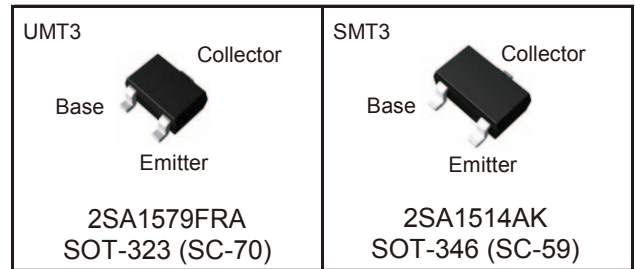


Parameter	Value
V_{CEO}	-120V
I_C	-50mA

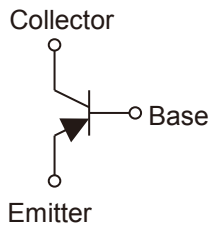
●Features

- 1) High Breakdown Voltage ($BV_{CEO} = -120V$)
- 2) Complementary NPN Types :
2SC4102FRA (UMT3) / 2SC3906KFRA (SMT3)
- 3) Complex transistors :
IMT4FRA (SMT6)
- 4) Lead Free/RoHS Compliant.

●Outline



●Inner circuit



●Applications

High Voltage Amplifier

●Packaging specifications

Part No.	Package	Package size (mm)	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit (pcs)	Marking
2SA1579FRA	UMT3	2021	T106	180	8	3,000	Rx ^{*1}
2SA1514K	SMT3	2928	T146	180	8	3,000	Rx ^{*1}

*1 x : h_{FE} rank

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

Parameter	Symbol	Values	Unit
Collector-base voltage	V_{CBO}	-120	V
Collector-emitter voltage	V_{CEO}	-120	V
Emitter-base voltage	V_{EBO}	-5	V
Collector current	I_C	-50	mA
	I_{CP}^{*1}	-100	mA
Power dissipation	2SA1579FRA 2SA1514K	P_D^{*2}	200 mW
Junction temperature	T_j	150	°C
Range of storage temperature	T_{stg}	-55 to +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	$I_C = -1mA$	-120	-	-	V
Collector-base breakdown voltage	BV_{CBO}	$I_C = -50\mu A$	-120	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	$I_E = -50\mu A$	-5	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB} = -100V$	-	-	-0.5	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -4V$	-	-	-0.5	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -10mA, I_B = -1mA$	-	-	-0.5	V
DC current gain	h_{FE}	$V_{CE} = -6V, I_C = -2mA$	180	-	560	-
Transition frequency	f_T	$V_{CE} = -12V, I_E = 2mA$ $f = 100MHz$	-	140	-	MHz
Output capacitance	Cob	$V_{CB} = -12V, I_E = 0mA,$ $f = 1MHz$	-	3.2	-	pF

*1 $P_W = 100ms$ Single Pulse

*2 Each terminal mounted on a reference footprint

● **h_{FE} rank categories**

Rank	R	S
h_{FE}	180 to 390	270 to 560

●Electrical characteristic curves(Ta = 25°C)

Fig.1 Ground Emitter Propagation Characteristics

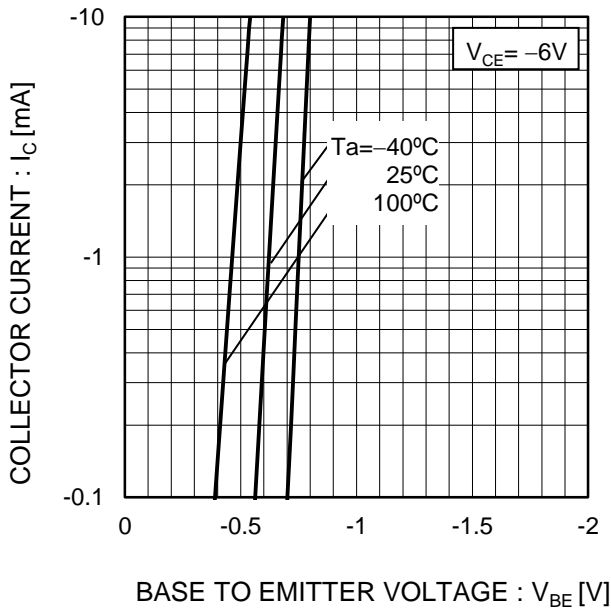


Fig.2 Typical Output Characteristics

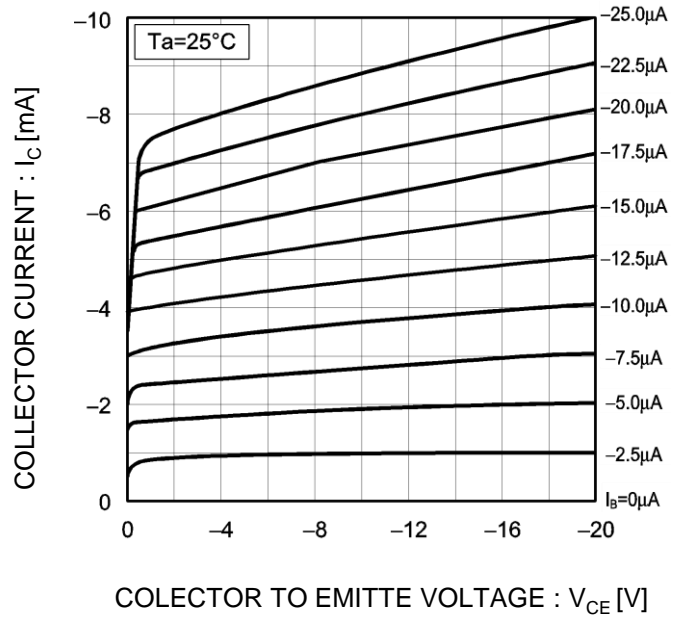


Fig.3 DC Current Gain vs. Collector Current(I)

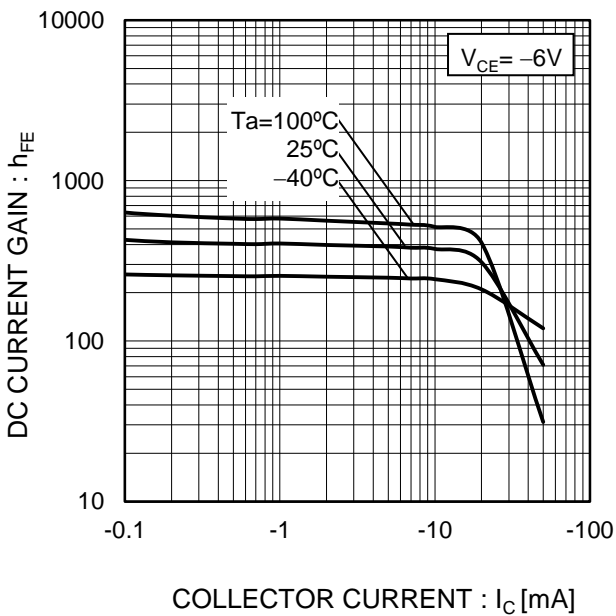
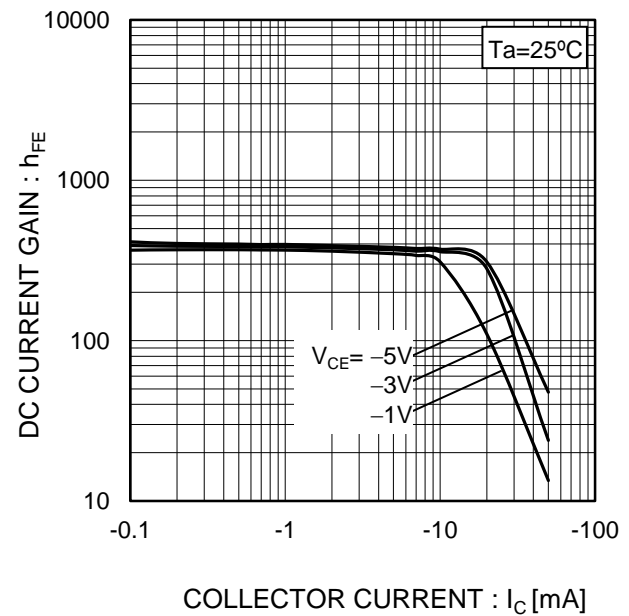


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

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

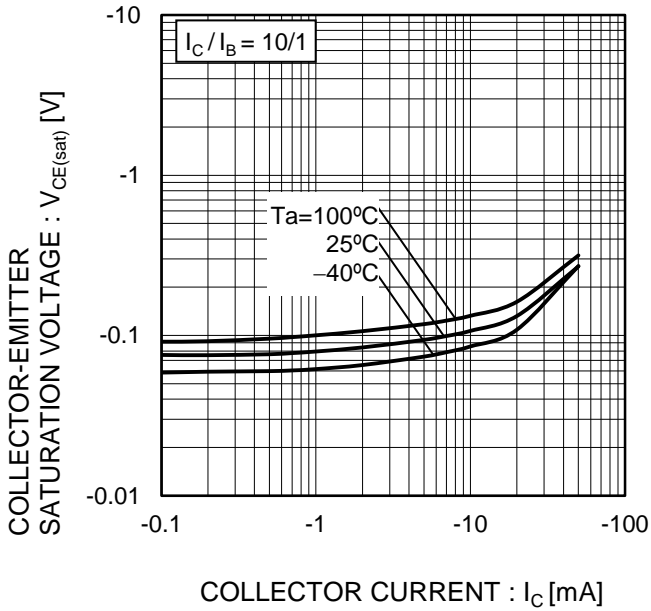


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

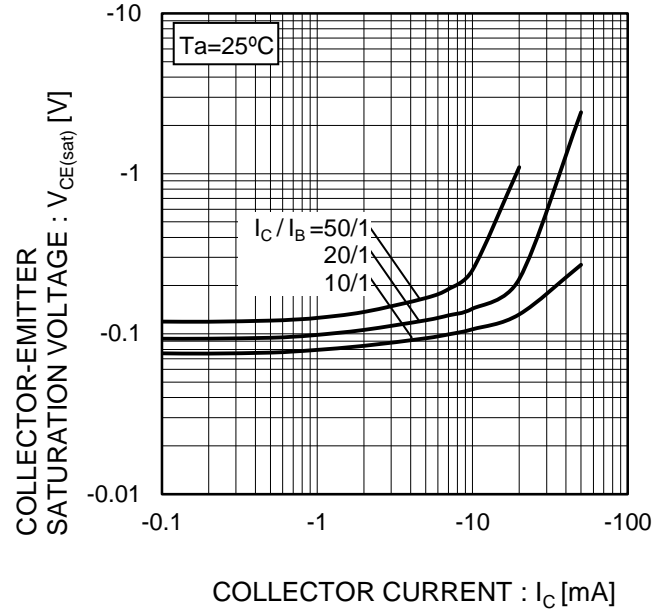


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

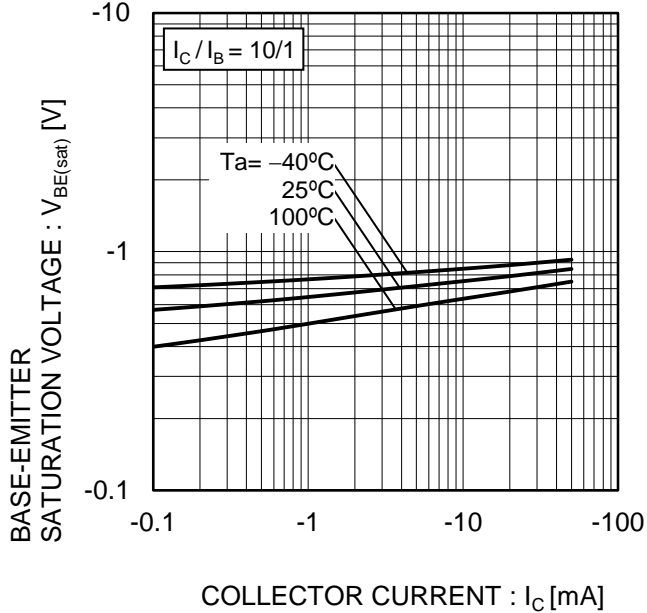
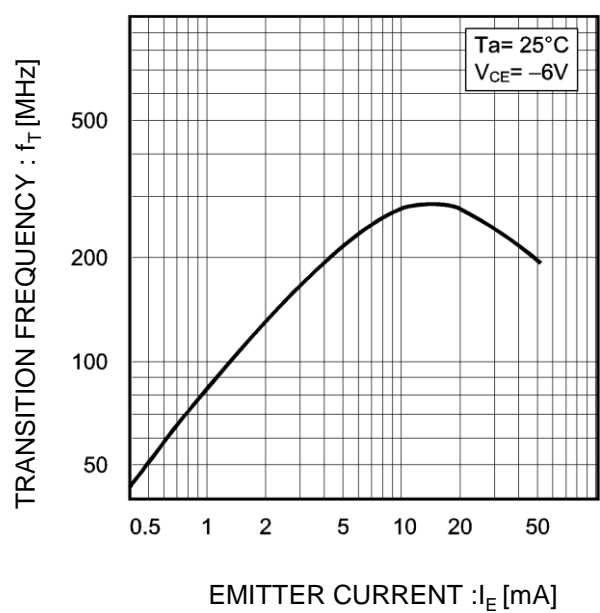


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

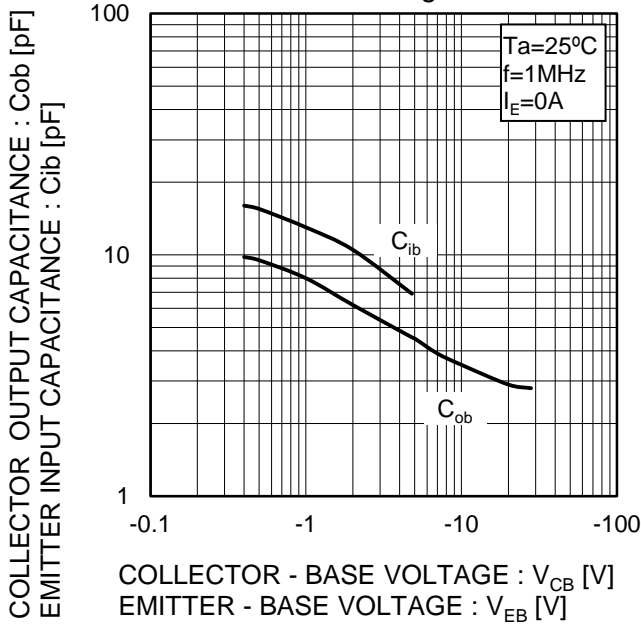


Fig.10 Safe Operating Area

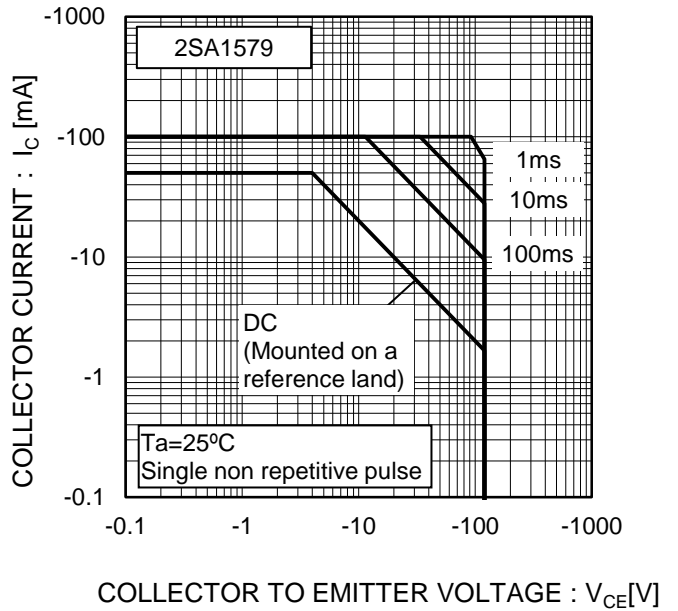
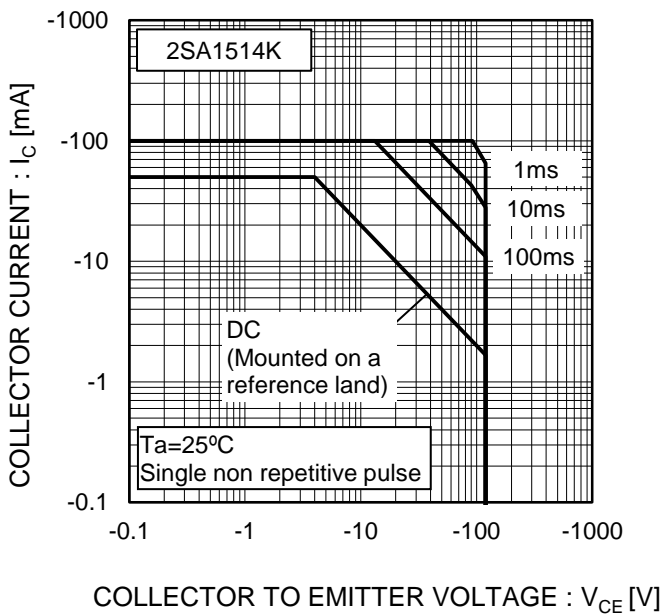
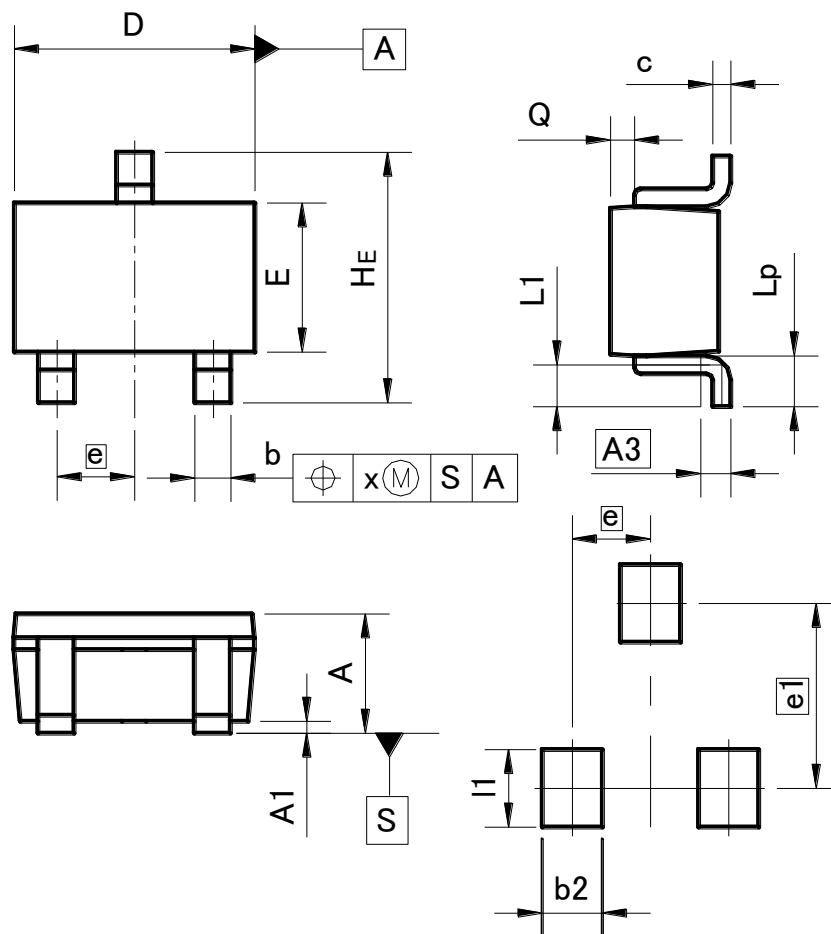


Fig.11 Safe Operating Area



●Dimensions (Unit : mm)

UMT3



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

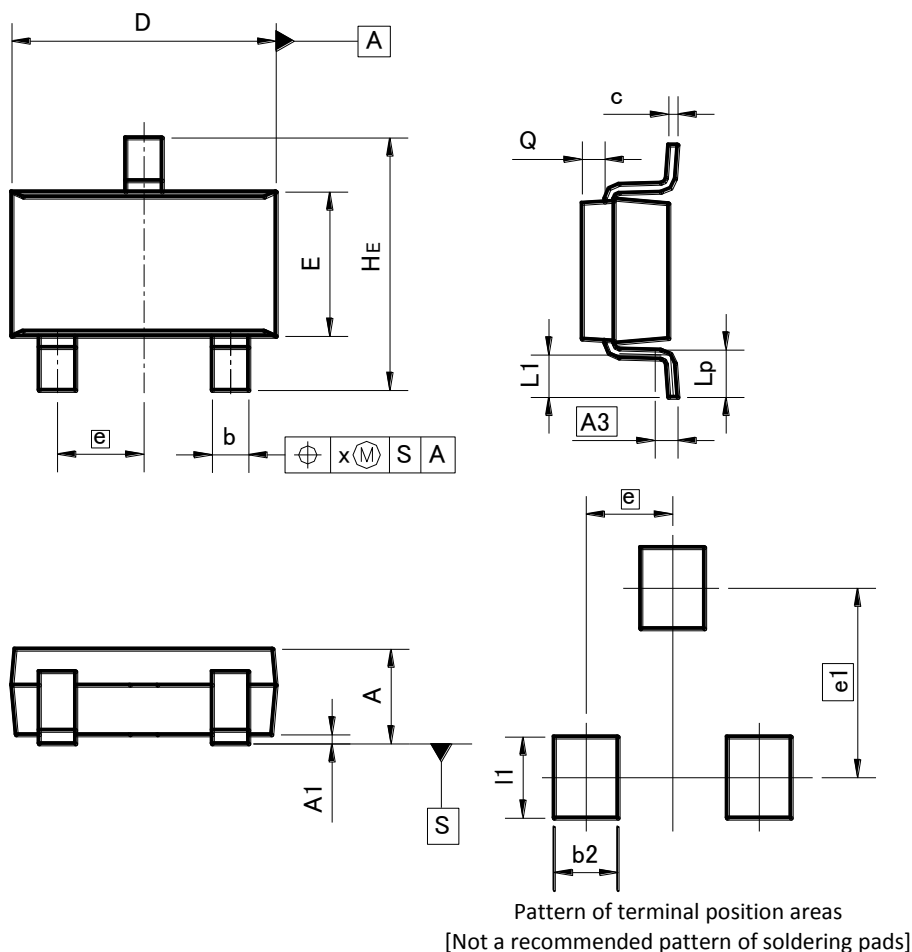
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.15	0.30	0.006	0.012
c	0.10	0.20	0.004	0.008
D	1.90	2.10	0.075	0.083
E	1.15	1.35	0.045	0.053
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L1	0.20	0.50	0.008	0.020
Lp	0.25	0.55	0.010	0.022
Q	0.10	0.30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

DIM	MILIMETERS		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 (Unit : mm)

SMT3



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	0.35	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	
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	-	0.10	-	0.004
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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