Emitter common(dual digital transistors)

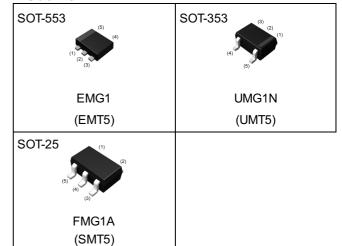
**Datasheet** 

Parameter	DTr1 and DTr2
V <sub>CC</sub>	50V
I <sub>C(MAX.)</sub>	100mA
R <sub>1</sub>	22kΩ
R <sub>2</sub>	22kΩ

### Features

- 1)Two DTC124E chips in a EMT or UMT or SMT package.
- 2) Mounting cost and area can be cut in half.

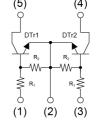
### Outline



## •Inner circuit

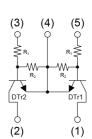
#### EMG1 / UMG1N

- (1) DTr1 IN(Base)
- (2) DTr1 / DTr2 GND(Emitter)
- (3) DTr2 IN(Base)
- (4) DTr2 OUT(Collector)
- (5) DTr1 OUT(Collector)



#### FMG1A

- (1) DTr1 OUT(Collector)
- (2) DTr2 OUT(Collector)
- (3) DTr2 IN(Base)
- (4) DTr1 / DTr2 GND(Emitter)
- (5) DTr1 IN(Base)



# Application

INVERTER, INTERFACE, DRIVER

## Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
EMG1	SOT-553 (EMT5)	1616	T2R	180	8	8000	G1
UMG1N	SOT-353 (UMT5)	2021	TR	180	8	3000	G1
FMG1A	SOT-25 (SMT5)	2928	T148	180	8	3000	G1

# ● Absolute maximum ratings (T<sub>a</sub> = 25°C)

<For DTr1 and DTr2 in common>

Parameter			Values	Unit
Supply voltage			50	V
Input voltage		V <sub>IN</sub>	-10 to 40	V
Output current		Io	30	mA
Collector current		I <sub>C(MAX)</sub> *1	100	mA
	EMG1	P <sub>D</sub> *2*3	150	
Power dissipation	UMG1N	P <sub>D</sub> *2*3	150	mW
	FMG1A	P <sub>D</sub> *2*4	300	
Junction temperature		T <sub>j</sub>	150	°C
Range of storage temperature		T <sub>stg</sub>	-55 to +150	°C

# ● Electrical characteristics (T<sub>a</sub> = 25°C)

<For DTr1 and DTr2 in common>

Danamatan	C: made al	Canditiana	Values			l limit
Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
land to alterna	$V_{I(off)}$	V <sub>CC</sub> = 5V, I <sub>O</sub> = 100μA	-	-	0.5	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Input voltage	V <sub>I(on)</sub>	V <sub>O</sub> = 0.2V, I <sub>O</sub> = 5mA	3.0	-	-	V
Output voltage	V <sub>O(on)</sub>	I <sub>O</sub> = 10mA, I <sub>I</sub> = 0.5mA	-	100	300	mV
Input current	I <sub>I</sub>	V <sub>I</sub> = 5V	-	-	360	μΑ
Output current	I <sub>O(off)</sub>	V <sub>CC</sub> = 50V, V <sub>I</sub> = 0V	-	-	500	nA
DC current gain	G <sub>l</sub>	V <sub>O</sub> = 5V, I <sub>O</sub> = 5mA	56	-	-	-
Input resistance	R <sub>1</sub>	-	15.4	22	28.6	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>	-	0.8	1.0	1.2	-
Transition frequency	f <sub>T</sub> *1	V <sub>CE</sub> = 10V, I <sub>E</sub> = -5mA, f = 100MHz	-	250	-	MHz

<sup>\*1</sup> Characteristics of built-in transistor



<sup>\*2</sup> Each terminal mounted on a reference land.

<sup>\*3 120</sup>mW per element must not be exceeded.

<sup>\*4 200</sup>mW per element must not be exceeded.

# ● Electrical characteristic curves (T<sub>a</sub> = 25°C)

<For DTr1 and DTr2 in common>

Fig.1 Input Voltage vs. Output Current (ON Characteristics)

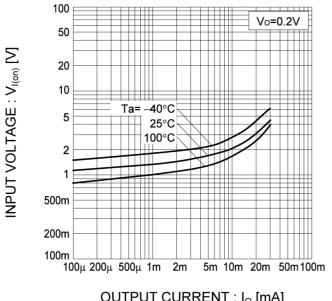
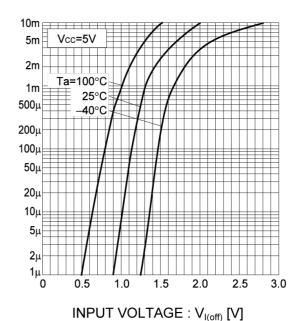


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)



OUTPUT CURRENT : Io [A]

OUTPUT CURRENT : Io [mA]

Fig.3 Output Current vs. Output Voltage

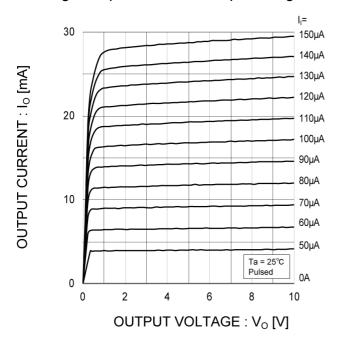
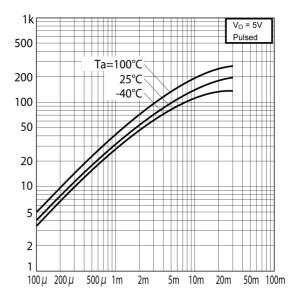


Fig.4 DC Current Gain vs. Output Current



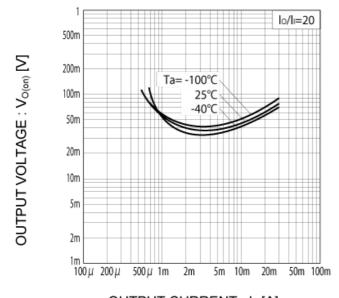
OUTPUT CURRENT: Io [A]

OC CURRENT GAIN : G

# ● Electrical characteristic curves (T<sub>a</sub> = 25°C)

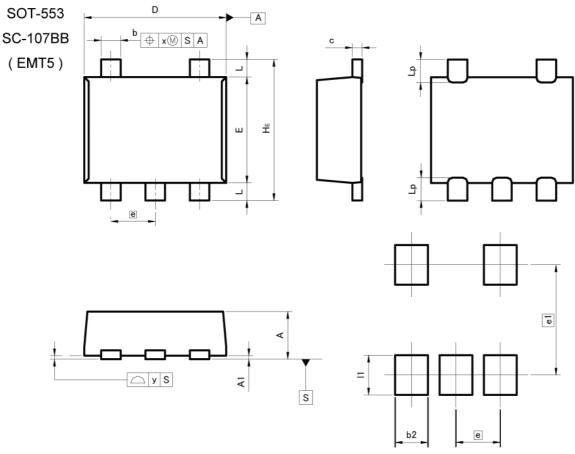
<For DTr1 and DTr2 in common>

Fig.5 Output Voltage vs. Output Current



OUTPUT CURRENT : Io [A]

## Dimensions



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

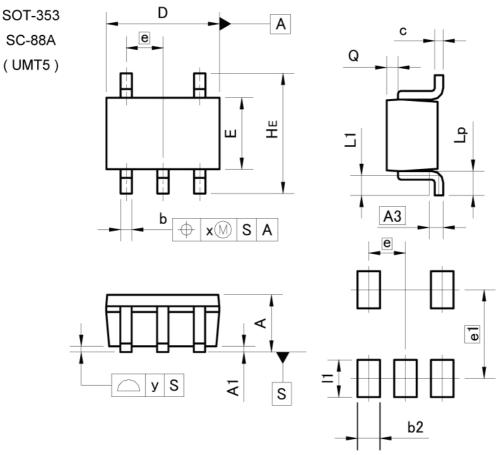
DIM	MILIM	ETERS	INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	0.45	0.55	0.018	0.022	
A1	0.00	0.10	0.000	0.004	
b	0.17	0.27	0.007	0.011	
С	0.08	0.18	0.003	0.007	
D	1.50	1.70	0.059	0.067	
E	1.10	1.30	0.043	0.051	
е	0.	50	0.020		
HE	1.50	1.70	0.059	0.067	
L	0.10	0.30	0.004	0.012	
Lp	_	0.35	-	0.014	
х	_	0.10	_	0.004	
У	_	0.10	_	0.004	

DIM	MILIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
b2	-	0.37	_	0.015	
e1	1.25		0.0	49	
11	_	0.45	-	0.018	

Dimension in mm/inches



## Dimensions



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

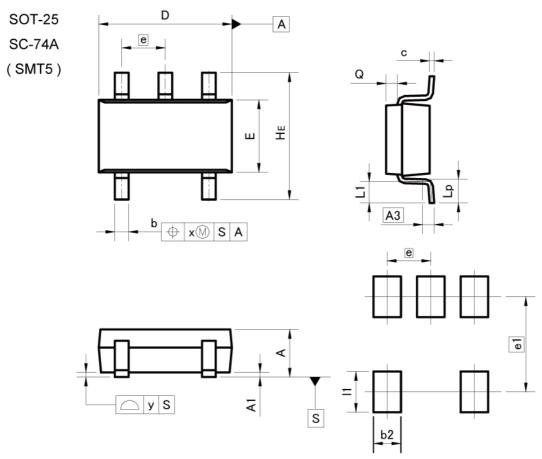
DIM	MILIM	ETERS	INC	HES
DIM	MIN	MAX	MIN	MAX
Α	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.3	25	0.0	10
b	0.15	0.30	0.006	0.012
С	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
е	0.0	65	0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30	0.004	0.012
х	-	0.10	,-	0.004
У	- 1	0.10	· —	0.004

DIM	MILIMETERS		INCHES		
	MIN	MAX	MIN	MAX	
b2	- 1	0.40	-	0.016	
e1	1.55		0.0	61	
11	-	0.65	-	0.026	

Dimension in mm/inches



## Dimensions



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

DIM	MILIMETERS		INCHES		
DIM	MIN	MAX	MIN	MAX	
Α	1.00	1.30	0.039	0.051	
A1	0.00	0.10	0.000	0.004	
A3	0.:	25	0.0	110	
b	0.25	0.40	0.010	0.016	
С	0.09	0.25	0.004	0.010	
D	2.80	3.00	0.110	0.118	
Е	1.50	1.80	0.059	0.071	
е	0.95		0.0	37	
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	
х		0.20	= 2	0.008	
У		0.10	<b>-</b> // <sub>1</sub> / <sub>1</sub> / <sub>1</sub>	0.004	

DIM	MILIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
b2	- 0	0.60	- 0	0.024
e1	2.	2.10		083
l1	=0	0.90	->	0.035

Dimension in mm/inches



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