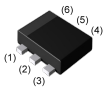
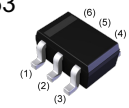
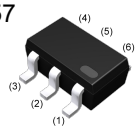
EMH6 / UMH6N / IMH6A

General purpose (dual digital transistors) Datasheet

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

●Outline

SOT-563  EMH6 (EMT6)	SOT-363  UMH6N (UMT6)
SOT-457  IMH6A (SMT6)	

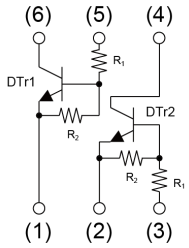
●Features

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.

●Inner circuit

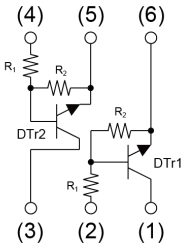
EMH6 / UMH6N

(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)



●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

●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}	-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	℃
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.

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

<For DTr1 and DTr2 in common>

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

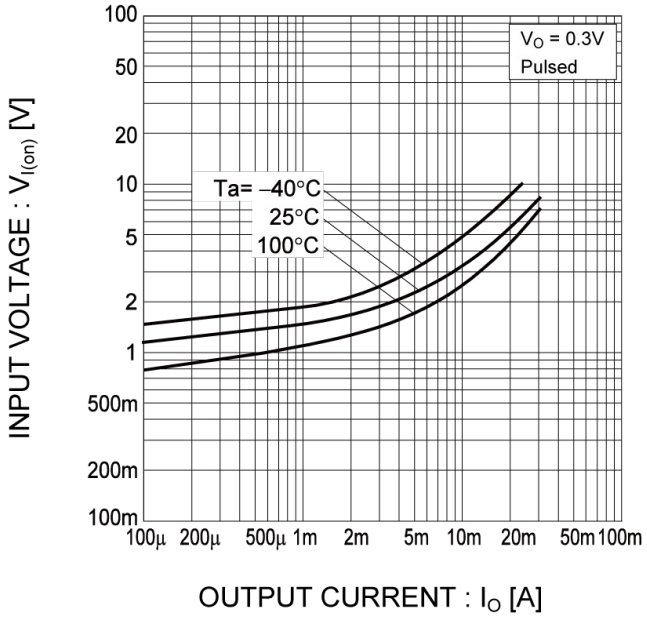


Fig.2 Output Current vs. Input Voltage (OFF Characteristics)

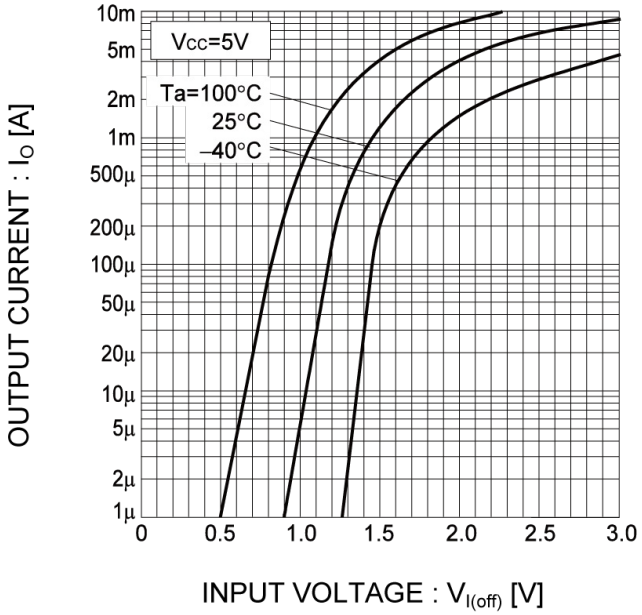


Fig.3 Output Current vs. Output Voltage

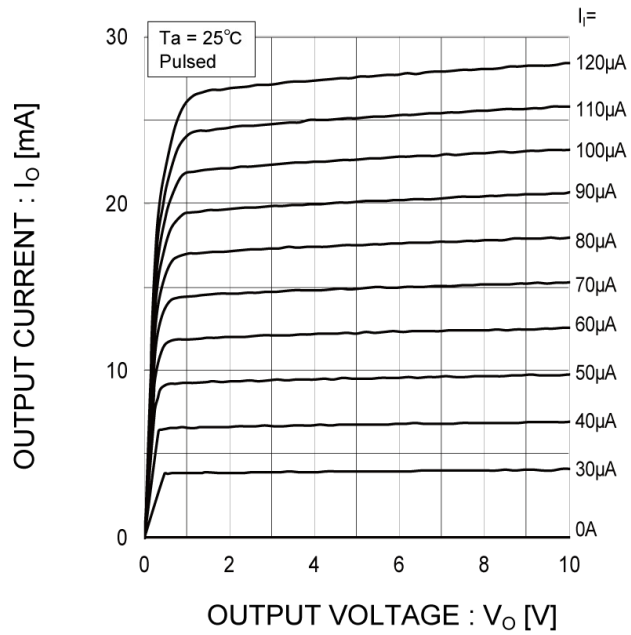
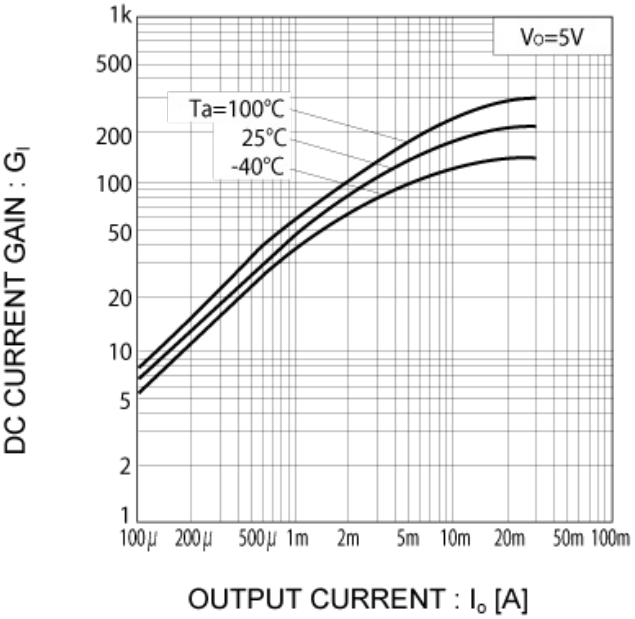


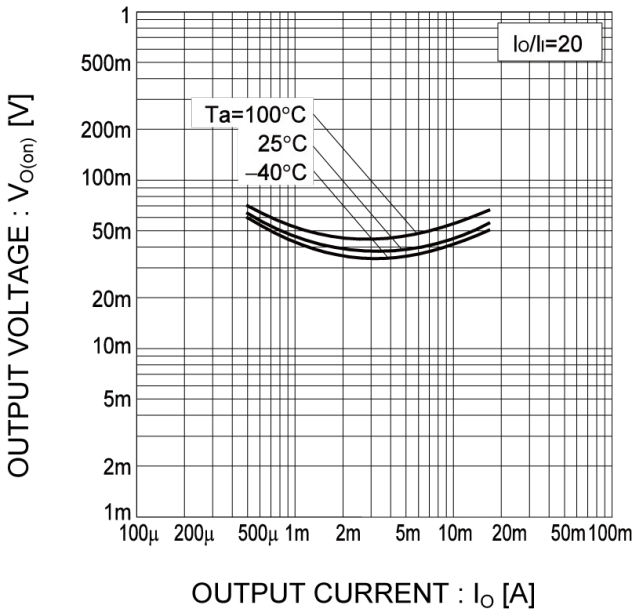
Fig.4 DC Current Gain vs. Output Current



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

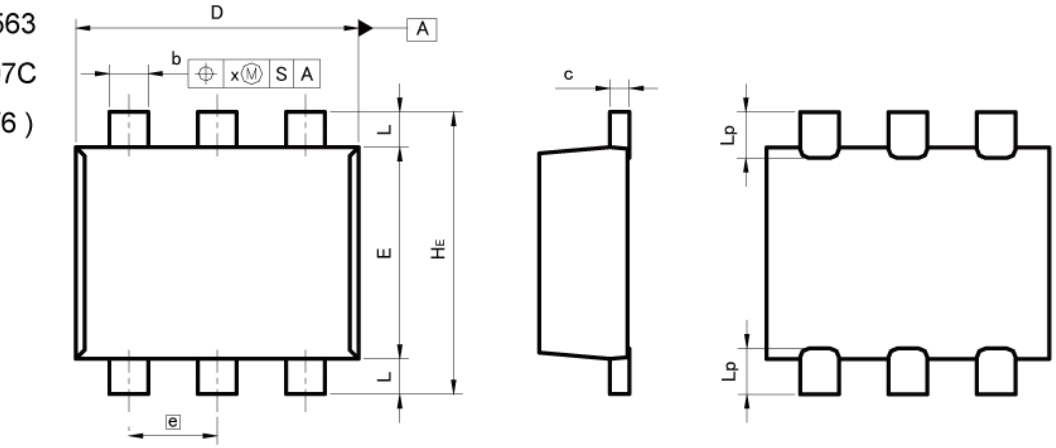
<For DTr1 and DTr2 in common>

Fig.5 Output Voltage vs. Output Current



●Dimensions

SOT-563
SC-107C
(EMT6)



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

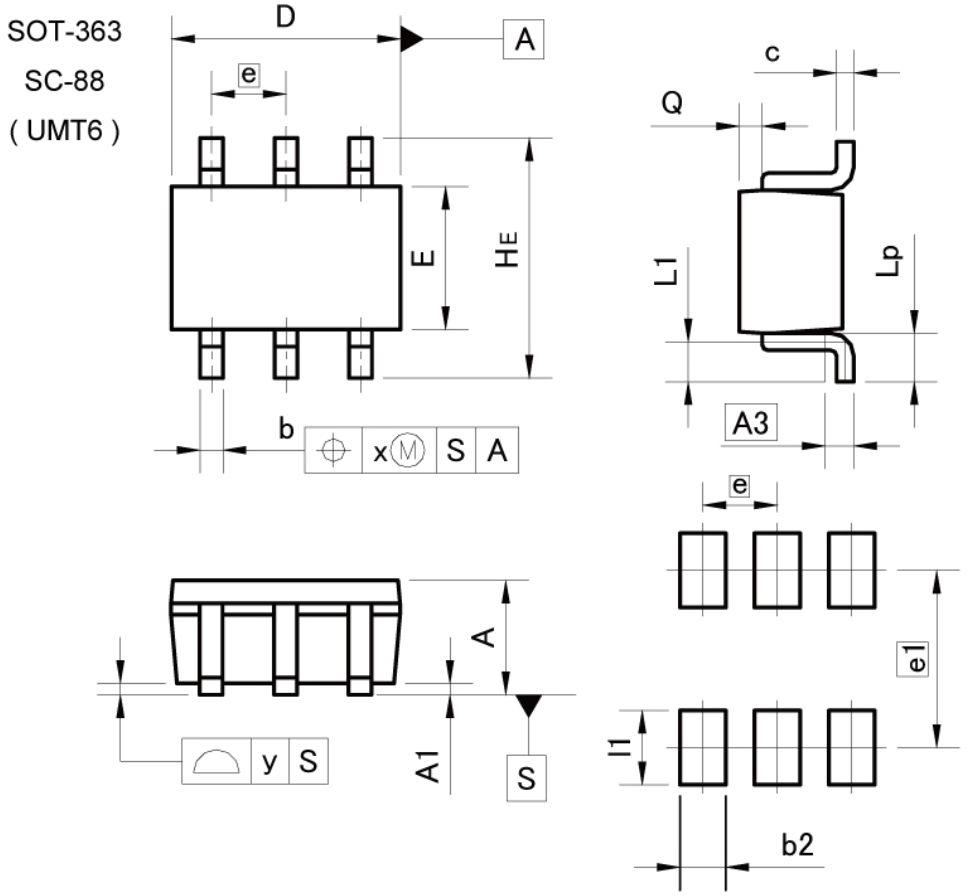
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.10	0.30	0.004	0.012
Lp	–	0.35	–	0.014
x	–	0.10	–	0.004
y	–	0.10	–	0.004

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

SOT-363
SC-88
(UMT6)



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

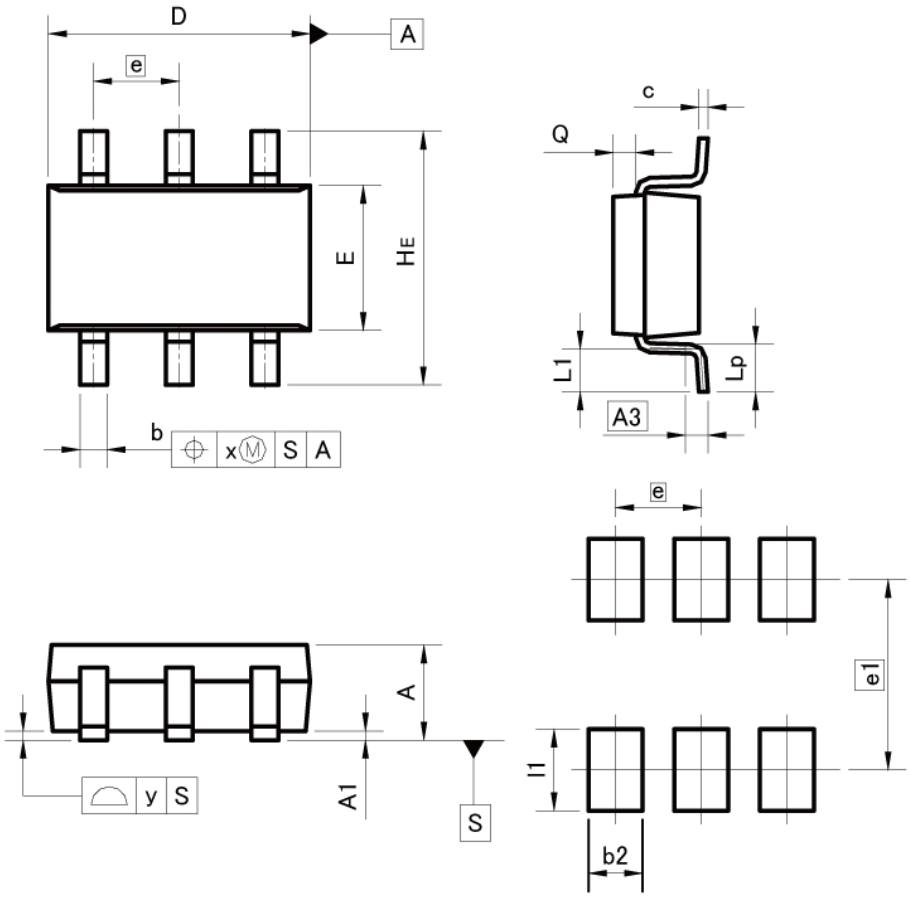
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30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