

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

### ●Features

- 1)Two DTC144E chips in a EMT or UMT or SMT package.
- 2)Mounting possible with EMT3 or UMT3 or SMT3 automatic mounting machines.
- 3)Transistor elements are independent, eliminating interference.
- 4)Mounting cost and area can be cut in half.

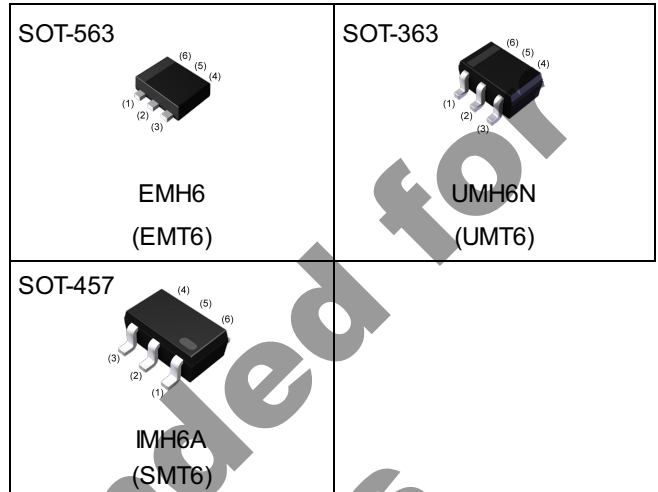
### ●Application

INVERTER, INTERFACE, DRIVER

### ●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
EMH6	SOT-563 (EMT6)	1616	T2R	180	8	8000	H6
UMH6N	SOT-363 (UMT6)	2021	TR	180	8	3000	H6
IMH6A	SOT-457 (SMT6)	2928	T108	180	8	3000	H6

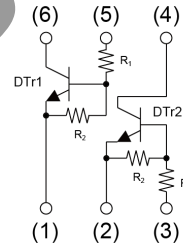
### ●Outline



### ●Inner circuit

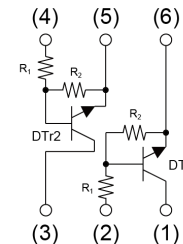
#### EMH6 / UMH6N

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



#### IMH6A

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



● **Absolute maximum ratings** ( $T_a = 25^\circ\text{C}$ )

<For DTr1 and DTr2 in common>

Parameter		Symbol	Values	Unit
Supply voltage		$V_{CC}$	50	V
Input voltage		$V_{IN}$	-10 to 40	V
Output current		$I_O$	30	mA
Collector current		$I_{C(MAX)}^{*1}$	100	mA
Power dissipation	EMH6	$P_D^{*2*3}$	150	mW
	UMH6N	$P_D^{*2*3}$	150	
	IMH6A	$P_D^{*2*4}$	300	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Range of storage temperature		$T_{stg}$	-55 to +150	$^\circ\text{C}$

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

<For DTr1 and DTr2 in common>

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

● **Electrical characteristic curves** ( $T_a = 25^\circ\text{C}$ )  
 <For DTr1 and DTr2 in common>

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

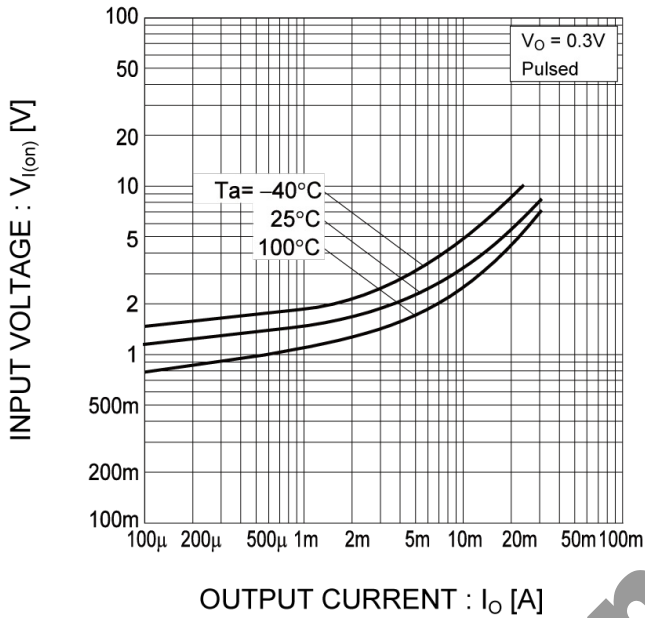


Fig.2 Output Current vs. Input Voltage  
 (OFF Characteristics)

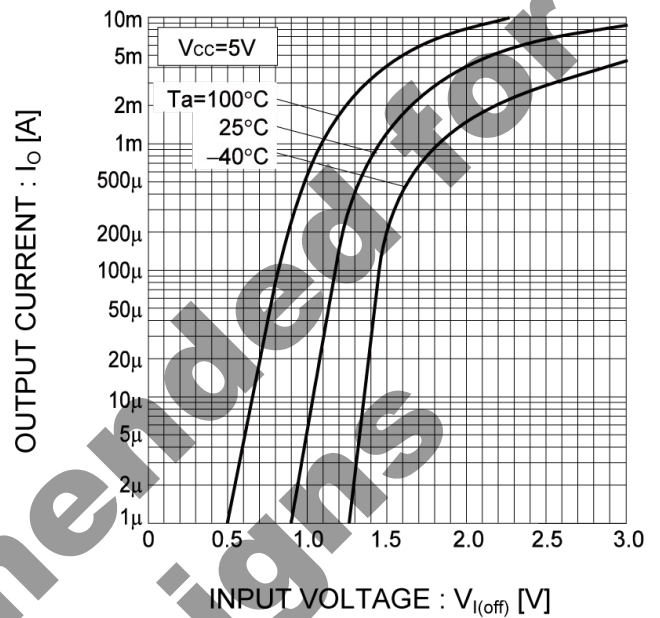


Fig.3 Output Current vs. Output Voltage

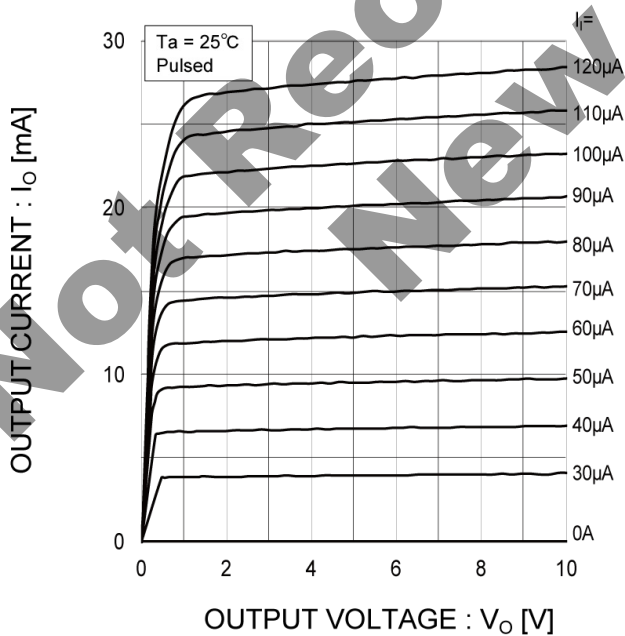
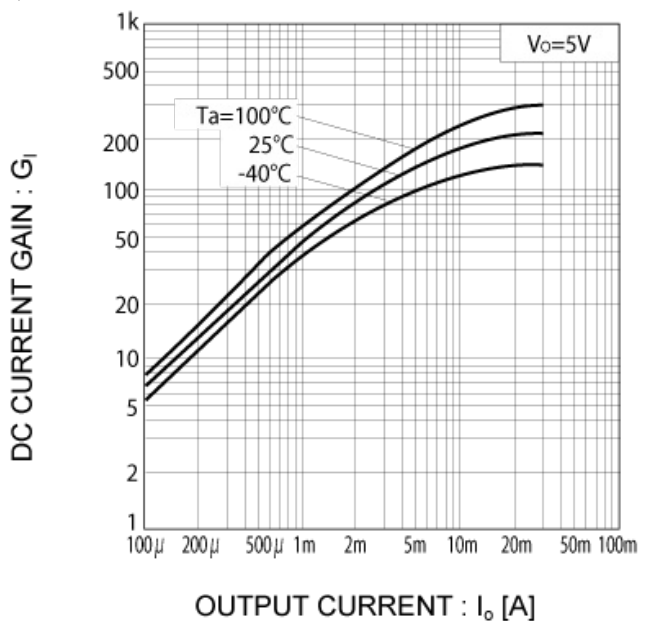


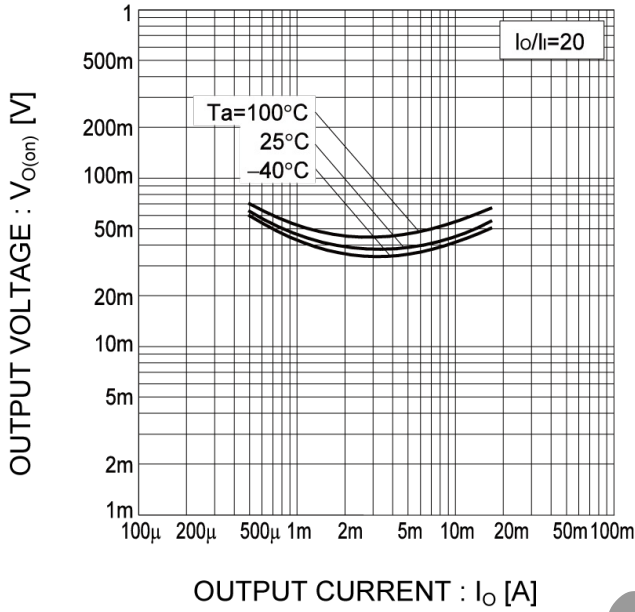
Fig.4 DC Current Gain vs. Output Current



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

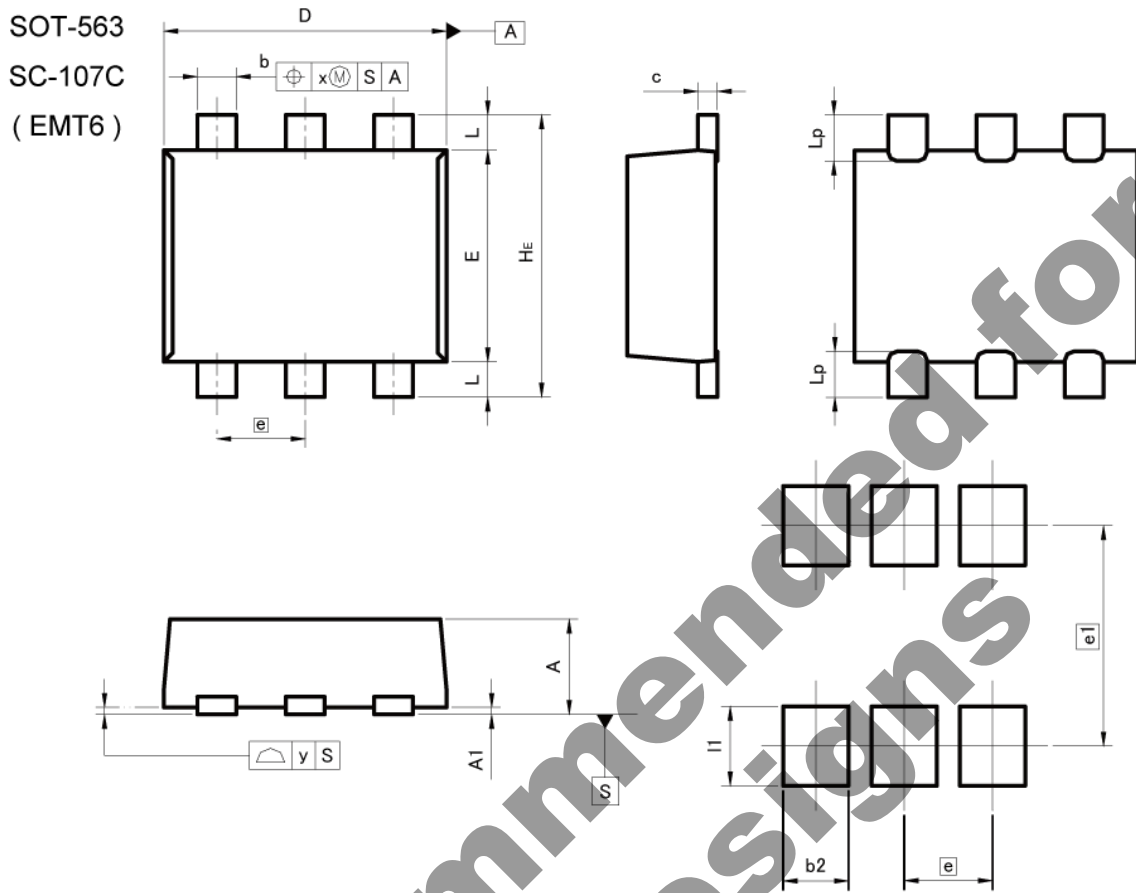
<For DTr1 and DTr2 in common>

Fig.5 Output Voltage vs. Output Current



Not Recommended for New Designs

●Dimensions



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

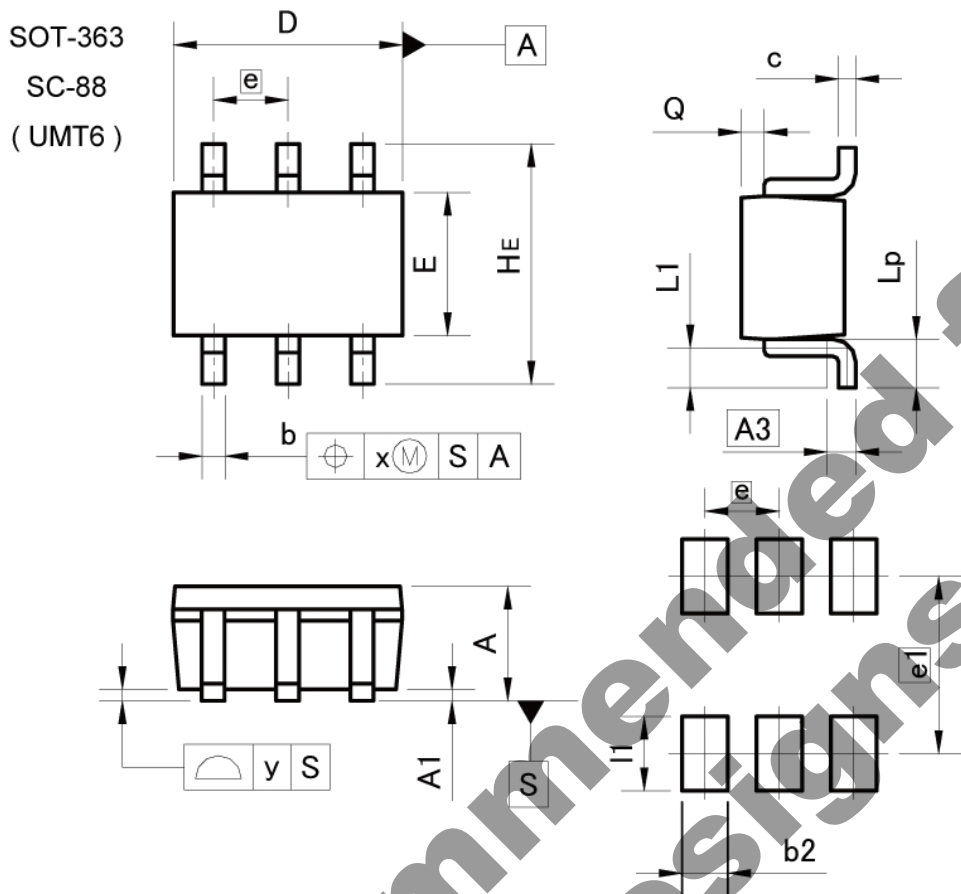
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.10	0.30	0.004	0.012
Lp	-	0.35	-	0.014
x	-	0.10	-	0.004
y	-	0.10	-	0.004

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

●Dimensions



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

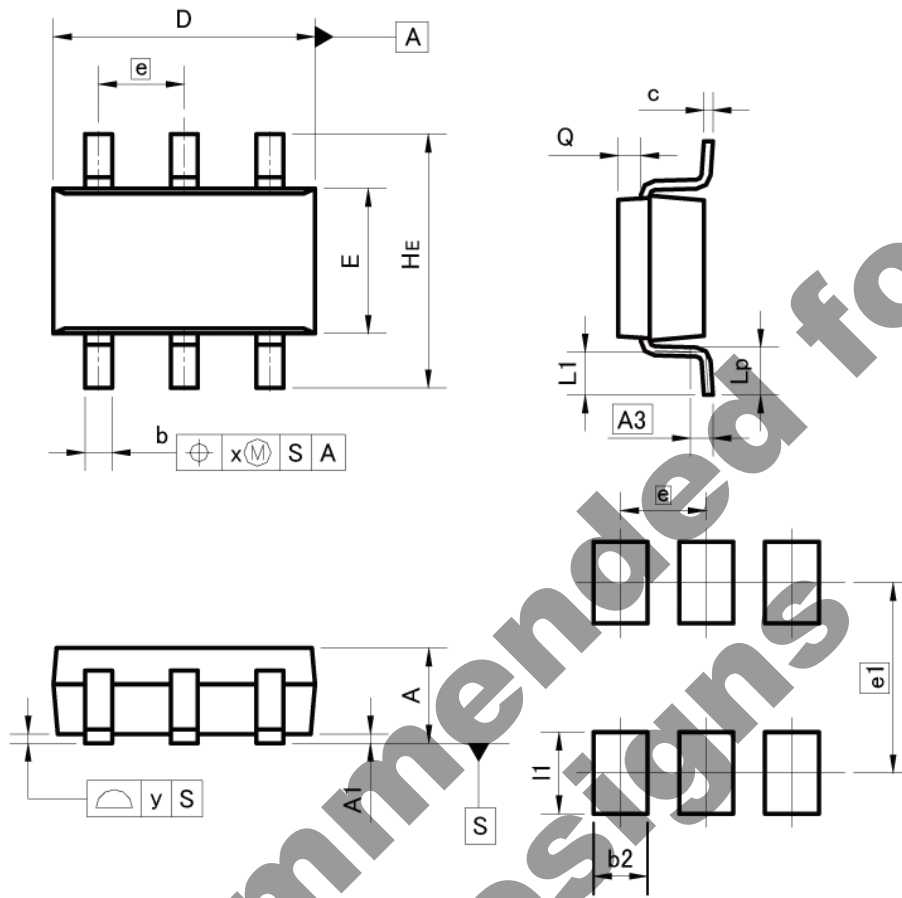
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30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

●Dimensions

SOT-457  
SC-74  
(SMT6)



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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