

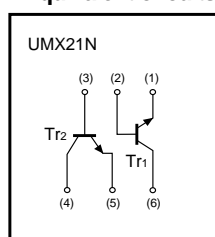
# High transition frequency (dual transistors)

## UMX21N

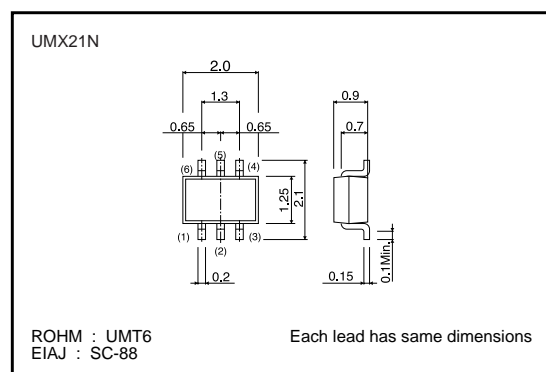
### ●Features

- 1) Two 2SC4713K chips in a UMT package.
- 2) Very low output-on resistance. (Ron)
- 3) Low capacitance.

### ●Equivalent circuits



### ●Dimensions (Unit : mm)



### ●Absolute maximum ratings (Ta=25°C)

| Parameter                   | Symbol           | Limits      | Unit |
|-----------------------------|------------------|-------------|------|
| Collector-base voltage      | V <sub>CB0</sub> | 12          | V    |
| Collector-emitter voltage   | V <sub>CE0</sub> | 6           | V    |
| Emitter-base voltage        | V <sub>EB0</sub> | 3           | V    |
| Collector current           | I <sub>c</sub>   | 50          | mA   |
| Collector power dissipation | P <sub>c</sub>   | 150         | mW * |
| Junction temperature        | T <sub>J</sub>   | 150         | °C   |
| Storage temperature         | T <sub>stg</sub> | -55 to +150 | °C   |

\* 120mW per element must not be exceeded.

### ●Package, marking, and packaging specifications

| Type                         | UMX21N |
|------------------------------|--------|
| Package                      | UMT6   |
| Marking                      | X21    |
| Code                         | TR     |
| Basic ordering unit (pieces) | 3000   |

### ●Electrical characteristics (Ta=25°C)

| Parameter                            | Symbol               | Min. | Typ. | Max. | Unit | Conditions  |
|--------------------------------------|----------------------|------|------|------|------|---|
| Collector-base breakdown voltage     | BV <sub>CB0</sub>    | 12   | –    | –    | V    | I <sub>c</sub> =10μA                                    |
| Collector-emitter breakdown voltage  | BV <sub>CE0</sub>    | 6    | –    | –    | V    | I <sub>c</sub> =1mA                                     |
| Emitter-base breakdown voltage       | BV <sub>EB0</sub>    | 3    | –    | –    | V    | I <sub>E</sub> =10μA                                    |
| Collector cutoff current             | I <sub>CB0</sub>     | –    | –    | 0.5  | μA   | V <sub>CB</sub> =10V                                    |
| Emitter cutoff current               | I <sub>EB0</sub>     | –    | –    | 0.5  | μA   | V <sub>EB</sub> =2V                                     |
| Collector-emitter saturation voltage | V <sub>CE(sat)</sub> | –    | –    | 0.3  | V    | I <sub>c</sub> /I <sub>B</sub> =10mA/1mA                |
| DC current transfer ratio            | h <sub>FE</sub>      | 270  | –    | 560  | –    | V <sub>CE</sub> =5V, I <sub>E</sub> =10mA               |
| Transition frequency                 | f <sub>r</sub>       | 300  | 800  | –    | MHz  | V <sub>CE</sub> =5V, I <sub>E</sub> =-10mA, f=200MHz    |
| Output capacitance                   | C <sub>ob</sub>      | –    | 1    | 1.7  | pF   | V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz        |
| Output-on resistance                 | R <sub>on</sub>      | –    | 2    | –    | Ω    | I <sub>B</sub> =3mA, V <sub>I</sub> =100mVrms, f=500kHz |

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

Transistors

●Electrical characteristics curves

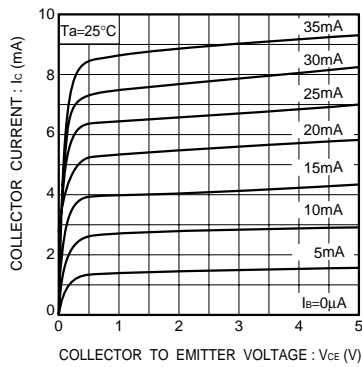


Fig.1 Grounded emitter output characteristics ( I )

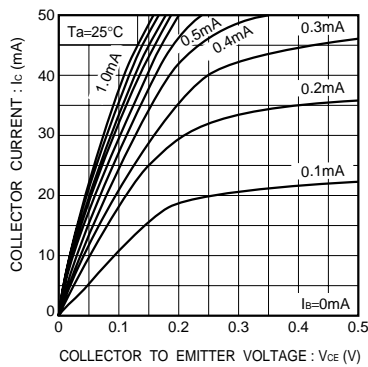


Fig.2 Grounded emitter output characteristics ( II )

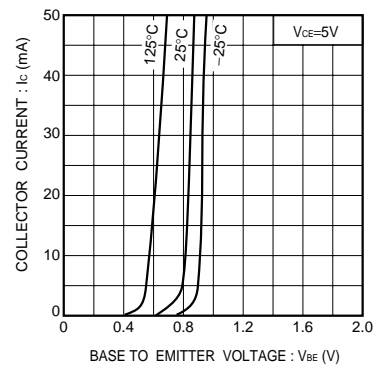


Fig.3 Grounded emitter propagation characteristics

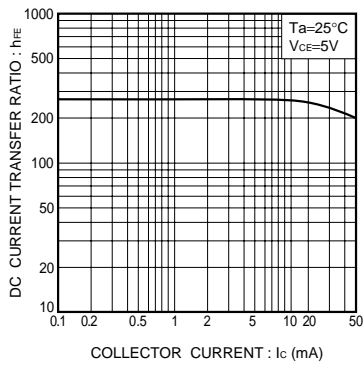


Fig.4 DC current gain vs. collector current

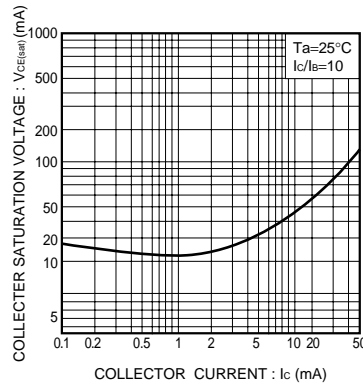


Fig.5 Collector-emitter saturation voltage vs. collector current

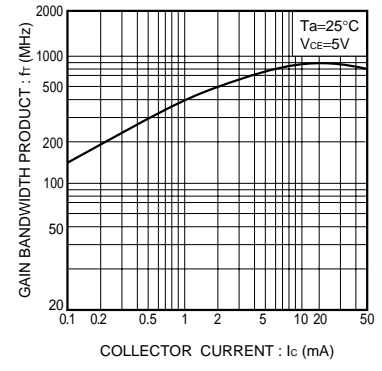


Fig.6 Gain bandwidth product vs. collector current

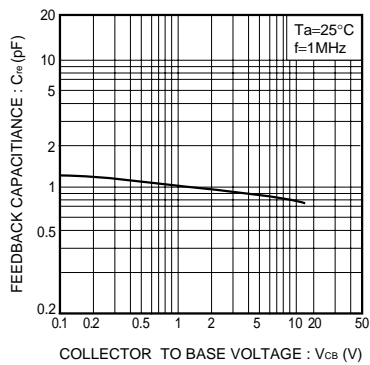


Fig.7 Collector output capacitance vs. voltage

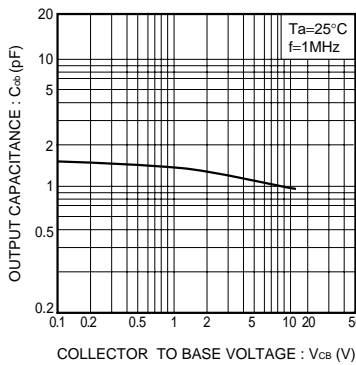


Fig.8 Back capacitance voltage

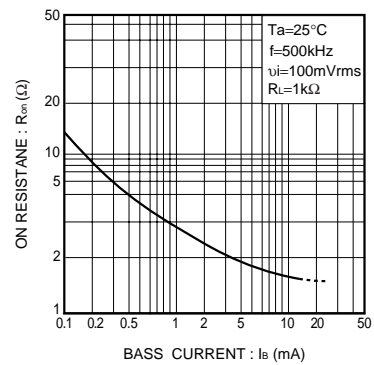


Fig.9 Output-on resistance vs. base current

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