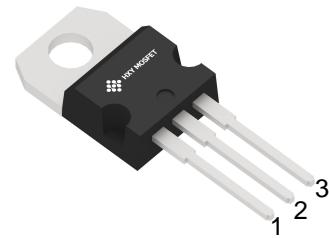




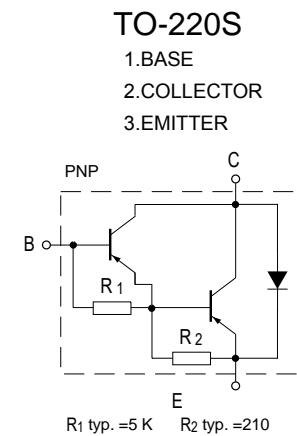
Features

- Monolithic Darlington Configuration
- Integrated Antiparallel Collector-Emitter Diode



Maximum Ratings (Ta=25 unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|-----------------|--|----------|------|
| V_{CBO} | Collector-Base Voltage | -100 | V |
| V_{CEO} | Collector-Emitter Voltage | -100 | V |
| V_{EBO} | Emitter-Base Voltage | -5 | V |
| I_C | Collector Current | -10 | A |
| P_C | Collector Power Dissipation | 2 | W |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 62.5 | °C/W |
| T_J, T_{stg} | Operation Junction and Storage Temperature Range | -55~+150 | °C |



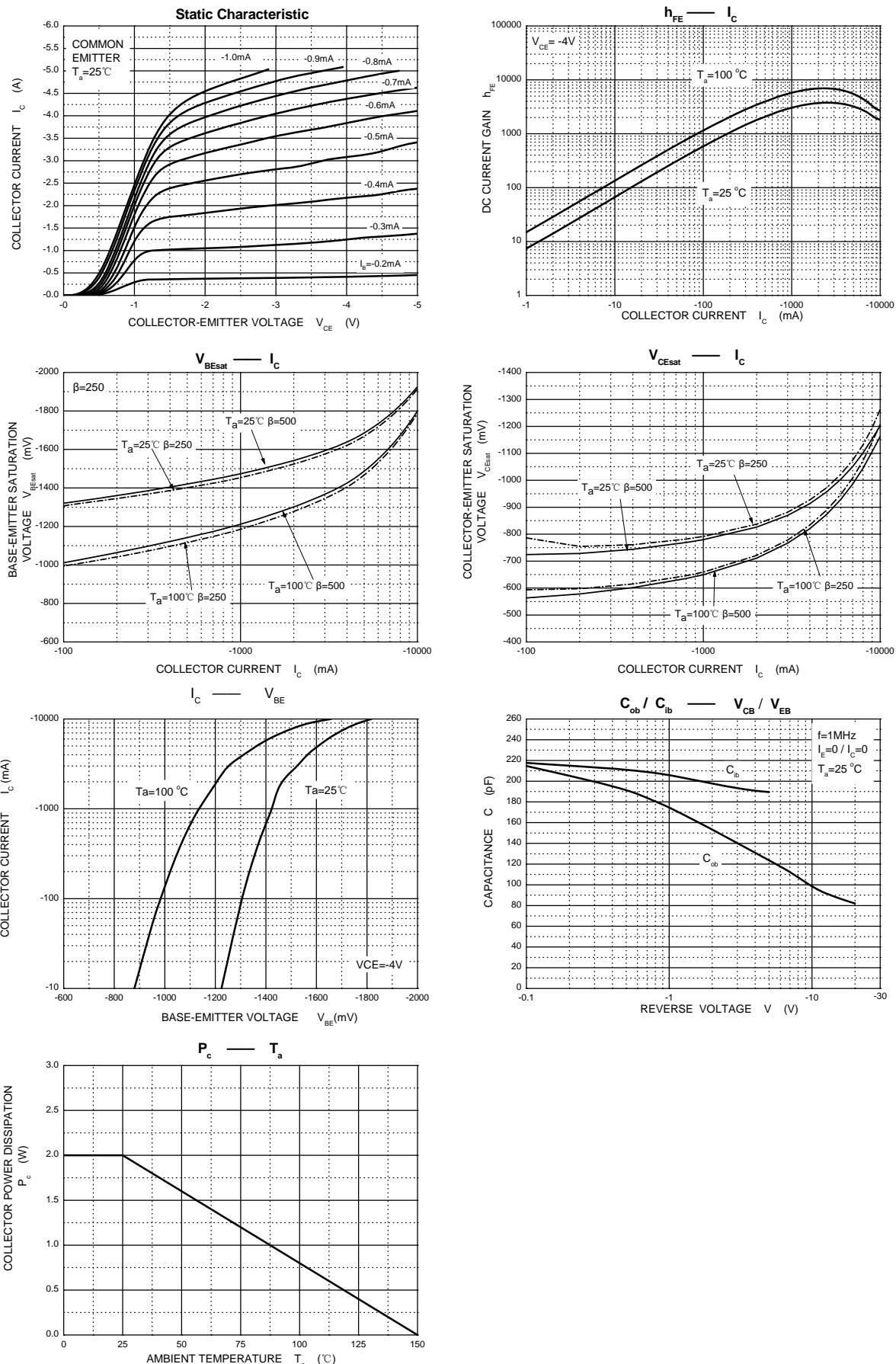
Electrical Characteristics (Ta=25 unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|------------------|---|------|-----|-------|------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=-1\text{mA}$, $I_E=0$ | -100 | | | V |
| Collector-emitter sustaining voltage | $V_{CEO(sus)}^*$ | $I_C=-30\text{mA}$, $I_B=0$ | -100 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=-10\text{mA}$, $I_C=0$ | -5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=-100\text{V}$, $I_E=0$ | | | -1 | mA |
| Collector cut-off current | I_{CEO} | $V_{CE}=-50\text{V}$, $I_C=0$ | | | -2 | mA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=-5\text{V}$, $I_C=0$ | | | -2 | mA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=-4\text{V}$, $I_C=-5\text{A}$ | 1000 | | 12000 | |
| | $h_{FE(2)}$ | $V_{CE}=-4\text{V}$, $I_C=-10\text{A}$ | 50 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)(1)}$ | $I_C=-5\text{A}$, $I_B=-10\text{mA}$ | | | -2 | V |
| | $V_{CE(sat)(2)}$ | $I_C=-10\text{A}$, $I_B=-40\text{mA}$ | | | -3 | V |
| Base-emitter voltage | V_{BE} | $V_{CE}=-4\text{V}$, $I_C=-10\text{A}$ | | | -3 | V |

*Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$.

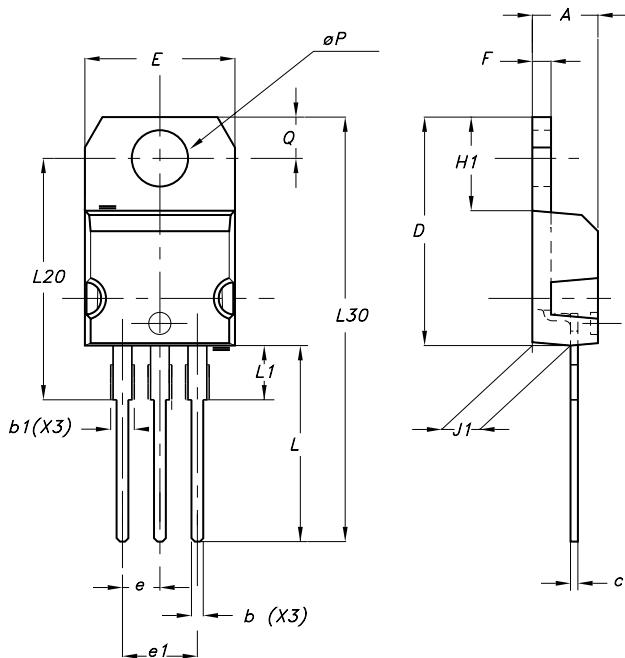


Typical Characteristics





Package Information TO-220S



| DIM. | mm. | | | inch | | |
|------|-------|-------|-------|-------|-------|-------|
| | MIN. | _TYP. | MAX. | MIN. | _TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| b | 0.61 | | 0.88 | 0.024 | | 0.034 |
| b1 | 1.15 | | 1.70 | 0.045 | | 0.066 |
| c | 0.49 | | 0.70 | 0.019 | | 0.027 |
| D | 15.25 | | 15.75 | 0.60 | | 0.620 |
| E | 10 | | 10.40 | 0.393 | | 0.409 |
| e | 2.40 | | 2.70 | 0.094 | | 0.106 |
| e1 | 4.95 | | 5.15 | 0.194 | | 0.202 |
| F | 1.23 | | 1.32 | 0.048 | | 0.052 |
| H1 | 6.20 | | 6.60 | 0.244 | | 0.256 |
| J1 | 2.40 | | 2.72 | 0.094 | | 0.107 |
| L | 13 | | 14 | 0.511 | | 0.551 |
| L1 | 3.50 | | 3.93 | 0.137 | | 0.154 |
| L20 | | 16.40 | | | 0.645 | |
| L30 | | 28.90 | | | 1.137 | |
| øP | 3.75 | | 3.85 | 0.147 | | 0.151 |
| Q | 2.65 | | 2.95 | 0.104 | | 0.116 |



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