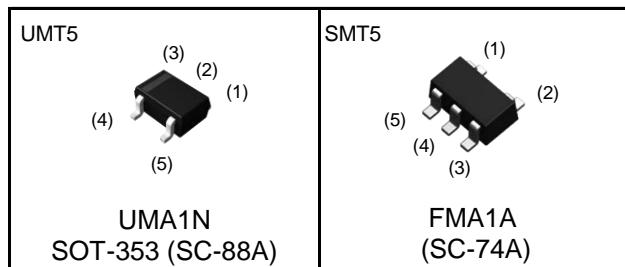


Parameter	Tr1 and Tr2
$V_{CC}$	-50V
$I_C(\text{MAX.})$	-100mA
$R_1$	22k $\Omega$
$R_2$	22k $\Omega$

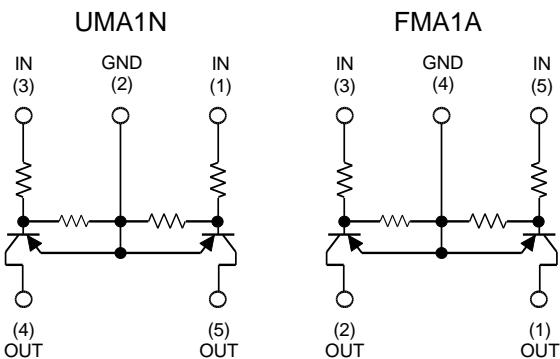
### ●Outline



### ●Features

- 1) Built-In Biasing Resistors,  $R_1 = R_2 = 22k\Omega$ .
- 2) Two DTA124E chips in one package.
- 3) Emitter(GND)-common type
- 4) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 5) The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input. They also have the advantage of completely eliminating parasitic effects.
- 6) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 7) Lead Free/RoHS Compliant.

### ●Inner circuit



### ●Application

Interface circuit, Driver circuit

### ●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
UMA1N	UMT5	2021	TR	180	8	3,000	A1
FMA1A	SMT5	2928	T148	180	8	3,000	A1

## ● Absolute maximum ratings (Ta = 25°C)

&lt;For Tr1 and Tr2 in common&gt;

Parameter	Symbol	Values	Unit
Supply voltage	V <sub>CC</sub>	-50	V
Input voltage	V <sub>IN</sub>	-40 to +10	V
Output current	I <sub>O</sub>	-30	mA
Collector current	I <sub>C(MAX.)</sub> <sup>*1</sup>	-100	mA
Power dissipation	UMA1N	150 (Total) <sup>*3</sup>	mW
	FMA1A	300 (Total) <sup>*4</sup>	mW
Junction temperature	T <sub>j</sub>	150	°C
Range of storage temperature	T <sub>stg</sub>	-55 to +150	°C

## ● Electrical characteristics(Ta = 25°C)

&lt;For Tr1 and Tr2 in common&gt;

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input voltage	V <sub>I(off)</sub>	V <sub>CC</sub> = -5V, I <sub>O</sub> = -100μA	-	-	-0.5	V
	V <sub>I(on)</sub>	V <sub>O</sub> = -0.2V, I <sub>O</sub> = -5mA	-3	-	-	
Output voltage	V <sub>O(on)</sub>	I <sub>O</sub> / I <sub>I</sub> = -10mA / -0.5mA	-	-0.1	-0.3	V
Input current	I <sub>I</sub>	V <sub>I</sub> = -5V	-	-	-0.36	mA
Output current	I <sub>O(off)</sub>	V <sub>CC</sub> = -50V, V <sub>I</sub> = 0V	-	-	-0.5	μA
DC current gain	G <sub>I</sub>	V <sub>O</sub> = -5V, I <sub>O</sub> = -5mA	56	-	-	-
Input resistance	R <sub>I</sub>	-	15.4	22	28.6	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	-	0.8	1	1.2	-
Transition frequency	f <sub>T</sub> <sup>*1</sup>	V <sub>CE</sub> = -10V, I <sub>E</sub> = 5mA, f = 100MHz	-	250	-	MHz

\*1 Characteristics of built-in transistor

\*2 Each terminal mounted on a reference footprint

\*3 120mW per element must not be exceeded.

\*4 200mW per element must not be exceeded.

## ●Electrical characteristic curves (Ta = 25°C)

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

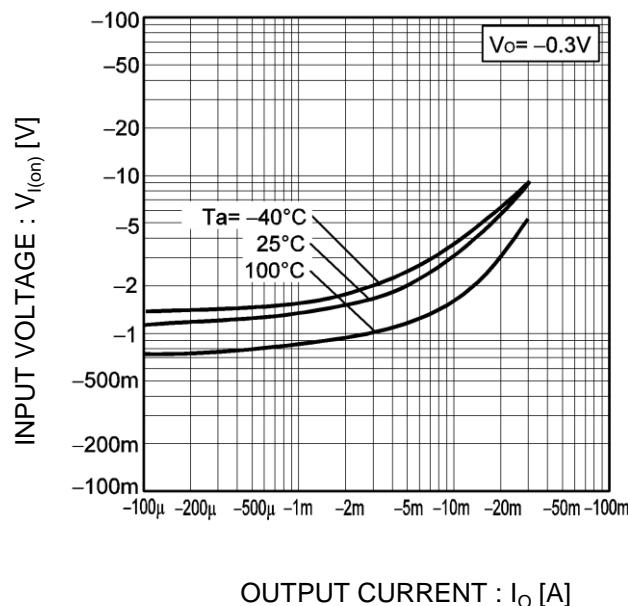


Fig.2 Output current vs. input voltage (OFF characteristics)

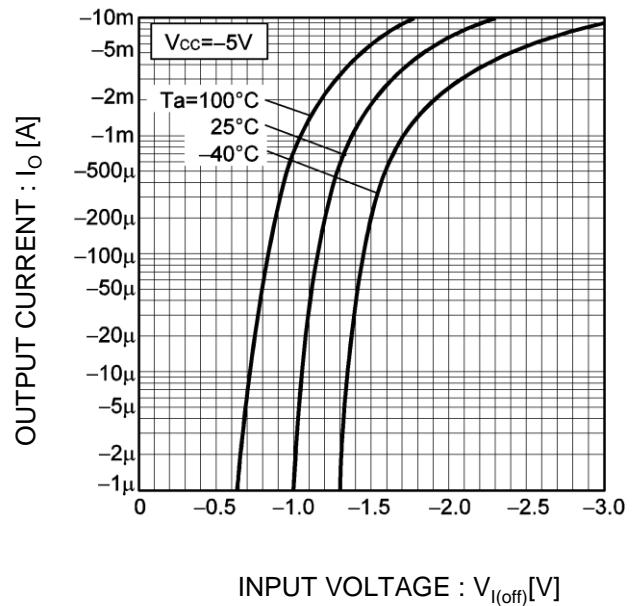


Fig.3 Output current vs. output voltage

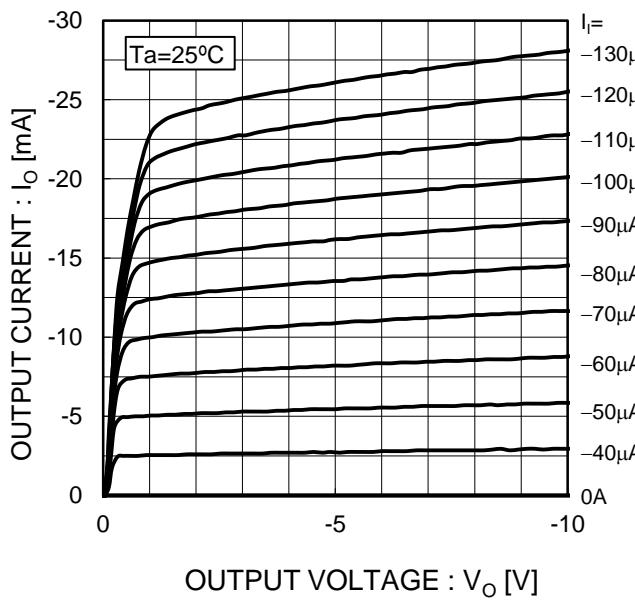
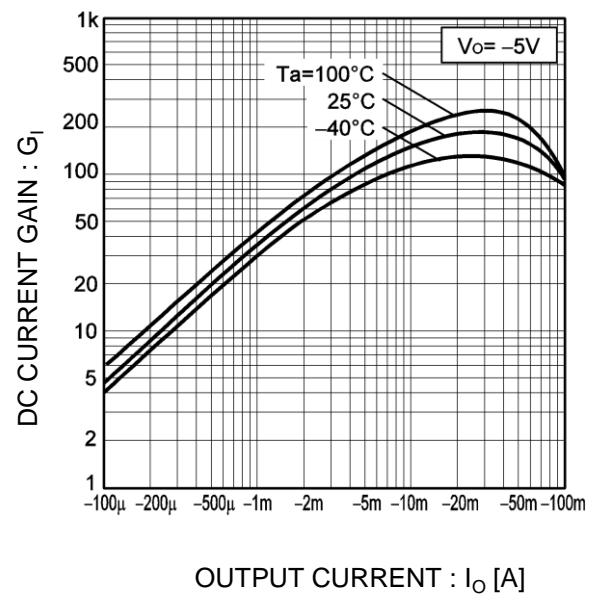
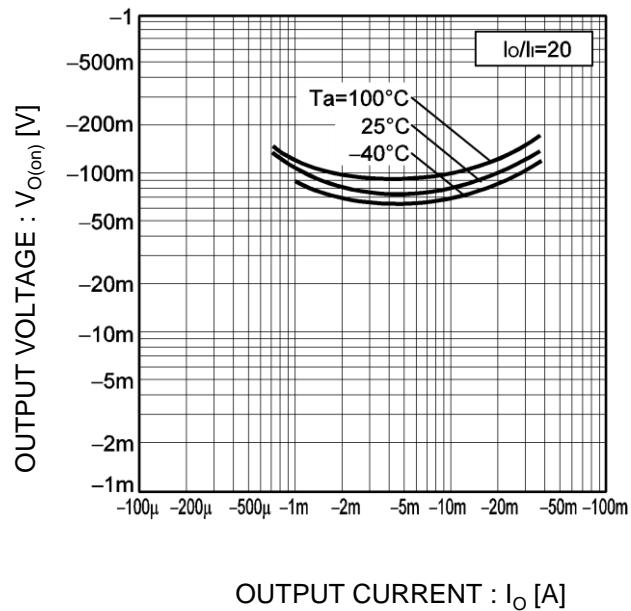


Fig.4 DC current gain vs. output current

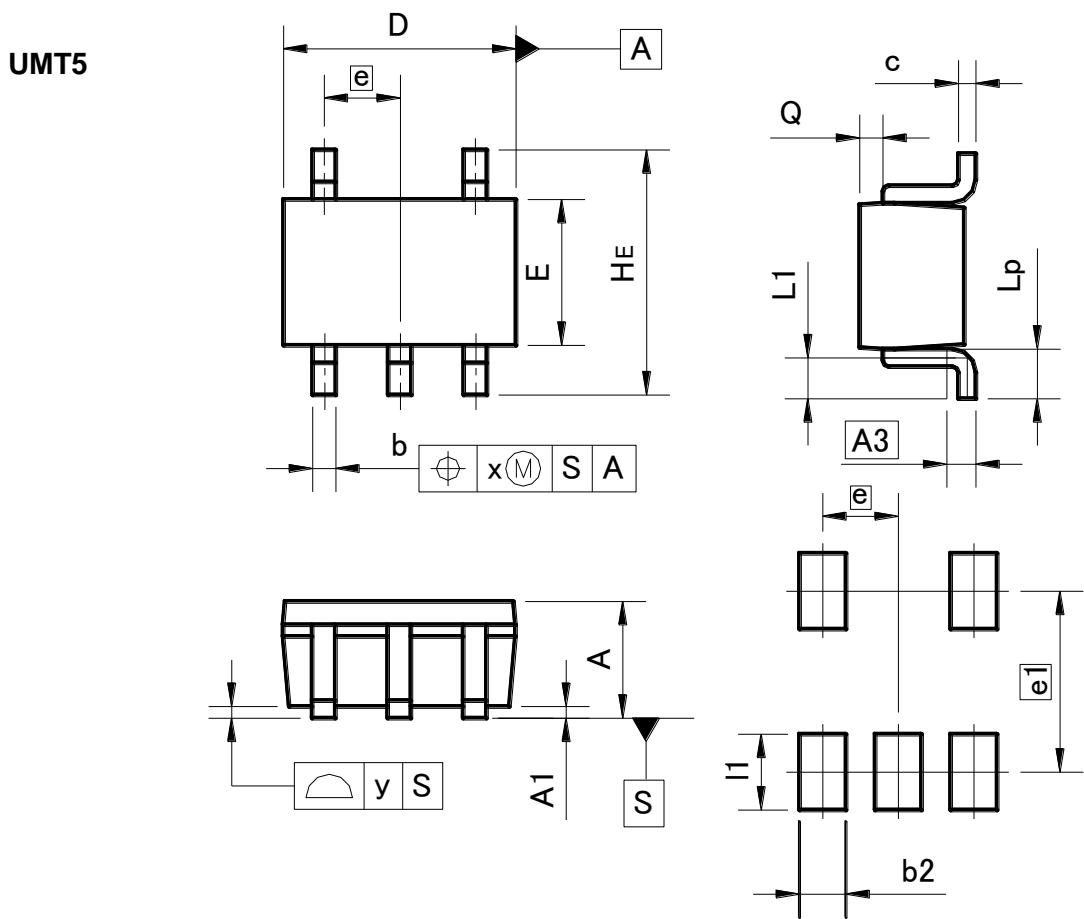


●Electrical characteristic curves( $T_a = 25^\circ\text{C}$ )

Fig.5 Output voltage vs. output current

OUTPUT CURRENT :  $I_O$  [A]

## ●Dimensions (Unit : mm)



Pattern of terminal position areas

[Not a recommended pattern of soldering pads]

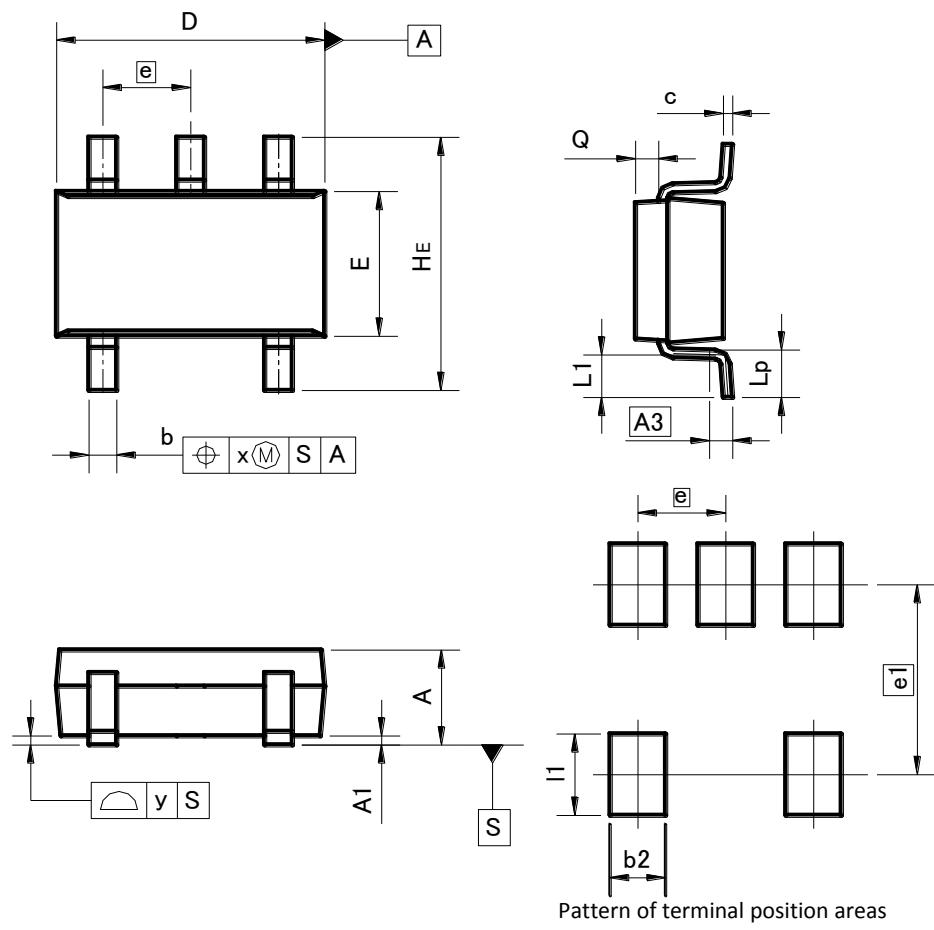
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30	0.004	0.012
x	—	0.10	—	0.004
y	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	—	0.40	—	0.016
e1	1.55		0.061	
I1	—	0.65	—	0.026

Dimension in mm / inches

## ●Dimensions (Unit : mm)

SMT5



Pattern of terminal position areas  
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.25	0.40	0.010	0.016
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
He	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	—	0.20	—	0.008
y	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	—	0.60	—	0.024
e1	2.10		0.083	
I1	—	0.90	—	0.035

Dimension in mm / inches

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