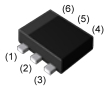
VT6T1 / EMT51

General purpose transister (isolated dual transistors) Datasheet

Parameter	Tr1 and Tr2
V_{CEO}	-20V
I_C	-200mA

●Outline

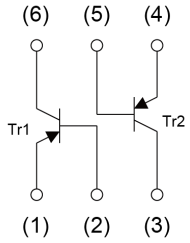
VMT6	EMT6
	
VT6T1	EMT51 (SC-107C)

●Features

1) General Purpose.
2) Two 2SAR522 chips in one package.
3) Transister elements are independent, eliminating interface.
4) Mounting cost and area can be cut in half.
5) Lead Free/RoHS Compliant.

●Inner circuit

(1) Tr1 Emitter
(2) Tr1 Base
(3) Tr2 Collector
(4) Tr2 Emitter
(5) Tr2 Base
(6) Tr1 Collector



●Application

Switching, LED driver

●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
VT6T1	VMT6	1212	T2R	180	8	8000	T1
EMT51	EMT6	1616	T2R	180	8	8000	T51

●Absolute maximum ratings (T_a = 25°C)

<For Tr1 and Tr2 in common>

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	-20	V
Collector-emitter voltage		V_{CEO}	-20	V
Emitter-base voltage		V_{EBO}	-5	V
Collector current		I_C	-200	mA
		I_{CP} *1	-400	mA
Power dissipation	VT6T1	P_D *2 *3	150	mW
	EMT51		150	
Junction temperature		T_j	150	℃
Range of storage temperature		T_{stg}	-55 to +150	℃

●Electrical characteristics (T_a = 25°C)

<For Tr1 and Tr2 in common>

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	BV_{CBO}	I_C = -50μA	-20	-	-	V
Collector-emitter breakdown voltage	BV_{CEO}	I_C = -1mA	-20	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = -50μA	-5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = -20V	-	-	-0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = -5V	-	-	-0.1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = -100mA, I_B = -10mA	-	-0.12	-0.30	V
DC current gain	h_{FE}	V_{CE} = -6V, I_C = -1mA	120	-	560	-
Transition frequency	f_T	V_{CE} = -10V, I_E = 10mA, f = 100MHz	-	350	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A, f = 1MHz	-	1.6	-	pF

*1 Pw=1ms Single Pulse

*2 Each terminal mounted on a reference footprint

*3 120mW per element must not be exceeded.

●Electrical characteristic curves(Ta=25℃)

<For Tr1 and Tr2 in common>

Fig.1 Grounded Emitter Propagation Characteristics

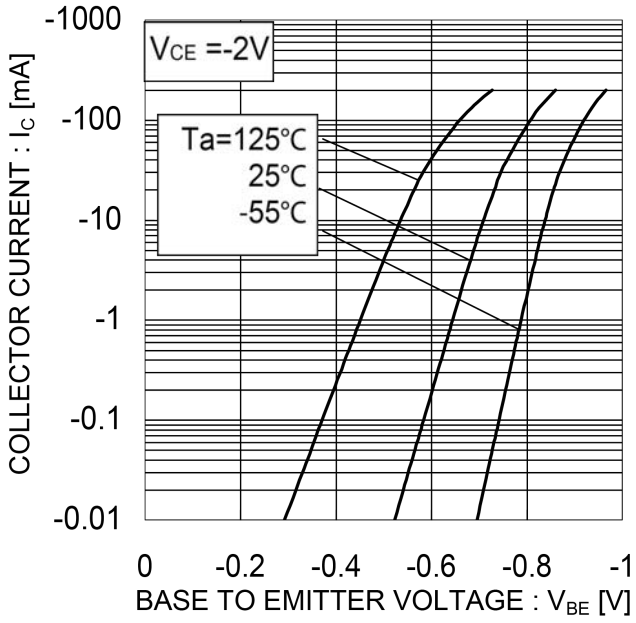


Fig.2 Typical Output Characteristics

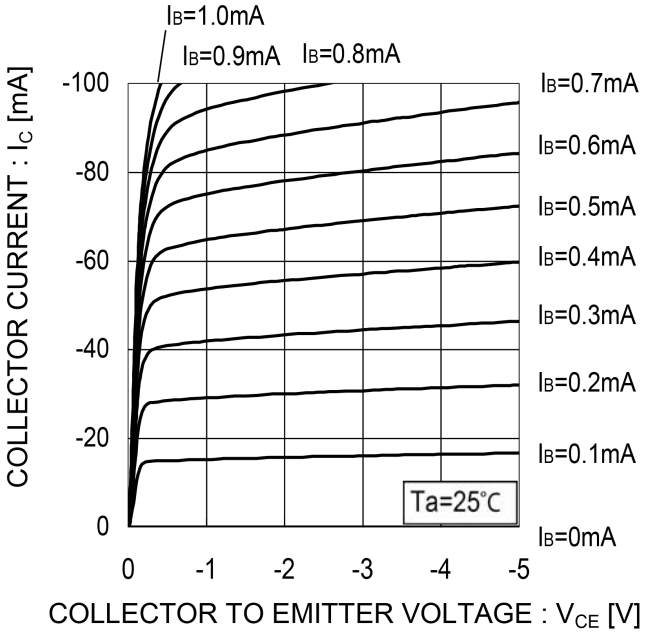


Fig.3 DC Current Gain vs. Collector Current(I)

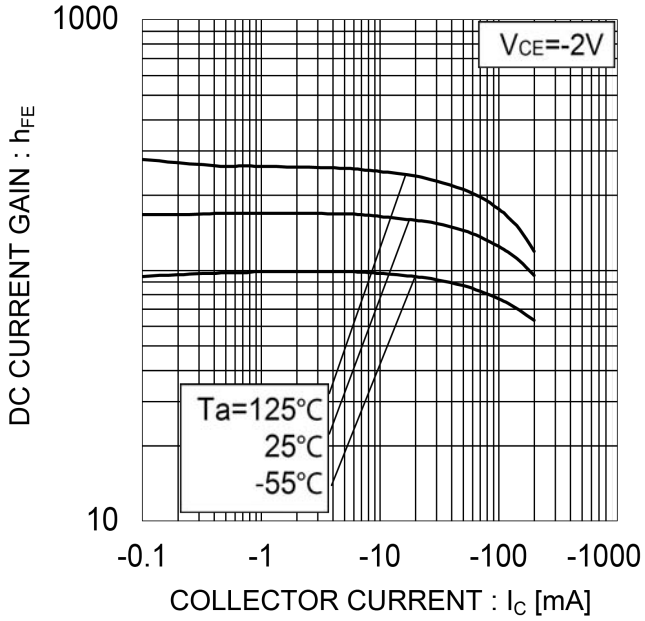
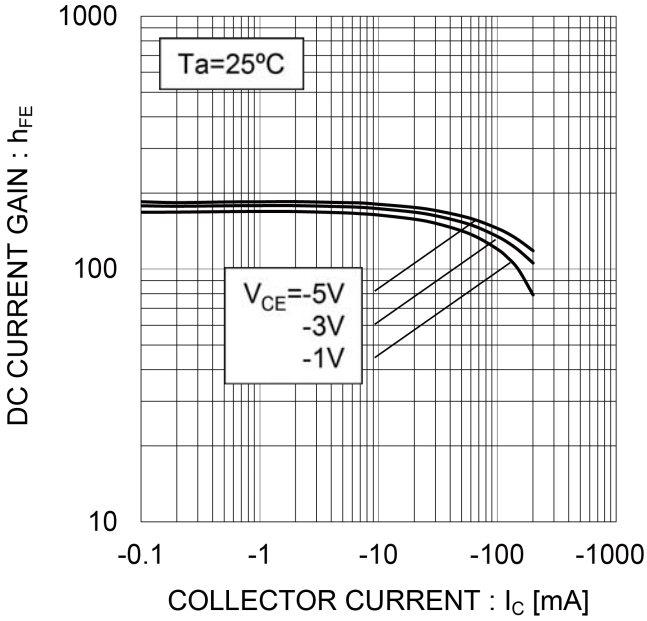


Fig.4 DC Current Gain vs. Collector Current(II)



●Electrical characteristic curves (T_a=25°C)

<For Tr1 and Tr2 in common>

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

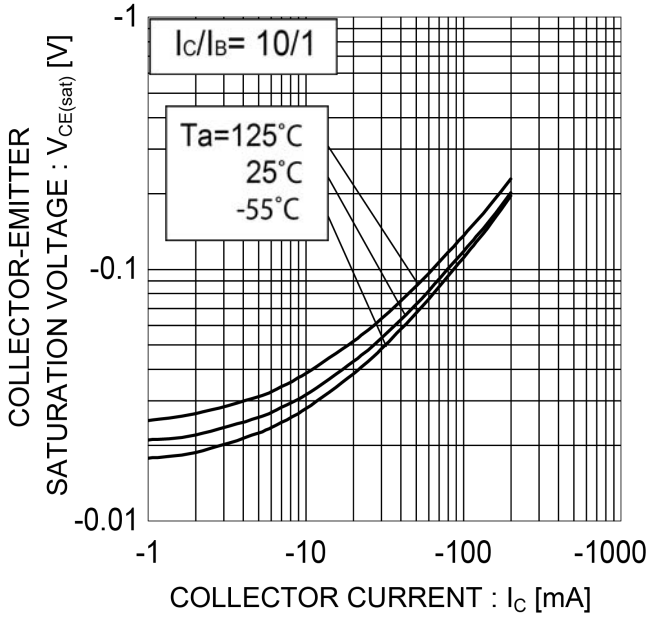


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current(II)

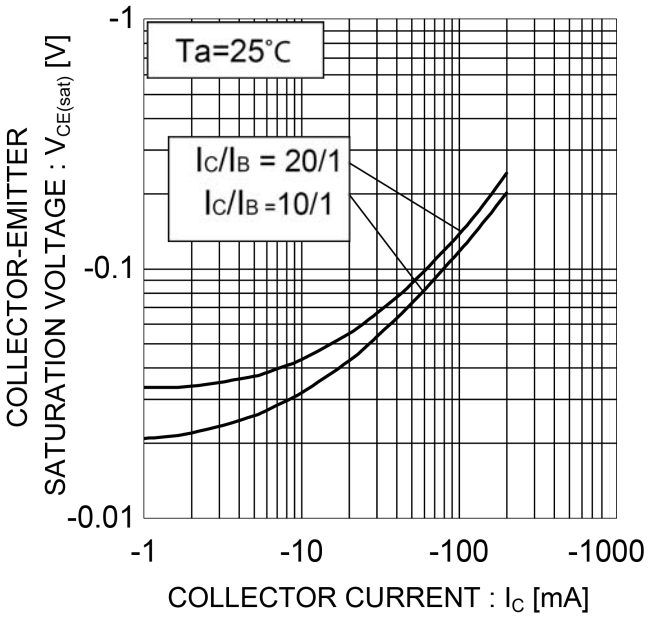


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

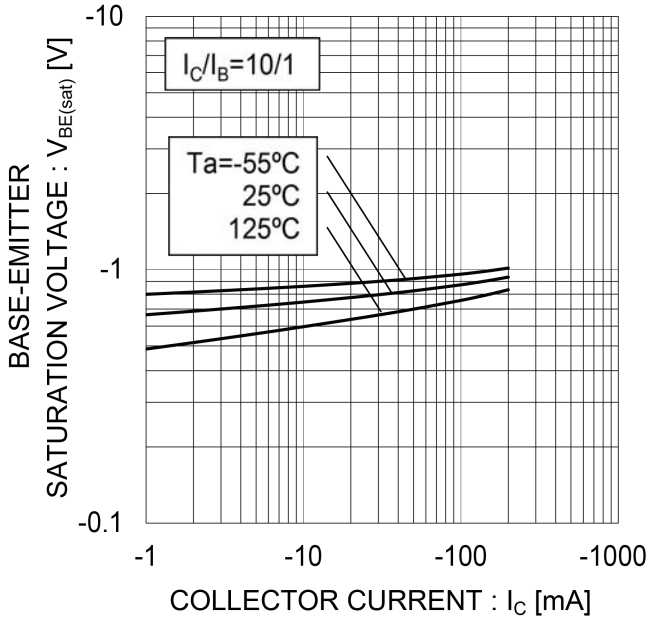
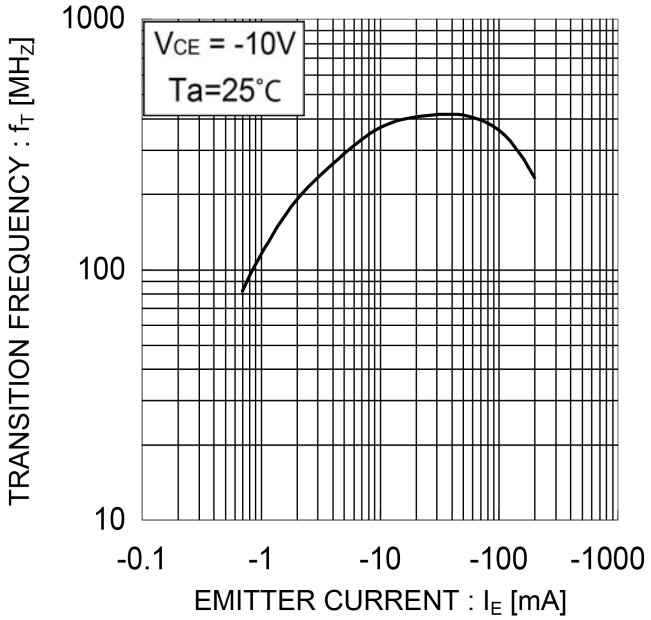


Fig.8 Gain Bandwidth Product vs. Emitter Current



● **Electrical characteristic curves** (T_a =25°C)

<For Tr1 and Tr2 in common>

Fig.9 Emitter input capacitance Collector output capacitance

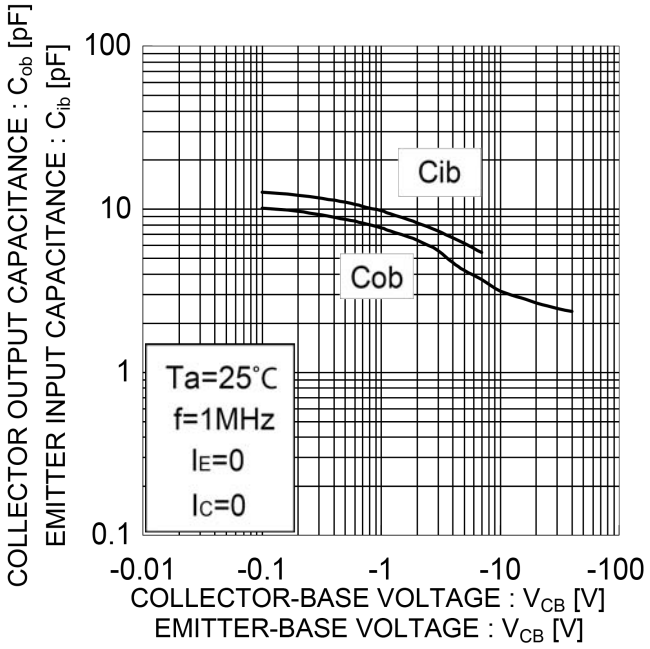
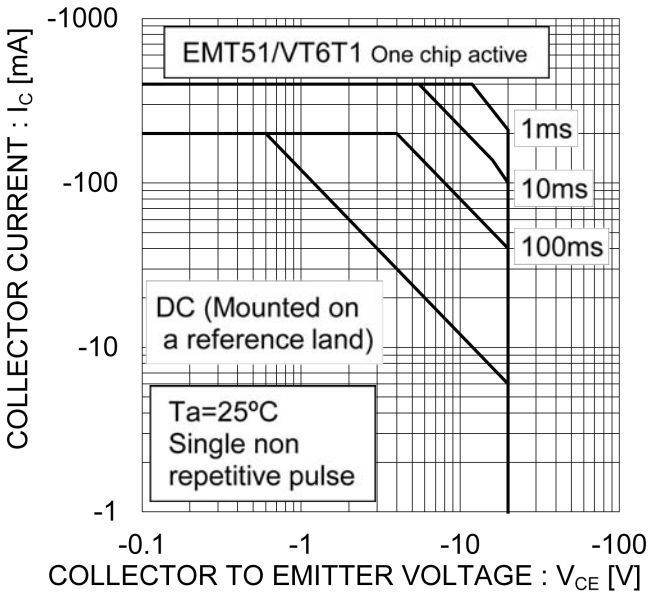
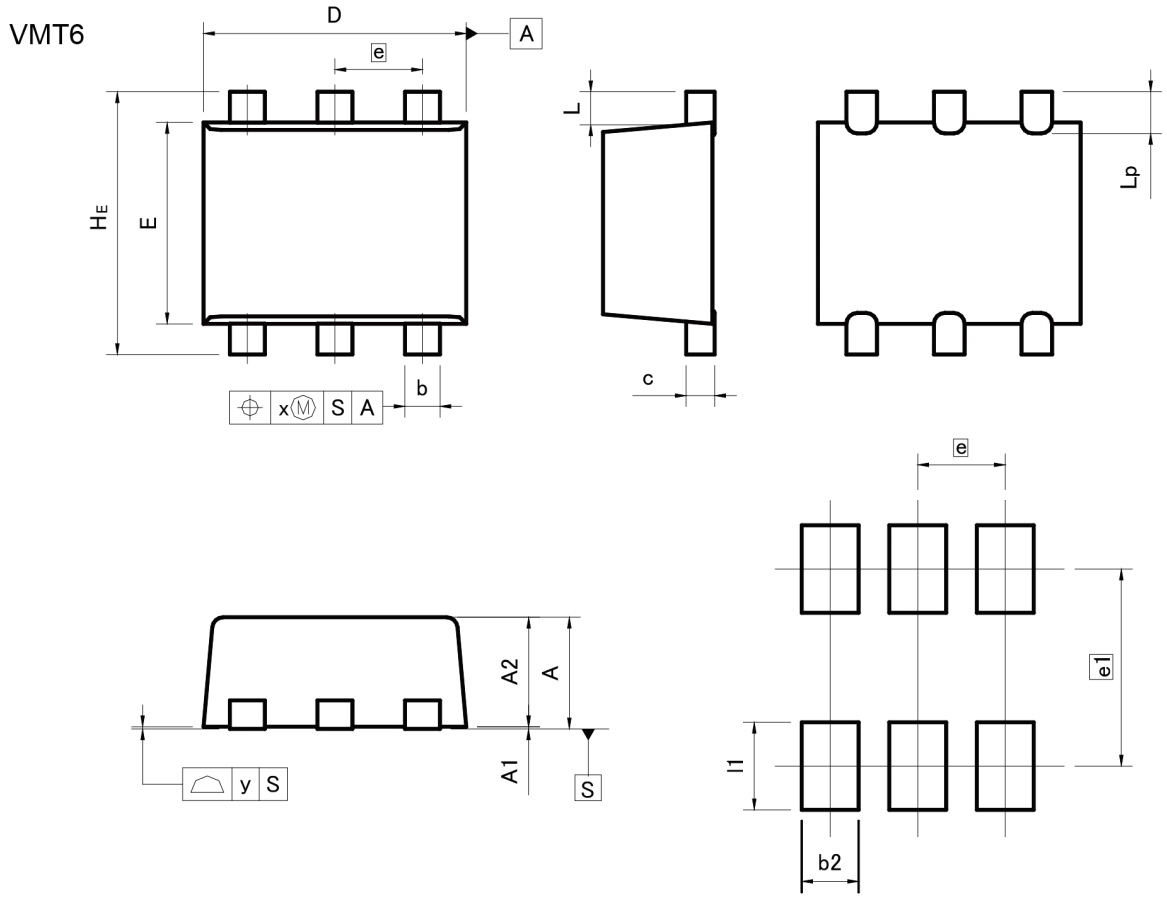


Fig.10 Safe Operating Area



●Dimensions

VMT6



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

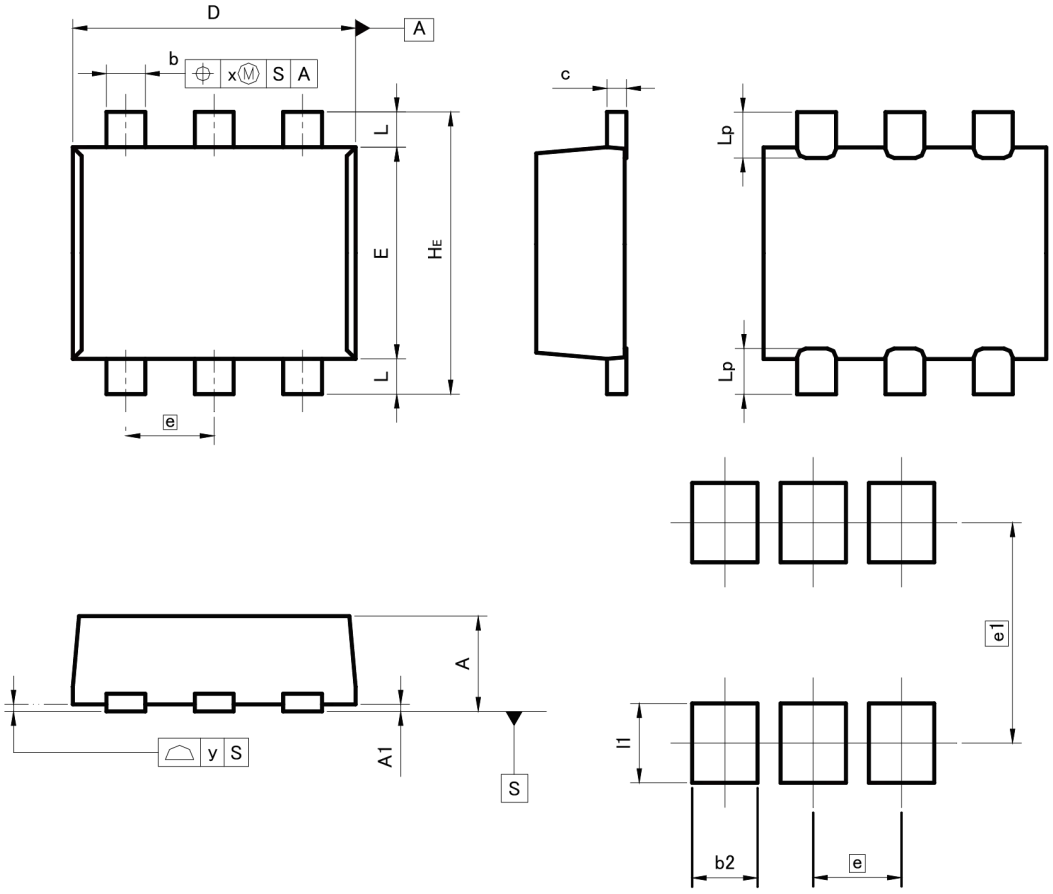
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.42	0.62	0.017	0.024
A1	0.00	0.05	0.000	0.002
A2	0.40	0.60	0.016	0.024
b	0.11	0.21	0.004	0.008
c	0.08	0.18	0.003	0.007
D	1.10	1.30	0.043	0.051
E	0.82	1.02	0.032	0.04
e	0.40		0.016	
HE	1.10	1.30	0.043	0.051
L	0.14		0.006	
Lp	0.10	0.30	0.004	0.012
x	−	0.05	−	0.002
y	−	0.10	−	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	−	0.26	−	0.010
e1	0.90		0.035	
l1	−	0.40	−	0.016

Dimension in mm/inches

●Dimensions

EMT6



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

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
c	0.08	0.18	0.003	0.007
D	1.50	1.70	0.059	0.067
E	1.10	1.30	0.043	0.051
e	0.50		0.020	
HE	1.50	1.70	0.059	0.067
L	0.10	0.30	0.004	0.012
Lp	–	0.35	–	0.014
x	–	0.10	–	0.004
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	–	0.37	–	0.015
e1	1.25		0.049	
l1	–	0.45	–	0.018

Dimension in mm/inches

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