



# IMZ1AS-AU

## Complementary Dual General Purpose Transistor

**Voltage**

50V /  
-50V

**Current**

0.15 /  
-0.15A

### Features

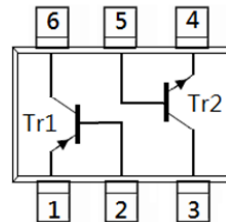
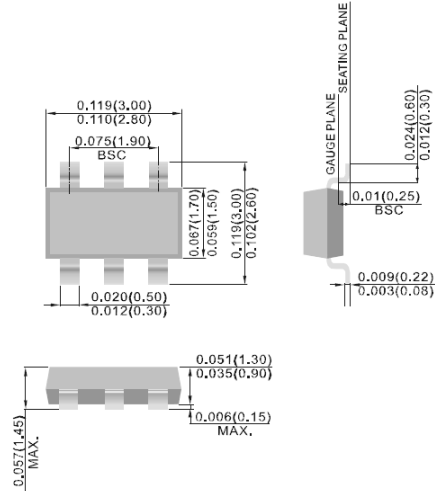
- Silicon PNP/NPN epitaxial type
- Tr1: PNP  
Tr2: NPN
- Ideal for Low Power Amplification and Switching
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC 61249 standard

### Mechanical Data

- Case: SOT-23 6L Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0005 ounces, 0.014 grams
- Marking: 1AS

SOT-23 6L

Unit: inch(mm)



#### Pin Assignment

1. Tr1 (PNP) Emitter
2. Tr1 (PNP) Base
3. Tr2 (NPN) Collector
4. Tr2 (NPN) Emitter
5. Tr2 (NPN) Base
6. Tr1 (PNP) Collector

## Maximum Ratings and Thermal Characteristics ( $T_A=25^\circ\text{C}$ unless otherwise noted)

| PARAMETER   | SYMBOL          | Tr1     | Tr2  | UNITS              |
|---|-----------------|---------|------|--------------------|
| Collector-Base Voltage  | $V_{CBO}$       | 50      | -50  | V                  |
| Collector-Emitter Voltage   | $V_{CEO}$       | 60      | -60  |                    |
| Emitter-Base Voltage  | $V_{EBO}$       | 7       | -6   |                    |
| Collector Current (DC)  | $I_C$           | 150     | -150 | mA                 |
| Total Power Dissipation   | $P_D$           | 300     |      | mW                 |
| Operating Junction and Storage Temperature Range                      | $T_J, T_{STG}$  | -55~150 |      | $^\circ\text{C}$   |
| Typical Thermal Resistance from Junction to Ambient <sup>(Note)</sup> | $R_{\theta JA}$ | 100     |      | $^\circ\text{C/W}$ |

Note: Mounted on FR4 with 2oz. PCB at 1 inch square copper pad.



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## Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise noted)

| PARAMETER                            | SYMBOL        | TEST CONDITION   | MIN. | TYP. | MAX. | UNITS |
|--------------------------------------|---------------|--|------|------|------|-------|
| <b>Tr1 (PNP)</b>                     |               |  |      |      |      |       |
| <b>OFF Characteristics</b>           |               |  |      |      |      |       |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C = -1\text{mA}, I_B = 0\text{A}$                             | -50  | -    | -    | V     |
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C = -50\mu\text{A}, I_E = 0\text{A}$                          | -60  | -    | -    |       |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E = -50\mu\text{A}, I_C = 0\text{A}$                          | -6   | -    | -    |       |
| Collector-Base Cutoff Current        | $I_{CBO}$     | $V_{CB} = -60\text{V}, I_E = 0\text{A}$                          | -    | -    | -100 | nA    |
| Emitter-Base Cutoff Current          | $I_{EBO}$     | $V_{EB} = -6\text{V}$  | -    | -    | -100 |       |
| <b>ON characteristics</b>            |               |  |      |      |      |       |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = -6\text{V}, I_C = -1\text{mA}$                         | 120  | -    | 560  | -     |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = -50\text{mA}, I_B = -5\text{mA}$                          | -    | -150 | -500 | mV    |
| Transition Frequency                 | $f_T$         | $I_E = -2\text{mA}, V_{CE} = -12\text{V}$<br>$f = 100\text{MHz}$ | -    | 140  | -    | MHz   |
| Collector Output Capacitance         | $C_{OB}$      | $V_{CB} = -12\text{V}, I_E = 0\text{A}$ ,<br>$f = 100\text{MHz}$ | -    | 4    | 5    | pF    |
| <b>Tr2 (NPN)</b>                     |               |  |      |      |      |       |
| <b>OFF Characteristics</b>           |               |  |      |      |      |       |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C = 1\text{mA}, I_B = 0\text{A}$                              | 50   | -    | -    | V     |
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C = 50\mu\text{A}, I_E = 0\text{A}$                           | 60   | -    | -    |       |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E = 50\mu\text{A}, I_C = 0\text{A}$                           | 7    | -    | -    |       |
| Collector-Base Cutoff Current        | $I_{CBO}$     | $V_{CB} = 60\text{V}, I_E = 0\text{A}$                           | -    | -    | 100  | nA    |
| Emitter-Base Cutoff Current          | $I_{EBO}$     | $V_{EB} = 7\text{V}$   | -    | -    | 100  |       |
| <b>ON characteristics</b>            |               |  |      |      |      |       |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = 6\text{V}, I_C = 1\text{mA}$                           | 120  | -    | 560  | -     |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = 50\text{mA}, I_B = 5\text{mA}$                            | -    | 100  | 400  | mV    |
| Transition Frequency                 | $f_T$         | $I_E = 2\text{mA}, V_{CE} = 12\text{V}$<br>$f = 100\text{MHz}$   | -    | 180  | -    | MHz   |
| Collector Output Capacitance         | $C_{OB}$      | $V_{CB} = 12\text{V}, I_E = 0\text{A}$ ,<br>$f = 100\text{MHz}$  | -    | 2    | 3.5  | pF    |

Note: 1. Pulse width  $\leq 300\mu\text{s}$ , Duty cycle  $\leq 2\%$



# IMZ1AS-AU

## TYPICAL CHARACTERISTIC CURVES

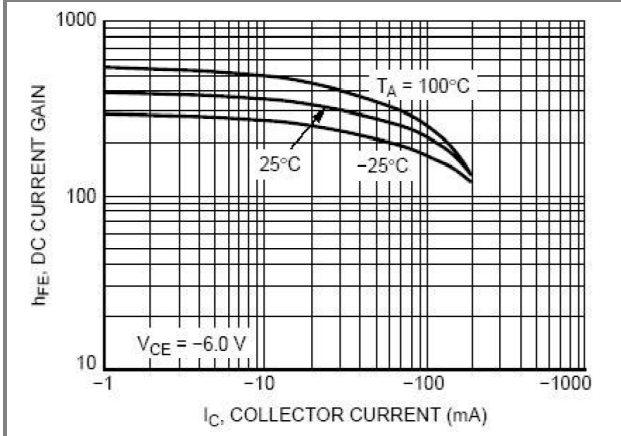


Fig.1 DC Current Gain

## Tr1 (PNP)

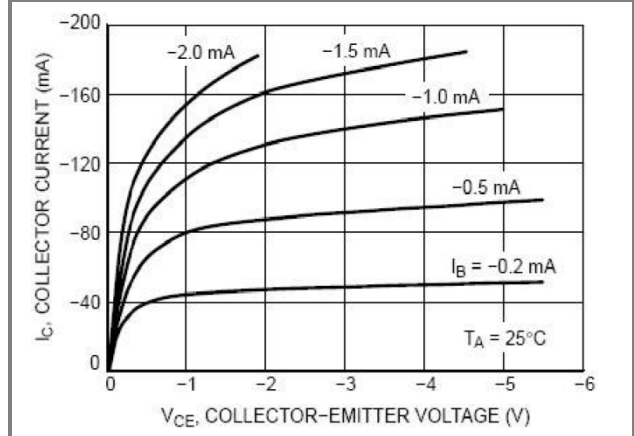


Fig.2 Collector Current

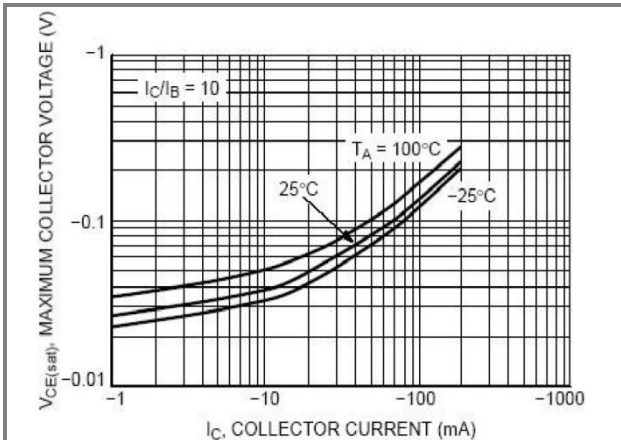


Fig.3 Collector-Emitter Saturation Voltage

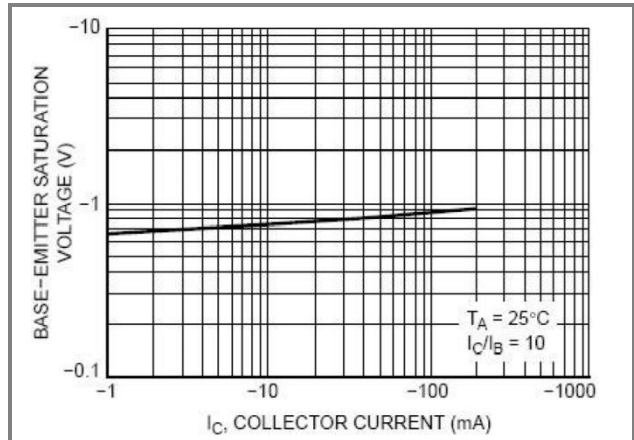


Fig.4 Base-Emitter Saturation Voltage

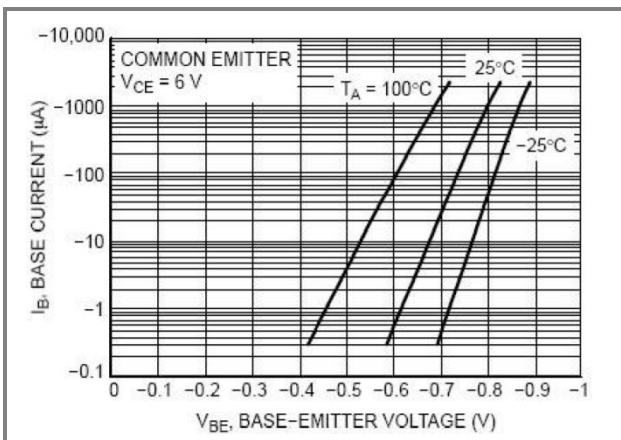


Fig.5 Base-Emitter Voltage



# IMZ1AS-AU

## TYPICAL CHARACTERISTIC CURVES

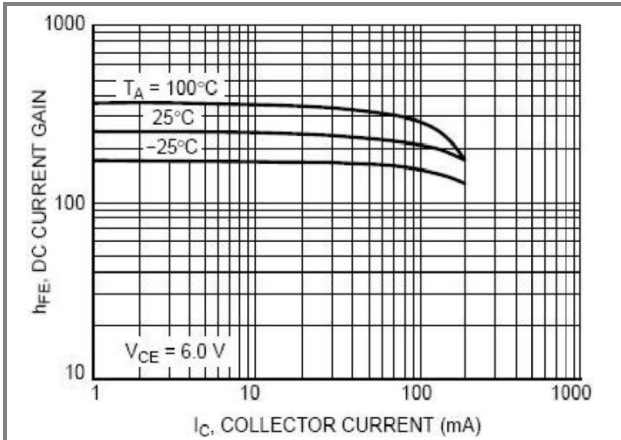


Fig.6 DC Current Gain

## Tr2 (NPN)

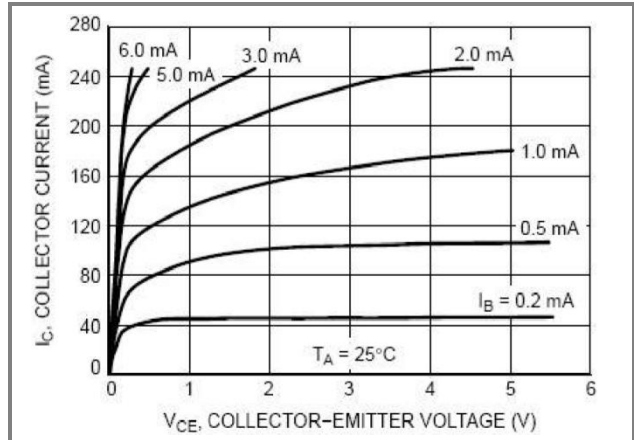


Fig.7 Collector Current

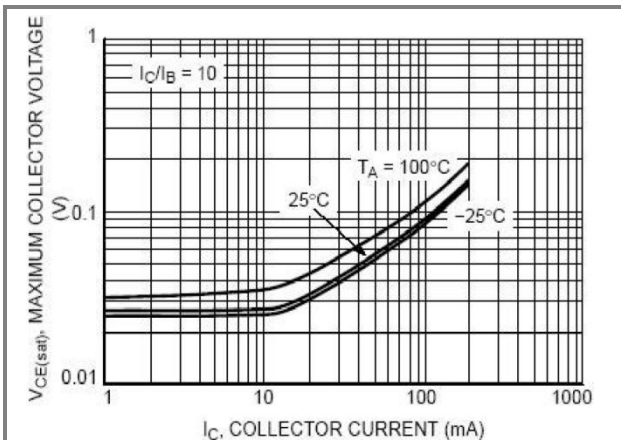


Fig.8 Collector-Emitter Saturation Voltage

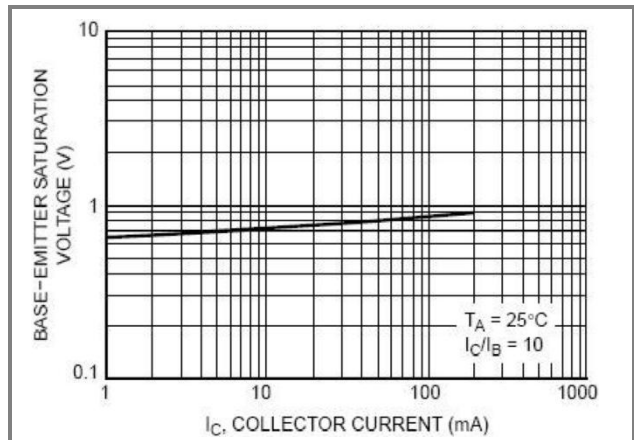


Fig.9 Base-Emitter Saturation Voltage

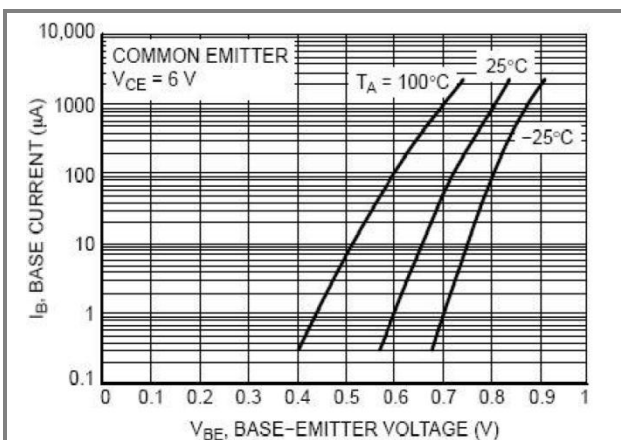


Fig.10 Base-Emitter Voltage

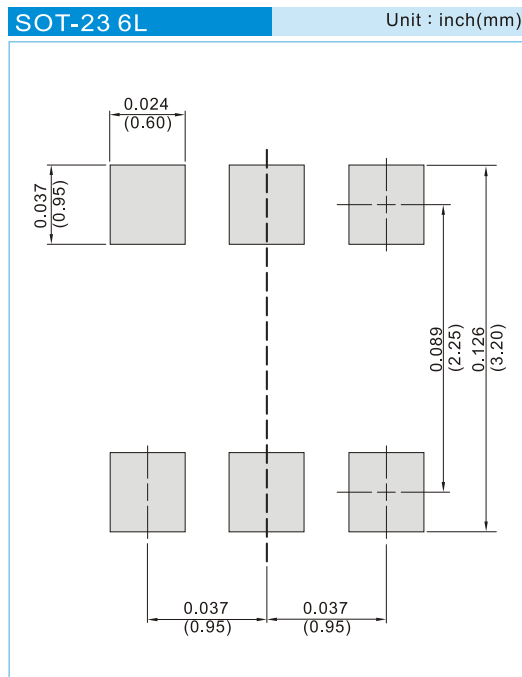


# IMZ1AS-AU

## Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type     | Marking | Version      |
|----------------------|--------------|------------------|---------|--------------|
| IMZ1AS-AU_S1_000A1   | SOT-23 6L    | 3K pcs / 7" reel | 1AS     | Halogen free |

## Mounting Pad Layout





## IMZ1AS-AU

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