

INCHANGE Semiconductor

isc Product Specification

isc Silicon NPN Power Transistor

2N3055A

DESCRIPTION

- Excellent Safe Operating Area
- DC Current Gain- $h_{FE}=20-70@I_C = 4A$
- Collector-Emitter Saturation Voltage:
: $V_{CE(sat)}= 1.1 V(Max)@ I_C = 4A$
- Complement to Type MJ2955A

APPLICATIONS

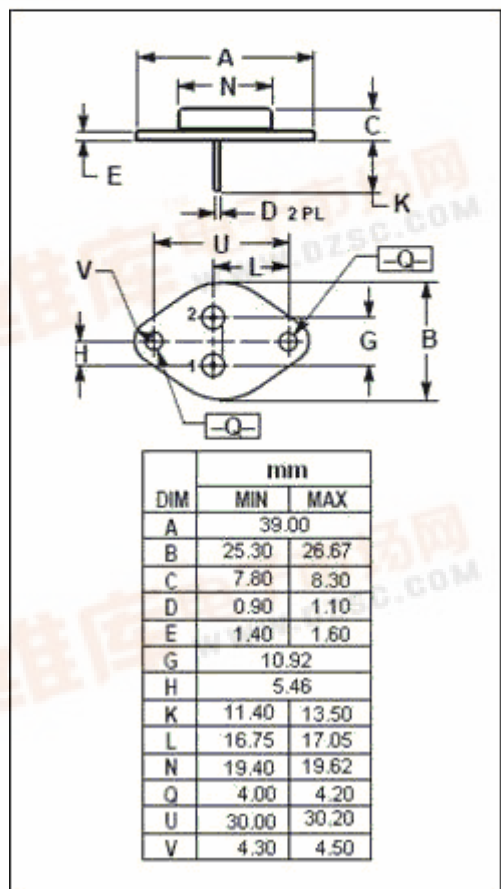
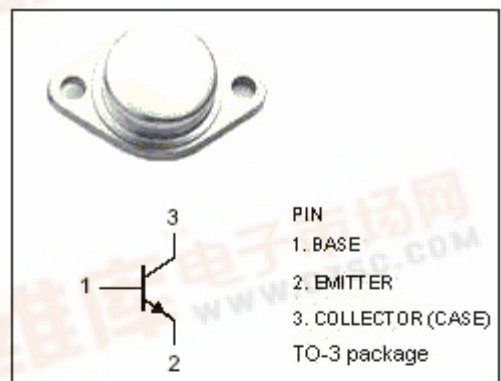
- Designed for high power audio, stepping motor and other linear applications. It can also be used in power switching circuits such as relay or solenoid drivers,DC-DC converters, inverters, or for inductive loads.

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

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|--|---------|-------------|
| V_{CBO} | Collector-Base Voltage | 100 | V |
| V_{CEV} | Collector-Emitter Voltage | 100 | V |
| V_{CEO} | Collector-Emitter Voltage | 60 | V |
| V_{EBO} | Emitter-Base Voltage | 7 | V |
| I_C | Collector Current-Continuous | 15 | A |
| I_B | Base Current | 7 | A |
| P_C | Collector Power Dissipation@ $T_C=25^{\circ}C$ | 115 | W |
| T_J | Junction Temperature | 200 | $^{\circ}C$ |
| T_{stg} | Storage Temperature | -65~200 | $^{\circ}C$ |

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | MAX | UNIT |
|---------------|-------------------------------------|------|---------------|
| $R_{th\ j-c}$ | Thermal Resistance,Junction to Case | 1.52 | $^{\circ}C/W$ |



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ELECTRICAL CHARACTERISTICS

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

| SYMBOL | PARAMETER | CONDITIONS | MIN | MAX | UNIT |
|-----------------|---|--|------|-----------|------|
| $V_{CEO(SUS)}$ | Collector-Emitter Sustaining Voltage | $I_C=200\text{mA}$; $I_B=0$ | 60 | | V |
| $V_{CE(sat)-1}$ | Collector-Emitter Saturation Voltage | $I_C=4\text{A}$; $I_B=0.4\text{A}$ | | 1.1 | V |
| $V_{CE(sat)-2}$ | Collector-Emitter Saturation Voltage | $I_C=10\text{A}$; $I_B=3.3\text{A}$ | | 3.0 | V |
| $V_{CE(sat)-3}$ | Collector-Emitter Saturation Voltage | $I_C=15\text{A}$; $I_B=7\text{A}$ | | 5.0 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C=4\text{A}$; $V_{CE}=4\text{V}$ | | 1.8 | V |
| I_{CEO} | Collector Cutoff Current | $V_{CE}=30\text{V}$; $I_B=0$ | | 0.7 | mA |
| I_{CEX} | Collector Cutoff Current | $V_{CE}=100\text{V}$; $V_{BE(off)}=1.5\text{V}$ $V_{CE}=100\text{V}$; $V_{BE(off)}=1.5\text{V}$, $T_C=150^{\circ}\text{C}$ | | 5.0 30 | mA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=7.0\text{V}$; $I_C=0$ | | 5.0 | mA |
| h_{FE-1} | DC Current Gain | $I_C=4\text{A}$; $V_{CE}=2\text{V}$ | 10 | 70 | |
| h_{FE-2} | DC Current Gain | $I_C=4\text{A}$; $V_{CE}=4\text{V}$ | 20 | 70 | |
| h_{FE-3} | DC Current Gain | $I_C=10\text{A}$; $V_{CE}=4\text{V}$ | 5 | | |
| $I_{s/b}$ | Second Breakdown Collector Current with Base Forward Biased | $V_{CE}=60\text{V}$; $t=0.5\text{s}$, Nonrepetitive | 1.95 | | A |
| C_{OB} | Output Capacitance | $I_E=0$; $V_{CB}=10\text{V}$; $f=1.0\text{MHz}$ | | 600 | pF |
| f_T | Current Gain-Bandwidth Product | $I_C=1\text{A}$; $V_{CE}=4\text{V}$; $f=1.0\text{MHz}$ | 0.8 | | MHz |

Switching Times

| | | | | | |
|-----------|--------------|---|--|-----|---------------|
| t_d | Delay Time | $I_C=4\text{A}$; $V_{CC}=30\text{V}$; $I_{B1}=-I_{B2}=0.4\text{A}$, $t_p=25\mu\text{s}$; Duty Cycle $\leq 2\%$ | | 0.5 | μs |
| t_r | Rise Time | | | 4.0 | μs |
| t_{stg} | Storage Time | | | 3.0 | μs |
| t_f | Fall Time | | | 6.0 | μs |