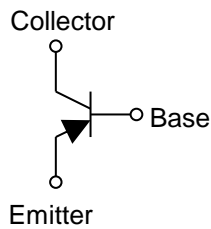


Parameter	Value
$V_{CEO}$	-12V
$I_C$	-1.5A

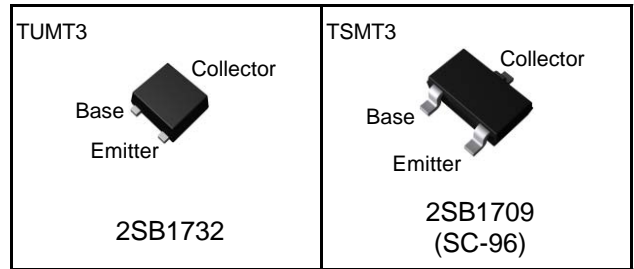
### ●Features

- 1) Suitable for Middle Power Driver
- 2) Complementary PNP Types : 2SD2702, 2SD2674
- 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



### ●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
2SB1732	TUMT3	2021	TL	180	8	3,000	EV
2SB1709	TSMT3	2928	TL	180	8	3,000	EV

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

Parameter		Symbol	Values	Unit
Collector-base voltage		$V_{CBO}$	-15	V
Collector-emitter voltage		$V_{CEO}$	-12	V
Emitter-base voltage		$V_{EBO}$	-6	V
Collector current	DC	$I_C$	-1.5	A
	Pulsed	$I_{CP}^{*1}$	-3.0	A
Power dissipation	2SB1732	$P_D^{*2}$	0.4	W
	2SB1709	$P_D^{*2}$	0.5	W
Junction temperature		$T_j$	150	°C
Range of storage temperature		$T_{stg}$	-55 to +150	°C

\*1 Pw=1ms , single pulse

\*2 Each terminal mounted on a reference land

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = -10\mu A$	-15	-	-	V
Collector-base breakdown voltage	$BV_{CBO}$	$I_C = -1mA$	-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	$h_{FE}^{*3}$	$V_{CE} = -2V, I_C = -200mA$	270	-	680	-
Transition frequency	$f_T^{*3}$	$V_{CE} = -2V, I_E = 200mA$ $f = 100MHz$	-	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

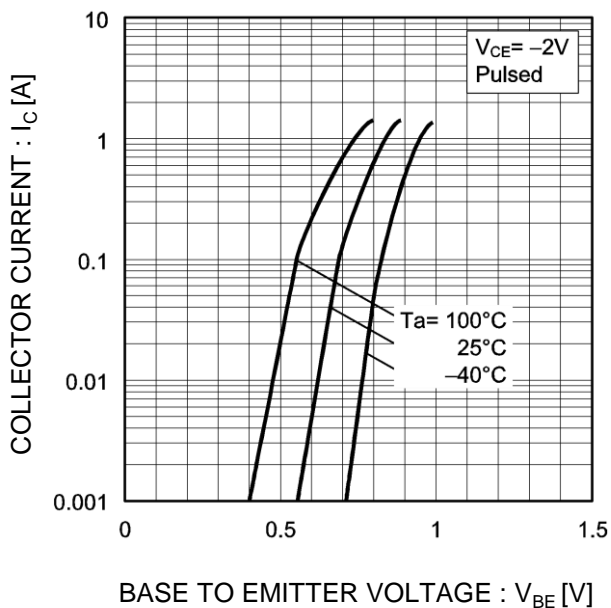


Fig.2 Typical Output Characteristics

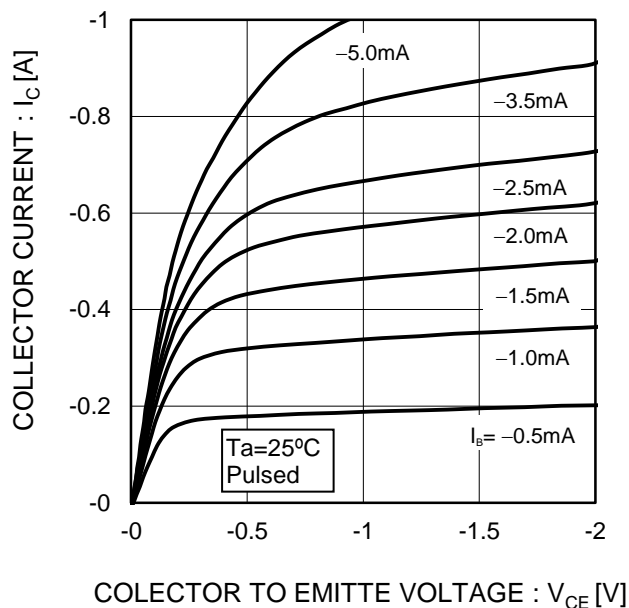


Fig.3 DC Current Gain vs. Collector Current(I)

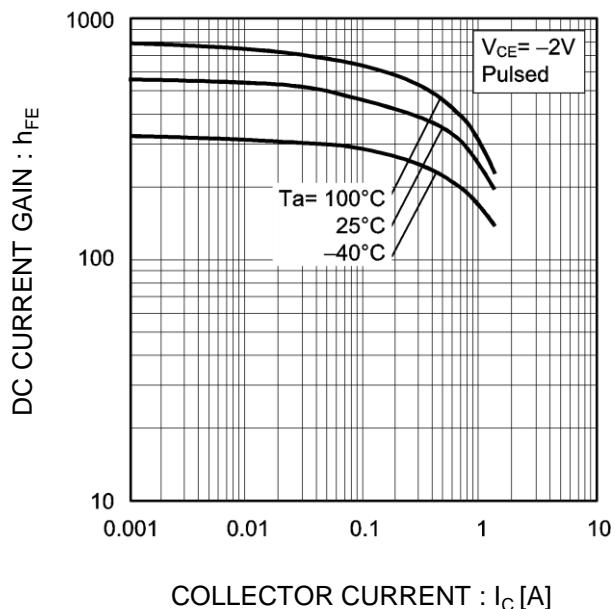
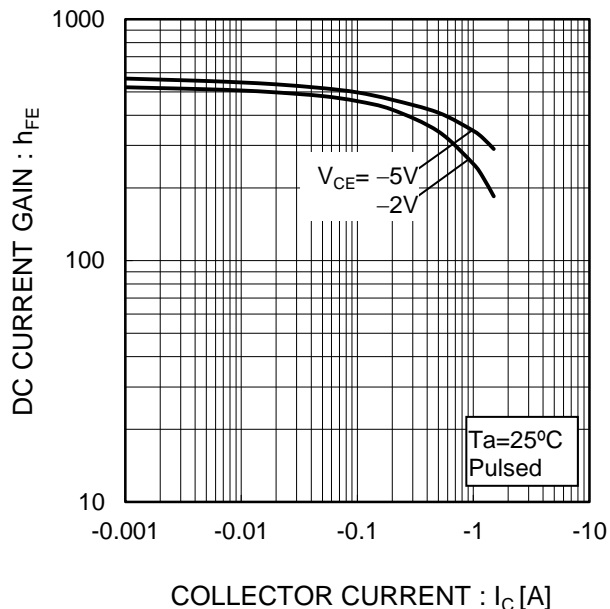


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves(Ta = 25°C)

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

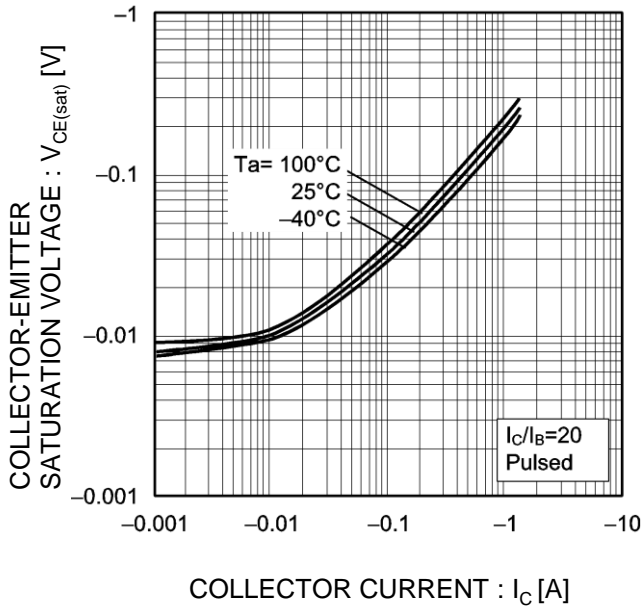


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

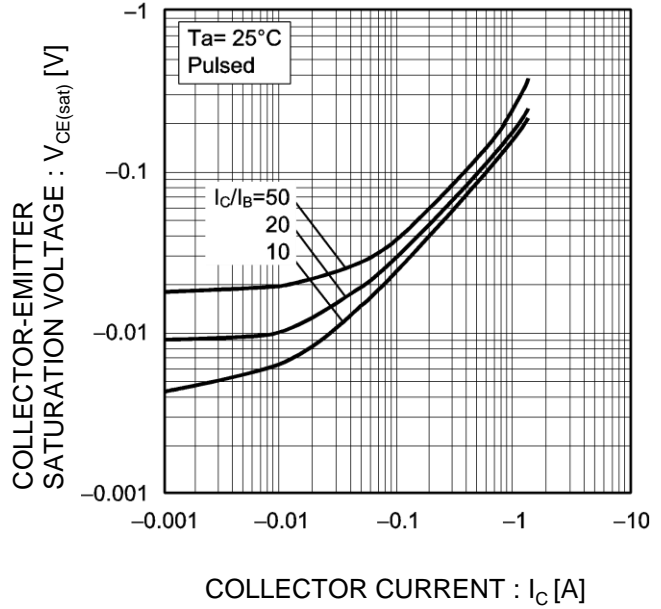


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

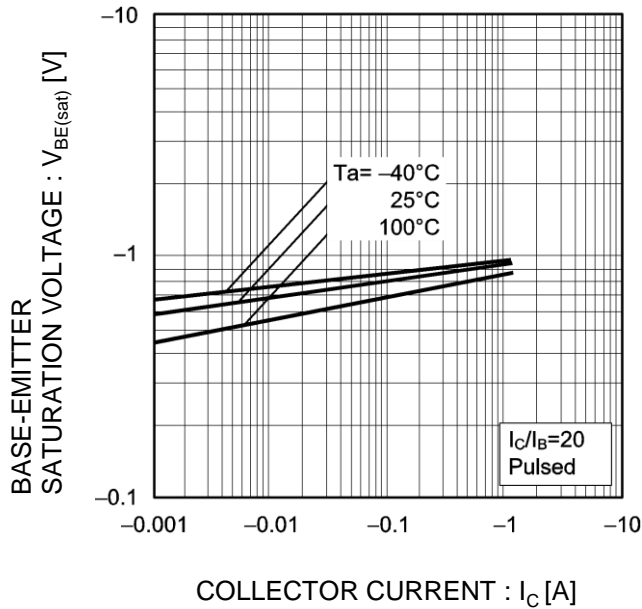
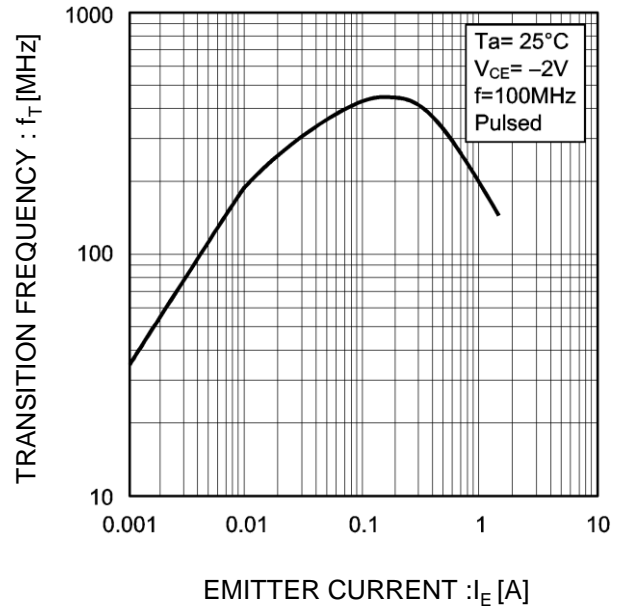


Fig.8 Gain Bandwidth Product vs. Emitter Current



●Electrical characteristic curves(Ta = 25°C)

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

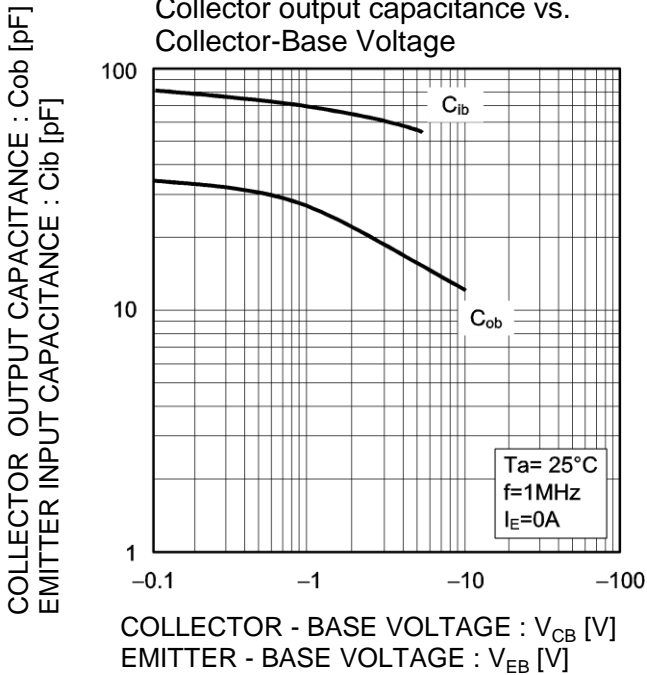


Fig.10 Safe Operating Area

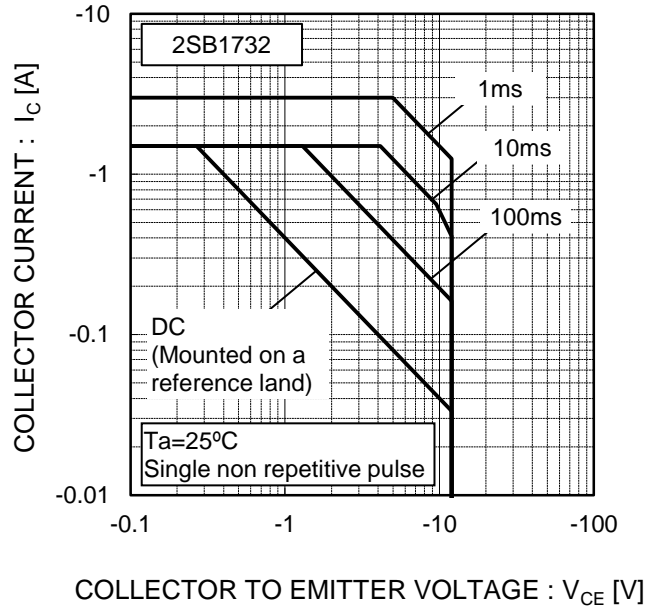
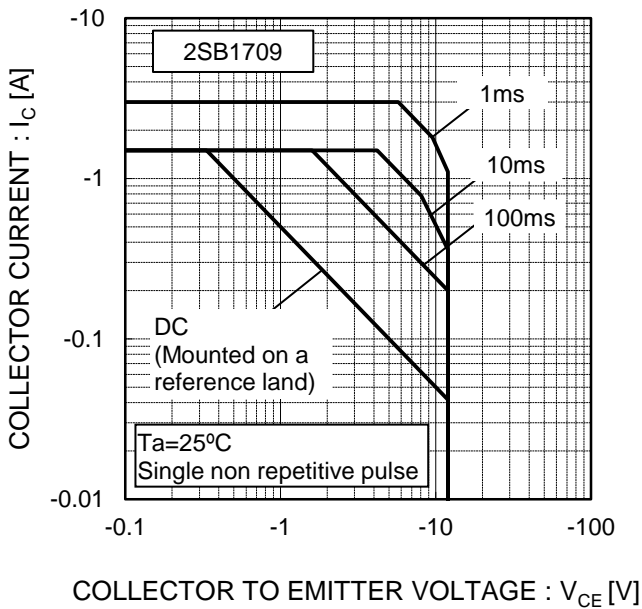
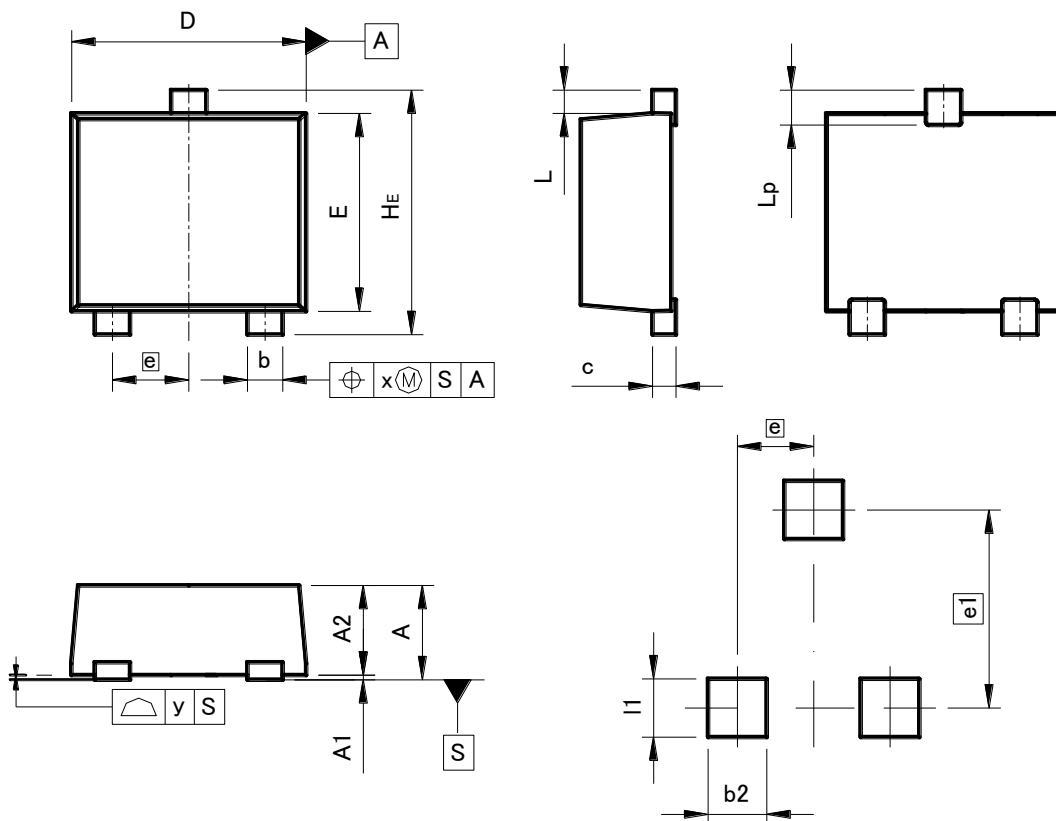


Fig.11 Safe Operating Area



●Dimensions (Unit : mm)

TUMT3



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

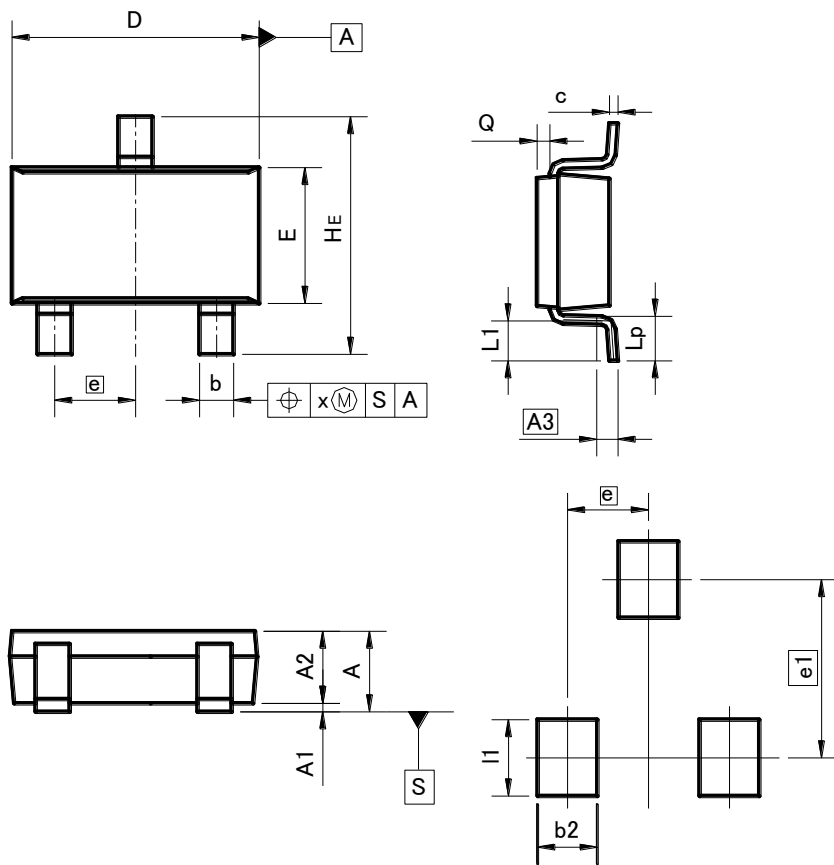
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	-	0.85	-	0.033
A1	0.00	0.10	0.000	0.004
A2	0.72	0.82	0.028	0.032
b	0.25	0.40	0.010	0.016
c	0.12	0.22	0.005	0.009
D	1.90	2.10	0.075	0.083
E	1.60	1.80	0.063	0.071
e	0.65		0.026	
HE	2.00	2.20	0.079	0.087
L	0.20		0.008	
Lp	-	0.40	-	0.016
x	-	0.10	-	0.004
y	-	0.10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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.50	-	0.020
e1	1.70		0.067	
I1	-	0.50	-	0.020

Dimension in mm / inches

●Dimensions (Unit : mm)

TSMT3



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

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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