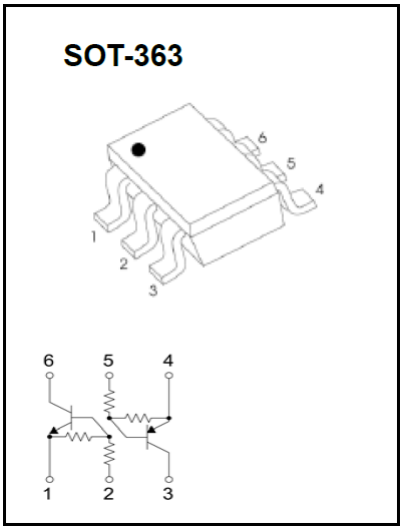
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

# AD-UMD22N Digital Transistor (Built-In Resistors)

## AD-UMD22N Dual digital transistor (NPN+PNP)




## FEATURES

- AD-DTA143Z and AD-DTC143Z series chips in a package
- Transistor elements are independent, eliminating interference
- AEC-Q101 qualified

## MARKING

D̄22

## MAXIMUM RATINGS NPN TRANSISTOR ($T_j$ = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | 50 | V |
| Input voltage | $V_{IN}$ | -5 ~ 30 | V |
| Output current | $I_O$ | 100 | mA |
| Peak collector current | $I_{C(MAX)}$ | 100 | mA |
| Maximum power dissipation | $P_D$ | 150 | mW |
| Operating junction and storage temperature range | $T_j$, $T_{stg}$ | -55 ~ 150 | °C |

## ELECTRICAL CHARACTERISTICS NPN TRANSISTOR ($T_j$ = 25°C unless otherwise specified)

| Parameter | Symbol | Test condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Input voltage | $V_{I(off)}$ | $V_{CC}$ = 5V, $I_O$ = 100μA | 0.5 | - | - | V |
| | $V_{I(on)}$ | $V_O$ = 0.3V, $I_O$ = 5mA | - | - | 1.3 | |
| Output voltage | $V_{O(on)}$ | $I_O/I_I$ = 5mA/0.25mA | - | 0.1 | 0.3 | V |
| Input current | $I_I$ | $V_I$ = 5V | - | - | 1.8 | mA |
| Output current | $I_{O(off)}$ | $V_{CC}$ = 50V, $V_I$ = 0V | - | - | 0.5 | μA |
| DC current gain | $G_I$ | $V_O$ = 5V, $I_O$ = 10mA | 80 | - | - | - |
| Input resistance | $R_1$ | | 3.29 | 4.7 | 6.11 | kΩ |
| Resistance ratio | $R_2/R_1$ | | 8 | 10 | 12 | |
| Transition frequency | $f_T$ | $V_{CE}$ = 10V, $I_E$ = -5mA, f = 100MHz | - | 250 | - | MHz |

## MAXIMUM RATINGS PNP TRANSISTOR ($T_j$ = 25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Supply voltage | $V_{CC}$ | -50 | V |
| Input voltage | $V_{IN}$ | -30 ~ 5 | V |
| Output current | $I_O$ | -100 | mA |
| Peak collector current | $I_{C(MAX)}$ | -100 | mA |
| Maximum power dissipation | $P_D$ | 150 | mW |
| Operating junction and storage temperature range | $T_j$, $T_{stg}$ | -55 ~ 150 | °C |

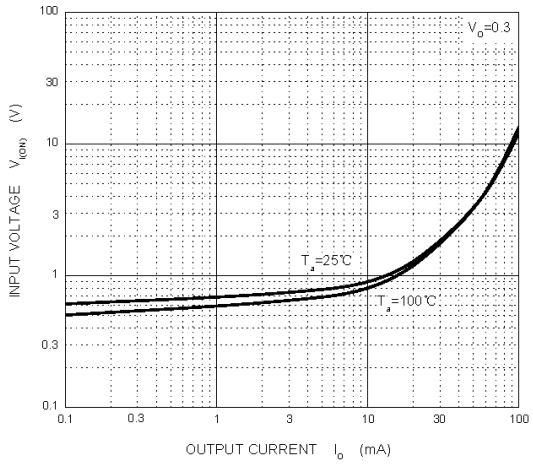
## ELECTRICAL CHARACTERISTICS PNP TRANSISTOR ($T_j$ = 25°C unless otherwise specified)

| Parameter | Symbol | Test condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Input voltage | $V_{I(off)}$ | $V_{CC}$ = -5V, $I_O$ = -100μA | -0.5 | - | - | V |
| | $V_{I(on)}$ | $V_O$ = -0.3V, $I_O$ = -5mA | - | - | -1.3 | |
| Output voltage | $V_{O(on)}$ | $I_O/I_I$ = -5mA/-0.25mA | - | -0.1 | -0.3 | V |
| Input current | $I_I$ | $V_I$ = -5V | - | - | -1.8 | mA |
| Output current | $I_{O(off)}$ | $V_{CC}$ = -50V, $V_I$ = 0V | - | - | -0.5 | μA |
| DC current gain | $G_I$ | $V_O$ = -5V, $I_O$ = -10mA | 80 | - | - | - |
| Input resistance | $R_1$ | | 3.29 | 4.7 | 6.11 | kΩ |
| Resistance ratio | $R_2/R_1$ | | 8 | 10 | 12 | |
| Transition frequency | $f_T$ | $V_{CE}$ = -10V, $I_E$ = 5mA, f = 100MHz | - | 250 | - | MHz |

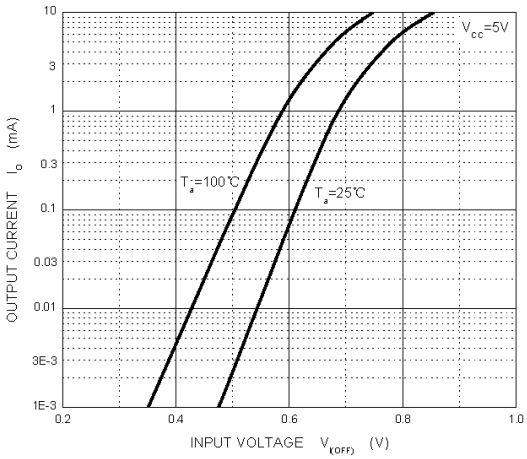
# TYPICAL CHARACTERISTICS

## NPN Transistor

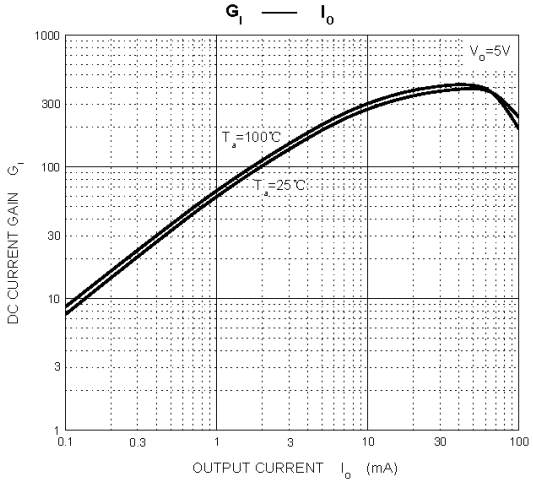
**ON Characteristics**



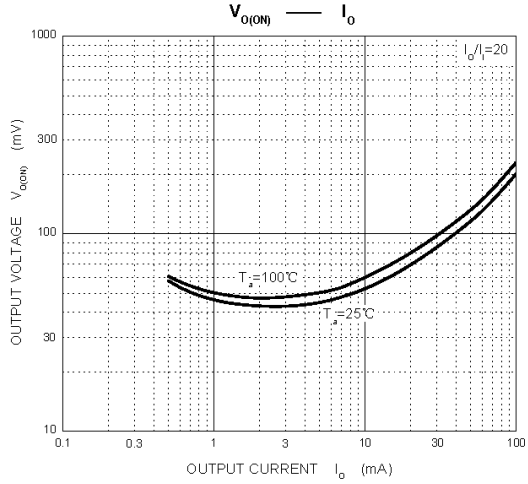

**OFF Characteristics**



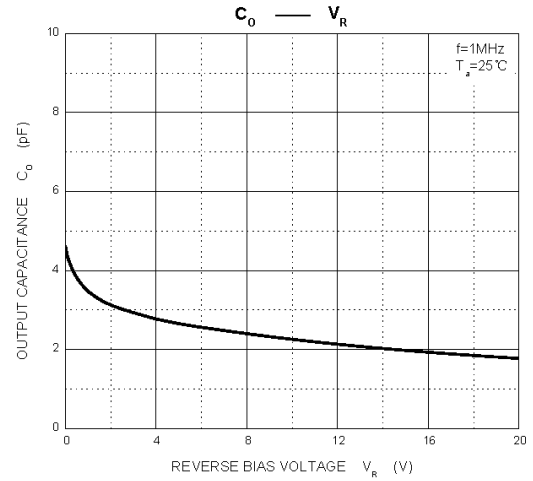

**$G_I$ — $I_O$**



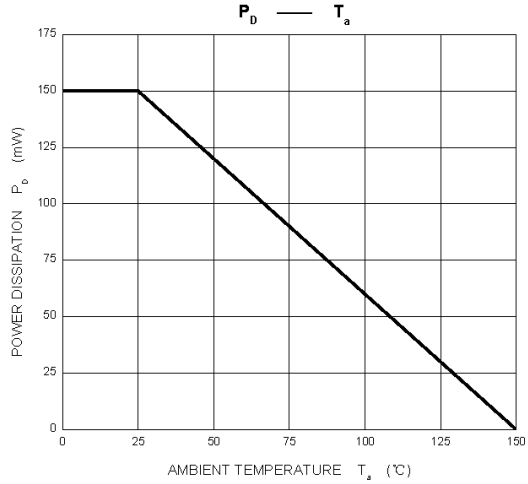

**$V_{O(ON)}$ — $I_O$**




**$C_O$ — $V_R$**



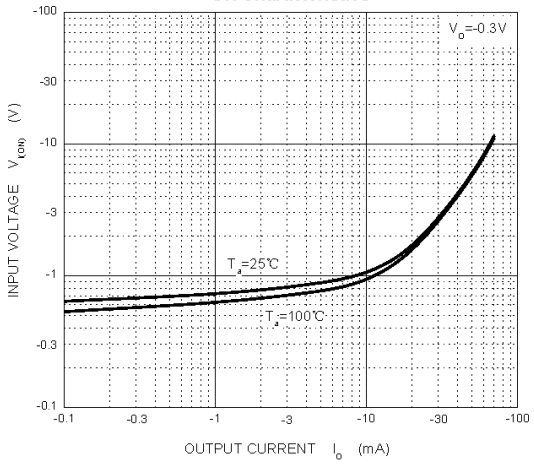

**$P_D$ — $T_a$**



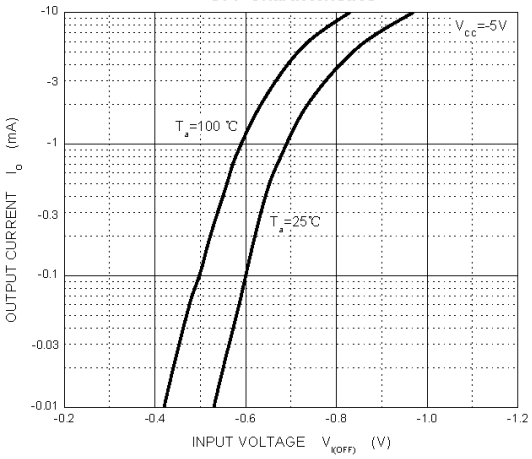
# TYPICAL CHARACTERISTICS

## PNP Transistor

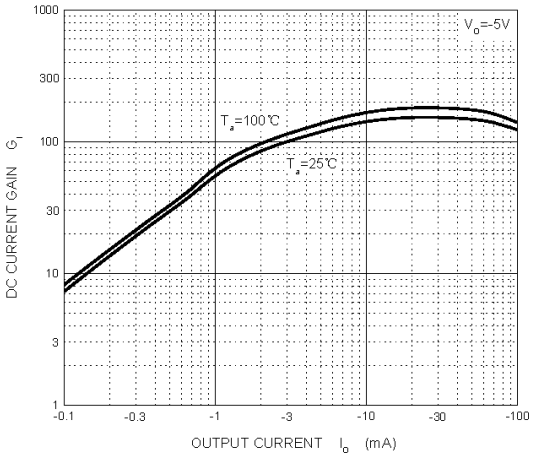
ON Characteristics



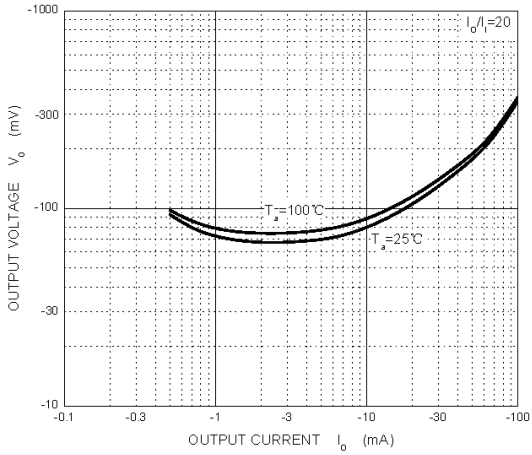

OFF Characteristics



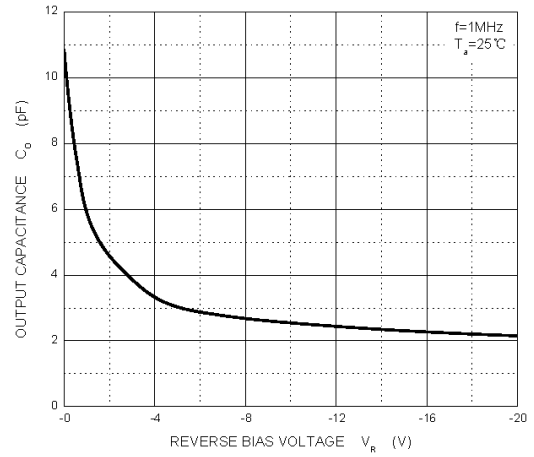

$G_I$ — $I_O$



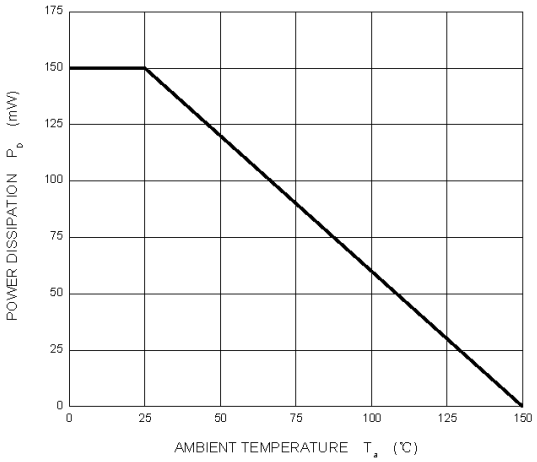

$V_{O(ON)}$ — $I_O$



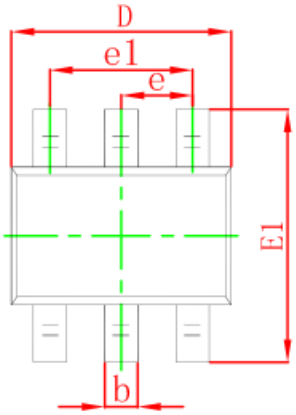

$C_O$ — $V_R$

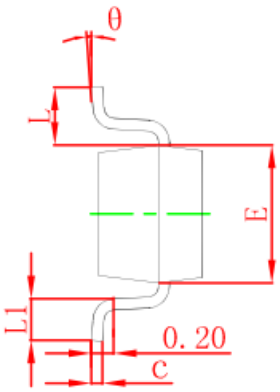


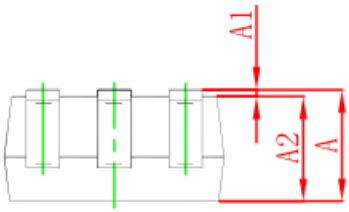

$P_D$ — $T_a$



## SOT-363 PACKAGE OUTLINE DIMENSIONS

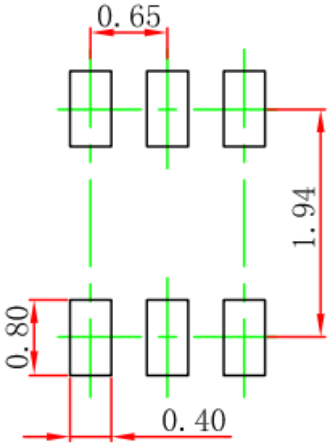



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.350 | 0.006 | 0.014 |
| c | 0.100 | 0.150 | 0.004 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.400 | 0.085 | 0.094 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-363 SUGGESTED PAD LAYOUT

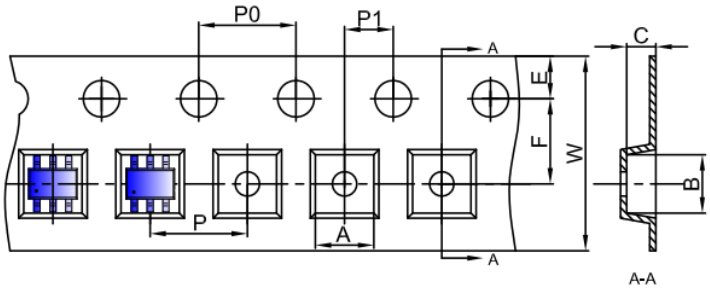



Note:

1. Controlling dimension in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purpose only.

# SOT-363 TAPE AND REEL

## SOT-363 Embossed Carrier Tape

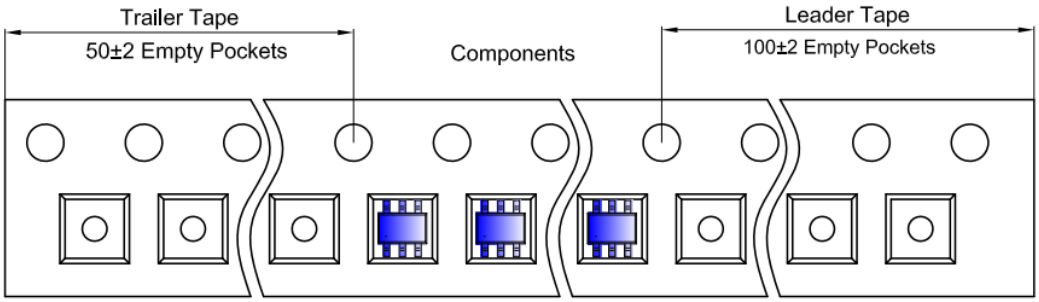



Packaging Description:

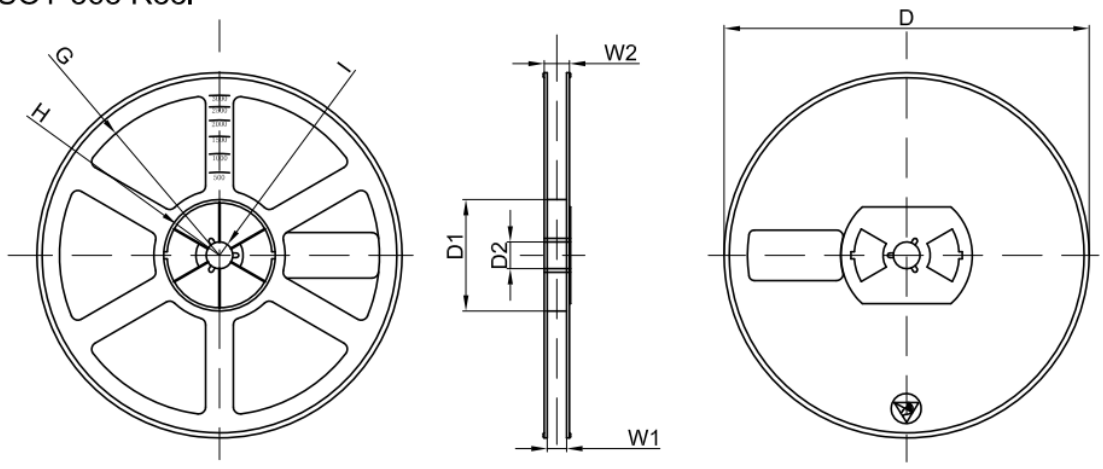
SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

| Dimensions are in millimeter | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pkg type | A | B | C | d | E | F | P0 | P | P1 | W |
| SOT-363 | 2.25 | 2.55 | 1.20 | Ø1.50 | 1.75 | 3.50 | 4.00 | 4.00 | 2.00 | 8.00 |

## SOT-363 Tape Leader and Trailer




## SOT-363 Reel




| Dimensions are in millimeter | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Reel Option | D | D1 | D2 | G | H | I | W1 | W2 |
| 7"Dia | Ø178.00 | 54.40 | 13.00 | R78.00 | R25.60 | R6.50 | 9.50 | 12.30 |

| REEL | Reel Size | Box | Box Size(mm) | Carton | Carton Size(mm) | G.W.(kg) |
|---|---|---|---|---|---|---|
| 3000 pcs | 7 inch | 45,000 pcs | 203×203×195 | 180,000 pcs | 438×438×220 | |

## PUBLISHED BY

**JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.**
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