

2N2102 · 2N4036

COMPLEMENTARY SILICON AF MEDIUM POWER AMPLIFIERS & SWITCHES

CASE TO-39

THE 2N2102(NPN) AND 2N4036(PNP) ARE COMPLEMENTARY SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF MEDIUM POWER DRIVERS AND OUTPUTS, AS WELL AS FOR SWITCHING APPLICATIONS.



ABSOLUTE MAXIMUM RATINGS

For p-n-p devices, voltage and current values are negative.

2N2102(NPN)

2N4036(PNP)

| | | | |
|--|------------------|------|--------------|
| Collector-Base Voltage | VCBO | 120V | 90V |
| Collector-Emitter Voltage | VCEO | 65V | 65V |
| Emitter-Base Voltage | VEBO | 7V | 7V |
| Collector Current | IC | | 1A |
| Total Power Dissipation (T _C ≤ 25°C) | P _{tot} | | 7W |
| (T _A ≤ 25°C) | | | 1W |
| Operating Junction & Storage Temperature T _j , T _{stg} | | | -65 to 200°C |

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

| PARAMETER | SYMBOL | 2N2102 | | 2N4036 | | UNIT | TEST CONDITIONS |
|-------------------------------------|-------------------|--------|-----|--------|-----|------|---|
| | | MIN | MAX | MIN | MAX | | |
| Collector-Base Breakdown Voltage | BVCBO | 120 | | 90 | | V | I _C =0.1mA I _E =0 |
| Collector-Emitter Breakdown Voltage | LVCER * | 80 | | | | V | I _C =100mA R _{BE} =10Ω |
| Collector-Emitter Breakdown Voltage | LVCEV * | | | 85 | | V | I _C =100mA V _{EB} =1.5V |
| Collector-Emitter Breakdown Voltage | LVCEO * | 65 | | 65 | | V | I _C =100mA I _B =0 |
| Emitter-Base Breakdown Voltage | BVEBO | 7 | | 7 | | V | I _E =0.1mA I _C =0 |
| Collector Cutoff Current | ICBO | | 2 | | | nA | V _{CB} =60V I _E =0 |
| | | | | | 100 | nA | V _{CB} =90V I _E =0 |
| Collector Cutoff Current | ICEV | | | | 100 | μA | V _{CE} =30V V _{EB} =1.5V T _A =150°C |
| Emitter Cutoff Current | IEBO | | 5 | | 20 | nA | V _{EB} =5V I _C =0 |
| D.C. Current Gain | H _{FE} * | 10 | | | | | I _C =0.01mA V _{CE} =10V |
| | | 20 | | 20 | | | I _C =0.1mA V _{CE} =10V |
| | | 40 | 120 | 40 | 140 | | I _C =150mA V _{CE} =10V |
| | | 25 | | 20 | | | I _C =500mA V _{CE} =10V |
| | | 10 | | | | | I _C =1A V _{CE} =10V |
| | | 35 | | | | | I _C =10mA V _{CE} =10V |
| | | | | 20 | 200 | | I _C =150mA V _{CE} =2V |

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| PARAMETER | SYMBOL | 2N2102 | | 2N4036 | | UNIT | TEST CONDITIONS |
|--------------------------------------|-----------------|--------|-----|--------|-----|------|--|
| | | MIN | MAX | MIN | MAX | | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ * | | 0.5 | 0.65 | | V | $I_C=150mA$ $I_B=15mA$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ * | | 1.1 | 1.4 | | V | $I_C=150mA$ $I_B=15mA$ |
| Current Gain-Bandwidth Product | f_T | 60 | | 60 | | MHz | $I_C=50mA$ $V_{CE}=10V$ |
| Collector-Base Capacitance | C_{ob} | | 10 | 30 | | pF | $V_{CB}=10V$ $I_E=0$ $f=1MHz$ |
| Emitter-Base Capacitance | C_{ib} | | 80 | 90 | | pF | $V_{EB}=0.5V$ $I_C=0$ $f=1MHz$ |
| Noise Figure | NF | | 6 | | | dB | $I_C=0.3mA$ $V_{CE}=10V$ $f=1kHz$ $R_G=510\Omega$ |
| Turn-On Time | t_{on} | | | 110 | | nS | $I_C=150mA$ $I_{B1}=15mA$ $V_{cc}=30V$ |
| Turn-Off Time | t_{off} | | | 700 | | nS | $I_C=150mA$ $I_{B1}=-I_{B2}=15mA$ $V_{cc}=30V$ |

* Pulse Test : Pulse Width=0.3mS, Duty Cycle=1%

