

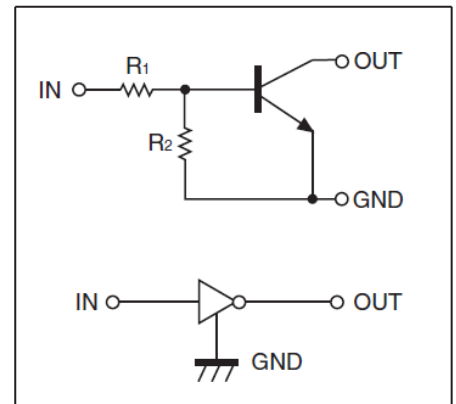
## DTC113ZM/DTC113ZE/DTC113ZUA DTC113ZKA/DTC113ZCA/DTC113ZSA

DIGITAL TRANSISTOR (NPN)

### FEATURES

- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy

### • Equivalent Circuit



| Part Number  | MARKING <sup>(1)</sup>                     | Package   | Packing Method | Pack Quantity |
|--------------|--------------------------------------------|-----------|----------------|---------------|
| DTC113ZM     | <b>E21</b>                                 | SOT-723   | Reel           | 8000pcs/Reel  |
| DTC113ZE     | <b>E21</b>                                 | SOT-523   | Reel           | 3000pcs/Reel  |
| DTC113ZUA    | <b>E21</b>                                 | SOT-323   | Reel           | 3000pcs/Reel  |
| DTC113ZKA    | <b>E21</b>                                 | SOT-23-3L | Reel           | 3000pcs/Reel  |
| DTC113ZCA    | <b>E21</b>                                 | SOT-23    | Reel           | 3000pcs/Reel  |
| DTC113ZSA    | <b>C113</b> <sup>(2)</sup><br><b>Z•XXX</b> | TO-92S    | Bulk           | 1000pcs/Bag   |
| DTC113ZSA-TA | <b>C113</b> <sup>(2)</sup><br><b>Z•XXX</b> | TO-92S    | Tape           | 3000pcs/Box   |

Notes: (1). Solid dot = Green molding compound device, if none, the normal device.

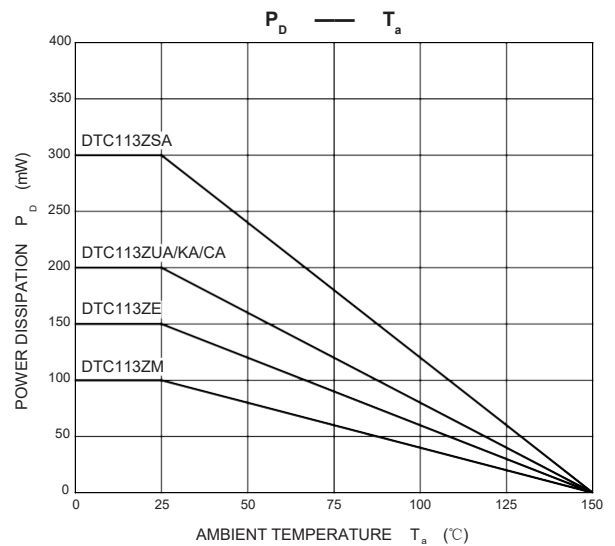
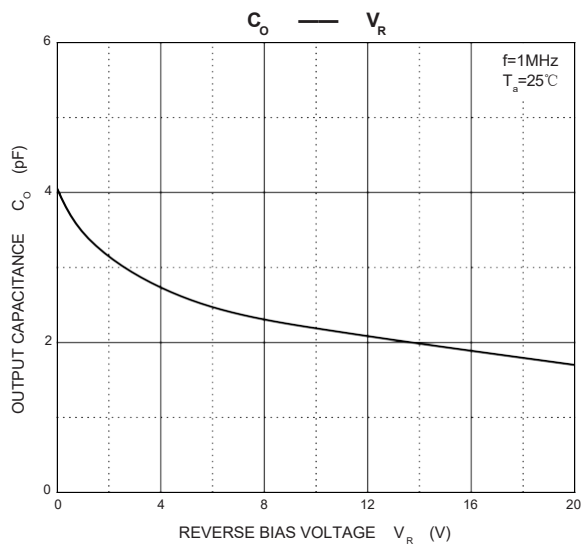
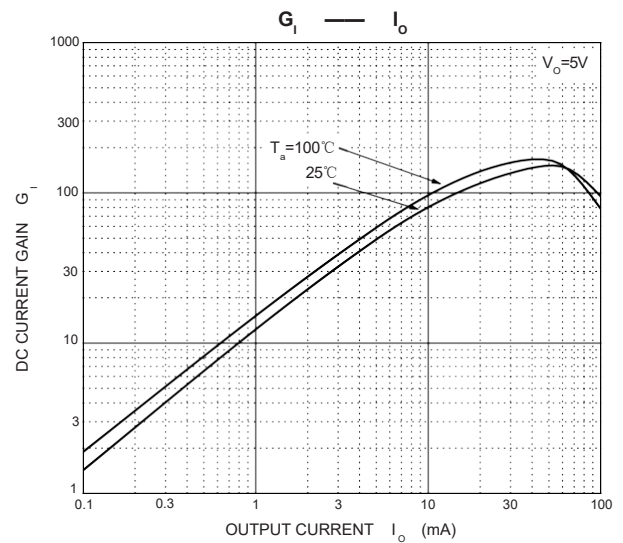
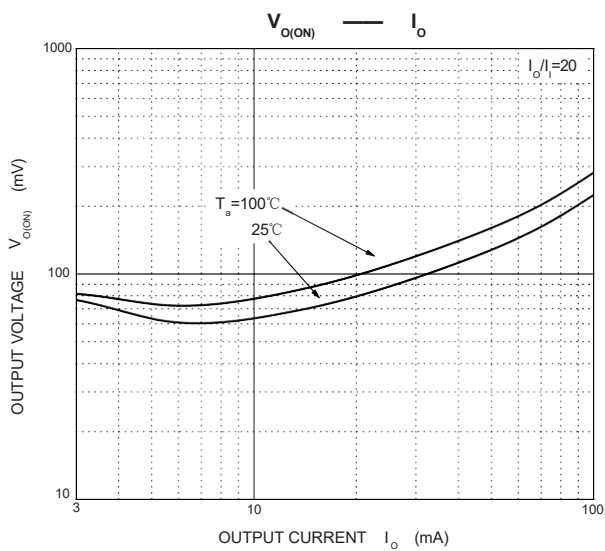
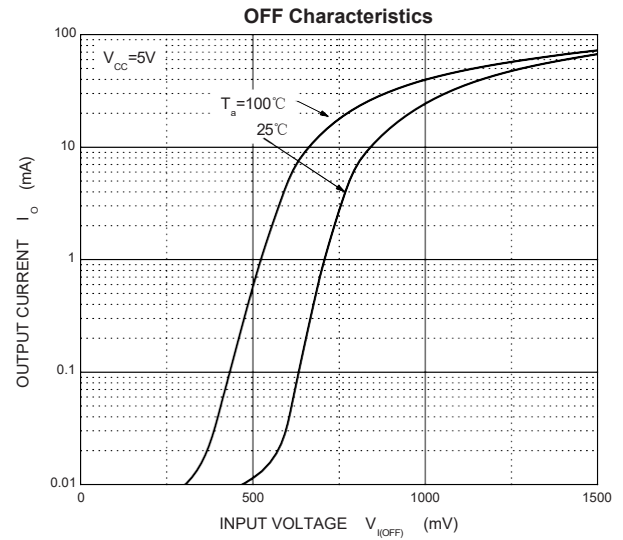
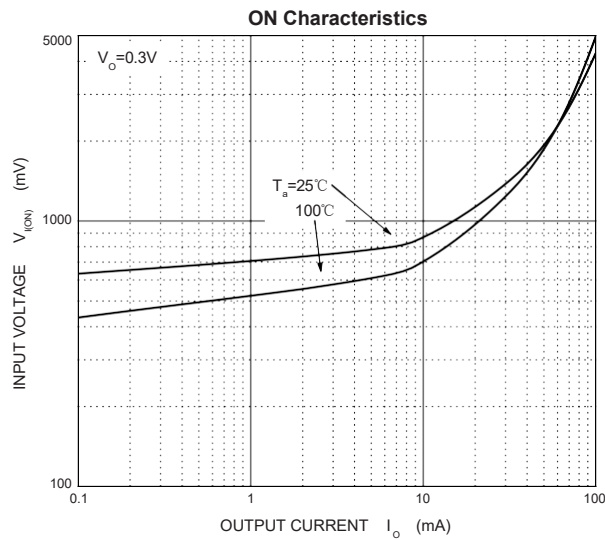
(2). XXX=Code

#### MAXIMUM RATINGS(Ta=25°C unless otherwise noted)

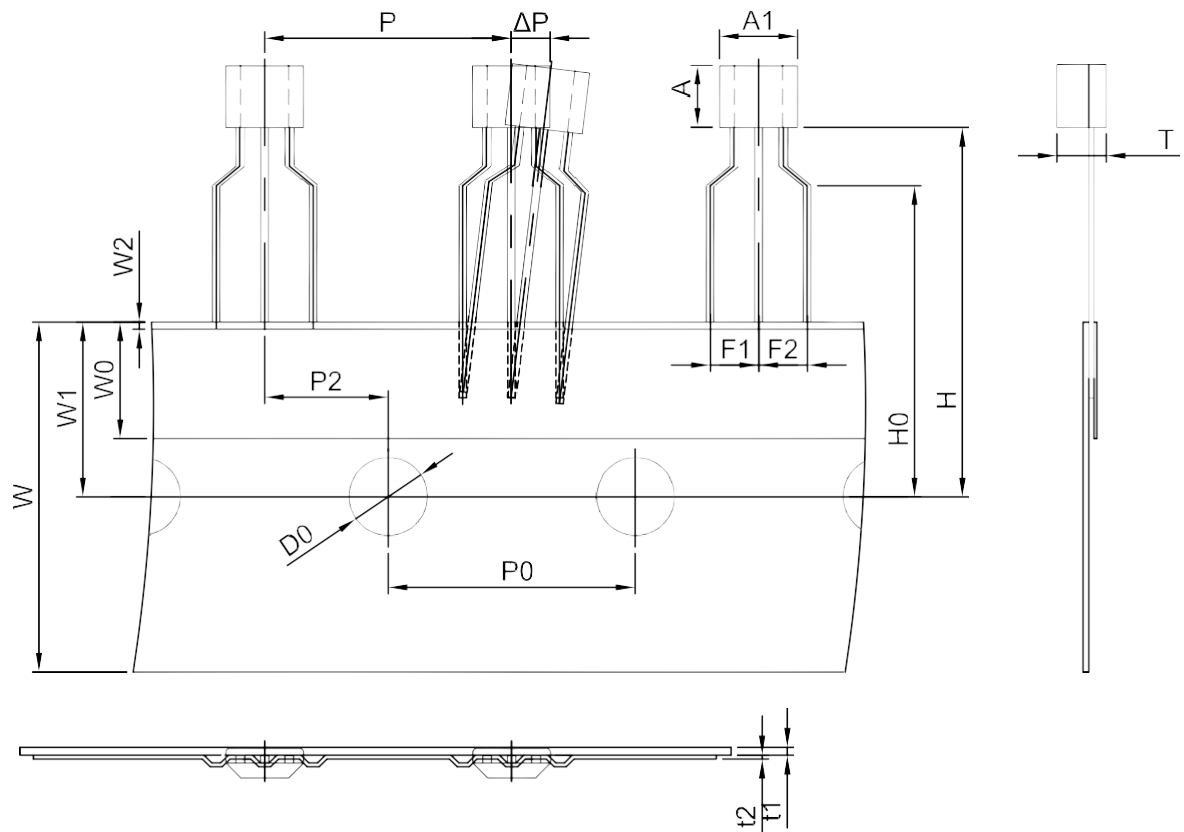
| Symbol                                | Parameter                                        | Limits(DTC113□) |     |     |     |     |     | Unit |
|---------------------------------------|--------------------------------------------------|-----------------|-----|-----|-----|-----|-----|------|
|                                       |                                                  | M               | E   | UA  | CA  | KA  | SA  |      |
| <b>V<sub>CC</sub></b>                 | Supply Voltage                                   | 50              |     |     |     |     |     | V    |
| <b>V<sub>IN</sub></b>                 | Input Voltage                                    | -5~+10          |     |     |     |     |     | V    |
| <b>I<sub>O</sub></b>                  | Output Current                                   | 100             |     |     |     |     |     | mA   |
| <b>P<sub>D</sub></b>                  | Power Dissipation                                | 100             | 150 | 200 | 200 | 200 | 300 | mW   |
| <b>T<sub>J</sub>, T<sub>stg</sub></b> | Operation Junction and Storage Temperature Range | -55~+150        |     |     |     |     |     | °C   |

#### ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter            | Symbol                         | Conditions                                         | Min | Typ | Max | Unit |
|----------------------|--------------------------------|----------------------------------------------------|-----|-----|-----|------|
| Input voltage        | V <sub>I(off)</sub>            | V <sub>CC</sub> =5V, I <sub>O</sub> =100μA         | 0.3 |     |     | V    |
|                      | V <sub>I(on)</sub>             | V <sub>O</sub> =0.3V, I <sub>O</sub> =20mA         |     |     | 3   | V    |
| Output voltage       | V <sub>O(on)</sub>             | I <sub>O</sub> /I <sub>I</sub> =10mA/0.5mA         |     |     | 0.3 | V    |
| Input current        | I <sub>I</sub>                 | V <sub>I</sub> =5V                                 |     |     | 7.2 | mA   |
| Output current       | I <sub>O(off)</sub>            | V <sub>CC</sub> =50V, V <sub>I</sub> =0            |     |     | 0.5 | μA   |
| DC current gain      | G <sub>I</sub>                 | V <sub>O</sub> =5V, I <sub>O</sub> =5mA            | 33  |     |     |      |
| Input resistance     | R <sub>1</sub>                 |                                                    | 0.7 | 1   | 1.3 | kΩ   |
| Resistance ratio     | R <sub>2</sub> /R <sub>1</sub> |                                                    | 8   | 10  | 12  |      |
| Transition frequency | f <sub>T</sub>                 | V <sub>O</sub> =10V, I <sub>O</sub> =5mA, f=100MHz |     | 250 |     | MHz  |

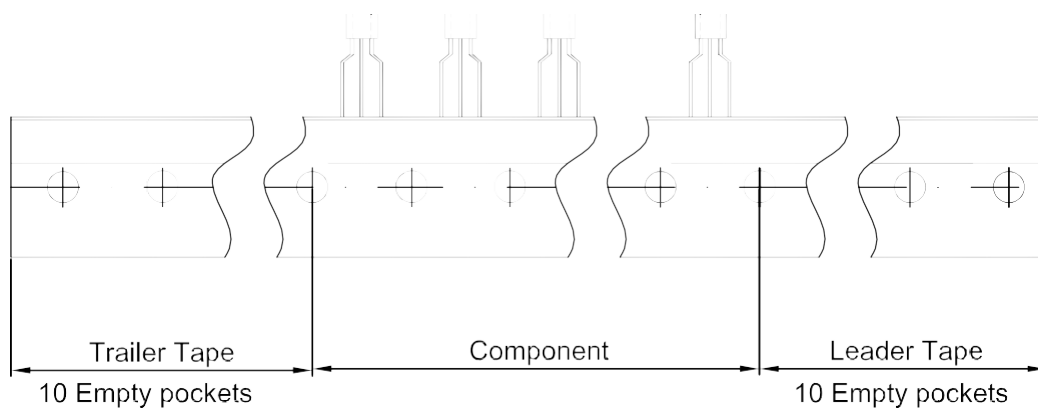


## TO-92S PACKAGE TAPING DIMENSION



Dimiensions are in millimeter

| A1  | A    | T    | P    | P0   | P2   | F1  | F2  | W          |
|-----|------|------|------|------|------|-----|-----|------------|
| 4.0 | 3.15 | 1.52 | 12.7 | 12.7 | 6.35 | 2.5 | 2.5 | 18.0       |
| W0  | W1   | W2   | H    | H0   | D0   | t1  | t2  | $\Delta P$ |
| 6.0 | 9.0  | 1.0  | 19.0 | 16.0 | 4.0  | 0.4 | 0.2 | 0          |



| Package | Box       | Box Size (mm) | Carton     | Carton Size (mm) |
|---------|-----------|---------------|------------|------------------|
| TO-92S  | 3,000 pcs | 330×184×40    | 30,000 pcs | 505×405×240      |