

# 10A015

1.5 Watts, 20 Volts, Class A  
Linear to 1000 MHz

## GENERAL DESCRIPTION

The 10A015 is a COMMON EMITTER transistor capable of providing 1.5 Watts of Class A, RF Output power to 1000 MHz. This transistor is specifically designed for general Class A amplifier applications. It utilizes gold metalization and diffused ballasting to provide high reliability and supreme ruggedness.

## ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C 6 Watts

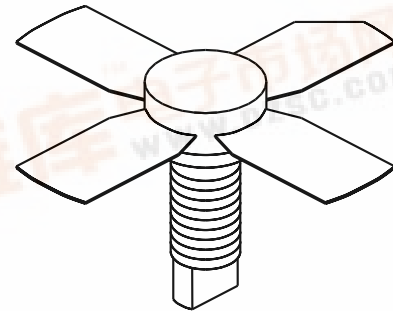
### Maximum Voltage and Current

|       |                              |           |
|-------|------------------------------|-----------|
| BVces | Collector to Emitter Voltage | 50 Volts  |
| BVebo | Emitter to Base Voltage      | 3.5 Volts |
| Ic    | Collector Current            | 750 mA    |

### Maximum Temperatures

|                                |                 |
|--------------------------------|-----------------|
| Storage Temperature            | - 65 to + 150°C |
| Operating Junction Temperature | + 200°C         |

## CASE OUTLINE 55FT, STYLE 2



## ELECTRICAL CHARACTERISTICS @ 25 °C

| SYMBOL | CHARACTERISTICS         | TEST CONDITIONS       | MIN | TYP | MAX  | UNITS |
|--------|-------------------------|-----------------------|-----|-----|------|-------|
| Pout   | Power Out               | F = 1 GHz             | 1.5 |     |      | Watts |
| Pin    | Power Input             | Ic = 220 mA           |     |     | 0.19 | Watts |
| Pg     | Power Gain              | Vcc = 20 Volts        | 9.0 | 9.5 |      | dB    |
| Ft     | Transition Frequency    | Vce = 20V, Ic =220 mA | 2.7 |     |      | GHz   |
| VSWR   | Load Mismatch Tolerance |                       |     |     | 30:1 |       |

|       |                                |                       |     |     |    |       |
|-------|--------------------------------|-----------------------|-----|-----|----|-------|
| BVebo | Emitter to Base Breakdown      | Ie = 1 mA             | 3.5 |     |    | Volts |
| BVces | Collector to Emitter Breakdown | Ic = 10 mA            | 50  |     |    | Volts |
| BVceo | Collector to Emitter Breakdown | Ic = 10 mA            | 24  |     |    | Volts |
| hFE   | DC Current Gain                | Vce = 5 V, Ic =100 mA | 20  |     |    |       |
| Cob   | Output Capacitance             | Vcb = 5 V, f = 1 MHz  |     | 3.8 |    | pF    |
| θjc   | Thermal Resistance             |                       |     | 20  | 29 | °C/W  |

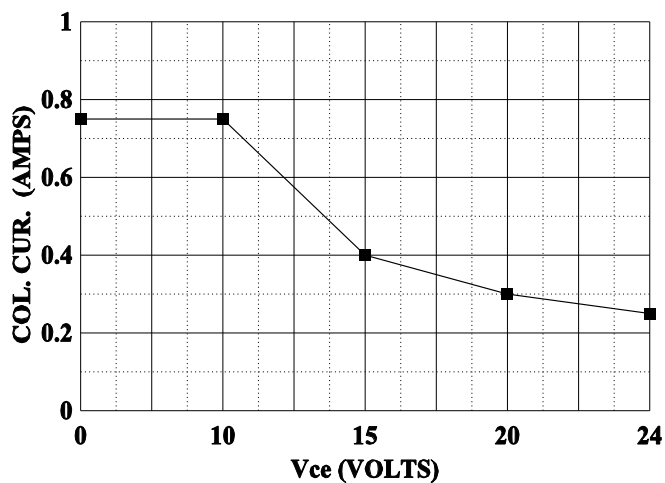
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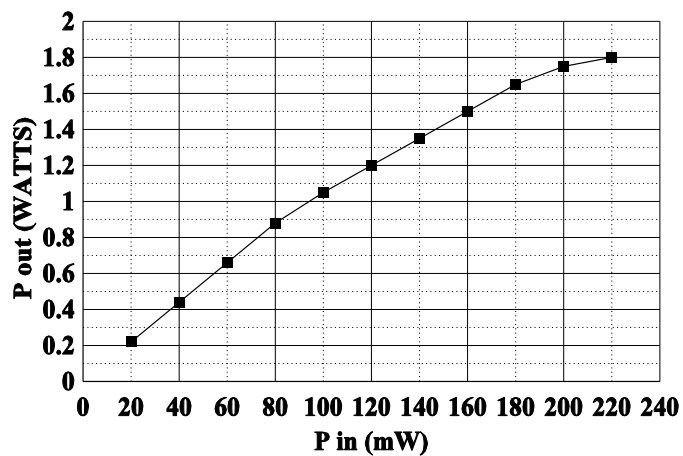


**DC SAFE OPERATING AREA**



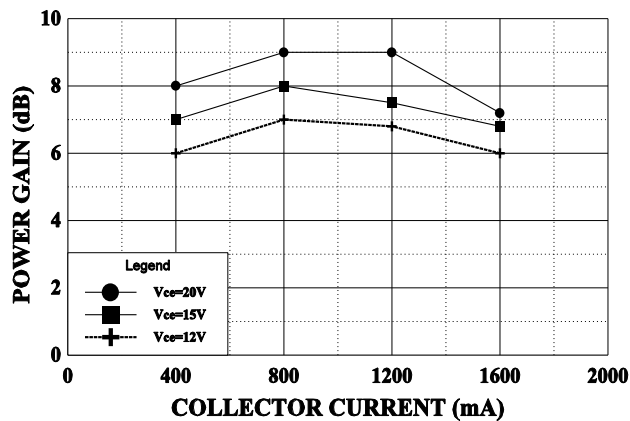
**POWER OUTPUT vs POWER INPUT**

f=1.0 GHz, Vcc=20V



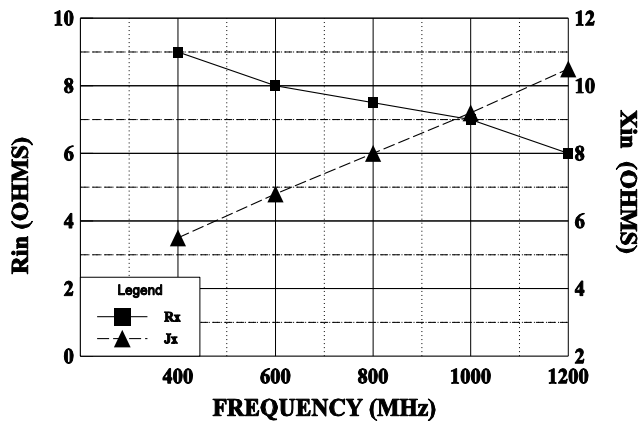
**GAIN vs COLLECTOR CURRENT**

f=1.0 GHz



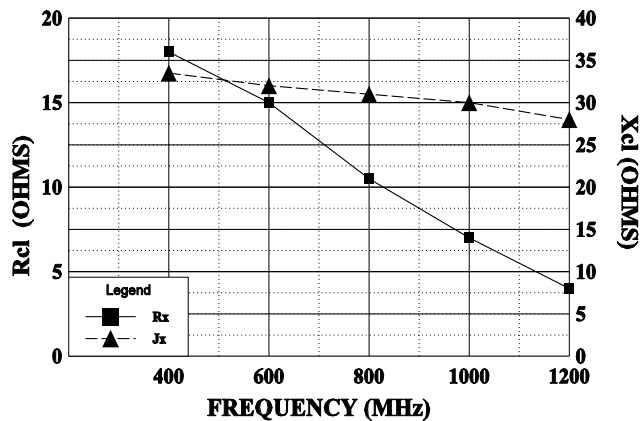
**SERIES INPUT IMPEDANCE vs FREQUENCY**

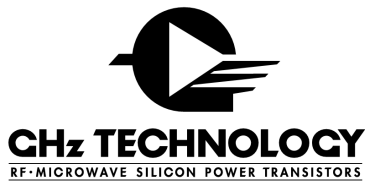
Vcc = 20 V, Ic = 220 mA



**SERIES LOAD IMPEDANCE vs FREQUENCY**

Vcc = 20 V, Ic = 220 mA





# 10A015 (20V , 0.22A)

MMICAD for Windows Fri Jul 08 10:34:39 1994  
CIRCUIT: MES

| FREQ  | --- S11 --- |          | --- S21 --- |          | --- S12 --- |         | --- S22 --- |          |
|-------|-------------|----------|-------------|----------|-------------|---------|-------------|----------|
| MHz   | MAG         | ANG      | MAG         | ANG      | MAG         | ANG     | MAG         | ANG      |
| 0.100 | 0.71444     | -160.782 | 16.0356     | 116.519  | 0.02275     | 35.0393 | 0.42058     | -77.3759 |
| 0.200 | 0.79473     | -172.871 | 8.98445     | 96.9768  | 0.02727     | 34.4150 | 0.30289     | -105.202 |
| 0.300 | 0.81513     | -179.724 | 6.16077     | 84.5847  | 0.03101     | 37.3839 | 0.27523     | -117.550 |
| 0.400 | 0.82391     | 175.497  | 4.67553     | 76.1937  | 0.03520     | 40.2138 | 0.27423     | -124.308 |
| 0.500 | 0.82552     | 171.380  | 3.75402     | 69.3057  | 0.03928     | 43.6423 | 0.28109     | -128.108 |
| 0.600 | 0.82599     | 167.564  | 3.12463     | 62.5982  | 0.04408     | 45.5915 | 0.29711     | -131.121 |
| 0.700 | 0.82590     | 164.137  | 2.67908     | 55.8207  | 0.04924     | 46.9769 | 0.31596     | -133.463 |
| 0.800 | 0.82751     | 160.922  | 2.34296     | 49.7308  | 0.05511     | 47.4369 | 0.33725     | -135.825 |
| 0.900 | 0.82895     | 157.536  | 2.07752     | 43.8716  | 0.06110     | 46.9143 | 0.35824     | -138.380 |
| 1.000 | 0.82649     | 154.035  | 1.86687     | 38.3915  | 0.06582     | 46.7907 | 0.37937     | -140.217 |
| 1.100 | 0.82518     | 150.725  | 1.69487     | 32.9740  | 0.07183     | 46.5604 | 0.40196     | -142.351 |
| 1.200 | 0.82311     | 147.466  | 1.54892     | 27.6537  | 0.07808     | 45.9531 | 0.42623     | -144.711 |
| 1.300 | 0.82374     | 144.089  | 1.42774     | 22.5346  | 0.08474     | 44.9908 | 0.44824     | -146.998 |
| 1.400 | 0.82316     | 140.784  | 1.32241     | 17.4996  | 0.09114     | 43.8844 | 0.47145     | -149.618 |
| 1.500 | 0.82222     | 137.234  | 1.22854     | 12.5140  | 0.09820     | 42.5710 | 0.49267     | -151.943 |
| 1.600 | 0.82163     | 133.648  | 1.14693     | 7.78041  | 0.10526     | 41.1111 | 0.51301     | -154.495 |
| 1.700 | 0.82074     | 130.047  | 1.07333     | 3.20224  | 0.11234     | 39.4652 | 0.53328     | -156.985 |
| 1.800 | 0.81902     | 126.149  | 1.00886     | -1.32148 | 0.12009     | 37.6259 | 0.55348     | -159.283 |
| 1.900 | 0.81773     | 122.433  | 0.95068     | -5.60939 | 0.12790     | 35.8041 | 0.57051     | -161.854 |
| 2.000 | 0.81598     | 118.694  | 0.89701     | -9.73811 | 0.13579     | 33.9701 | 0.58856     | -164.287 |
| 2.100 | 0.81452     | 114.613  | 0.85022     | -13.8881 | 0.14379     | 31.7736 | 0.60869     | -166.749 |
| 2.200 | 0.81224     | 110.743  | 0.80716     | -17.8736 | 0.15202     | 29.5273 | 0.62745     | -169.473 |
| 2.300 | 0.80926     | 106.728  | 0.76737     | -21.7289 | 0.16146     | 27.4446 | 0.64638     | -172.567 |
| 2.400 | 0.80939     | 102.646  | 0.73137     | -25.4845 | 0.17122     | 24.8018 | 0.65855     | -175.679 |
| 2.500 | 0.80620     | 98.4842  | 0.69786     | -29.2295 | 0.18040     | 22.0881 | 0.67062     | -178.831 |
| 2.600 | 0.80747     | 94.2752  | 0.66676     | -32.6879 | 0.18940     | 19.4187 | 0.67631     | 178.293  |
| 2.700 | 0.80377     | 89.9974  | 0.63783     | -36.1092 | 0.19878     | 16.5881 | 0.68340     | 175.321  |
| 2.800 | 0.79977     | 85.6483  | 0.61013     | -39.5377 | 0.20856     | 13.7516 | 0.69046     | 172.288  |
| 2.900 | 0.79459     | 81.4224  | 0.58377     | -42.5949 | 0.21777     | 10.9093 | 0.69394     | 169.137  |
| 3.000 | 0.79043     | 77.3116  | 0.55864     | -45.4501 | 0.22710     | 8.07792 | 0.69414     | 165.980  |