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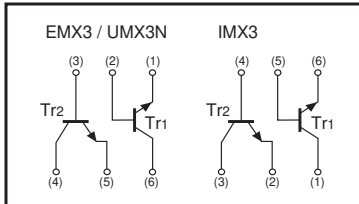
# General purpose (dual transistors)

## EMX3 / UMX3N / IMX3

### ●Features

Two 2SC2412AK chips in a EMT or UMT or SMT package.

### ●Inner circuits



### ●Package, marking, and packaging specifications

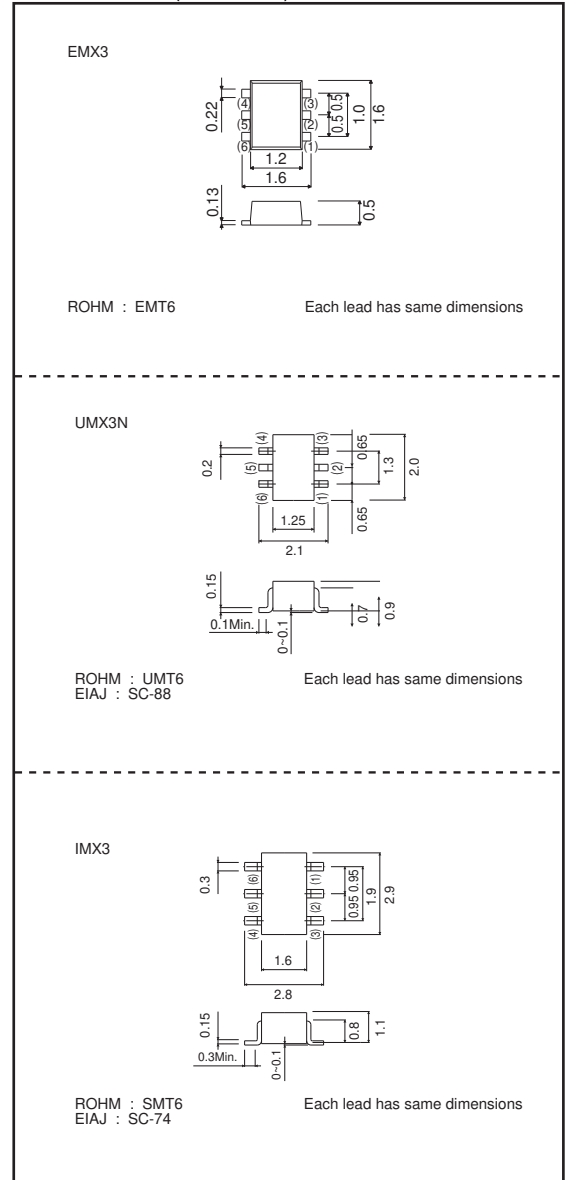
| Type                         | EMX3 | UMX3N | IMX3 |
|------------------------------|------|-------|------|
| Package                      | EMT6 | UMT6  | SMT6 |
| Marking                      | X3   | X3    | X3   |
| Code                         | T2R  | TR    | T108 |
| Basic ordering unit (pieces) | 8000 | 3000  | 3000 |

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

| Parameter                   | Symbol        | Limits      | Unit             |
|-----------------------------|---------------|-------------|------------------|
| Collector-base voltage      | $V_{CBO}$     | 60          | V                |
| Collector-emitter voltage   | $V_{CEO}$     | 50          | V                |
| Emitter-base voltage        | $V_{EBO}$     | 7           | V                |
| Collector current           | $I_C$         | 150         | mA               |
| Collector power dissipation | EEMX3 / UMX3N | 150(TOTAL)  | mW <sup>*1</sup> |
|                             | IMX3          | 300(TOTAL)  | mW <sup>*2</sup> |
| Junction temperature        | $T_j$         | 150         | °C               |
| Storage temperature         | $T_{stg}$     | -55 to +150 | °C               |

<sup>\*1</sup> 120mW per element must not be exceeded.  
<sup>\*2</sup> 200mW per element must not be exceeded.

### ●Dimensions (Unit : mm)



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

| Parameter                            | Symbol        | Min. | Typ. | Max. | Unit    | Conditions                         |
|--------------------------------------|---------------|------|------|------|---------|------------------------------------|
| Collector-base breakdown voltage     | $BV_{CBO}$    | 60   | -    | -    | V       | $I_C=50\mu A$                      |
| Collector-emitter breakdown voltage  | $BV_{CEO}$    | 50   | -    | -    | V       | $I_C=1mA$                          |
| Emitter-base breakdown voltage       | $BV_{EBO}$    | 7    | -    | -    | V       | $I_E=50\mu A$                      |
| Collector cutoff current             | $I_{CBO}$     | -    | -    | 0.1  | $\mu A$ | $V_{CB}=60V$                       |
| Emitter cutoff current               | $I_{EBO}$     | -    | -    | 0.1  | $\mu A$ | $V_{EB}=7V$                        |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | -    | -    | 0.4  | V       | $I_C/I_E=50mA/5mA$                 |
| DC current transfer ratio            | $h_{FE}$      | 120  | -    | 560  | -       | $V_{CE}=6V, I_C=1mA$               |
| Transition frequency                 | $f_T$         | -    | 180  | -    | MHz     | $V_{CE}=12V, I_E=-2mA, f=100MHz$ * |
| Output capacitance                   | $C_{ob}$      | -    | 2    | 3.5  | pF      | $V_{CB}=12V, I_E=0mA, f=1MHz$      |

\*Transition frequency of the device.

●Electrical characteristics curves

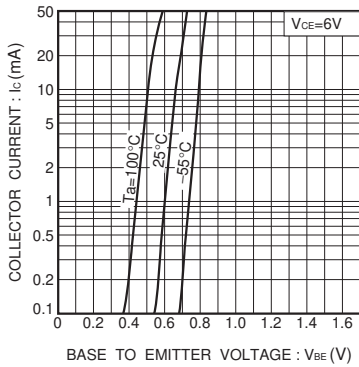


Fig.1 Grounded emitter propagation characteristics

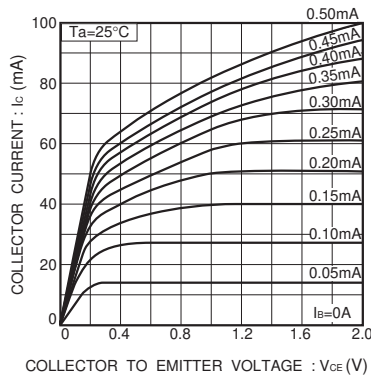


Fig.2 Grounded emitter output characteristics ( I )

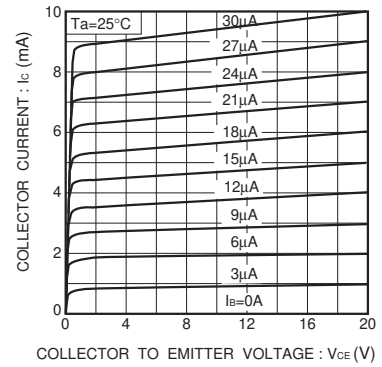


Fig.3 Grounded emitter output characteristics ( II )

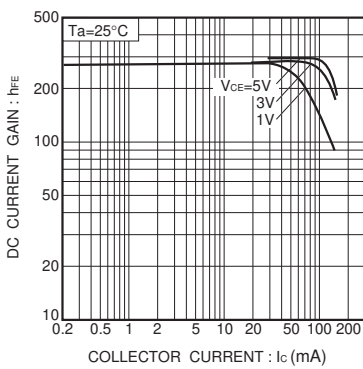


Fig.4 DC current gain vs. collector current ( I )

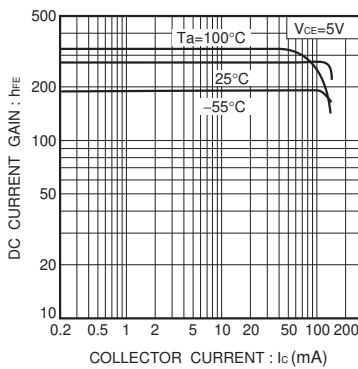


Fig.5 DC current gain vs. collector current ( II )

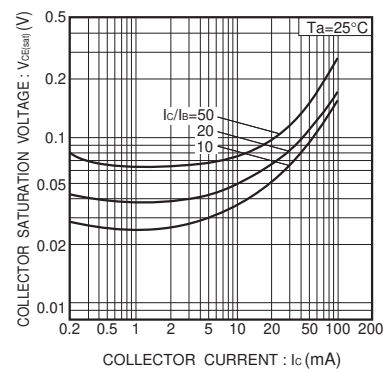


Fig.6 Collector-emitter saturation voltage vs. collector current

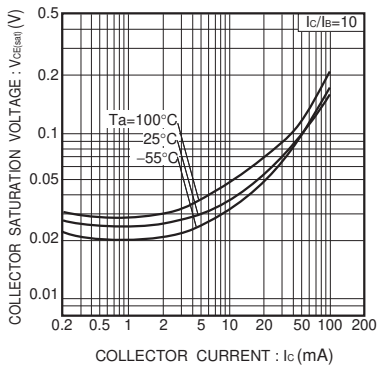


Fig.7 Collector-emitter saturation voltage vs. collector current ( I )

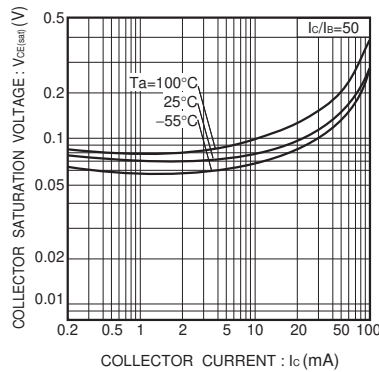


Fig.8 Collector-emitter saturation voltage vs. collector current ( II )

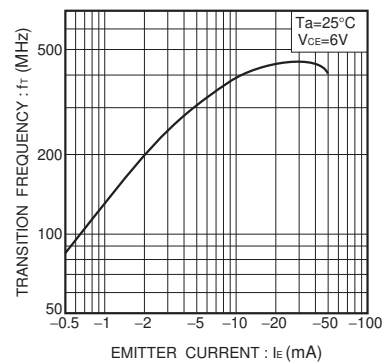


Fig.9 Gain bandwidth product vs. emitter current

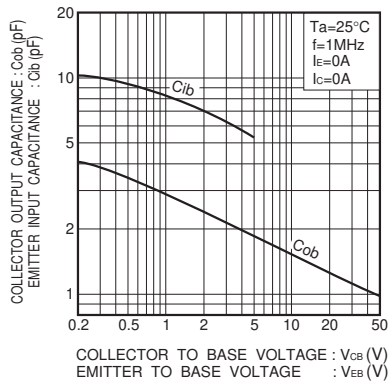


Fig.10 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

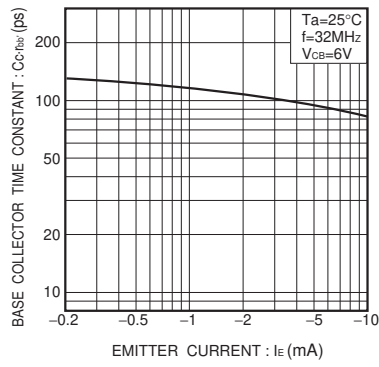


Fig.11 Base-collector time constant vs. emitter current

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