_{CBO}$ | *max.* | *100* | *120* | *V* |
| *Collector-emitter voltage (open base)* | $V_{CEO}$ | *max.* | *100* | *120* | *V* |
| *Collector current* | $I_C$ | *max.* | *1.0* | | *A* |
| *Total power dissipation up to $T_C$ = 25°C* | $P_C$ | *max.* | *8.0* | | *W* |
| *Junction temperature* | $T_j$ | *max.* | *150* | | *°C* |
| *Collector-emitter saturation voltage* | | | | | |
| *$I_C$ = 0.5 A; $I_B$ = 50 mA* | $V_{CEsat}$ | *max.* | *0.4* | | *V* |
| *D.C. current gain* | | | | | |
| *$I_C$ = 50 mA; $V_{CE}$ = 5 V* | $h_{FE}$ | *min.* | *60* | | |
| | | *max.* | *320* | | |

***RATINGS*** *(at $T_A$=25°C unless otherwise specified)*

| | | | | | |
|---|---|---|---|---|---|
| *Limiting values* | | | | | |
| *Collector-base voltage (open emitter)* | $V_{CBO}$ | *max.* | *100* | *120* | *V* |
| *Collector-emitter voltage (open base)* | $V_{CEO}$ | *max.* | *100* | *120* | *V* |

| | | | | 631 / 600 | 631K / 600K |
|---|---|---|---|---|---|
| *Emitter-base voltage (open collector)* | | $V_{EBO}$ | max. | 5.0 | V |
| *Collector current* | | $I_C$ | max. | 1.0 | A |
| *Collector current (peak)* | | $I_{CP}$ | max. | 2.0 | mA |
| *Total power dissipation up to $T_A$ = 25°C* | | $P_C$ | max. | 1.0 | W |
| *Total power dissipation up to $T_C$ = 25°C* | | $P_C$ | max. | 8.0 | W |
| *Junction temperature* | | $T_j$ | max. | 150 | °C |
| *Storage temperature* | | $T_{stg}$ | | –65 to +150 | °C |

***CHARACTERISTICS***

*$T_{amb}$ = 25°C unless otherwise specified*

| | | | | 631 / 600 | 631K / 600K |
|---|---|---|---|---|---|
| *Collector cutoff current* | | | | | |
| *$I_E$ = 0; $V_{CB}$ = 50 V* | | $I_{CBO}$ | max. | 1.0 | µA |
| *Emitter cut-off current* | | | | | |
| *$I_C$ = 0; $V_{EB}$ = 4 V* | | $I_{EBO}$ | max. | 1.0 | µA |
| *Breakdown voltages* | | | | | |
| *$I_C$ = 1 mA; $I_B$ = 0* | | $V_{CEO}$ | min. | 100 / 120 | V |
| *$I_C$ = 10 µA; $I_E$ = 0* | | $V_{CBO}$ | min. | 100 / 120 | V |
| *$I_E$ = 10 µA; $I_C$ = 0* | | $V_{EBO}$ | min. | 5.0 | V |
| *Saturation voltages* | | | | | |
| *$I_C$ = 500 mA; $I_B$ = 50 mA* | | $V_{CEsat}$ | max. | 0.4 | V |
| | | $V_{BEsat}$ | max. | 1.2 | V |
| *D.C. current gain* | | | | | |
| *$I_C$ = 50 mA; $V_{CE}$ = 5 V* | | $h_{FE}$* | min. | 60 | |
| | | | max. | 320 | |
| *$I_C$ = 500 mA; $V_{CE}$ = 5 V* | | $h_{FE}$ | min. | 20 | |
| *Transition frequency* | | | | | |
| *$I_C$ = 50 mA; $V_{CE}$ = 10 V* | ***PNP*** | $f_T$ | typ. | 110 | MHz |
| | ***NPN*** | | typ. | 130 | MHz |
| *Output capacitance* | | | | | |
| *$V_{CB}$ = 10 V; $I_E$ = 0; f = 1 MHz* | ***PNP*** | $C_{ob}$ | typ. | 30 | pF |
| | ***NPN*** | $C_{ob}$ | typ. | 20 | pF |

**** $h_{FE}$ classification: D60 - 120, E = 100 - 200, F 160 - 320***

## Customer Notes

## Disclaimer

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