

Parameter	Value
$V_{CEO}$	50V
$I_C$	100mA
$R_1$	4.7k $\Omega$

### ●Features

- 1) Built-In Biasing Resistor
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit) .
- 3) 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.
- 4) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 5) Complementary PNP Types: DTA043T series
- 6) Lead Free/RoHS Compliant.

### ●Application

Switching circuit, Inverter circuit, Interface circuit, Driver circuit

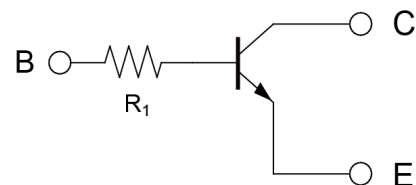
### ●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTC043TM	VMT3	1212	T2L	180	8	8000	49
DTC043TEB	EMT3F	1616	TL	180	8	3000	49
DTC043TUB	UMT3F	2021	TL	180	8	3000	49

### ●Outline

 VMT3 DTC043TM (SC-105AA)	 EMT3F DTC043TEB (SC-89)
 UMT3F DTC043TUB (SC-85)	

### ●Inner circuit



B: BASE  
 C: COLLECTOR  
 E: EMITTER

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

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		$I_C$	100	mA
Power dissipation	DTC043TM	$P_D^{*1}$	150	mW
	DTC043TEB		150	
	DTC043TUB		200	
Junction temperature		$T_j$	150	$^\circ\text{C}$
Range of storage temperature		$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	$BV_{CBO}$	$I_C = 50\mu\text{A}$	50	-	-	V
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = 1\text{mA}$	50	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = 50\mu\text{A}$	5	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 50\text{V}$	-	-	0.5	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 4\text{V}$	-	-	0.5	$\mu\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C / I_B = 5\text{mA} / 0.5\text{mA}$	-	0.05	0.15	V
DC current gain	$h_{FE}$	$V_{CE} = 10\text{V}, I_C = 5\text{mA}$	100	-	600	-
Input resistance	$R_1$	-	3.29	4.7	6.11	k $\Omega$
Transition frequency	$f_T^{*2}$	$V_{CE} = 10\text{V}, I_E = -5\text{mA},$ $f = 100\text{MHz}$	-	250	-	MHz

\*1 Each terminal mounted on a reference footprint

\*2 Characteristics of built-in transistor

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

Fig.1 Grounded emitter propagation characteristics

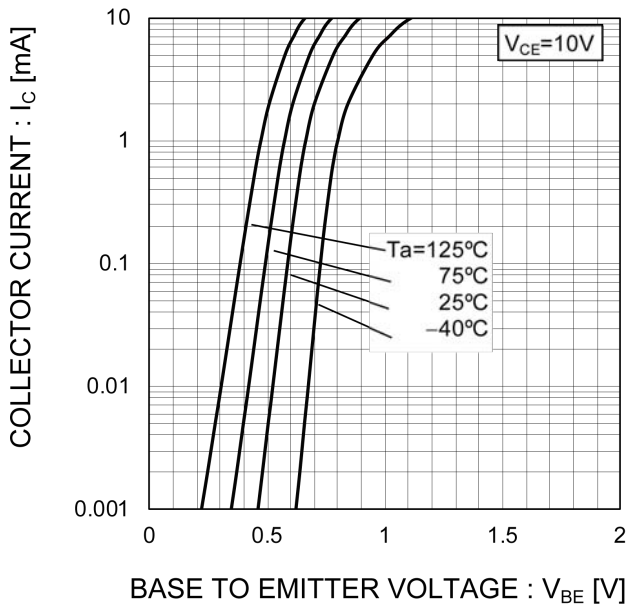


Fig.2 Grounded emitter output characteristics

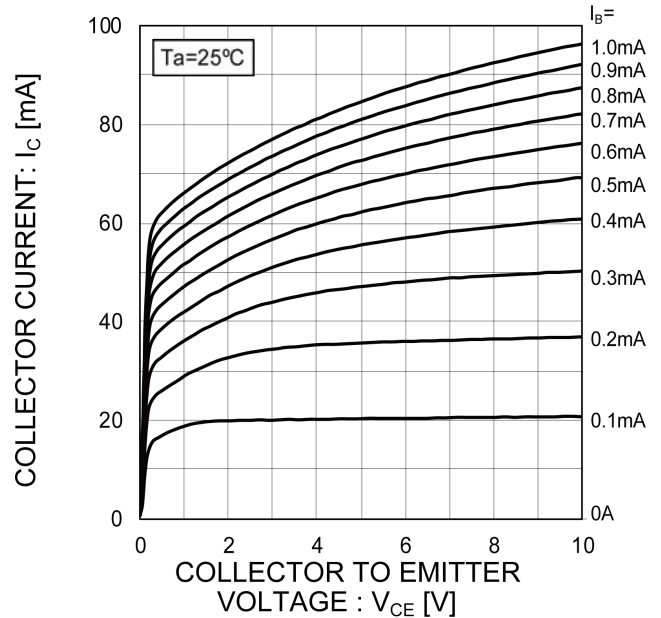


Fig.3 DC Current gain vs. Collector Current

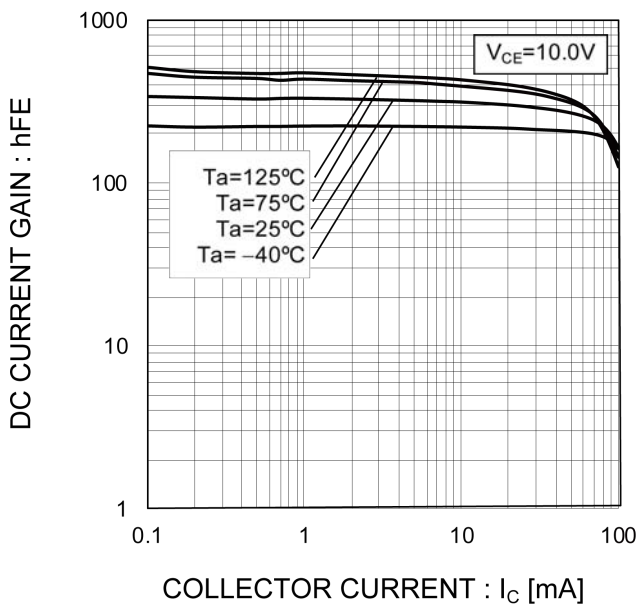
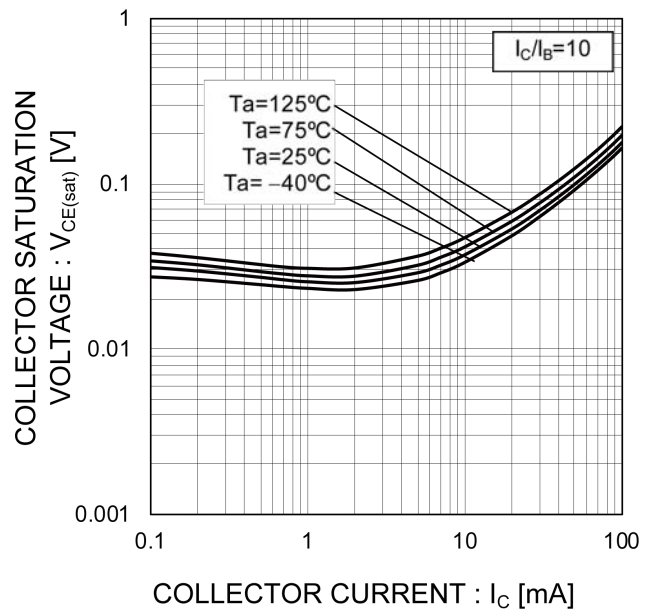
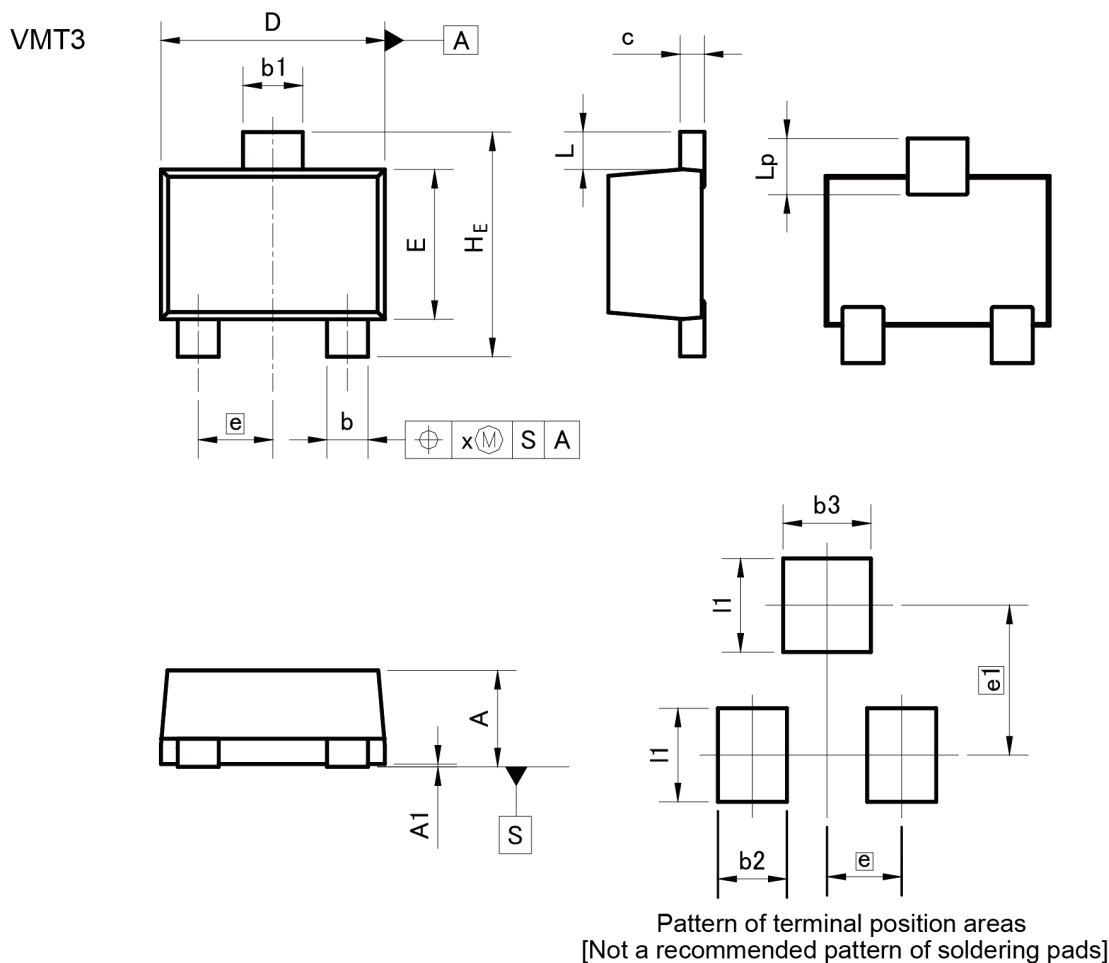


Fig.4 Collector-emitter saturation voltage vs. Collector Current



●Dimensions



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
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
e	0.40		0.02	
HE	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	0.012
Lp	0.20	0.40	0.008	0.016
x	-	0.10	-	0.004

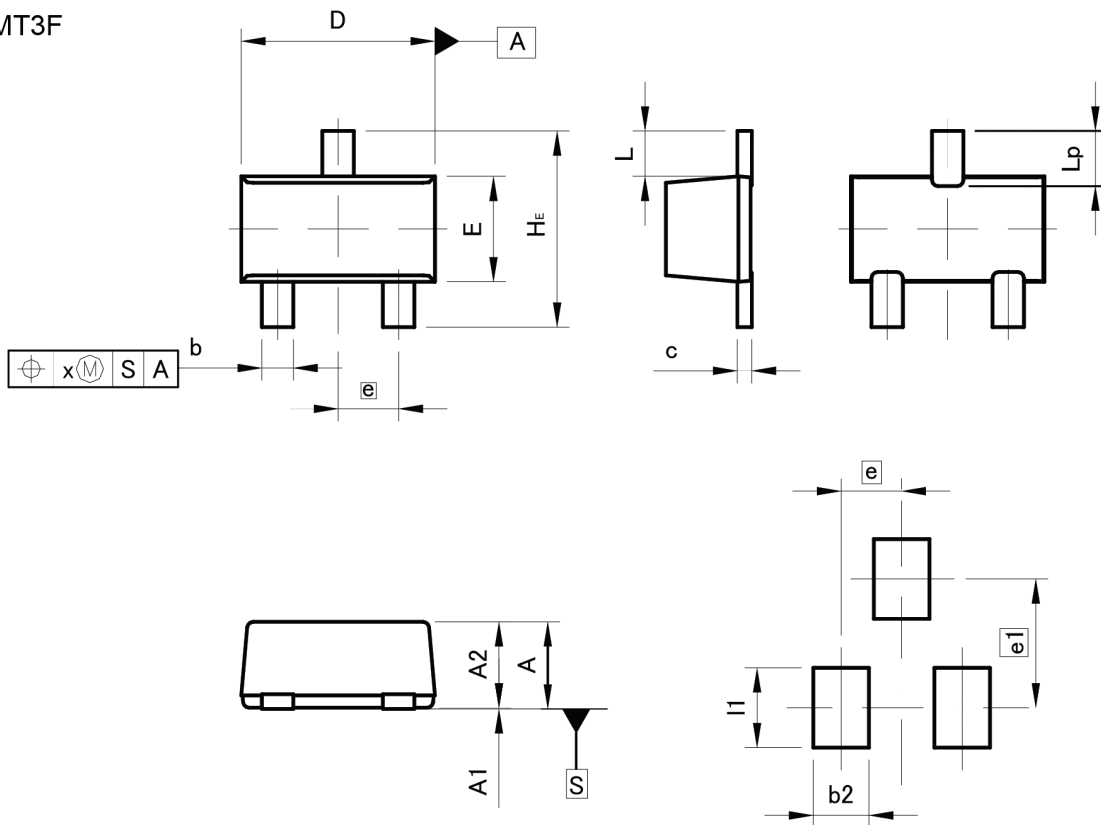
  

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.37	-	0.015
b3	-	0.47	-	0.019
e1	0.80		0.031	
I1	-	0.50	-	0.020

Dimension in mm/inches

●Dimensions

EMT3F



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.65	0.85	0.026	0.033
A1	0.00	0.10	0.000	0.004
A2	0.60	0.80	0.024	0.031
b	0.21	0.36	0.008	0.014
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	0.76	0.96	0.030	0.038
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.37		0.015	
Lp	0.35	0.55	0.014	0.022
x	-	0.10	-	0.004

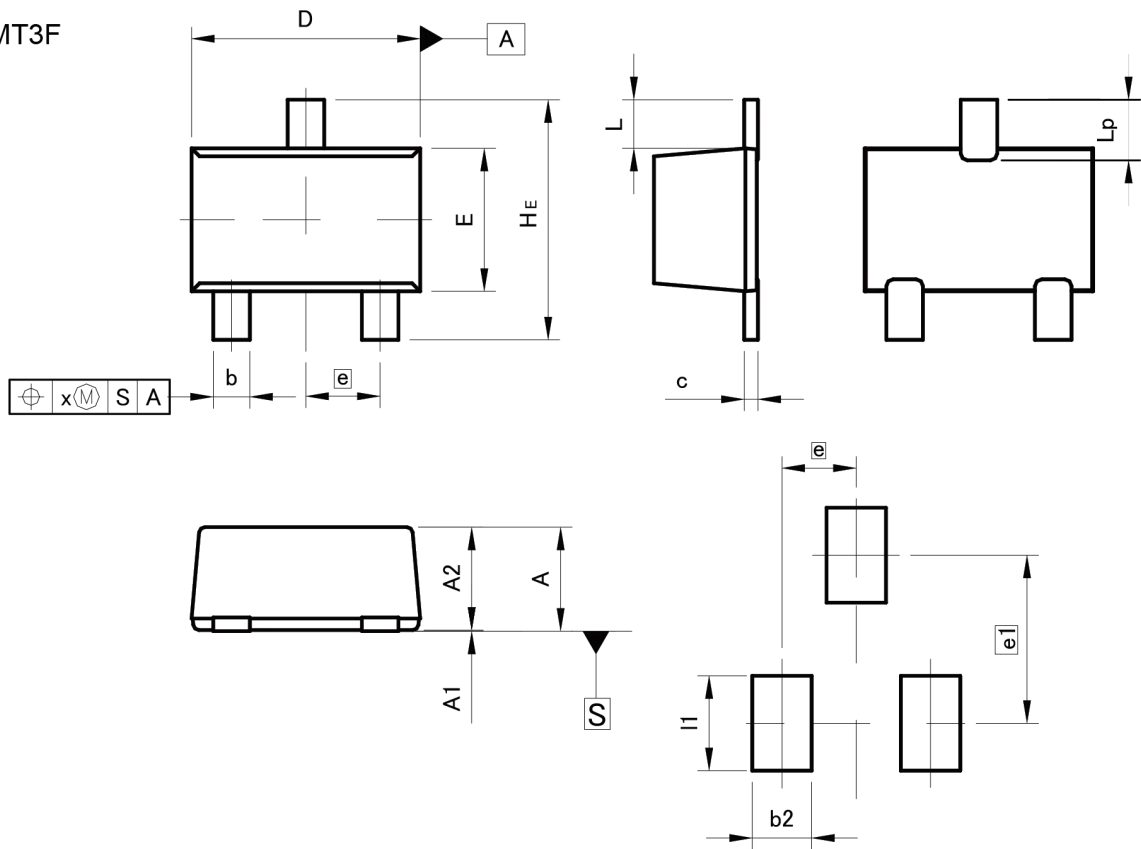
  

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.46	-	0.018
e1	-	1.05	-	0.041
l1	-	0.65	-	0.026

Dimension in mm/inches

●Dimensions

UMT3F



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.85	1.05	0.033	0.041
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.27	0.42	0.011	0.017
c	0.08	0.18	0.003	0.007
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
L	0.43		0.017	
Lp	0.43	0.63	0.017	0.025
x	-	0.10	-	0.004
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.52	-	0.020
e1	1.47		0.058	
l1	-	0.83	-	0.033

Dimension in mm/inches

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