



## AD-UMD2N Digital Transistor (Built-In Resistors)

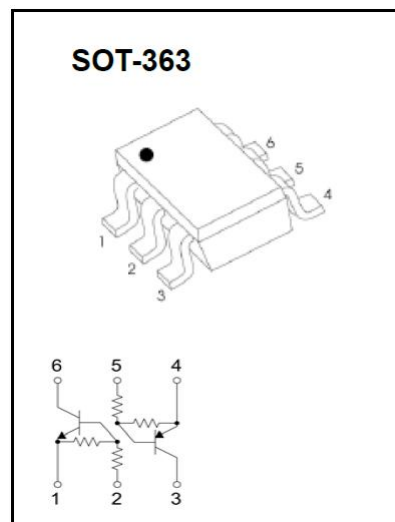
**AD-UMD2N** Dual digital transistor (NPN+PNP)

### FEATURES

- AD-DTC124E and AD-DTA124E transistors are in a package
- Mounting possible with SOT-363 automatic mounting machines
- Transistor elements are independent, eliminating interference
- AEC-Q101 qualified

### MARKING

$\bar{D}2$



**MAXIMUM RATINGS NPN TRANSISTOR ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-10 ~ 40	V
Output current	$I_o$	30	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	$^\circ\text{C}$

**ELECTRICAL CHARACTERISTICS NPN TRANSISTOR ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_o = 100\mu\text{A}$	0.5	-	-	V
	$V_{I(on)}$	$V_o = 0.2V, I_o = 5\text{mA}$	-	-	3	
Output voltage	$V_{O(on)}$	$I_o/I_i = 10\text{mA}/0.5\text{mA}$	-	0.1	0.3	V
Input current	$I_i$	$V_i = 5V$	-	-	0.36	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_i = 0V$	-	-	0.5	$\mu\text{A}$
DC current gain	$G_I$	$V_o = 5V, I_o = 5\text{mA}$	56	-	-	-
Input resistance	$R_1$	-	15.4	22	28.6	$\text{k}\Omega$
Resistance ratio	$R_2/R_1$	-	0.8	1	1.2	-
Transition frequency	$f_T$	$V_{CE} = 10V, I_E = 5\text{mA}, f = 100\text{MHz}$	-	250	-	MHz

**MAXIMUM RATINGS NPN TRANSISTOR ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Value	Unit
Supply voltage	$V_{CC}$	-50	V
Input voltage	$V_{IN}$	-40 ~ 10	V
Output current	$I_o$	-30	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	$^\circ\text{C}$

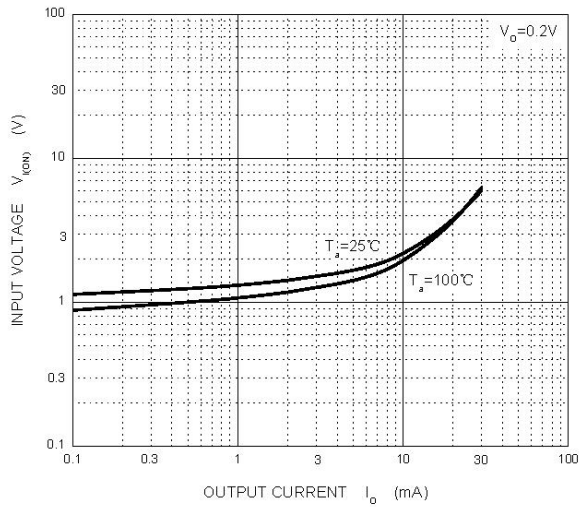
**ELECTRICAL CHARACTERISTICS NPN TRANSISTOR ( $T_j = 25^\circ\text{C}$  unless otherwise specified)**

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	$V_{CC} = -5V, I_o = -100\mu\text{A}$	-0.5	-	-	V
	$V_{I(on)}$	$V_o = -0.3V, I_o = -5\text{mA}$	-	-	-3	
Output voltage	$V_{O(on)}$	$I_o/I_i = -10\text{mA}/-0.5\text{mA}$	-	-	-0.3	V
Input current	$I_i$	$V_i = -5V$	-	-	-0.36	mA
Output current	$I_{O(off)}$	$V_{CC} = -50V, V_i = 0V$	-	-	-0.5	$\mu\text{A}$
DC current gain	$G_I$	$V_o = -5V, I_o = -5\text{mA}$	56	-	-	-
Input resistance	$R_1$	-	15.4	22	28.6	$\text{k}\Omega$
Resistance ratio	$R_2/R_1$	-	0.8	1	1.2	-
Transition frequency	$f_T$	$V_{CE} = -10V, I_E = -5\text{mA}, f = 100\text{MHz}$	-	250	-	MHz

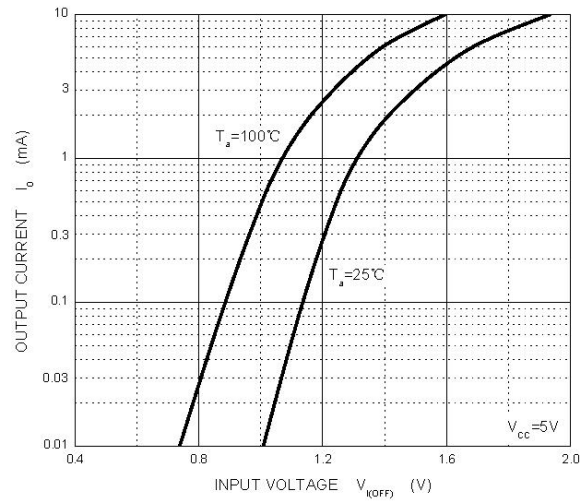
TYPICAL CHARACTERISTICS

AD-DTC124E

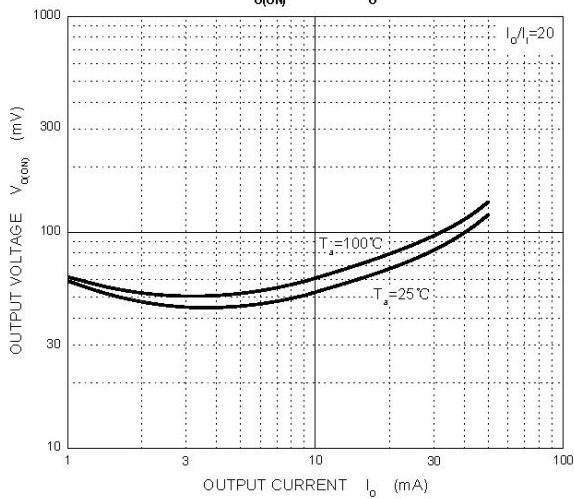
ON Characteristics



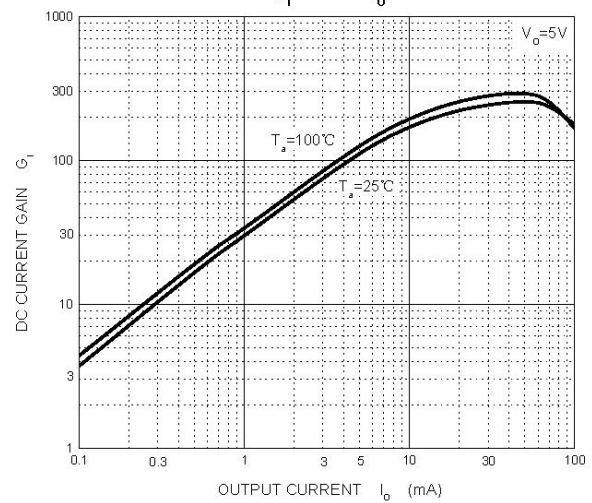
OFF Characteristics



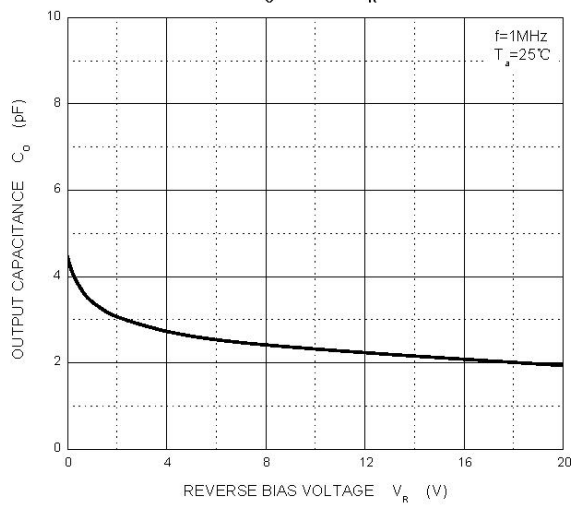
$V_{o(off)} - I_o$



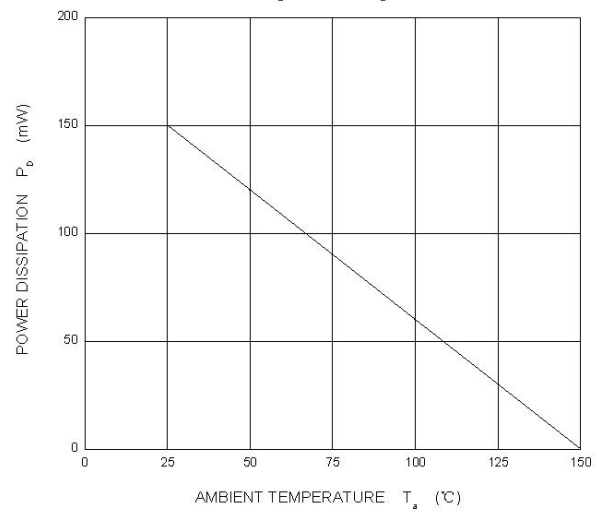
$G_I - I_o$



$C_o - V_R$

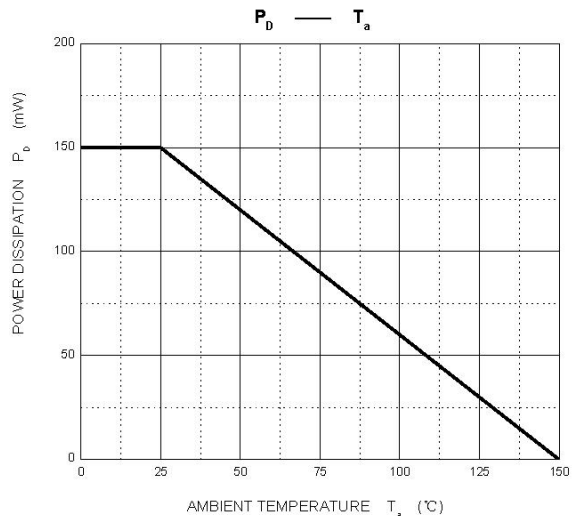
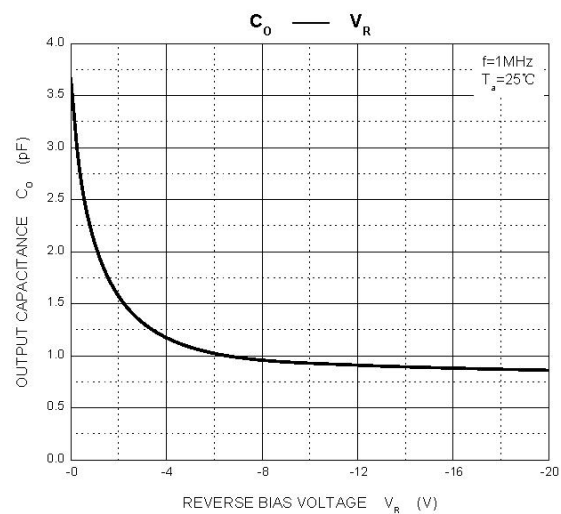
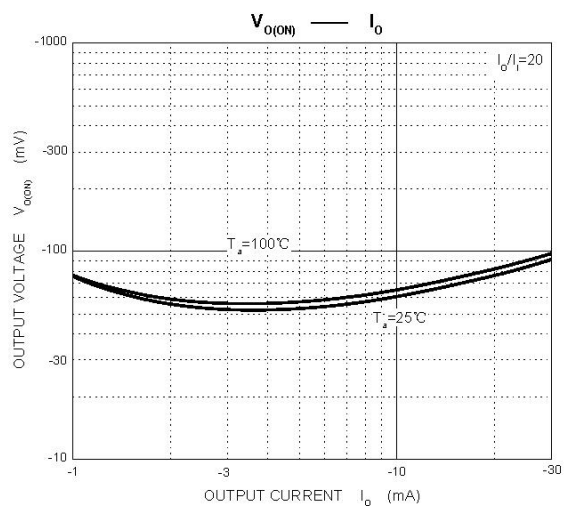
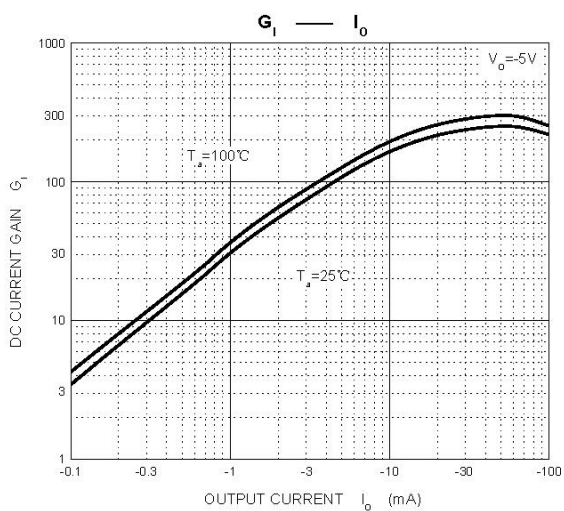
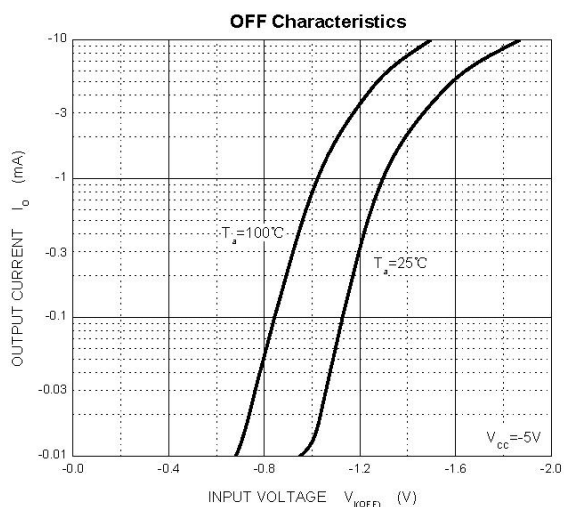
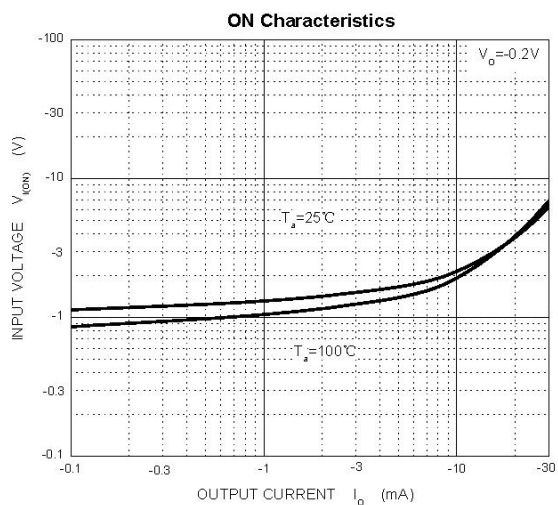


$P_D - T_a$

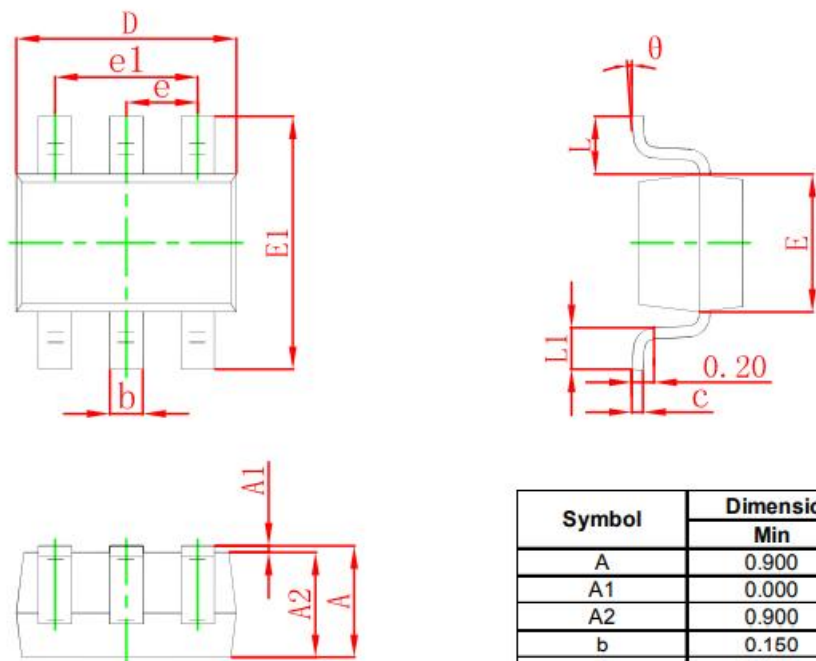


# TYPICAL CHARACTERISTICS

## AD-DTA124E

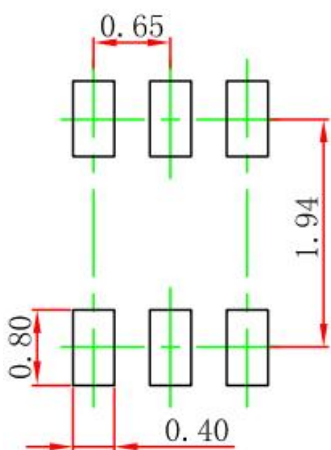


### SOT-363 PACKAGE OUTLINE DIMENSIONS



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

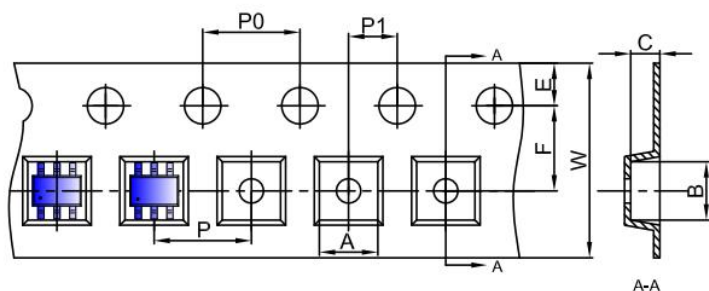


Note:

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

### SOT-363 TAPE AND REEL

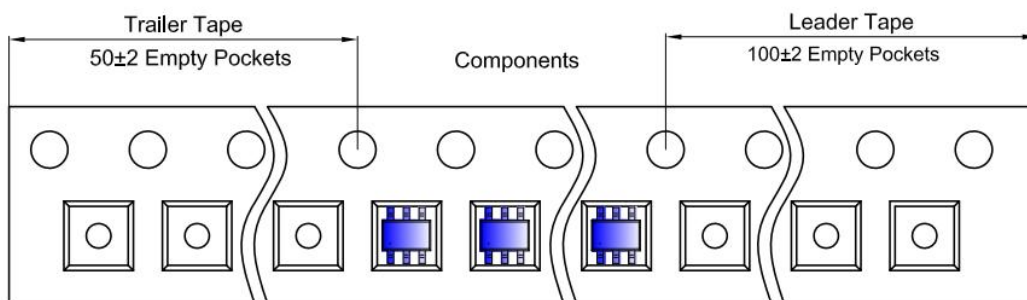
#### SOT-363 Embossed Carrier Tape



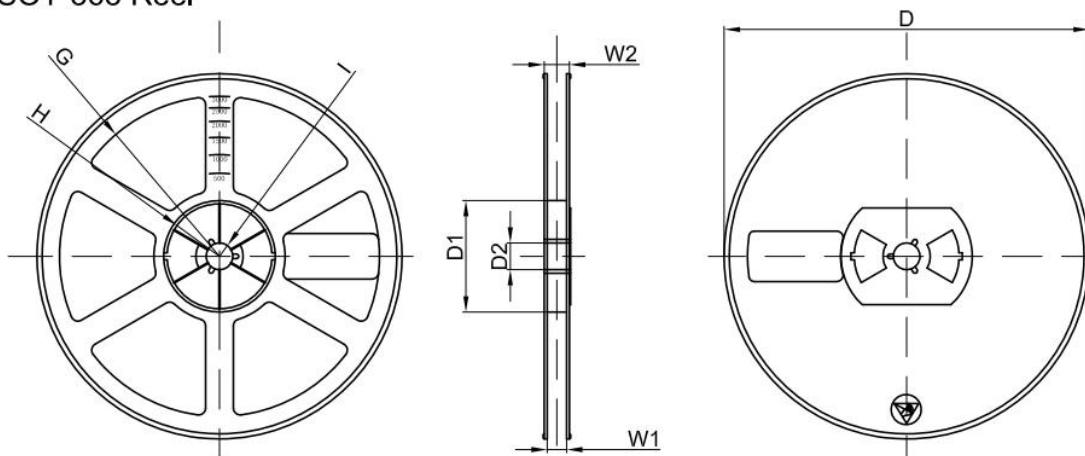
**Packaging Description:**  
 SOT-363 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed 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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