



# 15GN01M

## VHF to UHF Band High-frequency Switching, High-frequency General-Purpose Amplifier Applications

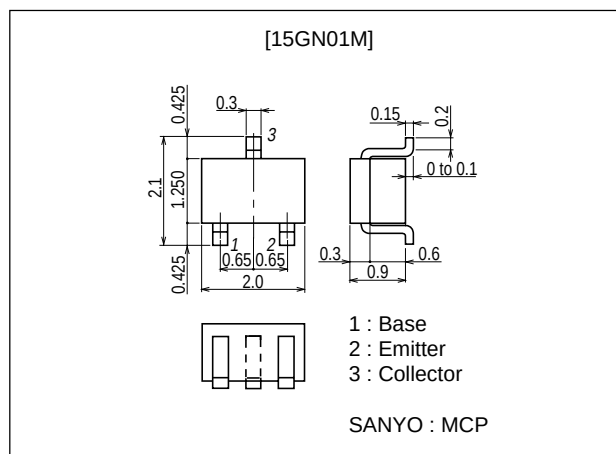
### Features

- Small ON-resistance [ $R_{on}=2\Omega$  ( $I_B=3mA$ )].
- Small output capacitance [ $C_{ob}=1.1pF$  ( $V_{CB}=10V$ )].

### Package Dimensions

unit : mm

2059B



### Specifications

Absolute Maximum Ratings at  $T_a=25^\circ C$ 

| Parameter                    | Symbol    | Conditions                                            | Ratings     | Unit       |
|------------------------------|-----------|-------------------------------------------------------|-------------|------------|
| Collector-to-Base Voltage    | $V_{CBO}$ |                                                       | 15          | V          |
| Collector-to-Emitter Voltage | $V_{CEO}$ |                                                       | 8           | V          |
| Emitter-to-Base Voltage      | $V_{EBO}$ |                                                       | 3           | V          |
| Collector Current            | $I_C$     |                                                       | 50          | mA         |
| Collector Dissipation        | $P_C$     | Mounted on a ceramic board(250mm <sup>2</sup> ×0.8mm) | 400         | mW         |
| Junction Temperature         | $T_J$     |                                                       | 150         | $^\circ C$ |
| Storage Temperature          | $T_{stg}$ |                                                       | -55 to +150 | $^\circ C$ |

Electrical Characteristics at  $T_a=25^\circ C$ 

| Parameter                               | Symbol        | Conditions            | Ratings |      |      | Unit     |
|-----------------------------------------|---------------|-----------------------|---------|------|------|----------|
|                                         |               |                       | min     | typ  | max  |          |
| Collector Cutoff Current                | $I_{CBO}$     | $V_{CB}=10V, I_E=0$   |         |      | 0.5  | $\mu A$  |
| Emitter Cutoff Current                  | $I_{EBO}$     | $V_{EB}=2V, I_C=0$    |         |      | 0.5  | $\mu A$  |
| DC Current Gain                         | $h_{FE}$      | $V_{CE}=5V, I_C=10mA$ | 200     |      | 400  |          |
| Gain-Bandwidth Product                  | $f_T$         | $V_{CE}=5V, I_C=10mA$ | 1.0     | 1.5  |      | GHz      |
| Output Capacitance                      | $C_{ob}$      | $V_{CB}=10V, f=1MHz$  |         | 1.1  | 1.5  | pF       |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=20mA, I_B=2mA$   |         | 0.06 | 0.12 | V        |
| Output ON resistance                    | $R_{on}$      | $I_B=3mA, f=10kHz$    |         | 2.0  |      | $\Omega$ |

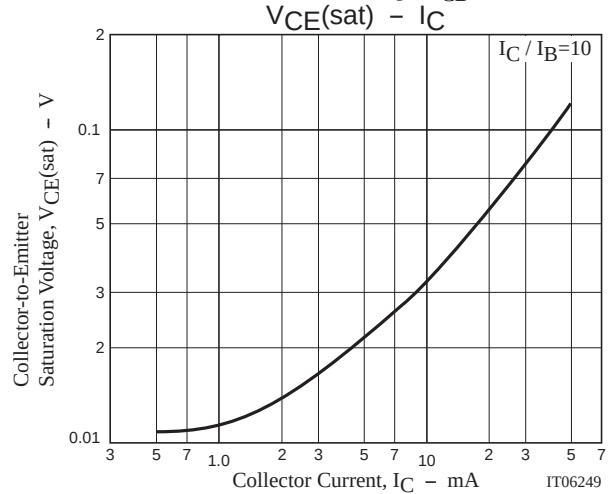
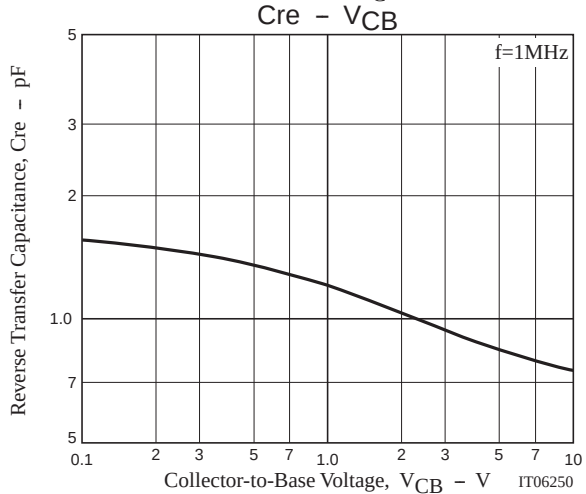
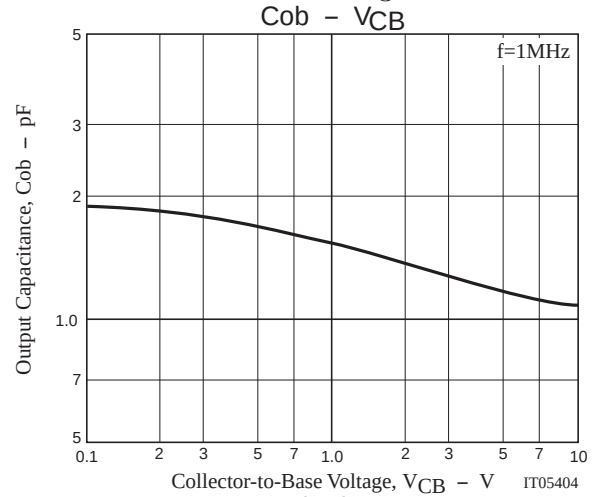
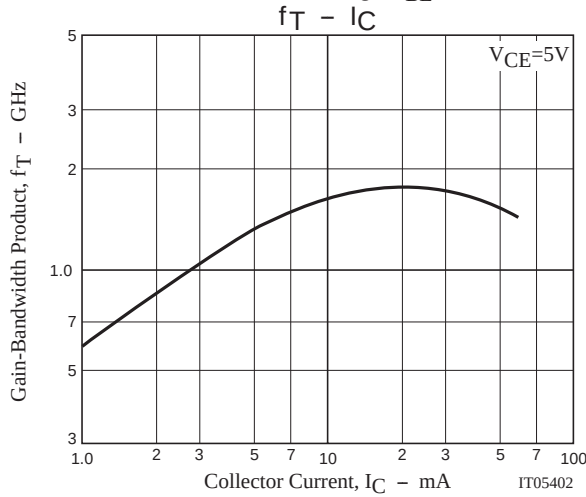
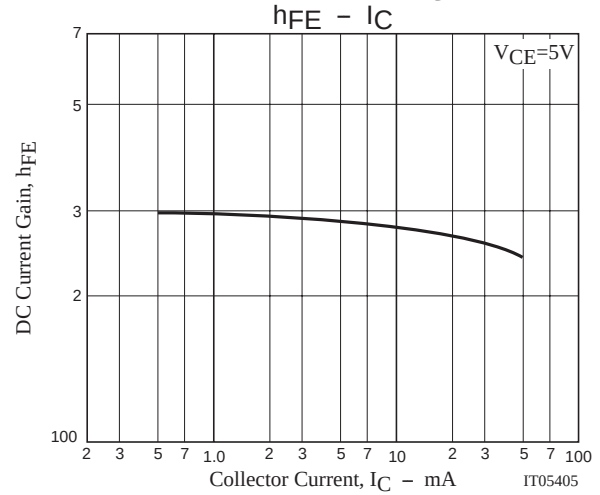
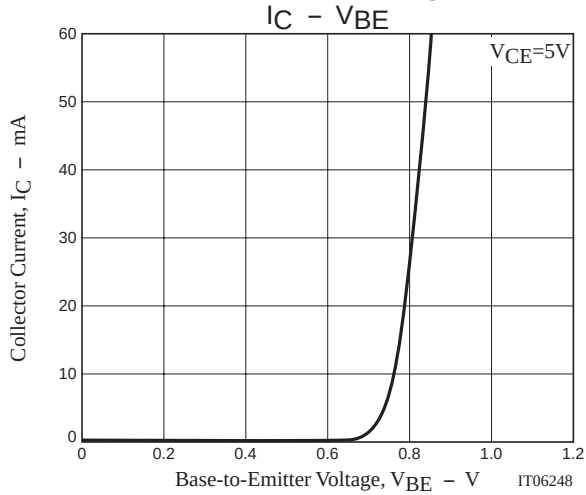
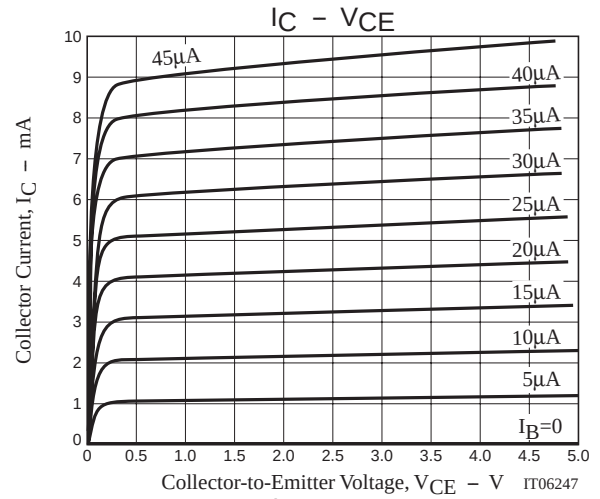
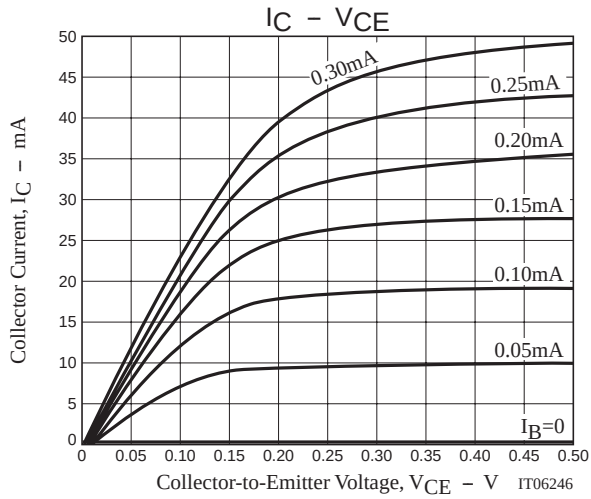
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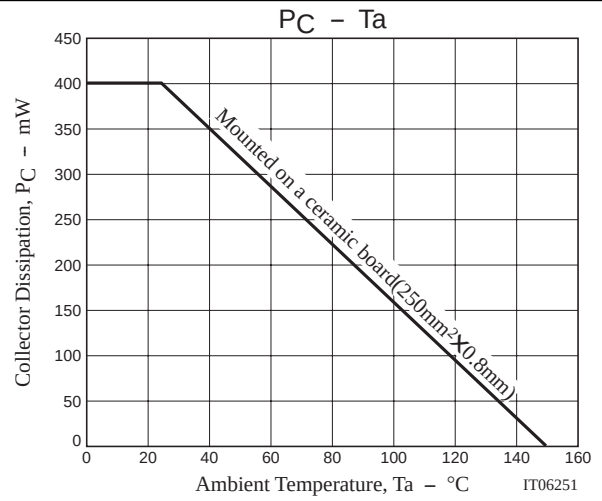
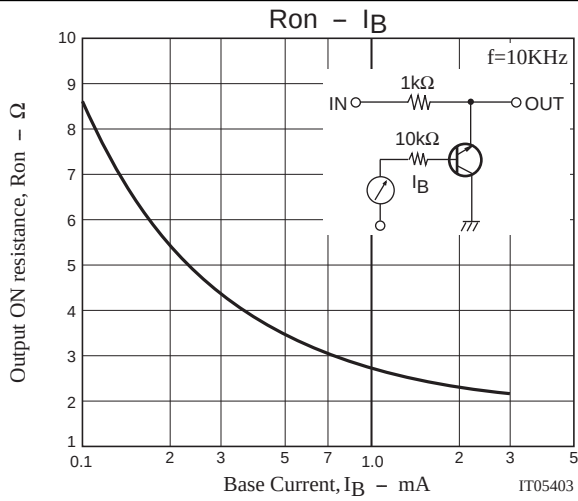
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71003 TS IM TA-100386 No.7540-1/4



# 15GN01M



## S Parameters (Common emitter)

$V_{CE}=5\text{V}$ ,  $I_C=5\text{mA}$ ,  $Z_O=50\Omega$

| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100       | 0.662      | -25.65          | 4.631      | 122.00          | 0.028      | 71.36           | 0.765      | -10.50          |
| 200       | 0.582      | -36.72          | 3.028      | 112.20          | 0.051      | 68.80           | 0.732      | -14.15          |
| 300       | 0.529      | -47.21          | 2.353      | 104.69          | 0.071      | 65.59           | 0.713      | -17.91          |
| 400       | 0.487      | -56.61          | 1.955      | 97.68           | 0.088      | 63.00           | 0.700      | -21.58          |
| 500       | 0.459      | -65.82          | 1.691      | 91.07           | 0.103      | 60.43           | 0.689      | -25.23          |
| 600       | 0.429      | -74.14          | 1.496      | 85.11           | 0.116      | 57.83           | 0.679      | -28.81          |
| 700       | 0.409      | -82.44          | 1.353      | 79.01           | 0.128      | 56.22           | 0.674      | -32.38          |
| 800       | 0.388      | -89.94          | 1.239      | 73.29           | 0.138      | 54.76           | 0.671      | -35.89          |
| 900       | 0.374      | -96.79          | 1.149      | 67.98           | 0.148      | 53.44           | 0.671      | -39.34          |
| 1000      | 0.365      | -103.28         | 1.072      | 63.13           | 0.156      | 52.60           | 0.670      | -42.75          |

$V_{CE}=5\text{V}$ ,  $I_C=10\text{mA}$ ,  $Z_O=50\Omega$

| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100       | 0.587      | -31.65          | 6.647      | 118.78          | 0.026      | 71.86           | 0.694      | -11.96          |
| 200       | 0.502      | -46.40          | 4.239      | 108.57          | 0.046      | 68.22           | 0.653      | -15.76          |
| 300       | 0.444      | -59.47          | 3.227      | 100.32          | 0.064      | 65.90           | 0.630      | -19.10          |
| 400       | 0.405      | -70.80          | 2.616      | 93.18           | 0.079      | 63.91           | 0.619      | -22.50          |
| 500       | 0.381      | -81.80          | 2.217      | 86.64           | 0.093      | 62.30           | 0.607      | -25.83          |
| 600       | 0.356      | -91.29          | 1.922      | 80.82           | 0.105      | 60.39           | 0.598      | -29.19          |
| 700       | 0.342      | -101.15         | 1.715      | 74.86           | 0.115      | 59.29           | 0.596      | -32.72          |
| 800       | 0.329      | -109.42         | 1.544      | 69.40           | 0.125      | 58.34           | 0.593      | -36.10          |
| 900       | 0.319      | -116.99         | 1.414      | 64.16           | 0.135      | 57.86           | 0.594      | -39.48          |
| 1000      | 0.315      | -124.06         | 1.305      | 59.41           | 0.144      | 57.47           | 0.593      | -42.80          |

$V_{CE}=5\text{V}$ ,  $I_C=20\text{mA}$ ,  $Z_O=50\Omega$

| Freq(MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|-----------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 100       | 0.505      | -41.07          | 8.945      | 114.82          | 0.023      | 71.42           | 0.611      | -13.64          |
| 200       | 0.417      | -60.49          | 5.500      | 103.75          | 0.042      | 69.03           | 0.568      | -16.14          |
| 300       | 0.369      | -76.83          | 4.039      | 95.20           | 0.056      | 67.39           | 0.548      | -18.89          |
| 400       | 0.341      | -90.31          | 3.197      | 88.11           | 0.070      | 66.22           | 0.539      | -21.75          |
| 500       | 0.328      | -102.08         | 2.654      | 81.71           | 0.082      | 65.43           | 0.533      | -24.77          |
| 600       | 0.316      | -112.57         | 2.264      | 76.38           | 0.094      | 64.49           | 0.528      | -27.99          |
| 700       | 0.311      | -122.49         | 1.988      | 70.80           | 0.104      | 64.03           | 0.530      | -31.32          |
| 800       | 0.306      | -130.50         | 1.771      | 65.75           | 0.115      | 63.95           | 0.530      | -34.57          |
| 900       | 0.304      | -137.80         | 1.605      | 60.92           | 0.125      | 64.09           | 0.534      | -37.93          |
| 1000      | 0.306      | -144.30         | 1.470      | 56.51           | 0.135      | 64.16           | 0.537      | -41.24          |

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