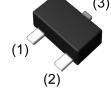
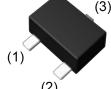


Parameter	Value
V _{CC}	50V
I _{C(MAX.)}	100mA
R ₁	4.7kΩ
R ₂	47kΩ

●Features

- 1) Built-in bias resistors .R₁ = 4.7kΩ, R₂ = 47kΩ.
- 2) Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors (see inner circuit).
- 3) Only the on/off conditions need to be set for operation, making the circuit design easy.
- 4) Complementary PNP Types: DTA143Z series

●Outline

VMT3  DTC143ZM (SC-105AA)	EMT3F  DTC143ZEB (SC-89)
EMT3  DTC143ZE SOT-416(SC-75A)	UMT3F  DTC143ZUB (SC-85)
UMT3  DTC143ZUA SOT-323(SC-70)	SMT3  DTC143ZKA SOT-346(SC-59)

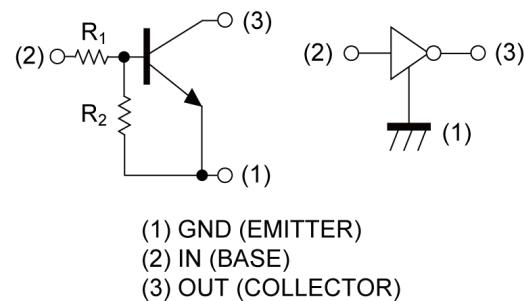
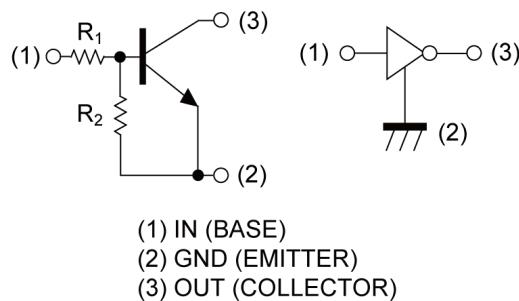
●Application

INVERTER, INTERFACE, DRIVER

●Inner circuit

DTC143ZM/ DTC143ZEB/ DTC143ZUB

DTC143ZE/ DTC143ZUA/ DTC143ZKA



●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
DTC143ZM	VMT3	1212	T2L	180	8	8000	E23
DTC143ZEB	EMT3F	1616	TL	180	8	3000	E23
DTC143ZE	EMT3	1616	TL	180	8	3000	E23
DTC143ZUB	UMT3F	2021	TL	180	8	3000	123
DTC143ZUA	UMT3	2021	T106	180	8	3000	123
DTC143ZKA	SMT3	2928	T146	180	8	3000	E23

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

Parameter	Symbol	Values	Unit
Supply voltage	V_{CC}	50	V
Input voltage	V_{IN}	-5 to 30	V
Output current	I_O	100	mA
Collector current	$I_{C(MAX)}^{*1}$	100	mA
Power dissipation	DTC143ZM	150	mW
	DTC143ZEB	150	
	DTC143ZE	150	
	DTC143ZUB	200	
	DTC143ZUA	200	
	DTC143ZKA	200	
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

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

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
	$V_{I(on)}$	$V_O = 0.3\text{V}, I_O = 5\text{mA}$	1.3	-	-	
Output voltage	$V_{O(on)}$	$I_O / I_I = 5\text{mA} / 0.25\text{mA}$	-	100	300	mV
Input current	I_I	$V_I = 5\text{V}$	-	-	1.8	mA
Output current	$I_{O(off)}$	$V_{CC} = 50\text{V}, V_I = 0\text{V}$	-	-	500	nA
DC current gain	G_I	$V_O = 5\text{V}, I_O = 10\text{mA}$	80	-	-	-
Input resistance	R_I	-	3.29	4.7	6.11	kΩ
Resistance ratio	R_2/R_1	-	8	10	12	-
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

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

Fig.1 Input voltage vs. output current (ON characteristics)

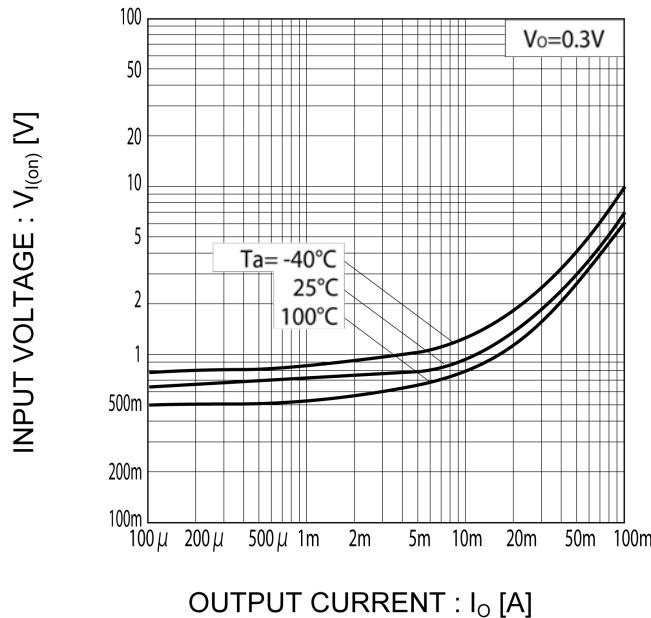


Fig.2 Output current vs. input voltage (OFF characteristics)

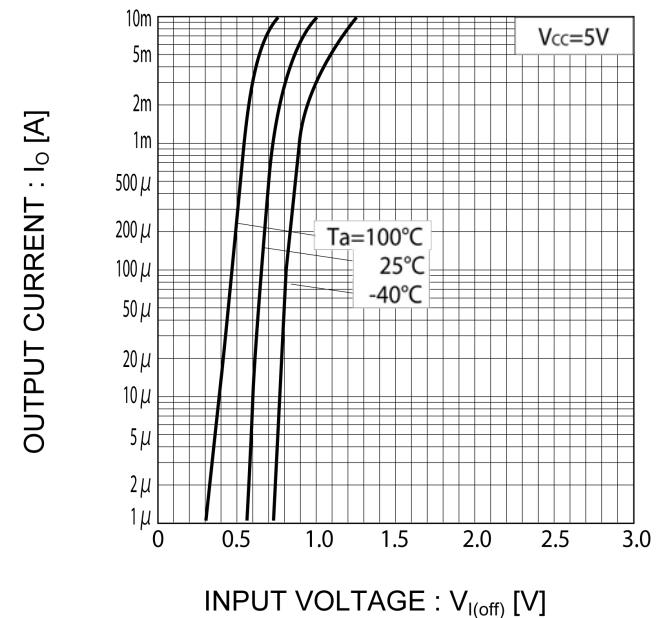


Fig.3 Output current vs. output voltage

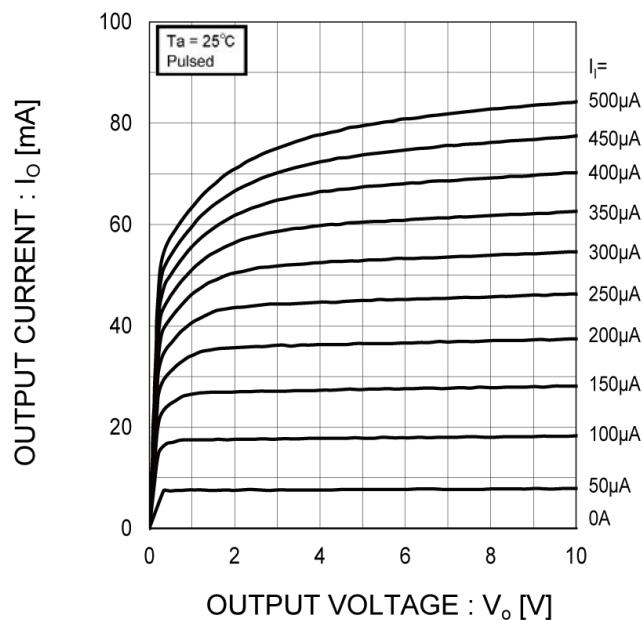
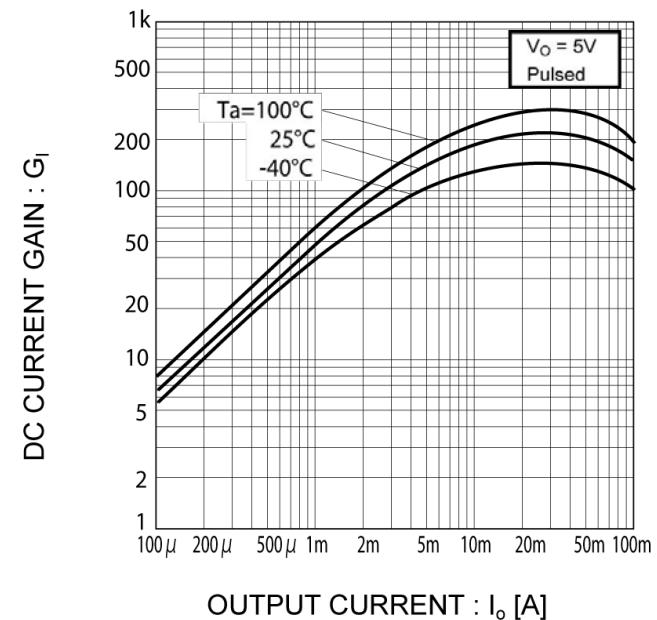
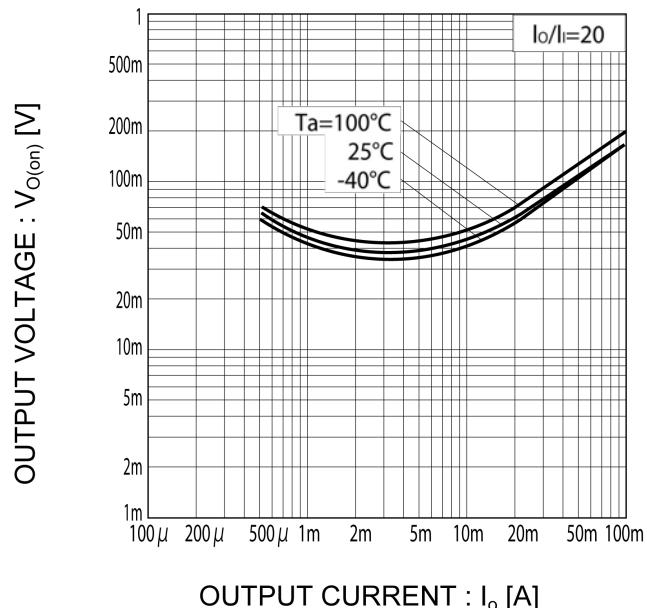


Fig.4 DC current gain vs. output current

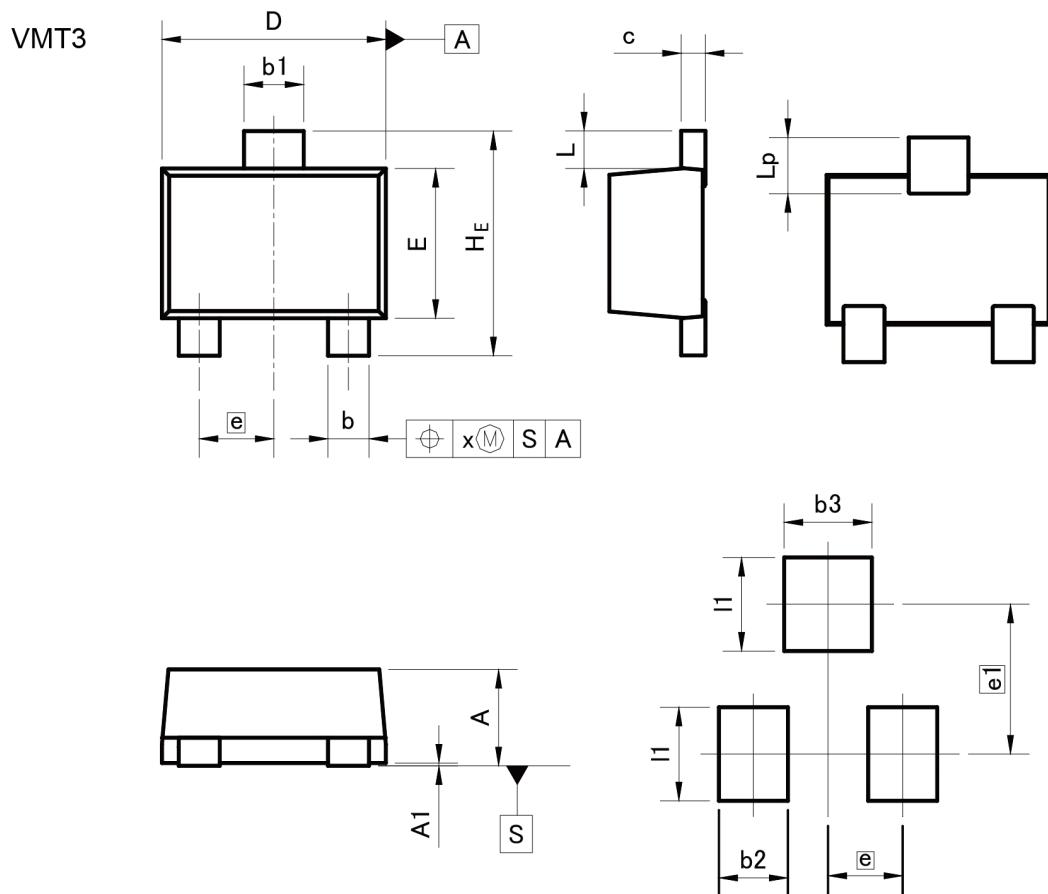


●Electrical characteristic curves ($T_a = 25^\circ\text{C}$)

Fig.5 Output voltage vs. output current



●Dimensions



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

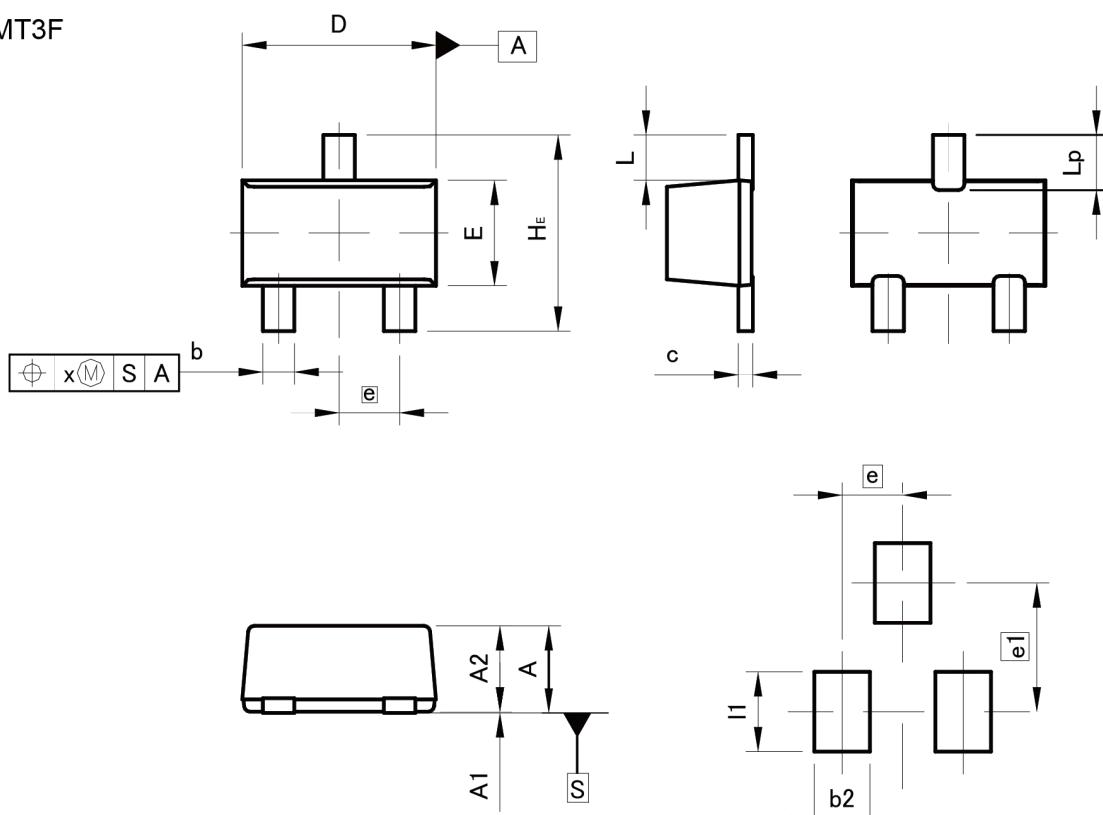
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.45	0.55	0.018	0.022
A1	0.00	0.10	0.000	0.004
b	0.17	0.27	0.007	0.011
b1	0.27	0.37	0.011	0.015
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.70	0.90	0.028	0.035
e	0.40		0.02	
H _E	1.10	1.30	0.043	0.051
L	0.10	0.30	0.004	0.012
L _p	0.20	0.40	0.008	0.016
x	—	0.10	—	0.004

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b ₂	—	0.37	—	0.015
b ₃	—	0.47	—	0.019
e ₁	0.80		0.031	
l ₁	—	0.50	—	0.020

Dimension in mm/inches

●Dimensions

EMT3F



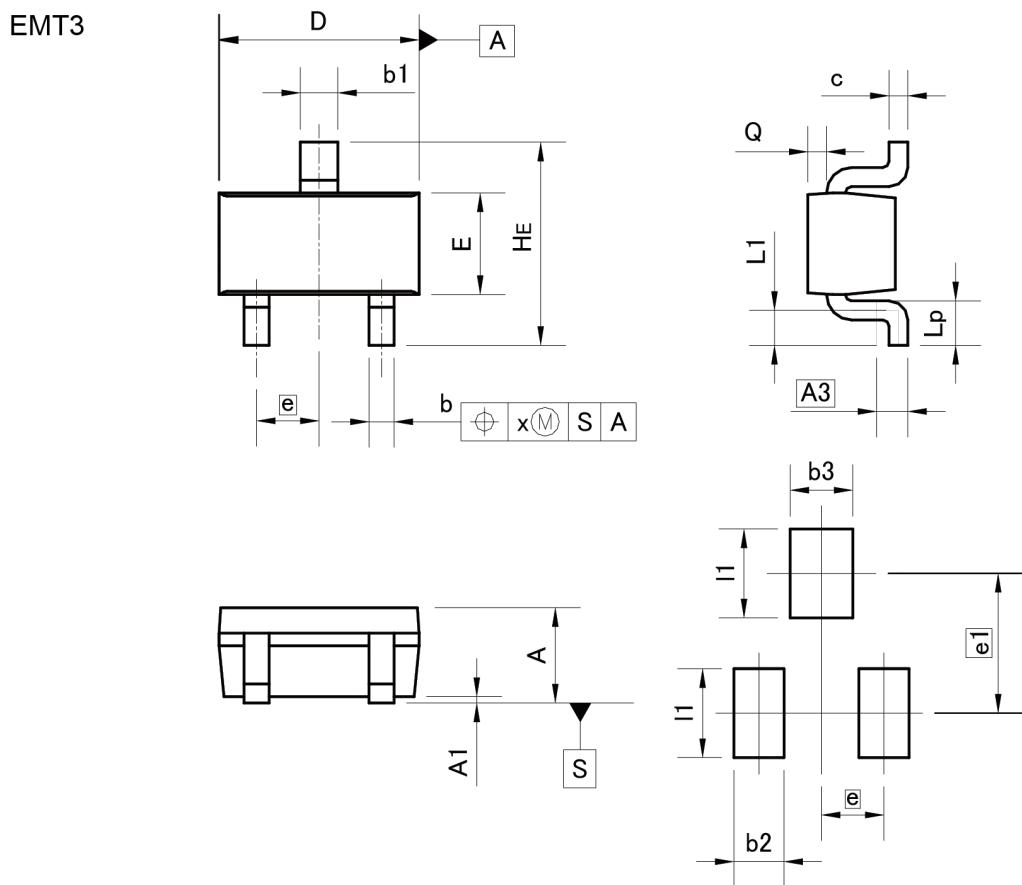
Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.65	0.85	0.026	0.033
A ₁	0.00	0.10	0.000	0.004
A ₂	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	
H _E	1.50	1.70	0.059	0.067
L	0.37		0.015	
L _P	0.35	0.55	0.014	0.022
x	-	0.10	-	0.004

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b ₂	-	0.46	-	0.018
e ₁	-	1.05	-	0.041
l ₁	-	0.65	-	0.026

Dimension in mm/inches

●Dimensions



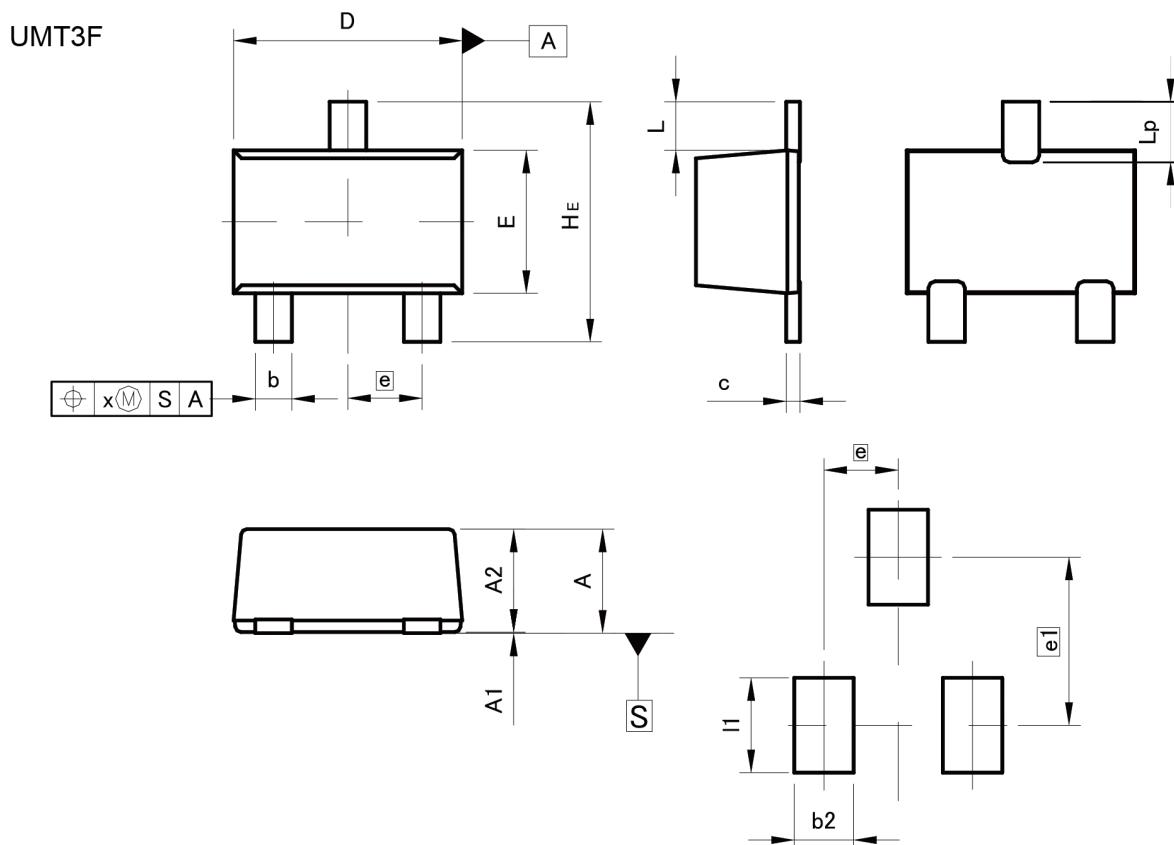
Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.60	0.80	0.024	0.031
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
e	0.50		0.020	
HE	1.40	1.80	0.055	0.071
L1	0.10	-	0.004	-
Lp	0.15	-	0.006	-
Q	0.05	0.25	0.002	0.010
x	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.40	-	0.016
b3	-	0.50	-	0.020
e1	1.10		0.043	
I1	-	0.70	-	0.028

Dimension in mm/inches

●Dimensions



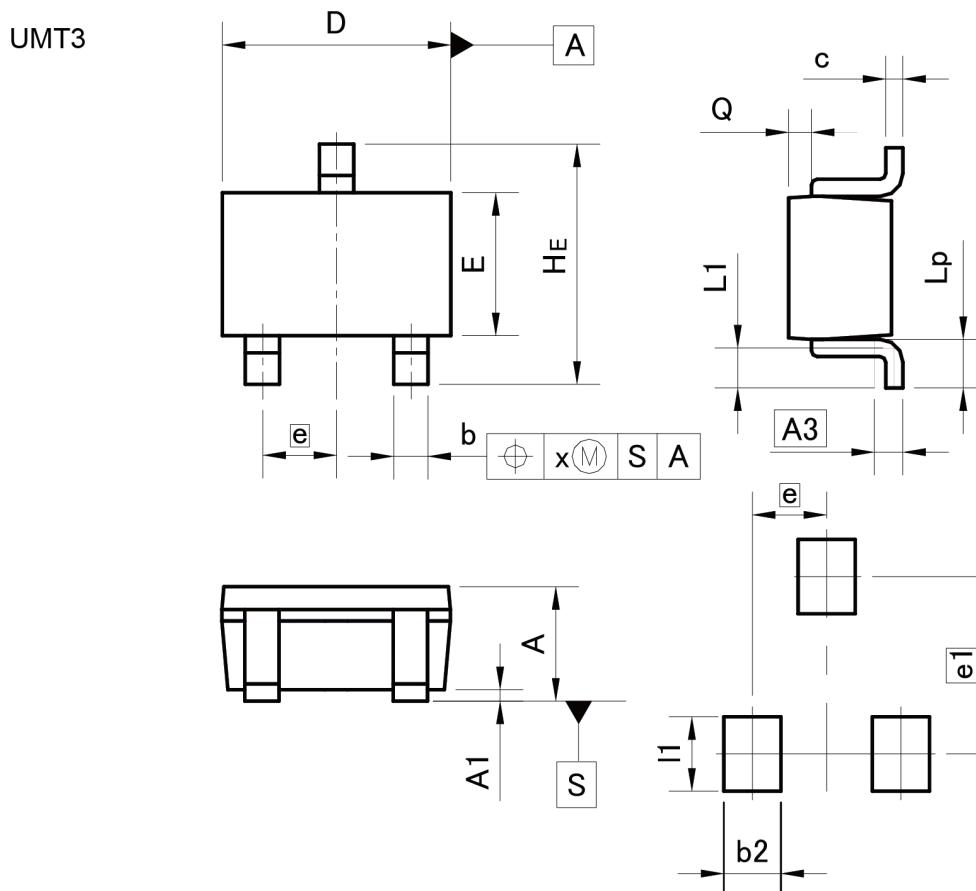
Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILLIMETERS		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	
H_E	2.00	2.20	0.079	0.087
L	0.43		0.017	
L _p	0.43	0.63	0.017	0.025
x	-	0.10	-	0.004

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b ₂	-	0.52	-	0.020
e ₁	1.47		0.058	
l ₁	-	0.83	-	0.033

Dimension in mm/inches

●Dimensions



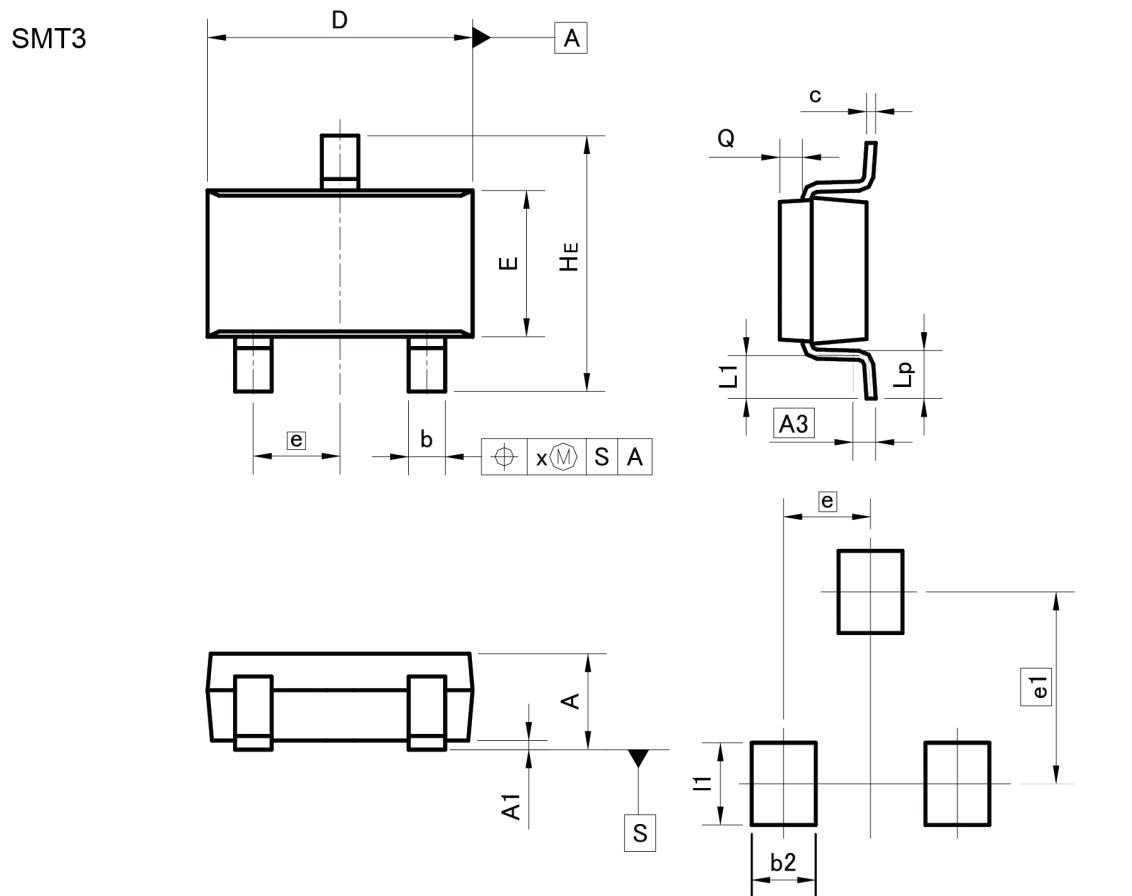
Pattern of terminal position areas
[Not a recommended pattern of soldering pads]

DIM	MILLIMETERS		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	
H_E	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

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.50	-	0.020
e1	1.55		0.061	
l1	-	0.65	-	0.026

Dimension in mm/inches

●Dimensions



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

DIM	MILLIMETERS		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	0.35	0.50	0.014	0.020
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	
H_E	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
L_p	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	-	0.10	-	0.004
y	-	0.10	-	0.004

DIM	MILLIMETERS		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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