

isc Silicon NPN Power Transistors

2N6338/6339/6340/6341

DESCRIPTION

- Collector-Emitter Sustaining Voltage-
 : $V_{CEO(SUS)} = 100V(\text{Min})$ - 2N6338
 = $120V(\text{Min})$ - 2N6339
 = $140V(\text{Min})$ - 2N6340
 = $160V(\text{Min})$ - 2N6341
- High Switching Speed
- Low Saturation Voltage-
 : $V_{CE(sat)} = 1.0V(\text{Max}) @ I_C = 10A$

APPLICATIONS

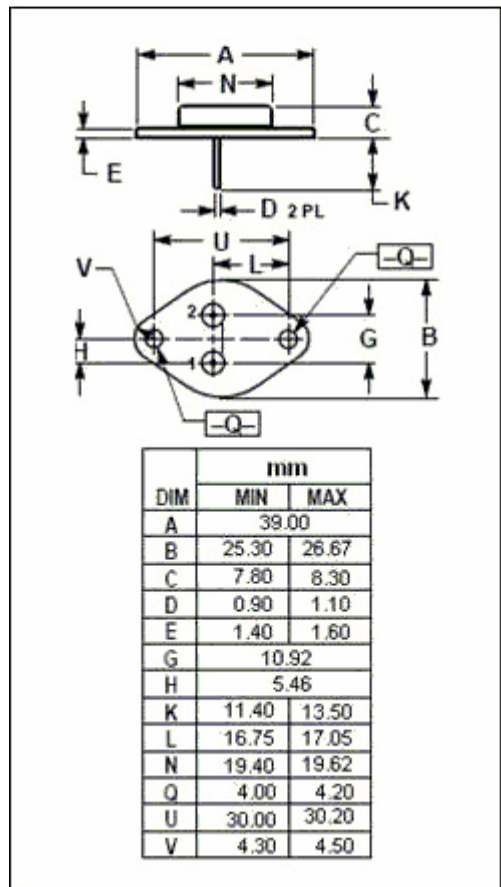
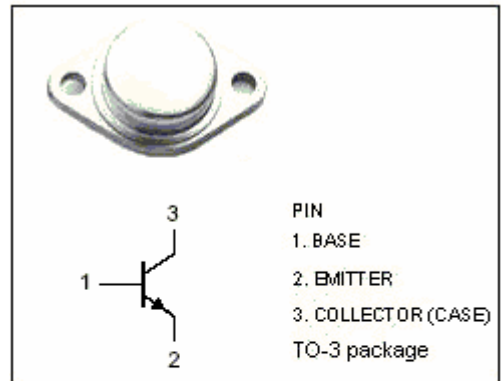
- Designed for use in industrial-military power amplifier and switching circuit applications.

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

| SYMBOL | PARAMETER | VALUE | UNIT | |
|-----------|--|---------|------------------|---|
| V_{CBO} | Collector-Base Voltage | 2N6338 | 120 | V |
| | | 2N6339 | 140 | |
| | | 2N6340 | 160 | |
| | | 2N6341 | 180 | |
| V_{CEO} | Collector-Emitter Voltage | 2N6338 | 100 | V |
| | | 2N6339 | 120 | |
| | | 2N6340 | 140 | |
| | | 2N6341 | 150 | |
| V_{EBO} | Emitter-Base Voltage | 7 | V | |
| I_C | Collector Current-Continuous | 25 | A | |
| I_{CM} | Collector Current-Peak | 50 | A | |
| I_B | Base Current-Continuous | 10 | A | |
| P_C | Collector Power Dissipation @ $T_C=25^\circ\text{C}$ | 200 | W | |
| T_J | Junction Temperature | 200 | $^\circ\text{C}$ | |
| T_{stg} | Storage Temperature | -65~200 | $^\circ\text{C}$ | |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|--------------------------------------|-------|--------------------|
| $R_{th\ j-c}$ | Thermal Resistance, Junction to Case | 0.875 | $^\circ\text{C/W}$ |



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ELECTRICAL CHARACTERISTICS

 $T_C=25^\circ\text{C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT | |
|-----------------|--------------------------------------|---|----------------------------|----------------------------|---------------|----|
| $V_{CE(SUS)}$ | Collector-Emitter Sustaining Voltage | 2N6338 | $I_C=50\text{mA}; I_B=0$ | 100 | V | |
| | | 2N6339 | | 120 | | |
| | | 2N6340 | | 140 | | |
| | | 2N6341 | | 150 | | |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=10\text{A}; I_B=1\text{A}$ | | 1.0 | V | |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=25\text{A}; I_B=2.5\text{A}$ | | 1.8 | V | |
| $V_{BE(sat)-1}$ | Base-Emitter Saturation Voltage | $I_C=10\text{A}; I_B=1\text{A}$ | | 1.8 | V | |
| $V_{BE(sat)-2}$ | Base-Emitter Saturation Voltage | $I_C=25\text{A}; I_B=2.5\text{A}$ | | 2.5 | V | |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C=10\text{A}; V_{CE}=2\text{V}$ | | 1.8 | V | |
| I_{CEO} | Collector Cutoff Current | 2N6338 | $V_{CE}=50\text{V}; I_B=0$ | 50 | μA | |
| | | 2N6339 | | $V_{CE}=60\text{V}; I_B=0$ | | 50 |
| | | 2N6340 | | $V_{CE}=70\text{V}; I_B=0$ | | 50 |
| | | 2N6341 | | $V_{CE}=75\text{V}; I_B=0$ | | 50 |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=\text{Rated } V_{CBO}; I_E=0$ | | 10 | μA | |
| I_{CEX} | Collector Cutoff Current | $V_{CE}=\text{Rated } V_{CEO}; V_{BE(off)}=1.5\text{V}$ $V_{CE}=\text{Rated } V_{CEO}; V_{BE(off)}=1.5\text{V}, T_C=150^\circ\text{C}$ | | 10 | μA | |
| | | | | 1.0 | mA | |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=6\text{V}; I_C=0$ | | 0.1 | mA | |
| h_{FE-1} | DC Current Gain | $I_C=0.5\text{A}; V_{CE}=2\text{V}$ | 50 | | | |
| h_{FE-2} | DC Current Gain | $I_C=10\text{A}; V_{CE}=2\text{V}$ | 30 | 120 | | |
| h_{FE-3} | DC Current Gain | $I_C=25\text{A}; V_{CE}=2\text{V}$ | 12 | | | |
| f_T | Current-Gain—Bandwidth Product | $I_C=1\text{A}; V_{CE}=10\text{V}; f_{\text{test}}=10\text{MHz}$ | 40 | | MHz | |
| C_{OB} | Output Capacitance | $I_E=0; V_{CB}=10\text{V}; f_{\text{test}}=0.1\text{MHz}$ | | 300 | pF | |

Switching Times

| | | | | | |
|-----------|--------------|--|--|------|---------------|
| t_r | Rise Time | $V_{CC}=80\text{V}; I_C=10\text{A}; I_{B1}=1\text{A}, V_{BE(off)}=6\text{V}$ | | 0.3 | μs |
| t_{stg} | Storage Time | $V_{CC}=80\text{V}; I_C=10\text{A}; I_{B1}=-I_{B2}=1\text{A},$ | | 1.0 | μs |
| t_f | Fall Time | | | 0.25 | μs |