



PNP 2N4398 – 2N4399 – 2N5745

SILICON POWER TRANSISTORS

They are PNP transistors mounted in Jedec TO-3 package.
 They are intended for use in power amplifier and switching circuits applications.
 Complement to NPN 2N5301 – 2N5302 – 2N5303.
 Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit |
|-----------|---------------------------|--------------------|------|
| V_{CEO} | Collector-Emitter Voltage | 2N4398 | -40 |
| | | 2N4399 | -60 |
| | | 2N5745 | -80 |
| V_{CBO} | Collector-Base Voltage | 2N4398 | -40 |
| | | 2N4399 | -60 |
| | | 2N5745 | -80 |
| V_{EBO} | Emitter-Base Voltage | -5 | V |
| I_C | Collector Current | 2N4398 | -30 |
| | | 2N4399 | |
| | | 2N5745 | -20 |
| I_{CM} | Collector Peak Current | 50 | A |
| I_B | Base Current | -7.5 | A |
| I_{BM} | Base Peak Current | 15 | A |
| P_{TOT} | Power Dissipation | @ $T_C = 25^\circ$ | 200 |
| T_J | Junction Temperature | 200 | °C |
| T_S | Storage Temperature | -65 to +200 | |

THERMAL CHARACTERISTICS

| Symbol | Ratings | Value | Unit |
|-------------|---|-------|------|
| R_{thJ-C} | Thermal Resistance, Junction to Case | 0.875 | °C/W |
| R_{thJ-A} | Thermal Resistance, Junction to Ambient | 35 | °C/W |

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | MAx | Unit | | | | |
|---|--|---|--------|-----|---|--------|----|---|------|----|
| $V_{CEO(BR)}$ | Collector-Emitter Breakdown Voltage (*) | $I_C = -200 \text{ mA}$ $I_B = 0$ | 2N4398 | -40 | - | - | V | | | |
| | | | 2N4399 | -60 | - | - | | | | |
| | | | 2N5745 | -80 | - | - | | | | |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = -40 \text{ V}, I_E = 0$ | 2N4398 | - | - | -1 | mA | | | |
| | | $V_{CB} = -60 \text{ V}, I_E = 0$ | 2N4399 | | | | | | | |
| | | $V_{CB} = -80 \text{ V}, I_E = 0$ | 2N5745 | | | | | | | |
| I_{CEO} | Collector Cutoff Current | $V_{CE} = -40 \text{ V}, I_B = 0$ | 2N4398 | - | - | -5 | mA | | | |
| | | $V_{CE} = -60 \text{ V}, I_B = 0$ | 2N4399 | | | | | | | |
| | | $V_{CE} = -80 \text{ V}, I_B = 0$ | 2N5745 | | | | | | | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = -5 \text{ V}, I_C = 0$ | 2N4398 | - | - | -5 | mA | | | |
| | | | 2N4399 | | | | | | | |
| | | | 2N5745 | | | | | | | |
| I_{CEX} | Collector Cutoff Current | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ | 2N4398 | - | - | -5 | mA | | | |
| | | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ | 2N4399 | | | | | | | |
| | | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ | 2N5745 | | | | | | | |
| | | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ $T_C = 150^\circ\text{C}$ | 2N4398 | | | - | | - | -10 | |
| | | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ $T_C = 150^\circ\text{C}$ | 2N4399 | | | | | | | |
| | | $V_{CE} = -40 \text{ V}, V_{BE} = 1.5 \text{ V}$ $T_C = 150^\circ\text{C}$ | 2N5745 | | | | | | | |
| $V_{CE(SAT)}$ | Collector-Emitter saturation Voltage (*) | $I_C = -10 \text{ A}, I_B = -1 \text{ A}$ | 2N4398 | - | - | -0.75 | V | | | |
| | | | 2N4399 | | | | | | | |
| | | | 2N5745 | | | | | - | - | -1 |
| | | $I_C = -15 \text{ A}, I_B = -1.5 \text{ A}$ | 2N4398 | | | | | | | |
| | | | 2N4399 | | | | | | | |
| | | | 2N5745 | - | - | -1.5 | | | | |
| | | $I_C = -20 \text{ A}, I_B = -2 \text{ A}$ | 2N4398 | | | | | | | |
| | | | 2N4399 | | | | | | | |
| | | | 2N5745 | - | - | -2 | | | | |
| $I_C = -20 \text{ A}, I_B = -4 \text{ A}$ | 2N4398 | | | | | | | | | |
| | 2N4399 | | | | | | | | | |
| | 2N5745 | - | - | -4 | | | | | | |
| $V_{BE(SAT)}$ | Base-Emitter saturation Voltage (*) | | | | $I_C = -10 \text{ A}, I_B = -1 \text{ A}$ | 2N4398 | - | - | -1.6 | V |
| | | | | | | 2N4399 | | | | |
| | | 2N5745 | - | - | | -1.7 | | | | |
| | | $I_C = -15 \text{ A}, I_B = -1.5 \text{ A}$ | | | 2N4398 | | | | | |
| | | | | | 2N4399 | | | | | |
| | | | 2N5745 | - | - | -1.85 | | | | |
| | | $I_C = -20 \text{ A}, I_B = -2 \text{ A}$ | 2N4398 | | | | | | | |
| | | | 2N4399 | | | | | | | |
| | | | 2N5745 | - | - | -2.5 | | | | |
| $I_C = -20 \text{ A}, I_B = -4 \text{ A}$ | 2N4398 | | | | | | | | | |
| | 2N4399 | | | | | | | | | |
| | 2N5745 | | | | | | | | | |



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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

| Symbol | Ratings | Test Condition(s) | Min | Typ | MAx | Unit |
|--|-----------------------------|--|--------|------|-----|------|
| $V_{BE(on)}$ | Base-Emitter on Voltage (*) | $I_C = -15\text{ A}, V_{CE} = -2\text{ V}$ | 2N4398 | - | - | -1.7 |
| | | | 2N4399 | | | |
| | | $I_C = -10\text{ A}, V_{CE} = -2\text{ V}$ | 2N5745 | - | - | -1.5 |
| | | | 2N4398 | | | |
| | | $I_C = -30\text{ A}, V_{CE} = -4\text{ V}$ | 2N4398 | - | - | -3 |
| 2N4399 | | | | | | |
| $I_C = -20\text{ A}, V_{CE} = -4\text{ V}$ | 2N5745 | - | - | -2.5 | | |
| | 2N5745 | | | | | |
| h_{FE} | DC Current Gain (*) | $I_C = -1\text{ A}, V_{CE} = -2\text{ V}$ | 2N4398 | 40 | - | - |
| | | | 2N4399 | - | - | - |
| | | | 2N5745 | - | - | - |
| | | $I_C = -15\text{ A}, V_{CE} = -2\text{ V}$ | 2N4398 | 15 | - | 60 |
| | | | 2N4399 | | | |
| | | $I_C = -10\text{ A}, V_{CE} = -2\text{ V}$ | 2N5745 | 5 | - | - |
| | | | 2N4398 | | | |
| | | $I_C = -30\text{ A}, V_{CE} = -2\text{ V}$ | 2N4398 | 5 | - | - |
| | | | 2N4399 | | | |
| | | $I_C = -20\text{ A}, V_{CE} = -4\text{ V}$ | 2N5745 | 5 | - | - |
| 2N5745 | | | | | | |
| f_T | Transition Frequency | $V_{CE} = -10\text{ V}, I_C = -1\text{ A}$ $f = 1\text{ MHz}$ | 2N4398 | 4 | - | - |
| | | | 2N4399 | | | |
| | | | 2N5745 | | | |

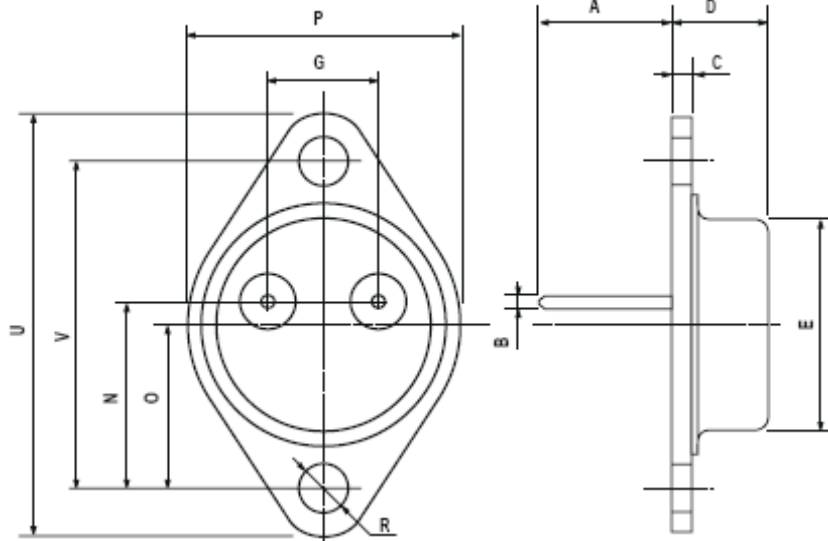
(*) Pulse Width $\approx 300\ \mu\text{s}$, Duty Cycle $\leq 2\%$



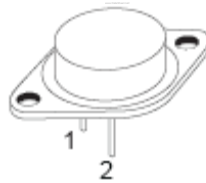
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MECHANICAL DATA CASE TO-3

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | min | max |
| A | 11 | 13.10 |
| B | 0.97 | 1.15 |
| C | 1.5 | 1.65 |
| D | 8.32 | 8.92 |
| F | 19 | 20 |
| G | 10.70 | 11.1 |
| N | 16.50 | 17.20 |
| P | 25 | 26 |
| R | 4 | 4.09 |
| U | 38.50 | 39.30 |
| V | 30 | 30.30 |



| | |
|---------|-----------|
| Pin 1 : | Base |
| Pin 2 : | Emitter |
| Case : | Collector |



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