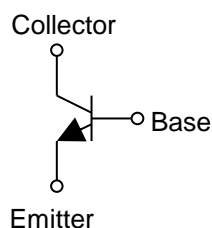


Parameter	Value
$V_{CEO}$	12V
$I_C$	1.5A


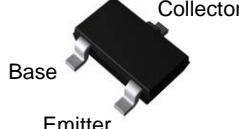
### ●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SB1732, 2SB1709
- 3) Low  $V_{CE(sat)}$   
 $V_{CE(sat)}=0.20V(\text{Max.})$   
 $(I_C/I_B=500mA/25mA)$
- 4) Lead Free/RoHS Compliant.

### ●Inner circuit



### ●Outline

<p>TUMT3</p>  <p>2SD2702</p>	<p>TSMT3</p>  <p>2SD2674 (SC-96)</p>
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### ●Applications

Motor driver , LED driver  
Power supply

### ●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SD2702	TUMT3	2021	TL	180	8	3,000	ES
2SD2674	TSMT3	2928	TL	180	8	3,000	ES

**●Absolute maximum ratings (Ta = 25°C)**

Parameter		Symbol	Values	Unit
Collector-base voltage		V <sub>CBO</sub>	15	V
Collector-emitter voltage		V <sub>CEO</sub>	12	V
Emitter-base voltage		V <sub>EBO</sub>	6	V
Collector current	DC	I <sub>C</sub>	1.5	A
	Pulsed	I <sub>CP</sub>	3 <sup>*1</sup>	A
Power dissipation	2SD2702	P <sub>D</sub>	0.4	W
			0.8 <sup>*2</sup>	
	2SD2674	P <sub>D</sub>	0.5	W
			1.0 <sup>*2</sup>	
Junction temperature		T <sub>j</sub>	150	°C
Range of storage temperature		T <sub>stg</sub>	−55 to +150	°C

\*1 Pw=1ms , single pulse

\*2 Mounted on a ceramic board (25×25×0.8 mm)

**●Electrical characteristics(Ta = 25°C)**

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	$BV_{CBO}$	$I_C = 10\mu A$	15	-	-	V
Collector-base breakdown voltage	$BV_{CEO}$	$I_C = 1mA$	12	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = 10\mu A$	6	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = 15V$	-	-	100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 6V$	-	-	100	nA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500mA, I_B = 25mA$	-	85	200	mV
DC current gain	$h_{FE}$ <sup>*3</sup>	$V_{CE} = 2V, I_C = 200mA$	270	-	680	-
Transition frequency	$f_T$ <sup>*3</sup>	$V_{CE} = 2V, I_E = -200mA$ $f = 100MHz$	-	400	-	MHz
Output capacitance	$C_{ob}$	$V_{CB} = 10V, I_E = 0A,$ $f = 1MHz$	-	12	-	pF

\*3 Pulsed

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics Fig.2 Typical Output Characteristics

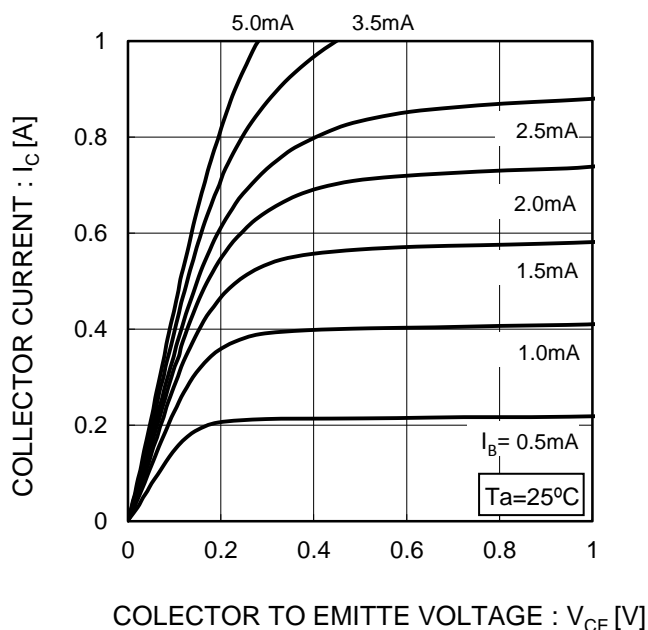
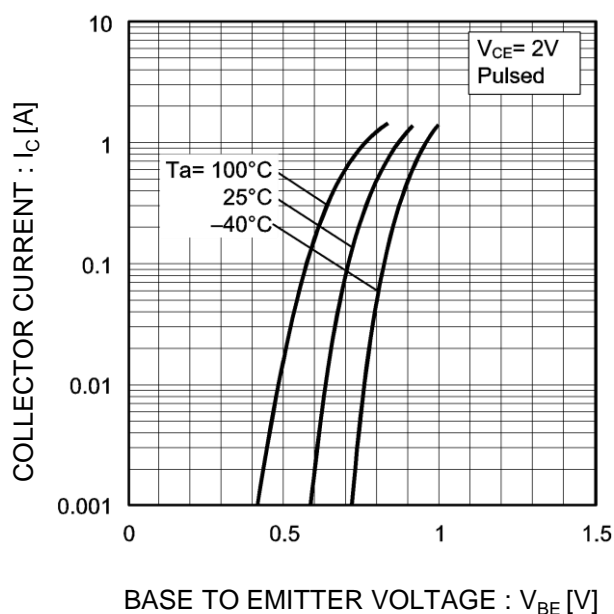


Fig.3 DC Current Gain vs. Collector Current(I)

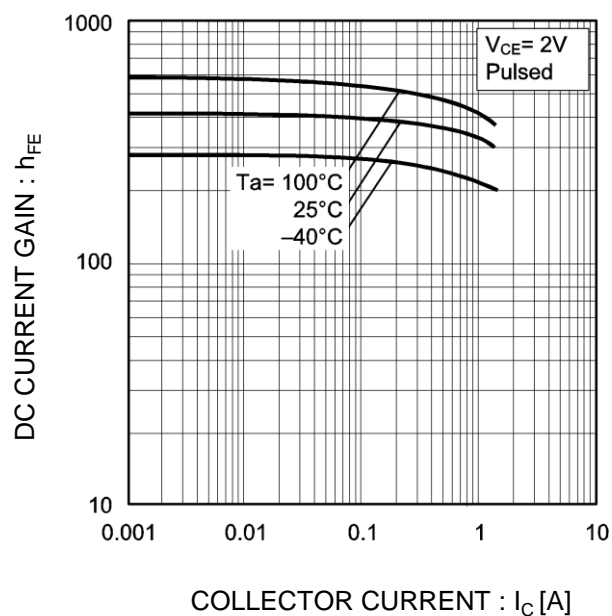
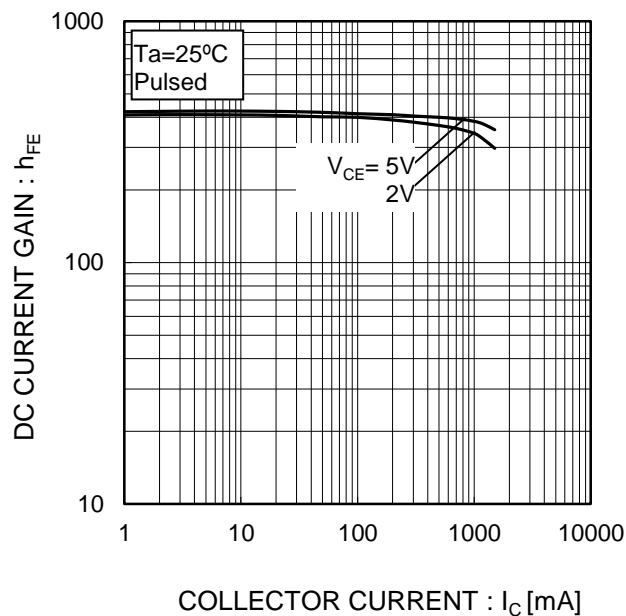


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

Fig.5 Collector-Emitter Saturation Voltage vs. Collector Current (I)

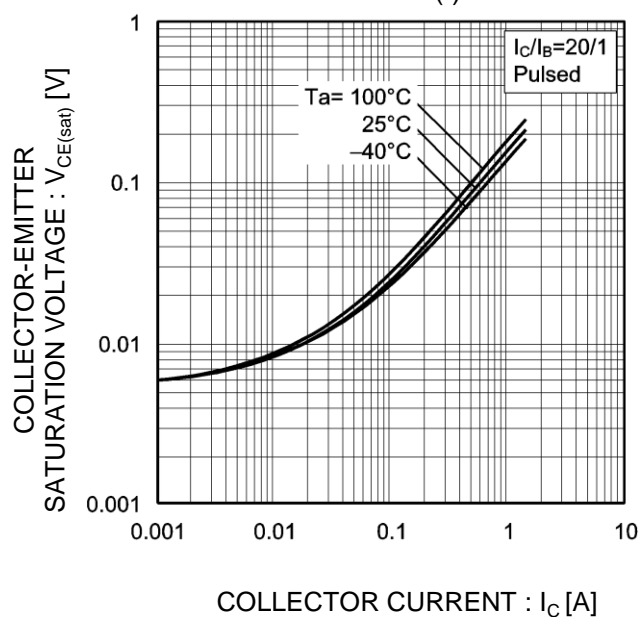


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

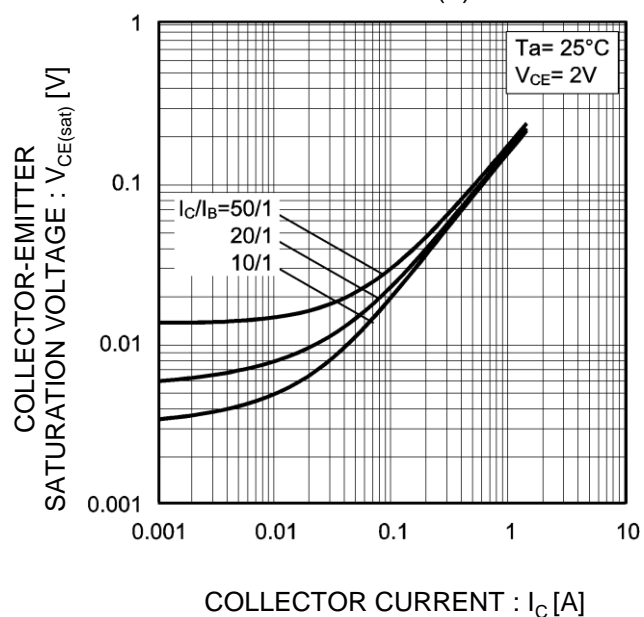


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

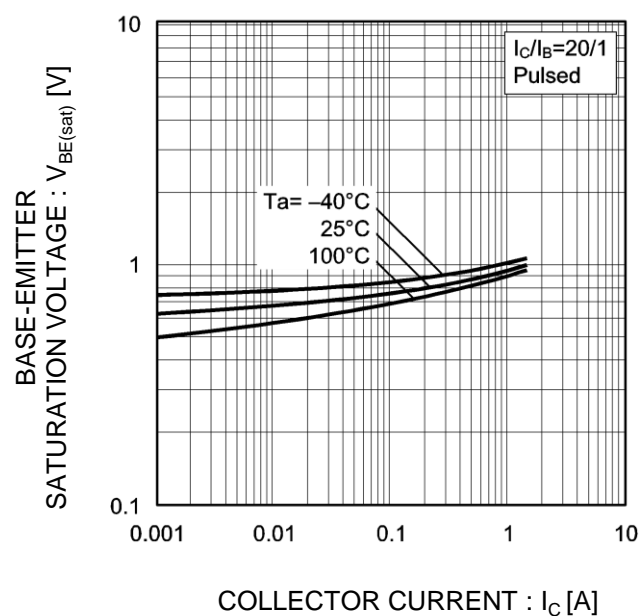
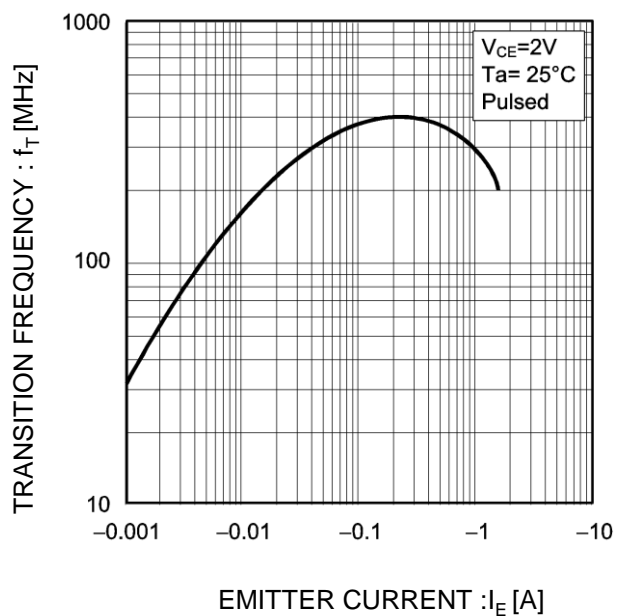


Fig.8 Gain Bandwidth Product vs. Emitter Current



# ●Electrical characteristic curves(Ta = 25°C)

Fig.9 Emitter input capacitance vs.  
Emitter-Base Voltage  
Collector output capacitance vs.  
Collector-Base Voltage

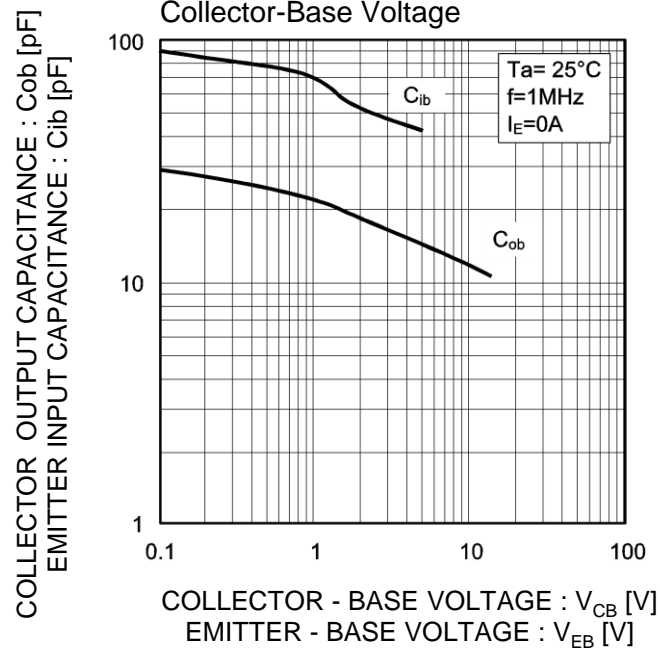


Fig.10 Safe Operating Area

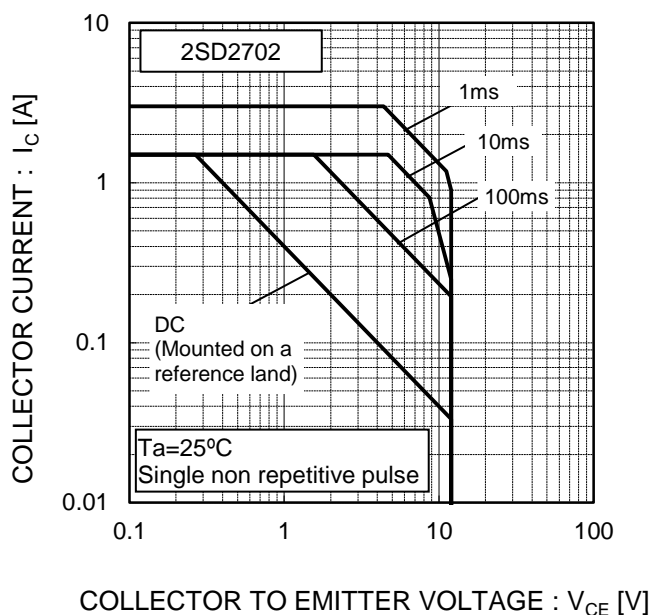
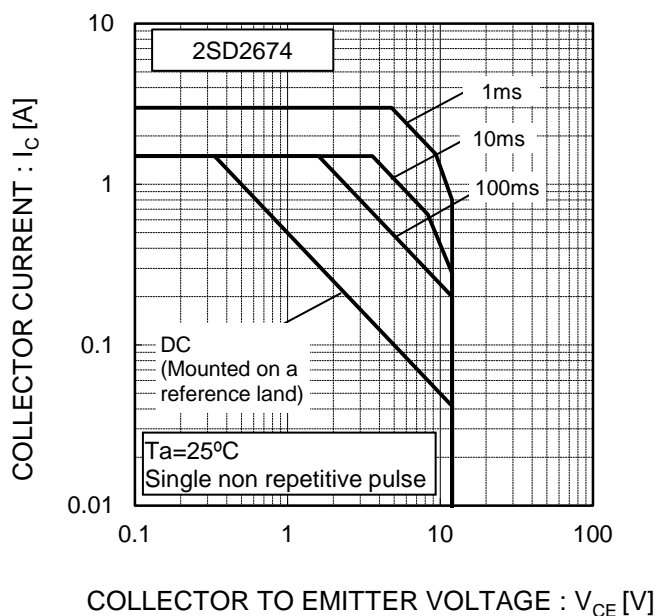
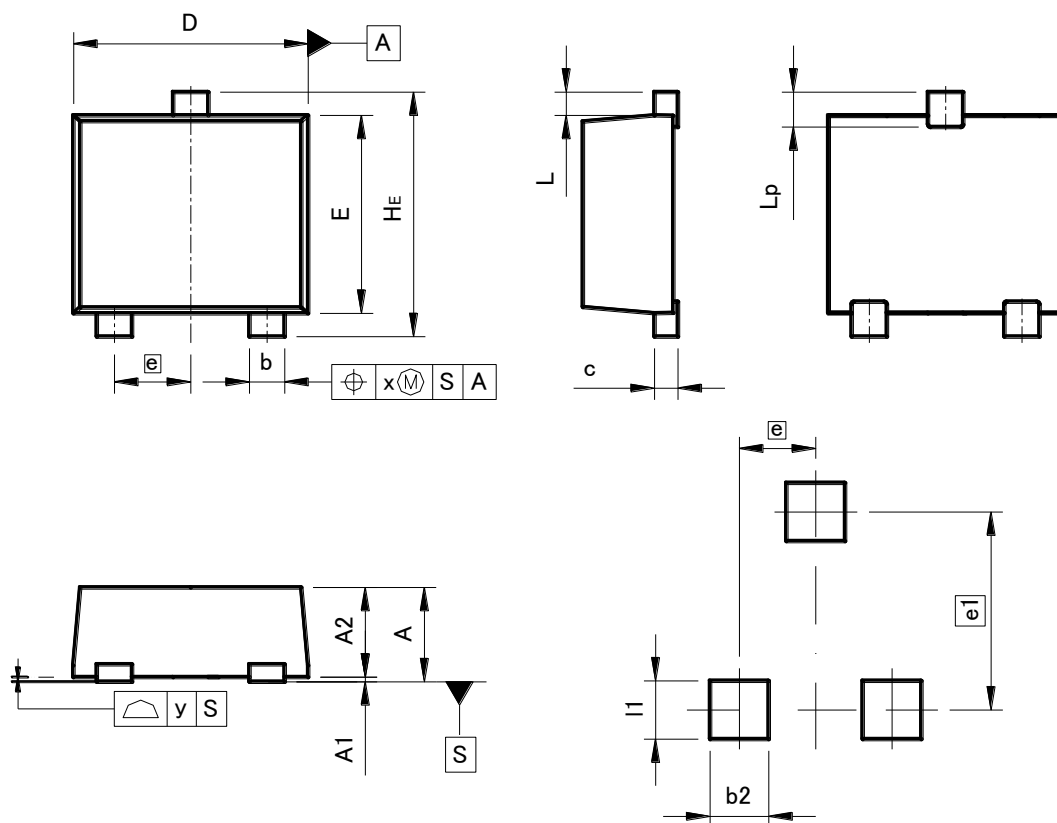


Fig.11 Safe Operating Area



## ●Dimensions (Unit : mm)

TUMT3



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

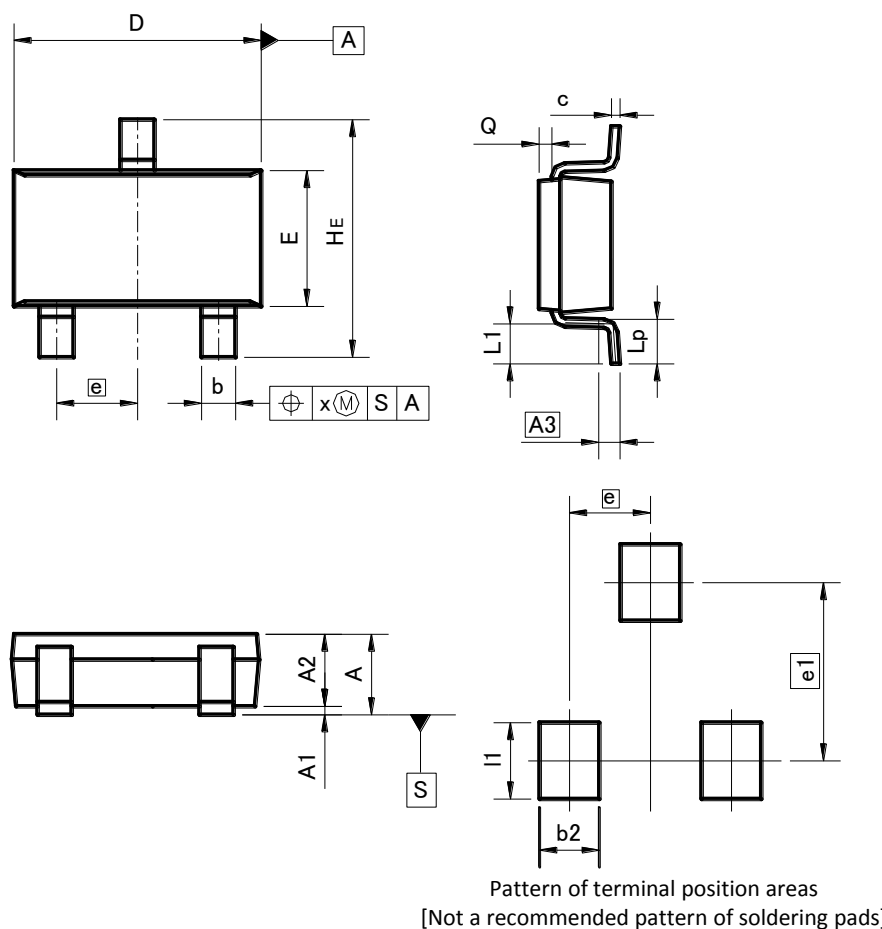
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	—	0.85	—	0.033
A1	0.00	0.10	0.000	0.004
A2	0.72	0.82	0.028	0.032
b	0.25	0.40	0.010	0.016
c	0.12	0.22	0.005	0.009
D	1.90	2.10	0.075	0.083
E	1.60	1.80	0.063	0.071
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L	0.20		0.008	
Lp	—	0.40	—	0.016
x	—	0.10	—	0.004
y	—	0.10	—	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	—	0.50	—	0.020
e1	1.70		0.067	
l1	—	0.50	—	0.020

Dimension in mm / inches

## ●Dimensions (Unit : mm)

## TSMT3



DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	–	1.00	–	0.039
A1	0.00	0.10	0.000	0.004
A2	0.75	0.95	0.030	0.037
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.10	0.26	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	0.05	0.25	0.002	0.010
x	–	0.20	–	0.008

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2		0.70	–	0.028
e1	2.10		0.083	
l1	–	0.90	–	0.035

Dimension in mm / inches

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