# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

#### DESCRIPTION

RD04HMS2 is MOS FET type transistor specifically designed for VHF/UHF/890-950MHz RF power amplifiers applications.

#### **FEATURES**

- High Power gain and High Efficiency Pout=5.0Wtyp., Gp=14dBtyp. Drain Effi.=53%typ.
   @Vds=12.5V, Pin=0.2W, f=950MHz
- 2. Integrated gate protection diode

#### **APPLICATION**

For output stage of high power amplifiers in VHF/ UHF/890-950MHz band mobile radio sets.

### 4.6+/-0.05 OUTLINE DRAWING 3.3+/-0.05 0,8+/-0.05 0.2+/-0.05 6.0+/-0.15 (0.25)(0.25)**INDEX MARK** (Gate) Terminal No. 1.Drain (output) 2.Source (GND) 3.Gate (input) Note ( ):center value UNIT:mm

### **Rohs Compliant**

RD04HMS2 is a RoHS compliant product. RoHS compliance is indicating by the letter "G" after the Lot Marking. This product includes the lead in high melting temperature type solders.

However, it is applicable to the following exceptions of RoHS Directions.

1. Lead in high melting temperature type solders (i.e. tin-lead solder alloys containing more than 85% lead.)

### ABSOLUTE MAXIMUM RATINGS (Tc=25°C UNLESS OTHERWISE NOTED)

| SYMBOL  | PARAMETER               | CONDITIONS       | RATINGS     | UNIT |
|---------|-------------------------|------------------|-------------|------|
| VDSS    | Drain to Source Voltage | Vgs=0V           | 40          | V    |
| VGSS    | Gate to Source Voltage  | Vds=0V           | -5/+10      | V    |
| Pch     | Channel Dissipation     | Tc=25°C          | 50          | W    |
| Pin     | Input Power             | Zg=Zl=50Ω        | 0.7         | W    |
| ID      | Drain Current           | -                | 3           | Α    |
| Tch     | Junction Temperature    | -                | 150         | ů    |
| Tstg    | Storage Temperature     | -                | -40 to +125 | ů    |
| Rth j-c | Thermal Resistance      | Junction to Case | 2.5         | °C/W |

Note: Above parameters are guaranteed independently.

### ELECTRICAL CHARACTERISTICS (Tc=25°C, UNLESS OTHERWISE NOTED)

| SYMBOL               | PARAMETER                       | CONDITIONS                             |      | LIMITS |      |         |
|----------------------|---------------------------------|--|------|--------|------|---------|
| STIVIBOL FARAIVIETER |                                 | CONDITIONS                             |      | TYP    | MAX. |         |
| IDSS                 | Zero Gate Voltage Drain Current | VDS=37V, VGS=0V                        | ı    | ı      | 5    | $\mu$ A |
| Igss                 | Gate to Source Leak Current     | VGS=10V, VDS=0V                        | -    | -      | 2.5  | $\mu$ A |
| VTH                  | Gate Threshold Voltage          | ate Threshold Voltage VDS=12V, IDS=1mA |      | -      | 2.6  | V       |
| Pout1                | Output power                    | f=950MHz*,VDS=12.5V,                   |      | 5.0    | -    | W       |
| ηD1                  | Drain Efficiency                | Pin=0.2W, Idq=0.1A                     |      | 58     | -    | %       |
| Pout2                | Output Power                    | f=175MHz**,VDS=12.5V,                  |      | 5.5    | -    | W       |
| ηD2                  | Drain Efficiency                | Pin=0.2W, Idq=0.1A                     | -    | 73     | -    | %       |
|                      |                                 | VDS=15.2V, Po=4W(Pin:Control)          |      |        |      |         |
| VSWRT                | Load VSWR Tolerance             | f=135MHz, Idq=0.1A, Zg=50Ω             | 20:1 | -      | -    | VSWR    |
|                      |                                 | ZI=All phase                           |      |        |      |         |

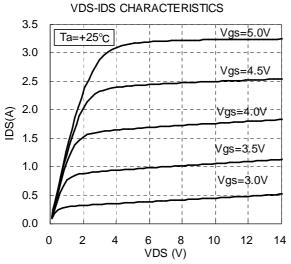
Note: Above parameters, ratings, limits and conditions are subject to change.

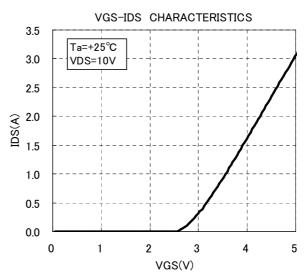
<sup>\*</sup> In Mitsubishi 890-950MHz Evaluation Board \*\* In Mitsubishi VHF Evaluation Board

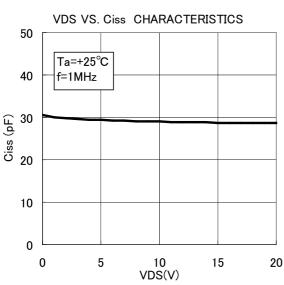
# RD04HMS2

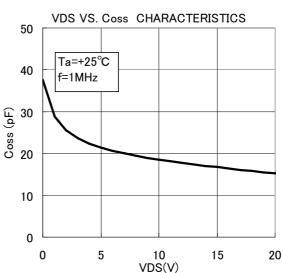
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

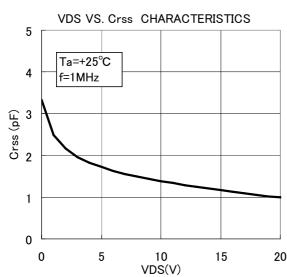
### TYPICAL CHARACTERISTICS











# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **VHF-band TYPICAL CHARACTERISTICS**

(These are only typical curves and devices are not necessarily guaranteed at these curves.)

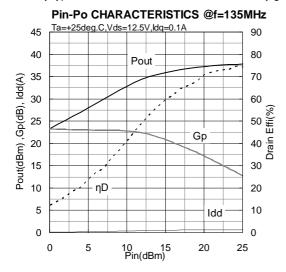
#### Frequency Characteristics @f=135 to 175MHz Ta=+25deg.C, Vds=12.5V,Idq=0.1A, Pin=0.2W 18 90 16 80 ηD 14 70 Gp Pout(W), Gp(dB), Idd(A) 12 60 50 10 8 Pout 6 30 4 20 2 10 ldd 0 0 130 140 150 160 170 180 f (MHz)

## RD04HMS2

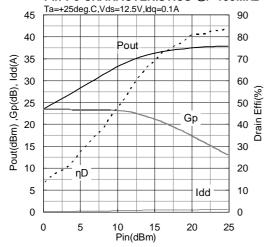
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **VHF-band TYPICAL CHARACTERISTICS**

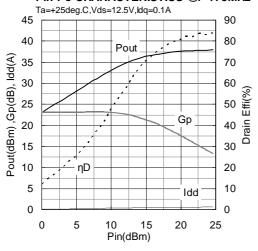
(These are only typical curves and devices are not necessarily guaranteed at these curves.)



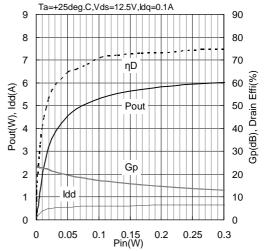
#### Pin-Po CHARACTERISTICS @f=155MHz



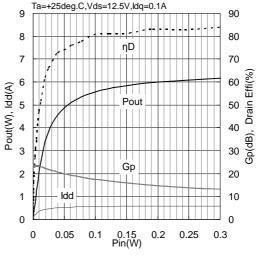
### Pin-Po CHARACTERISTICS @f=175MHz



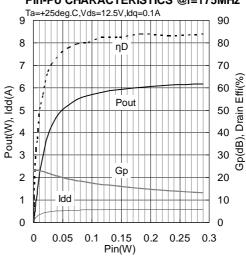
### Pin-Po CHARACTERISTICS @f=135MHz



#### Pin-Po CHARACTERISTICS @f=155MHz



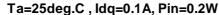
#### Pin-Po CHARACTERISTICS @f=175MHz

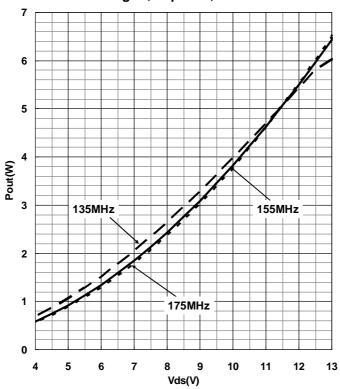


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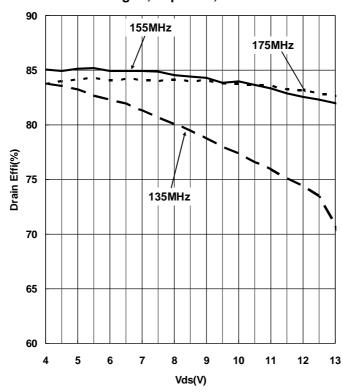
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### VHF-band TYPICAL CHARACTERISTICS





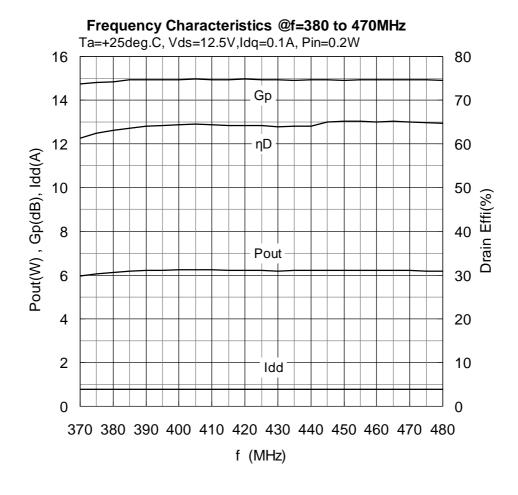
Ta=25deg.C, Idq=0.1A, Pin=0.2W



# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **UHF-band TYPICAL CHARACTERISTICS**

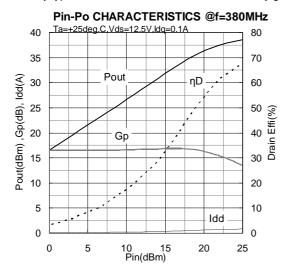


# **RD04HMS2**

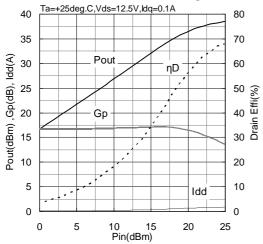
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **UHF-band TYPICAL CHARACTERISTICS**

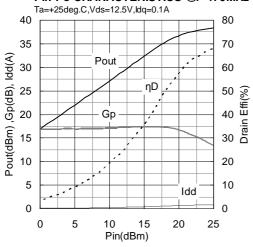
(These are only typical curves and devices are not necessarily guaranteed at these curves.)



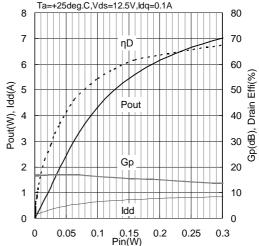
#### Pin-Po CHARACTERISTICS @f=425MHz



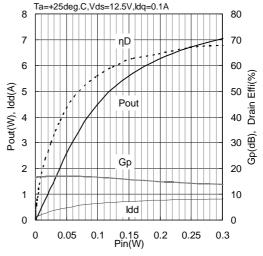
#### Pin-Po CHARACTERISTICS @f=470MHz



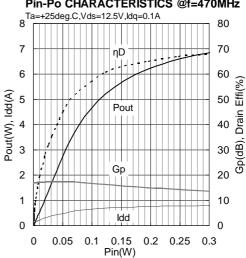
### Pin-Po CHARACTERISTICS @f=380MHz



#### Pin-Po CHARACTERISTICS @f=425MHz



#### Pin-Po CHARACTERISTICS @f=470MHz



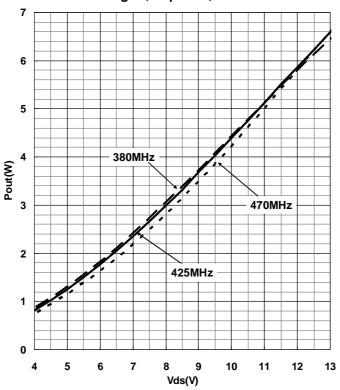
# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

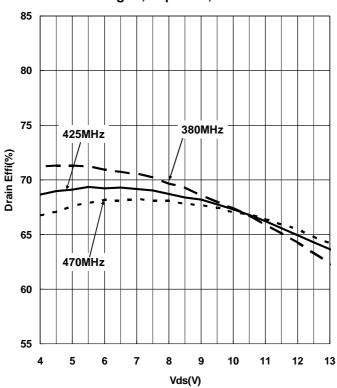
### **UHF-band TYPICAL CHARACTERISTICS**

(These are only typical curves and devices are not necessarily guaranteed at these curves.)

### Ta=25deg.C, Idq=0.1A, Pin=0.2W



Ta=25deg.C, Idq=0.1A, Pin=0.2W



# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### 890-950MHz-band TYPICAL CHARACTERISTICS

(These are only typical curves and devices are not necessarily guaranteed at these curves.)

#### Frequency Characteristics @f=890 to 950MHz Ta=+25deg.C, Vds=12.5V,Idq=0.1A, Pin=0.2W 16 80 Gp. 14 70 12 60 Pout(W), Gp(dB), Idd(A) ηD 10 50 40 8 Pout 30 6 4 20 2 10 ldd 0 0 880 890 900 910 920 930 940 950 960

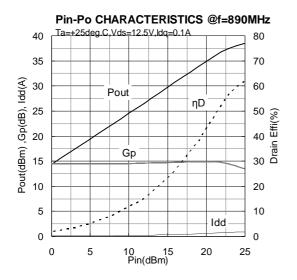
f (MHz)

## **RD04HMS2**

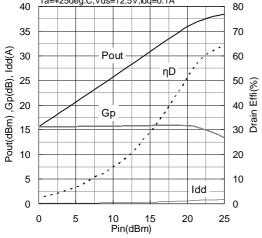
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### 890-950MHz-band TYPICAL CHARACTERISTICS

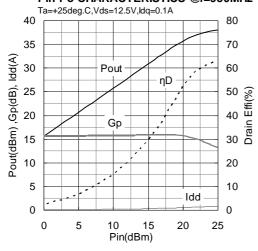
(These are only typical curves and devices are not necessarily guaranteed at these curves.)



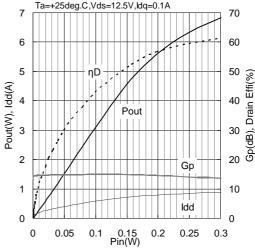
#### Pin-Po CHARACTERISTICS @f=920MHz =+25deg.C,Vds=12.5V,ldq=0.1A 80



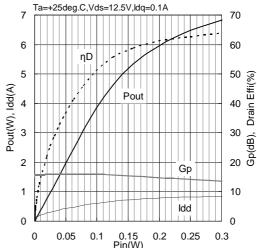
### Pin-Po CHARACTERISTICS @f=950MHz



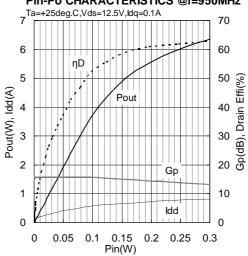
### Pin-Po CHARACTERISTICS @f=890MHz



#### Pin-Po CHARACTERISTICS @f=920MHz



#### Pin-Po CHARACTERISTICS @f=950MHz

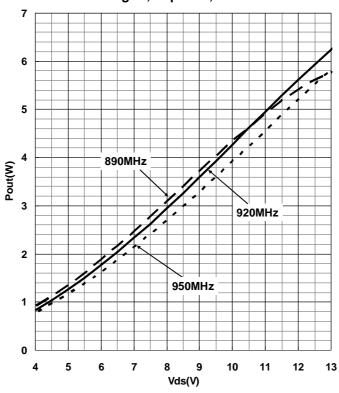


# RD04HMS2

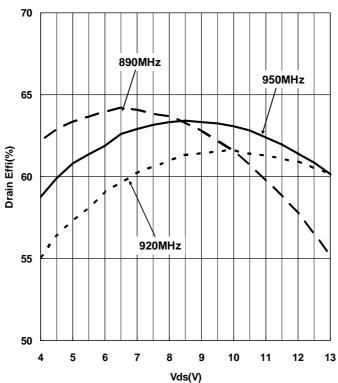
RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### 890-950MHz-band TYPICAL CHARACTERISTICS

Ta=25deg.C, Idq=0.1A, Pin=0.2W



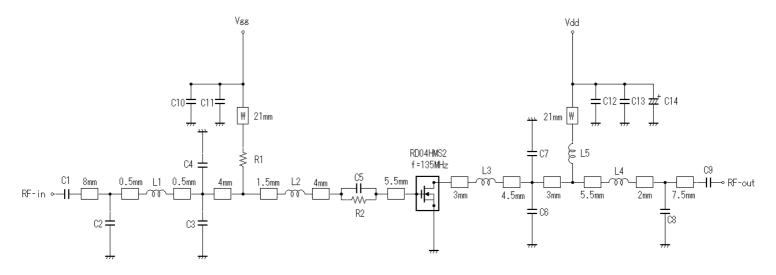
Ta=25deg.C , Idq=0.1A , Pin=0.2W



## RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **EQUIVALENT CIRCUITRY for VHF EVALUATION BOARD (f=135 – 175MHz)**



Note:Board material- Glass-Epoxy Substrate Micro strip line width=1.3mm/500HM,er:4.8,t=0.8mm W:Line width=1.0mm

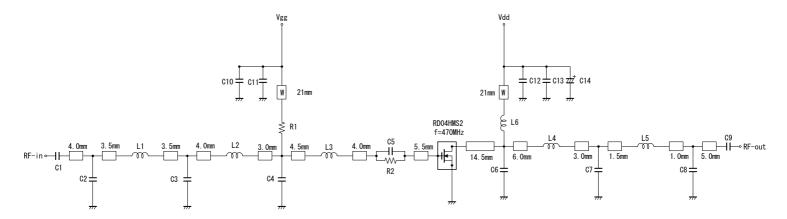
| C1<br>C2<br>C3<br>C4<br>C5 | 100pF<br>27pF<br>30pF<br>30pF<br>36pF                    | Chip Ceramic Capacitiors |  |  |  |  |  |
|----------------------------|--|---|--|--|--|--|--|
| C6                         | 39pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C7                         | 39pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C8                         | 24pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C9                         | 100pF  | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C10                        | 1000pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C11                        | 1000pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C12                        | 1000pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C13                        | 1000pF   | Chip Ceramic Capacitiors  |  |  |  |  |  |
| C14                        | 22µF   | Electrolytic Capacitior   |  |  |  |  |  |
| R1                         | 4.7K OHM   | Chip Resistors  |  |  |  |  |  |
| R2                         | 47 OHM   | Chip Resistors  |  |  |  |  |  |
| L1                         | 37nH *   | Enameled wire 7Turns, D:0.43mm, 2.46mmO.D   |  |  |  |  |  |
| L2                         | 56nH *   | Enameled wire12Turns, D:0.23mm, 1.66mmO.D   |  |  |  |  |  |
| L3                         | 22nH *   | Enameled wire 5Turns, D:0.43mm, 2.46mmO.D   |  |  |  |  |  |
| L4                         | 29nH *   | Enameled wire 6Turns, D:0.43mm, 2.46mmO.D   |  |  |  |  |  |
| L5                         | 37nH *   | Enameled wire 7Turns, D:0.43mm, 2.46mmO.D   |  |  |  |  |  |
| Inducto                    | nductor of Rolling Coil measurement condition : f=100MHz |   |  |  |  |  |  |

For more information regarding this evaluation board, refer to APPLICATION NOTE "AN-VHF-051"

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **EQUIVALENT CIRCUITRY for UHF EVALUATION BOARD (f=380 – 470MHz)**



Note:Board material- Glass-Epoxy Substrate Micro strip line width=1.3mm/500HM, er:4.8, t=0.8mm W:Line width=1.0mm

| C1  | 100pF       | Chip Ceramic Capacitors                   |
|-----|-------------|---|
| C2  | 6pF         | Chip Ceramic Capacitors                   |
| C3  | 20pF        | Chip Ceramic Capacitors                   |
| C4  | 36pF        | Chip Ceramic Capacitors                   |
| C5  | 24pF        | Chip Ceramic Capacitors                   |
| C6  | 36pF        | Chip Ceramic Capacitors                   |
| C7  | 20pF        | Chip Ceramic Capacitors                   |
| C8  | 7pF         | Chip Ceramic Capacitors                   |
| C9  | 100pF       | Chip Ceramic Capacitors                   |
| C10 | 1000pF      | Chip Ceramic Capacitors                   |
| C11 | 22000pF     | Chip Ceramic Capacitors                   |
| C12 | 1000pF      | Chip Ceramic Capacitors                   |
| C13 | 22000pF     | Chip Ceramic Capacitors                   |
| C14 | 22µF        | Electrolytic Capacitor                    |
| R1  | 4.7K OHM    | Chip Resistors                            |
| R2  | 47 OHM      | Chip Resistors                            |
| L1  | 12nH *      | Enameled wire 3Turns, D:0.23mm, 1.66mmO.D |
| L2  | 8nH *       | Enameled wire 2Turns, D:0.23mm, 1.66mmO.D |
| L3  | 8nH *       | Enameled wire 2Turns, D:0.23mm, 1.66mmO.D |
| L4  | 8nH *       | Enameled wire 2Turns, D:0.23mm, 1.66mmO.D |
| L5  | 16nH *      | Enameled wire 4Turns, D:0.23mm, 1.66mmO.D |
| L6  | 37nH *      | Enameled wire 7Turns, D:0.43mm, 2.46mmO.D |
| 1   | t D - II: ( | Dail management agentition of 400MHz      |

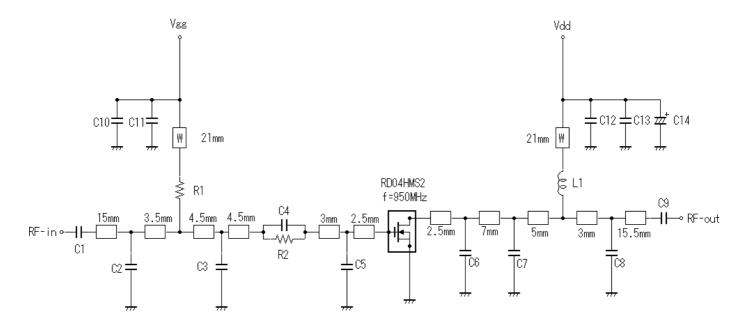
<sup>\*</sup> Inductor of Rolling Coil measurement condition : f=100MHz

For more information regarding this evaluation board, refer to APPLICATION NOTE "AN-UHF-114"

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### **EQUIVALENT CIRCUITRY for 890-950MHz EVALUATION BOARD (f=890 – 950MHz)**



Note:Board material- Glass-Epoxy Substrate Micro strip line width=1.3mm/500HM,er:4.8,t=0.8mm W:Line width=1.0mm

| 150pF    | Chip Ceramic Capacitiors   |
|----------|--|
| 4pF      | Chip Ceramic Capacitiors   |
| 9pF      | Chip Ceramic Capacitiors   |
| 16pF     | Chip Ceramic Capacitiors   |
| 10pF     | Chip Ceramic Capacitiors   |
| 12pF     | Chip Ceramic Capacitiors   |
| 5pF      | Chip Ceramic Capacitiors   |
| 4pF      | Chip Ceramic Capacitiors   |
| 150pF    | Chip Ceramic Capacitiors   |
| 100pF    | Chip Ceramic Capacitiors   |
| 1000pF   | Chip Ceramic Capacitiors   |
| 100pF    | Chip Ceramic Capacitiors   |
| 1000pF   | Chip Ceramic Capacitiors   |
| 22µF     | Electrolytic Capacitior  |
| 4.7K OHM | Chip Resistors   |
| 33 OHM   | Chip Resistors   |
| 37nH *   | Enameled wire 7Turns, D:0.43mm, 2.46mmO.D  |
|          | 4pF<br>9pF<br>16pF<br>10pF<br>12pF<br>5pF<br>4pF<br>150pF<br>100pF<br>100pF<br>100pF<br>22μF<br>4.7K OHM<br>33 OHM |

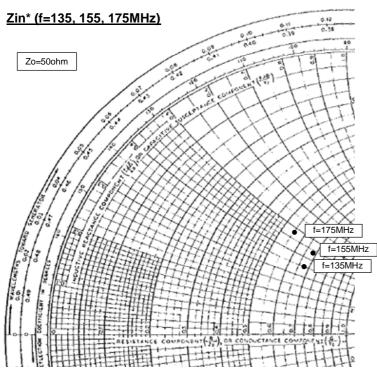
<sup>\*</sup> Inductor of Rolling Coil measurement condition : f=100MHz

For more information regarding this evaluation board, refer to APPLICATION NOTE "AN-900-043"

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

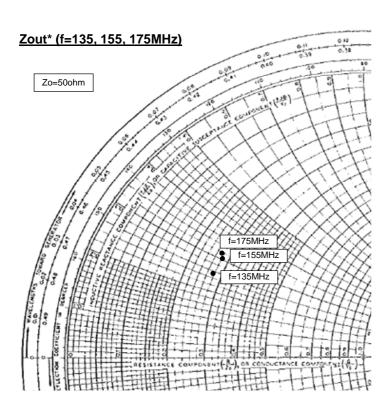
### Input / Output Impedance VS. Frequency Characteristics



@Pin=0.2W, Vds=12.5V,Idq=0.1A

| f     | Zin*            |  |  |  |  |
|-------|-----------------|--|--|--|--|
| (MHz) |                 |  |  |  |  |
|       | 34.15 + j 17.78 |  |  |  |  |
|       | 34.90 + j 21.74 |  |  |  |  |
| 175   | 28.10 + j 24.30 |  |  |  |  |

Zin\*: Complex conjugate of intput impedance



@Pin=0.2W, Vds=12.5V,Idq=0.1A

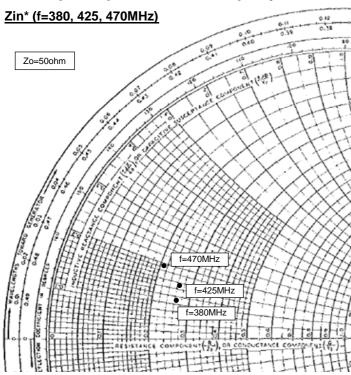
| f     | Zout*           |  |  |  |  |
|-------|-----------------|--|--|--|--|
| (MHz) | (ohm)           |  |  |  |  |
| 135   | 14.18 + j 12.41 |  |  |  |  |
| 155   | 14.45 + j 15.35 |  |  |  |  |
| 175   | 13.90 + j 15.87 |  |  |  |  |

Zout\*: Complex conjugate of output impedance

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RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

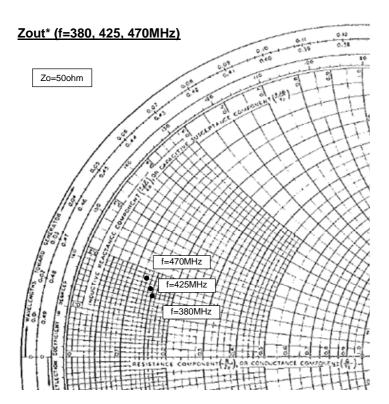
### Input / Output Impedance VS. Frequency Characteristics



@Pin=0.2W, Vds=12.5V,ldq=0.1A

| f    | Zin*           |  |  |  |
|------|----------------|--|--|--|
| (MHz | (ohm)          |  |  |  |
| 380  | 13.33 + j 5.61 |  |  |  |
| 425  | 13.49 + j7.55  |  |  |  |
| 470  | 10.39 + j 9.64 |  |  |  |

Zin\*: Complex conjugate of intput impedance



@Pin=0.2W, Vds=12.5V,Idq=0.1A

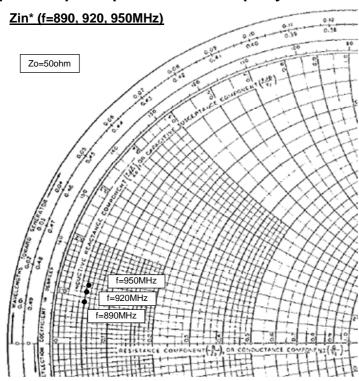
| f     | Zout*         |  |  |  |
|-------|---------------|--|--|--|
| (MHz) | (ohm)         |  |  |  |
| 380   | 7.83 + j 7.20 |  |  |  |
| 425   | 7.35 + j 7.93 |  |  |  |
| 470   | 6.32 + j 8.95 |  |  |  |

Zout\*: Complex conjugate of output impedance

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

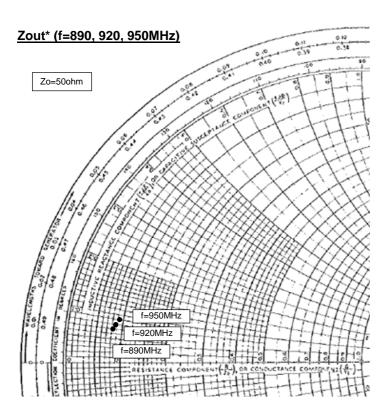
### Input / Output Impedance VS. Frequency Characteristics



@Pin=0.2W, Vds=12.5V,Idq=0.1A

| f     | Zin*          |
|-------|---------------|
| (MHz) | (ohm)         |
| 890   | 2.59 + j3.87  |
| 920   | 2.60 + j 4.81 |
| 950   | 2.67 + j 5.69 |

Zin\*: Complex conjugate of intput impedance



@Pin=0.2W, Vds=12.5V,Idq=0.1A

| f     | Zout*         |  |  |  |
|-------|---------------|--|--|--|
| (MHz) | (ohm)         |  |  |  |
| 890   | 4.19 + j 3.38 |  |  |  |
| 920   | 4.47 + j 3.99 |  |  |  |
| 950   | 4.83 + j 4.52 |  |  |  |

Zout\*: Complex conjugate of output impedance

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### Small Single Parameter of RD04HMS2 (@Vds=12.5V,ldq=100mA)

| Freq  | S     | 11     | S21    |       | S12   |       | S22   |        |
|-------|-------|--------|--------|-------|-------|-------|-------|--------|
| [MHz] | (mag) | (ang)  | (mag)  | (ang) | (mag) | (ang) | (mag) | (ang)  |
| 100   | 0.813 | -120.5 | 19.034 | 105.3 | 0.030 | 15.3  | 0.585 | -103.6 |
| 135   | 0.800 | -132.2 | 14.641 | 96.1  | 0.031 | 7.2   | 0.581 | -115.2 |
| 150   | 0.799 | -136.1 | 13.199 | 92.8  | 0.031 | 4.0   | 0.585 | -118.9 |
| 175   | 0.799 | -141.1 | 11.253 | 88.0  | 0.030 | -0.4  | 0.595 | -124.0 |
| 200   | 0.803 | -145.1 | 9.749  | 83.8  | 0.030 | -4.2  | 0.610 | -128.0 |
| 250   | 0.817 | -151.2 | 7.504  | 77.0  | 0.028 | -10.0 | 0.644 | -134.0 |
| 300   | 0.829 | -155.4 | 6.002  | 71.2  | 0.027 | -15.6 | 0.679 | -138.6 |
| 350   | 0.843 | -158.7 | 4.890  | 66.6  | 0.025 | -19.4 | 0.713 | -142.4 |
| 380   | 0.851 | -160.3 | 4.339  | 64.5  | 0.024 | -21.5 | 0.732 | -144.6 |
| 400   | 0.856 | -161.4 | 4.069  | 63.2  | 0.023 | -22.8 | 0.744 | -146.0 |
| 450   | 0.868 | -163.7 | 3.394  | 59.4  | 0.022 | -25.5 | 0.773 | -148.9 |
| 470   | 0.876 | -164.7 | 3.196  | 58.5  | 0.021 | -26.6 | 0.783 | -150.0 |
| 500   | 0.884 | -166.0 | 2.894  | 56.1  | 0.020 | -27.1 | 0.797 | -151.6 |
| 550   | 0.893 | -167.7 | 2.506  | 54.6  | 0.018 | -28.6 | 0.818 | -154.0 |
| 600   | 0.901 | -169.3 | 2.150  | 52.7  | 0.017 | -30.0 | 0.836 | -156.3 |
| 650   | 0.907 | -170.7 | 1.840  | 49.8  | 0.016 | -31.5 | 0.852 | -158.3 |
| 700   | 0.917 | -172.2 | 1.636  | 49.2  | 0.014 | -30.4 | 0.866 | -160.1 |
| 750   | 0.923 | -173.4 | 1.454  | 48.5  | 0.013 | -31.2 | 0.877 | -161.8 |
| 800   | 0.928 | -174.4 | 1.263  | 48.0  | 0.012 | -30.7 | 0.888 | -163.3 |
| 850   | 0.931 | -175.4 | 1.119  | 46.5  | 0.011 | -29.9 | 0.899 | -164.7 |
| 890   | 0.933 | -176.0 | 1.049  | 48.2  | 0.010 | -30.5 | 0.906 | -165.7 |
| 900   | 0.934 | -176.1 | 1.035  | 47.6  | 0.010 | -30.6 | 0.908 | -166.0 |
| 950   | 0.936 | -176.8 | 0.914  | 46.7  | 0.008 | -29.0 | 0.913 | -167.1 |
| 1000  | 0.939 | -177.4 | 0.838  | 46.8  | 0.008 | -28.0 | 0.919 | -168.1 |
| 1050  | 0.941 | -178.0 | 0.758  | 46.8  | 0.007 | -25.7 | 0.924 | -169.0 |
| 1100  | 0.942 | -178.4 | 0.702  | 48.8  | 0.006 | -23.6 | 0.928 | -170.0 |

#### Silicon RF Power Semiconductors

### ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

#### ATTENTION:

- 1. High Temperature; This product might have a heat generation while operation, Please take notice that have a possibility to receive a burn to touch the operating product directly or touch the product until cold after switch off. At the near the product, do not place the combustible material that have possibilities to arise the fire.
- 2.Generation of High Frequency Power; This product generate a high frequency power. Please take notice that do not leakage the unnecessary electric wave and use this products without cause damage for human and property per normal operation.
- 3.Before use; Before use the product, Please design the equipment in consideration of the risk for human and electric wave obstacle for equipment.

#### PRECAUTIONS FOR THE USE OF MITSUBISHI SILICON RF POWER DEVICES:

- 1. The specifications of mention are not guarantee values in this data sheet. Please confirm additional details regarding operation of these products from the formal specification sheet. For copies of the formal specification sheets, please contact one of our sales offices.
- 2. RD series products (RF power transistors) are designed for consumer mobile communication terminals and were not specifically designed for use in other applications. In particular, while these products are highly reliable for their designed purpose, they are not manufactured under a quality assurance testing protocol that is sufficient to guarantee the level of reliability typically deemed necessary for critical communications elements. Examples of critical communications elements would include transmitters for base station applications and fixed station applications that operate with long term continuous transmission and a higher on-off frequency during transmitting, especially for systems that may have a high impact to society.
- 3. RD series products use MOSFET semiconductor technology. They are sensitive to ESD voltage therefore appropriate ESD precautions are required.
- 4. In the case of use in below than recommended frequency, there is possibility to occur that the device is deteriorated or destroyed due to the RF-swing exceed the breakdown voltage.
- 5. In order to maximize reliability of the equipment, it is better to keep the devices temperature low. It is recommended to utilize a sufficient sized heat-sink in conjunction with other cooling methods as needed (fan, etc.) to keep the channel temperature for RD series products lower than 120deg/C(in case of Tchmax=150deg/C) .140deg/C(in case of Tchmax=175deg/C) under standard conditions.
- 6. Do not use the device at the exceeded the maximum rating condition. In case of plastic molded devices, the exceeded maximum rating condition may cause blowout, smoldering or catch fire of the molding resin due to extreme short current flow between the drain and the source of the device. These results causes in fire or injury.
- 7. For specific precautions regarding assembly of these products into the equipment, please refer to the supplementary items in the specification sheet.
- 8. Warranty for the product is void if the products protective cap (lid) is removed or if the product is modified in any way from it's original form.
- 9. For additional "Safety first" in your circuit design and notes regarding the materials, please refer the last page of this data sheet.
- 10. Please refer to the additional precautions in the formal specification sheet.

# RD04HMS2

RoHS Compliance, Silicon MOSFET Power Transistor, 175MHz, 950MHz, 4W

### Keep safety first in your circuit designs!

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

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