

BF 494

BF 495

NPN SILICON RF SMALL SIGNAL TRANSISTORS

MICRO ELECTRONICS

THE BF494, BF495 ARE NPN SILICON PLANAR EPITAXIAL TRANSISTORS FOR RF SMALL SIGNAL APPLICATIONS UP TO 100MHz.

CASE TO-92E



CBE

ABSOLUTE MAXIMUM RATINGS

| | | BF494 | BF495 |
|---|-----------------------------------|-----------------------------------|-------|
| Collector-Base Voltage | V _{CBO} | 30V | 30V |
| Collector-Emitter Voltage | V _{CEO} | 20V | 20V |
| Emitter-Base Voltage | V _{EBO} | 5V | 5V |
| Collector Current | I _C | 30mA | |
| Total Power Dissipation (T _A ≤ 75°C) | P _{tot} | 300mW derate 4mW/°C above 75°C | |
| Operating Junction & Storage Temperature | T _j , T _{stg} | -55 to 150°C | |

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

| PARAMETER | SYMBOL | BF494 | | | BF495 | | | UNIT | TEST CONDITIONS |
|--------------------------------------|----------------------|-------|-----|-----|-------|-----|-----|------|--|
| | | MIN | TYP | MAX | MIN | TYP | MAX | | |
| Emitter-Base Breakdown Voltage | V _{EBO} | 5 | | | 5 | | | V | I _E = 10μA I _C = 0 |
| Collector Cutoff Current | I _{CBO} | | 0.1 | | | 0.1 | | μA | V _{CB} = 30V I _E = 0 |
| Collector Cutoff Current | I _{CEO} | | 1 | | | 1 | | μA | V _{CE} = 20V I _B = 0 |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | 0.1 | | | 0.1 | | | V | I _C = 10mA I _B = 1mA |
| Base-Emitter Voltage | V _{BE} | .65 | .68 | .74 | .65 | .68 | .74 | V | I _C = 1mA V _{CE} = 10V |
| D.C. Current Gain | H _{FE} | 67 | 115 | 220 | 36 | 67 | 125 | | I _C = 1mA V _{CE} = 10V* |
| Current Gain-Bandwidth Product | f _T | 260 | | | 200 | | | MHz | I _C = 1mA V _{CE} = 10V |
| Feedback Capacitance | C _{re} | .85 | | | .85 | | | pF | I _C = 1mA V _{CE} = 10V f = 450KHz |
| Noise Figure | N _F | 4 | | | 4 | | | dB | I _C = 1mA V _{CE} = 10V R _G = 100Ω f = 100MHz |
| Mixing Noise Figure | N _{Fc} | 2 | | | | | | dB | I _C = 1mA V _{CE} = 10V R _G = 830Ω f = 1MHz |
| | N _{Fc} | | | | 2.5 | | | dB | I _C = 1mA V _{CE} = 10V R _G = 670Ω f = 1MHz |

* HFE Grouping :

B : 100-220

C : 72-110

D : 36-80

MICRO ELECTRONICS LTD.

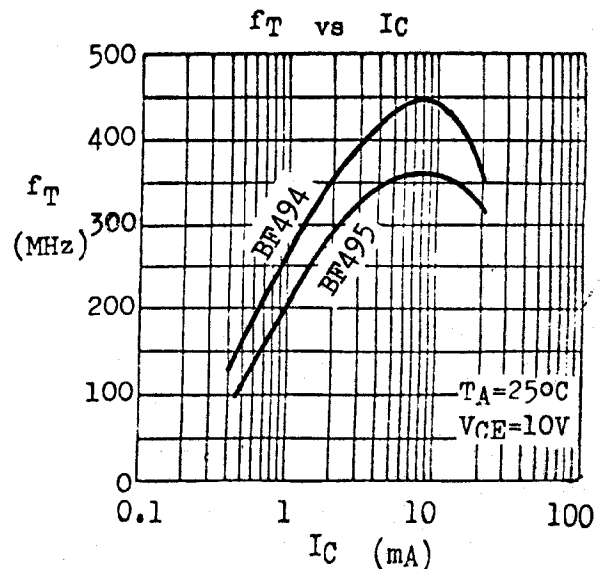
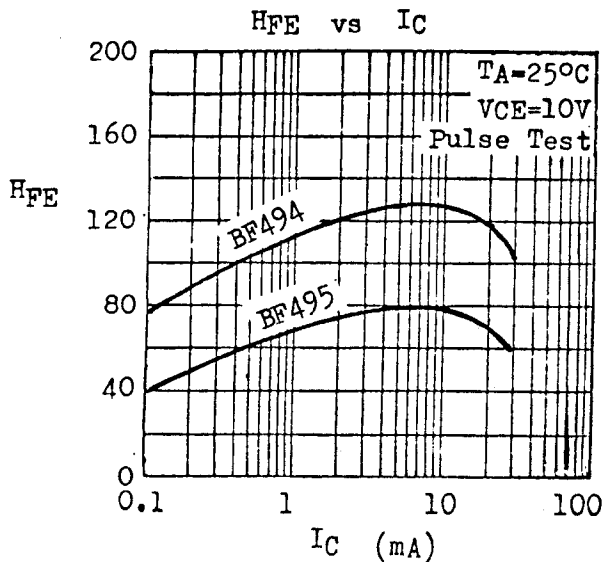
38 HUNG TO ROAD, KWUN TONG, HONG KONG.
KWUN TONG P. O. BOX 69477 CABLE ADDRESS
TELEPHONE:- 3-430181-6 3-893363.

TELEX 43510
"MICROTRON" FAX: 3-4103
3-892423

| | | | | |
|----------------|-----------------------|-------------------------|--------------------------|-----------------------|
| f=450kHz | $g_{11}=0.33m\Omega$ | $ y_{12} =2.8\mu\Omega$ | $ y_{21} =36m\Omega$ | $g_{22}=6\mu\Omega$ |
| Common Emitter | $b_{11}=0.065m\Omega$ | $-\theta_{12}=90^\circ$ | $-\theta_{21}=0^\circ$ | $b_{22}=4.5\mu\Omega$ |
| | $C_{11}=23pF$ | | | $C_{22}=1.6pF$ |
| f=10.7MHz | $g_{11}=0.45m\Omega$ | $ y_{12} =65\mu\Omega$ | $ y_{21} =36m\Omega$ | $g_{22}=8.5\mu\Omega$ |
| Common Emitter | $b_{11}=1.5m\Omega$ | $-\theta_{12}=90^\circ$ | $-\theta_{21}=10^\circ$ | $b_{22}=0.11m\Omega$ |
| | $C_{11}=22pF$ | | | $C_{22}=1.6pF$ |
| f=100MHz | $g_{11}=36m\Omega$ | $ y_{12} =420\mu\Omega$ | $ y_{21} =33m\Omega$ | $g_{22}=22\mu\Omega$ |
| Common Base | $-b_{11}=3m\Omega$ | $-\theta_{12}=88^\circ$ | $-\theta_{21}=146^\circ$ | $b_{22}=1.1m\Omega$ |
| | $-C_{11}=4.8pF$ | | | $C_{22}=1.75pF$ |

BF495 TYPICAL y-PARAMETERS AT $T_A=25^\circ C$ $I_C=1mA$ $V_{CE}=10V$

| | | | | |
|----------------|---------------------|-------------------------|--------------------------|-----------------------|
| f=450kHz | $g_{11}=0.5m\Omega$ | $ y_{12} =2.6\mu\Omega$ | $ y_{21} =36m\Omega$ | $g_{22}=2.7\mu\Omega$ |
| Common Emitter | $b_{11}=0.1m\Omega$ | $-\theta_{12}=90^\circ$ | $-\theta_{21}=0^\circ$ | $b_{22}=4.5\mu\Omega$ |
| | $C_{11}=32pF$ | | | $C_{22}=1.6pF$ |
| f=10.7MHz | $g_{11}=0.6m\Omega$ | $ y_{12} =60\mu\Omega$ | $ y_{21} =36m\Omega$ | $g_{22}=4.5\mu\Omega$ |
| Common Emitter | $b_{11}=2m\Omega$ | $-\theta_{12}=90^\circ$ | $-\theta_{21}=10^\circ$ | $b_{22}=0.11m\Omega$ |
| | $C_{11}=30pF$ | | | $C_{22}=1.6pF$ |
| f=100MHz | $g_{11}=38m\Omega$ | $ y_{12} =410\mu\Omega$ | $ y_{21} =34m\Omega$ | $g_{22}=12\mu\Omega$ |
| Common Base | $-b_{11}=1m\Omega$ | $-\theta_{12}=85^\circ$ | $-\theta_{21}=140^\circ$ | $b_{22}=1.1m\Omega$ |
| | $-C_{11}=1.6pF$ | | | $C_{22}=1.75pF$ |



d-2-β_{av}?

2.78.3300A