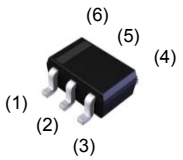
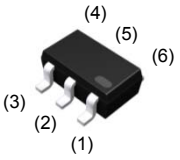
UMH8N / IMH8A

NPN 100mA 50V Complex Digital Transistors (Bias Resistor Built-in Transistors) Datasheet

Parameter	Tr1 and Tr2
V_{CEO}	50V
I_C	100mA
R_1	10kΩ

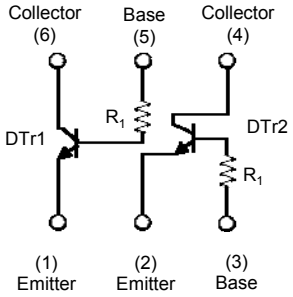
●Outline

UMT6	SMT6
	
UMH8N SOT-363 (SC-88)	IMH8A SOT-457 (SC-74)

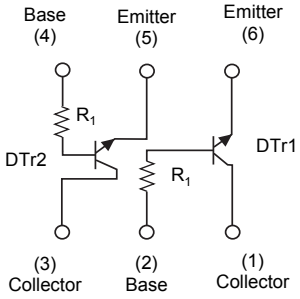
●Features

1) Built-In Biasing Resistors.
2) Two DTC114T chips in one package.
3) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
4) 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.
5) Only the on/off conditions need to be set for operation, making the circuit design easy.
6) Lead Free/RoHS Compliant.

●Inner circuit



UMH8N



IMH8A

●Application

Inverter circuit, 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
UMH8N	UMT6	2021	TN	180	8	3,000	H8
IMH8A	SMT6	2928	T110	180	8	3,000	H8

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●Absolute maximum ratings (Ta = 25°C)

<For DTr1 and DTr2 in common>

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C *1	100	mA
Collector Power dissipation	UMH8N	P_D *2	150 (Total) *3	mW
	IMH8A		300 (Total) *4	mW
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

●Electrical characteristics(Ta = 25°C)

<For DTr1 and DTr2 in common>

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	BV_{CBO}	I_C= 50μA	50	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C= 1mA	50	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E= 50μA	5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 50V	-	-	0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	-	-	0.5	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C / I_B= 10mA / 1mA	-	-	0.3	V
DC current gain	h_{FE}	V_{CE}= 5V , I_C= 1mA	100	250	600	-
Input resistance	R_1	-	7	10	13	kΩ
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 footprint

*3 120mW per element must not be exceeded.

*4 200mW per element must not be exceeded.

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●**Electrical characteristic curves** (Ta = 25°C) <For DTr1 and DTr2 in common>

Fig.1 Grounded emitter propagation characteristics

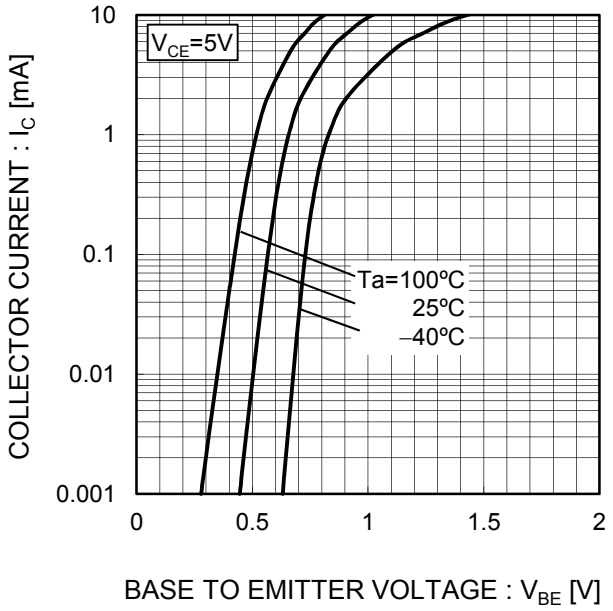


Fig.2 Grounded emitter output characteristics

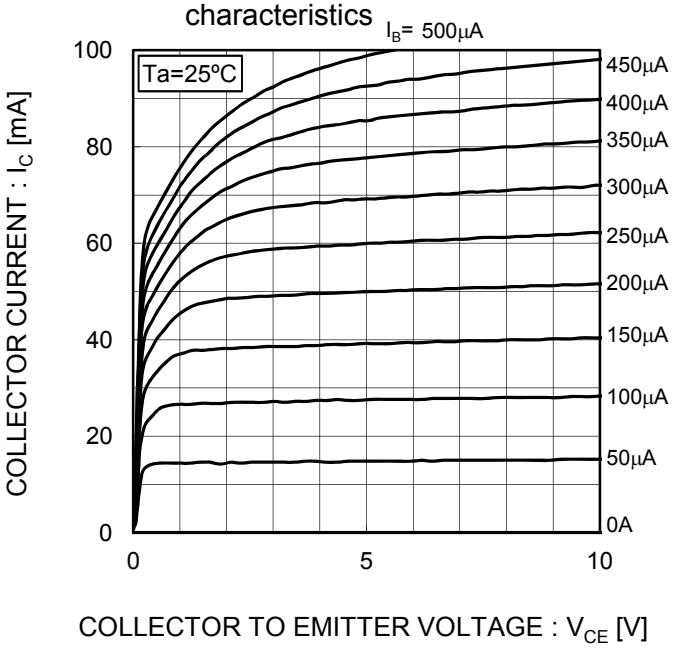


Fig.3 DC Current gain vs. Collector Current

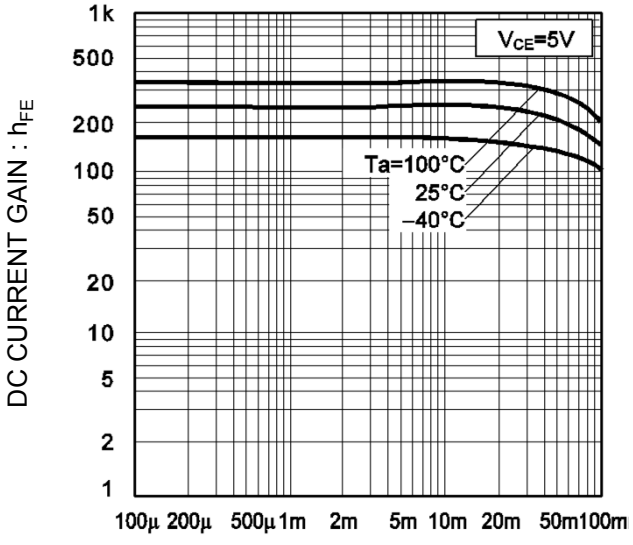
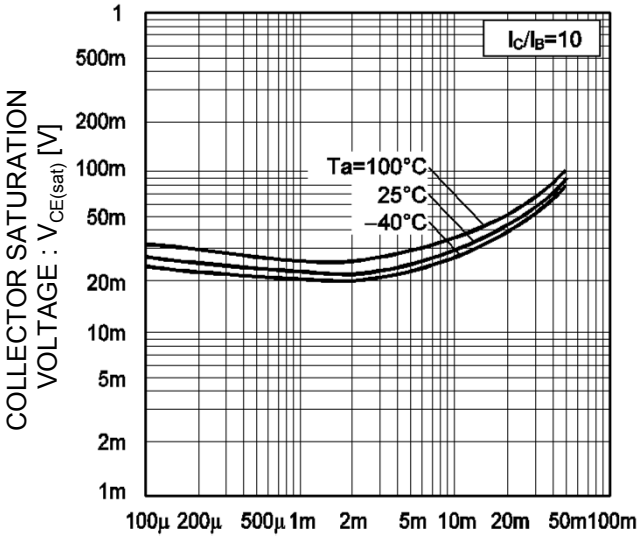


Fig.4 Collector-emitter saturation voltage vs. Collector Current

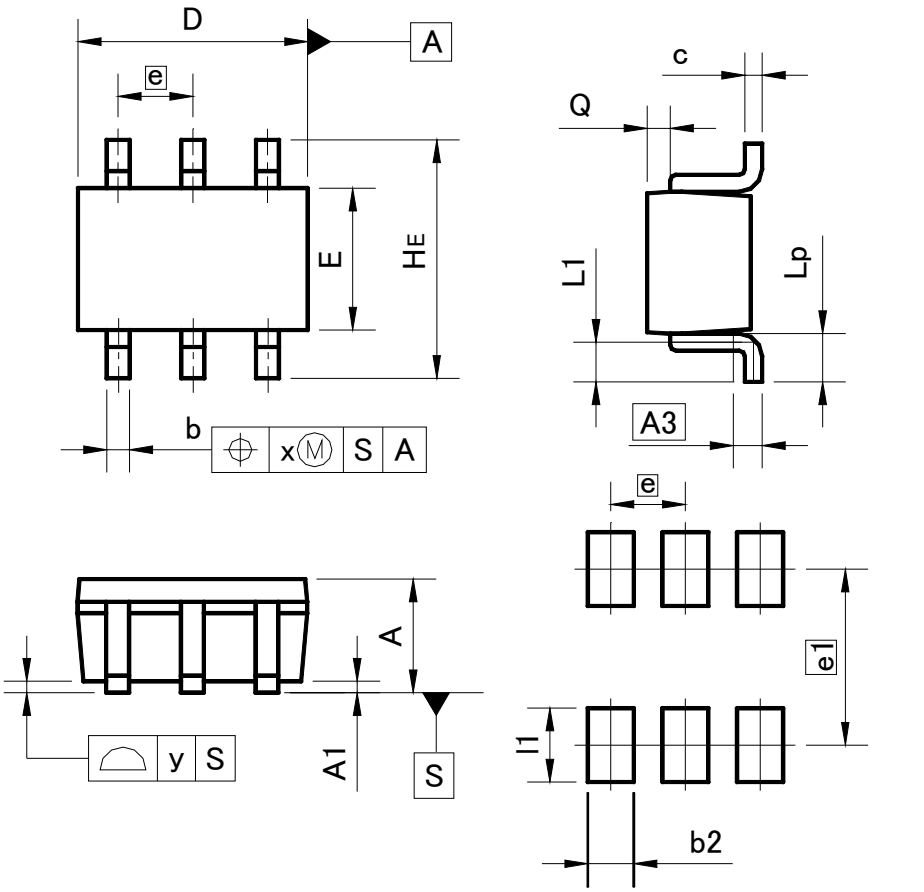


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●**Dimensions** (Unit : mm)

UMT6



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	
l1	−	0.65	−	0.026

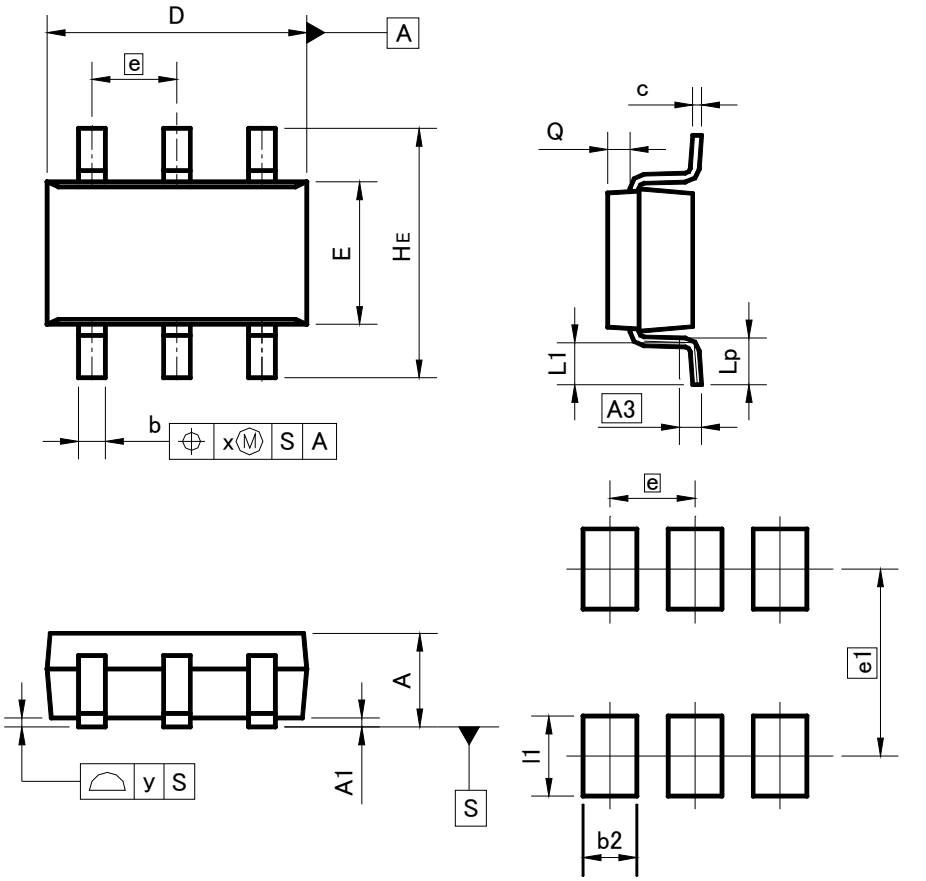
Dimension in mm / inches

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●**Dimensions** (Unit : mm)

SMT6



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	
l1	−	0.90	−	0.035

Dimension in mm / inches

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Buy

Distribution Inventory

Part Number	umh8n
Package	UMT6
Unit Quantity	3000
Minimum Package Quantity	3000
Packing Type	Taping
Constitution Materials List	inquiry
RoHS	Yes

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