

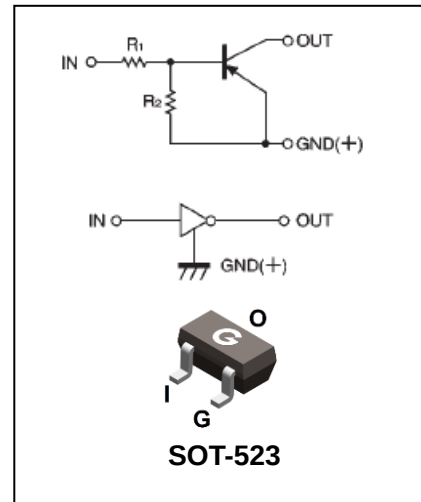
## Digital Transistor

## DTA(R<sub>1</sub>≠R<sub>2</sub> SERIES)E

### FEATURES

- Epitaxial planar die construction
- Complementary NPN types available(DTC)
- Built-in biasing resistors, R<sub>1</sub>≠R<sub>2</sub>
- Also available in lead free version

HF



### APPLICATIONS

- The PNP style digital transistor

### ORDERING INFORMATION

| Type No. | Marking | Package Code |
|----------|---------|--------------|
| DTA113ZE | E11     | SOT-523      |
| DTA114WE | 74      | SOT-523      |
| DTA114YE | 54      | SOT-523      |
| DTA123JE | E32     | SOT-523      |
| DTA123YE | 52      | SOT-523      |
| DTA143XE | 33      | SOT-523      |
| DTA143ZE | E13     | SOT-523      |

### MAXIMUM RATING @ Ta=25°C unless otherwise specified

| Symbol                | Parameter         | Value                                                                                                                                                                        | Units |
|-----------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| V <sub>CC</sub>       | Supply Voltage    | -50                                                                                                                                                                          | V     |
| V <sub>IN</sub>       | Input Voltage     | DTA113ZE<br>+5 to -10<br>DTA114WE<br>+10 to -30<br>DTA114YE<br>+6 to -40<br>DTA123JE<br>+5 to -12<br>DTA123YE<br>+5 to -12<br>DTA143XE<br>+7 to -20<br>DTA143ZE<br>+5 to -30 | V     |
| I <sub>O</sub>        | Output Current    | DTA113ZE<br>-100<br>DTA114WE<br>-100<br>DTA114YE<br>-70<br>DTA123JE<br>-100<br>DTA123YE<br>-100<br>DTA143XE<br>-100<br>DTA143ZE<br>-100                                      | mA    |
| I <sub>C</sub> (Max.) | Output current    | ALL<br>-100                                                                                                                                                                  | mA    |
| P <sub>D</sub>        | Power Dissipation | 150                                                                                                                                                                          | mW    |

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|                                   |                                                |             |      |
|-----------------------------------|------------------------------------------------|-------------|------|
| R <sub>θJA</sub>                  | Thermal Resistance, Junction to Ambient Air *1 | 306         | °C/W |
| R <sub>θJC</sub>                  | Thermal Resistance, Junction to Case *1        | 152         | °C/W |
| R <sub>θJL</sub>                  | Thermal Resistance, Junction to Lead *1        | 61          | °C/W |
| T <sub>j</sub> , T <sub>stg</sub> | Operating and Storage and Temperature Range    | -55 to +150 | °C   |

Note 1: The data tested by surface mounted on a 15mm \* 15mm \* 1mm FR4-epoxy P.C.B

### ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Parameter       | Symbol                                                                           | Test conditions                                                                                                                                                                                                                                                                                                                                                | MIN                                                  | TYP  | MAX                                                    | UNIT |
|-----------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------|--------------------------------------------------------|------|
| Input Voltage   | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE<br>DTA143ZE | V <sub>I(off)</sub><br>V <sub>CC</sub> =-5V, I <sub>O</sub> =-100μA                                                                                                                                                                                                                                                                                            | -0.3<br>-0.8<br>-0.3<br>-0.5<br>-0.3<br>-0.3<br>-0.5 | -    | -                                                      | V    |
| Input Voltage   | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE<br>DTA143ZE | V <sub>I(on)</sub><br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-20mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-2mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-1mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-5mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-20mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-20mA<br>V <sub>O</sub> =-0.3V, I <sub>O</sub> =-5mA | -                                                    | -    | -3<br>-3<br>-1.4<br>-1.1<br>-3.0<br>-2.5<br>-1.3       | V    |
| Output Voltage  | DTA123JE<br>DTA143ZE<br>DTA114YE<br>ALL Others                                   | V <sub>O(on)</sub><br>I <sub>O</sub> /I <sub>I</sub> =-5mA/-0.25mA<br><br>I <sub>O</sub> /I <sub>I</sub> =-10mA/-0.5mA                                                                                                                                                                                                                                         | -                                                    | -0.1 | -0.3                                                   | V    |
| Input Current   | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE<br>DTA143ZE | I <sub>I</sub><br>V <sub>I</sub> =-5V                                                                                                                                                                                                                                                                                                                          | -                                                    | -    | -7.2<br>-0.88<br>-0.88<br>-3.6<br>-3.8<br>-1.8<br>-1.8 | mA   |
| Output Current  |                                                                                  | I <sub>O(off)</sub><br>V <sub>CC</sub> =-50V, V <sub>I</sub> =0V                                                                                                                                                                                                                                                                                               | -                                                    | -    | -0.5                                                   | μA   |
| DC Current Gain | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE             | G <sub>I</sub><br>V <sub>O</sub> =-5V, I <sub>O</sub> =-5mA<br>V <sub>O</sub> =-5V, I <sub>O</sub> =-10mA<br>V <sub>O</sub> =-5V, I <sub>O</sub> =-5mA<br>V <sub>O</sub> =-5V, I <sub>O</sub> =-10mA<br>V <sub>O</sub> =-5V, I <sub>O</sub> =-10mA<br>V <sub>O</sub> =-5V, I <sub>O</sub> =-10mA                                                               | 33<br>24<br>68<br>80<br>33<br>30                     | -    | -                                                      |      |

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|                        |                                                                                  |            |                                             |                                               |                                             |                                                 |     |
|------------------------|----------------------------------------------------------------------------------|------------|---------------------------------------------|-----------------------------------------------|---------------------------------------------|-------------------------------------------------|-----|
|                        | DTA143ZE                                                                         |            | $V_O = -5V, I_O = -10mA$                    | 80                                            |                                             |                                                 |     |
| Input Resistor         | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE<br>DTA143ZE | $R_1(R_2)$ |                                             | 0.7<br>7<br>7<br>1.54<br>1.54<br>3.29<br>3.29 | 1<br>10<br>10<br>2.2<br>2.2<br>4.7<br>4.7   | 1.3<br>13<br>13<br>2.86<br>2.86<br>6.11<br>6.11 | kΩ  |
| Resistance Ratio       | DTA113ZE<br>DTA114WE<br>DTA114YE<br>DTA123JE<br>DTA123YE<br>DTA143XE<br>DTA143ZE | $R_2/R_1$  |                                             | 8<br>0.37<br>3.7<br>17<br>3.6<br>1.7<br>8     | 10<br>0.47<br>4.7<br>21<br>4.5<br>2.1<br>10 | 12<br>0.57<br>5.7<br>26<br>5.5<br>2.6<br>12     | -   |
| Gain-Bandwidth Product |                                                                                  | $f_T$      | $V_{CE} = -10V, I_E = 5mA,$<br>$f = 100MHz$ | -                                             | 250                                         | -                                               | MHz |

### TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

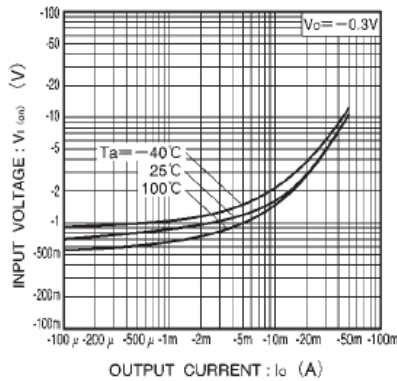


Fig.1 Input voltage vs. output current (ON characteristics)

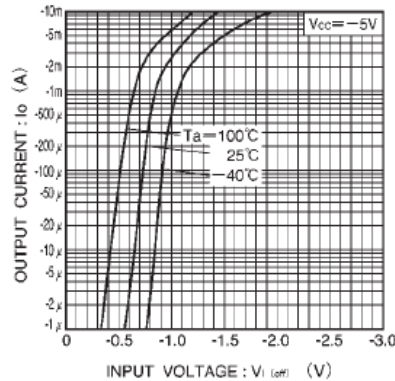


Fig.2 Output current vs. input voltage (OFF characteristics)

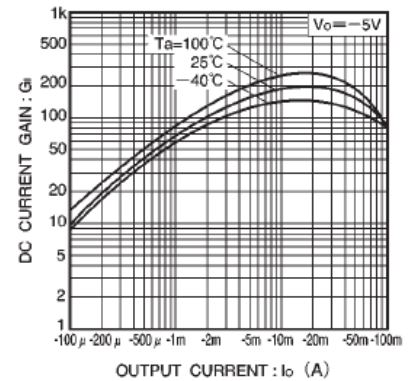


Fig.3 DC current gain vs. output current

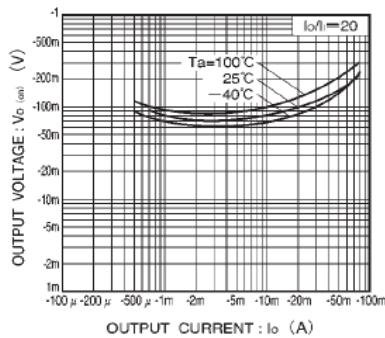


Fig.4 Output voltage vs. output current

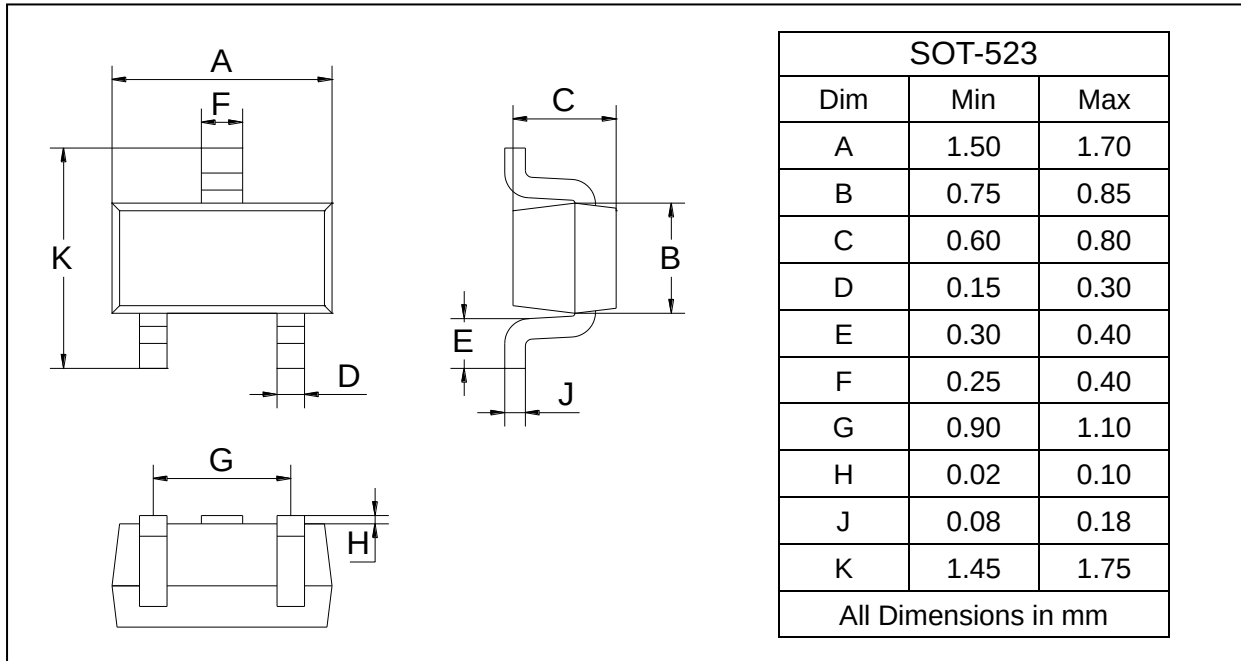
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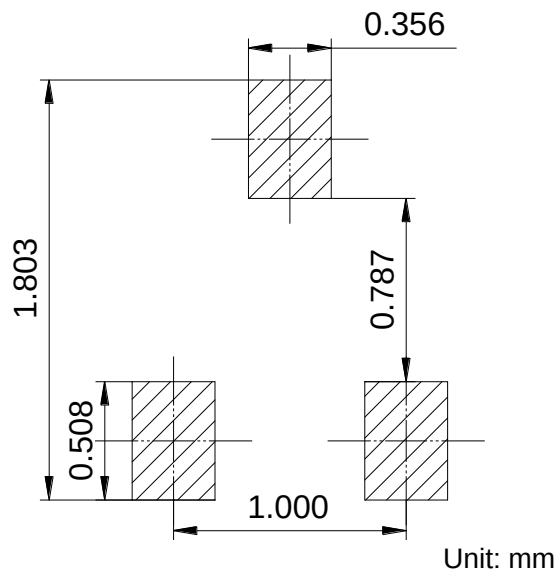
### PACKAGE OUTLINE

Plastic surface mounted package

SOT-523



### SOLDERING FOOTPRINT



### PACKAGE INFORMATION

| Device  | Package | Shipping               |
|---------|---------|------------------------|
| DTAXXXE | SOT-523 | 3000 pcs / Tape & Reel |