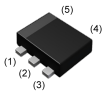
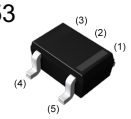
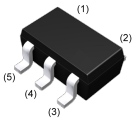
EMA2 / UMA2N / FMA2A

Emitter common (dual digital transistors) Datasheet

Parameter	DTr1 and DTr2
V_{CC}	-50V
$I_{C(MAX.)}$	-100mA
R_1	47kΩ
R_2	47kΩ

●Outline

SOT-553  EMA2 (EMT5)	SOT-353  UMA2N (UMT5)
SOT-25  FMA2A (SMT5)	

●Features

1)Two DTA144E transistors in a EMT or UMT or SMT package.

2)Mounting cost and area can be cut in half.

●Inner circuit

EMA2 / UMA2N

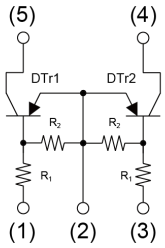
(1) DTr1 IN(Base)

(2) DTr1 / DTr2 GND(Emitter)

(3) DTr2 IN(Base)

(4) DTr2 OUT(Collector)

(5) DTr1 OUT(Collector)



FMA2A

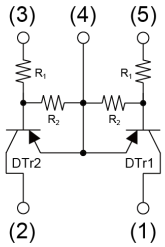
(1) DTr1 OUT(Collector)

(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
EMA2	SOT-553 (EMT5)	1616	T2R	180	8	8000	A2
UMA2N	SOT-353 (UMT5)	2021	TR	180	8	3000	A2
FMA2A	SOT-25 (SMT5)	2928	T148	180	8	3000	A2

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●Absolute maximum ratings (T_a = 25°C)

<For DTr1 and DTr2 in common>

Parameter		Symbol	Values	Unit
Supply voltage		V_{CC}	-50	V
Input voltage		V_{IN}	-40 to 10	V
Output current		I_O	-30	mA
Collector current		$I_{C(MAX)}$*1	-100	mA
Power dissipation	EMA2	P_D*2*3	150	mW
	UMA2N	P_D*2*3	150	
	FMA2A	P_D*2*4	300	
Junction temperature		T_j	150	℃
Range of storage temperature		T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

<For DTr1 and DTr2 in common>

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input voltage	$V_{I(off)}$	V_{CC} = -5V, I_O = -100μA	-	-	-0.5	V
	$V_{I(on)}$	V_O = -0.3V, I_O = -2mA	-3.0	-	-	
Output voltage	$V_{O(on)}$	I_O = -10mA, I_I = -0.5mA	-	-100	-300	mV
Input current	I_I	V_I = -5V	-	-	-180	μA
Output current	$I_{O(off)}$	V_{CC} = -50V, V_I = 0V	-	-	-500	nA
DC current gain	G_I	V_O = -5V, I_O = -5mA	68	-	-	-
Input resistance	R_1	-	32.9	47	61.1	kΩ
Resistance ratio	R_2/R_1	-	0.8	1.0	1.2	-
Transition frequency	f_T*1	V_{CE} = -10V, I_E = 5mA, f = 100MHz	-	250	-	MHz

*1 Characteristics of built-in transistor.

*2 Each terminal mounted on a reference land.

*3 120mW per element must not be exceeded.

*4 200mW per element must not be exceeded.

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●Electrical characteristic curves (T_a = 25°C)

<For DTr1 and DTr2 in common>

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

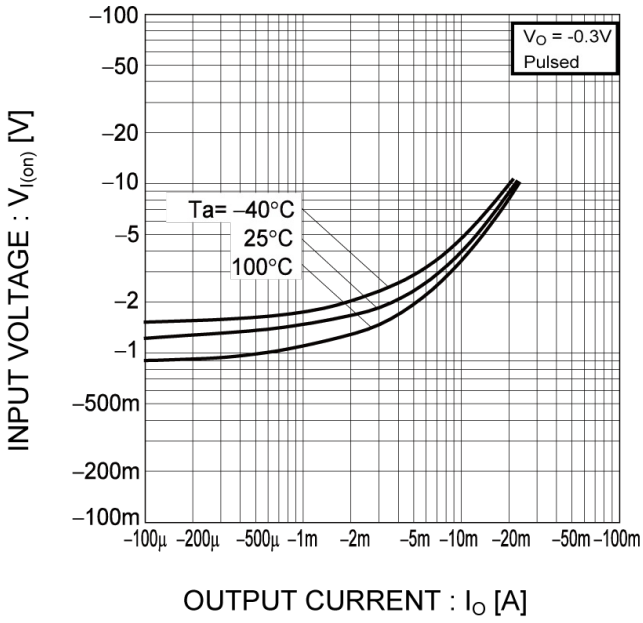


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

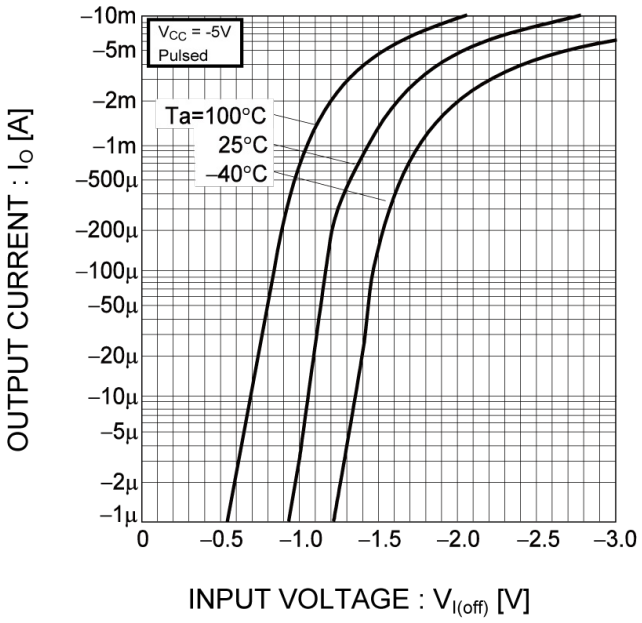


Fig.3 Output Current vs. Output Voltage

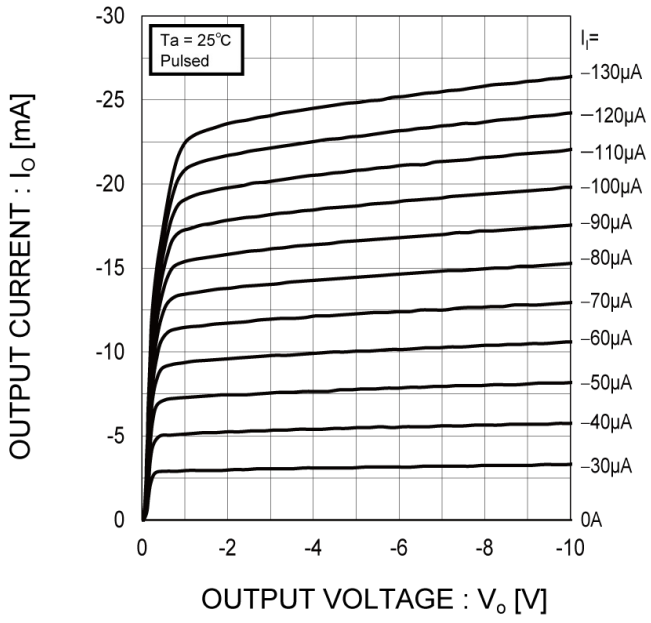
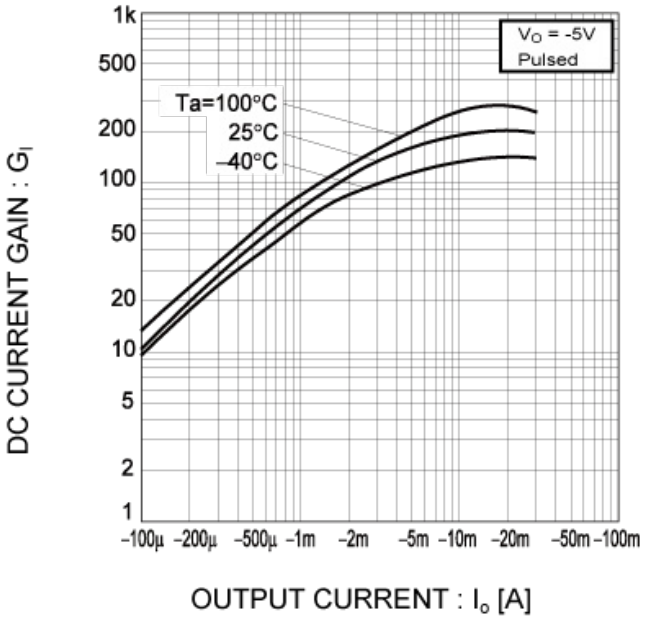


Fig.4 DC Current Gain vs. Output Current



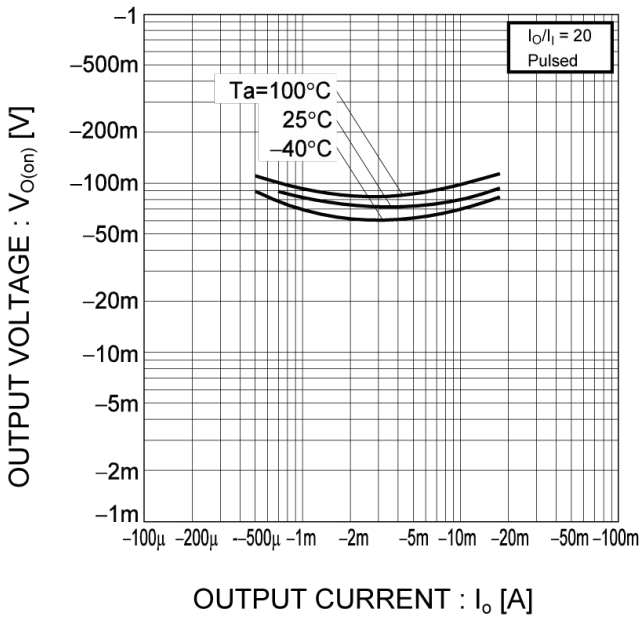
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● **Electrical characteristic curves** (T_a = 25°C)

<For DTr1 and DTr2 in common>

Fig.5 Output Voltage vs. Output Current

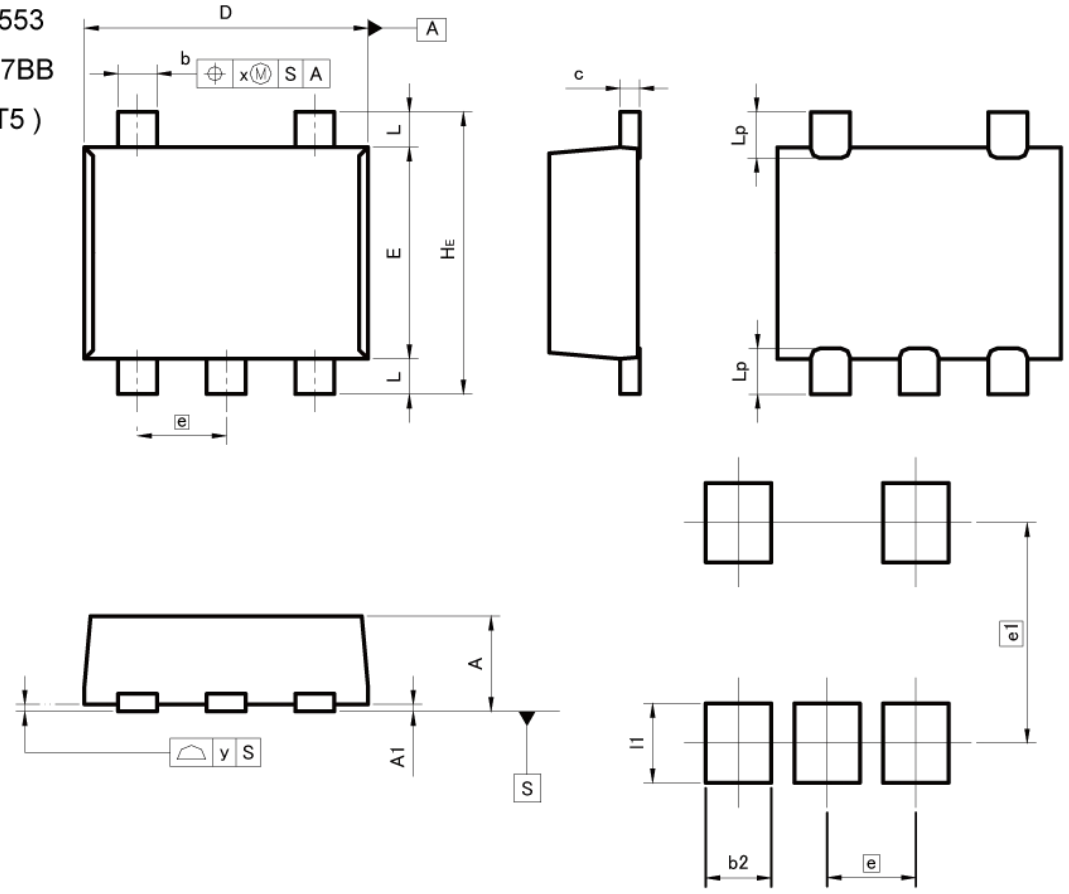


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●Dimensions

SOT-553
SC-107BB
(EMT5)



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	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
c	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
e	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
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.37	–	0.015
e1	1.25		0.049	
l1	–	0.45	–	0.018

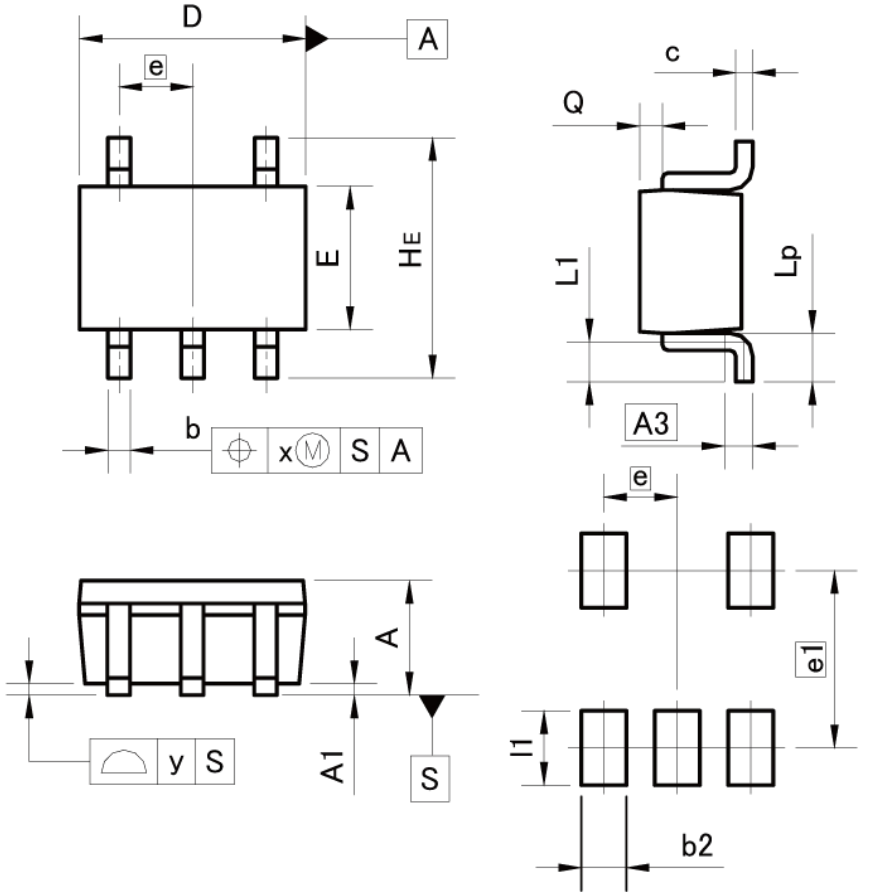
Dimension in mm/inches

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●Dimensions

SOT-353
SC-88A
(UMT5)



Pattern of terminal position areas
[Not a 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	
l1	–	0.65	–	0.026

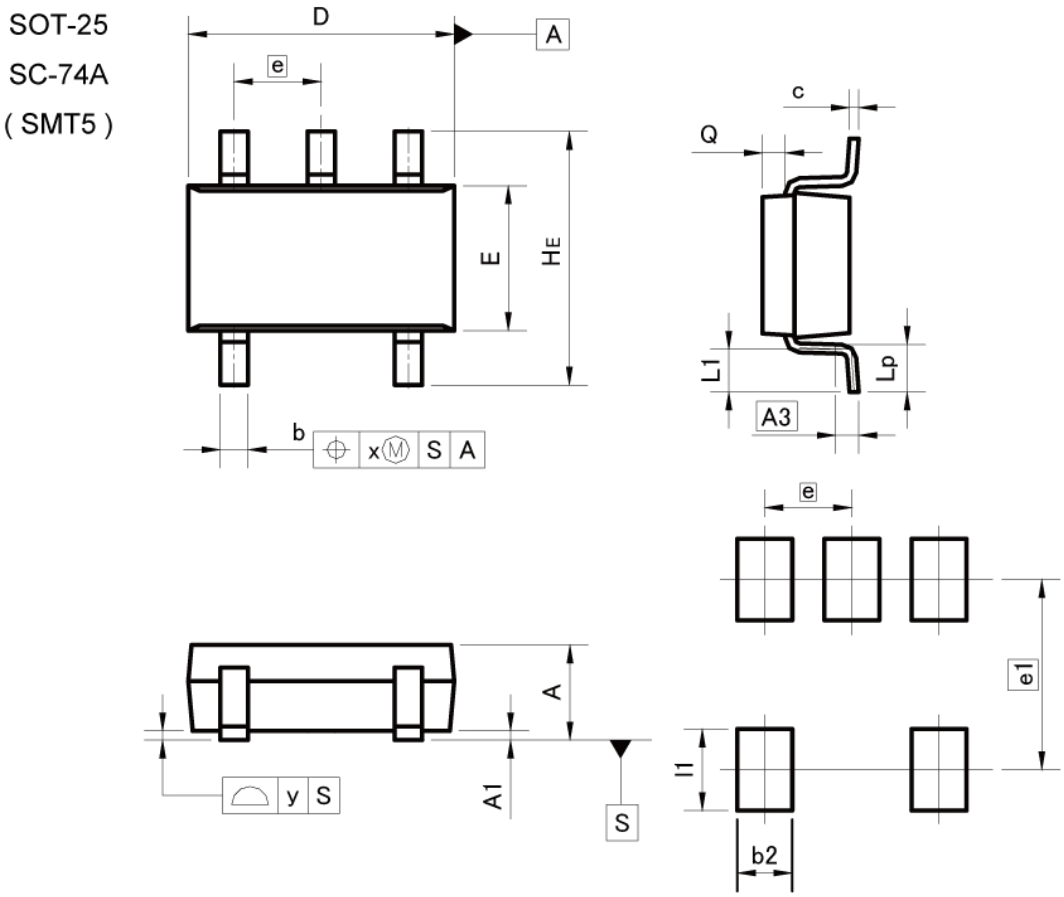
Dimension in mm/inches

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●Dimensions

SOT-25
SC-74A
(SMT5)



Pattern of terminal position areas
[Not a 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	
l1	−	0.90	−	0.035

Dimension in mm/inches

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