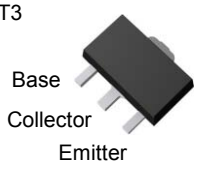
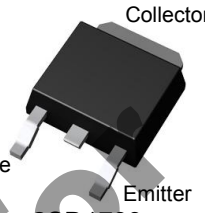
2SD1898 / 2SD1733

NPN 1.0A 80V Middle Power Transistor

Datasheet

Parameter	Value
V_{CEO}	80V
I_C	1.0A

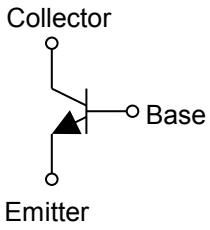
●Outline

MPT3	CPT3
	
2SD1898 (SC-62) <SOT-89>	2SD1733 (SC-63) <SOT-428>

●Features

1) Suitable for Middle Power Driver
2) Complementary PNP Types : 2SB1260 / 2SB1181
3) Low $V_{CE(sat)}$
   $V_{CE(sat)}$= 0.4V Max. (I_C/I_B=500mA/20mA)
4) Lead Free/RoHS Compliant.

●Inner circuit



●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
2SD1898	MPT3	4540	T100	180	12	1,000	DF
2SD1733	CPT3	6595	TL	330	16	2,500	D1733

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Values	Unit
Collector-base voltage		V_{CBO}	120	V
Collector-emitter voltage		V_{CEO}	80	V
Emitter-base voltage		V_{EBO}	5	V
Collector current	DC	I_C	1.0	A
	Pulsed	I_{CP} *1	2.0	A
Power dissipation	2SD1898	P_D	0.5 *2	W
			2.0 *3	W
	2SD1733		1 *4	W
			10 *5	W
Junction temperature		T_j	150	°C
Range of storage temperature		T_{stg}	−55 to +150	°C

*1 Pw=20ms , duty=1/2
*2 Each terminal mounted on a reference land
*3 Mounted on a ceramic board (40×40×0.7 mm)
*4 Mounted on a substrate
*5 T_C=25°C

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Collector-emitter breakdown voltage	BV_{CEO}	I_C = 1mA	80	-	-	V
Collector-base breakdown voltage	BV_{CBO}	I_C = 50μA	120	-	-	V
Emitter-base breakdown voltage	BV_{EBO}	I_E = 50μA	5	-	-	V
Collector cut-off current	I_{CBO}	V_{CB} = 100V	-	-	1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 4V	-	-	1	μA
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 500mA, I_B = 20mA	-	0.15	0.40	V
DC current gain	h_{FE} *6	V_{CE} = 3V, I_C = 0.5A	120	-	390	-
Transition frequency	f_T	V_{CE} = 10V, I_E = −50mA f=100MHz	-	100	-	MHz
Output capacitance	C_{ob}	V_{CB} = 10V, I_E = 0A f = 1MHz	-	20	-	pF

●h_{FE} rank categories

Rank	Q	R
h_{FE}	120 to 270	180 to 390

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

Fig.1 Ground Emitter Propagation Characteristics

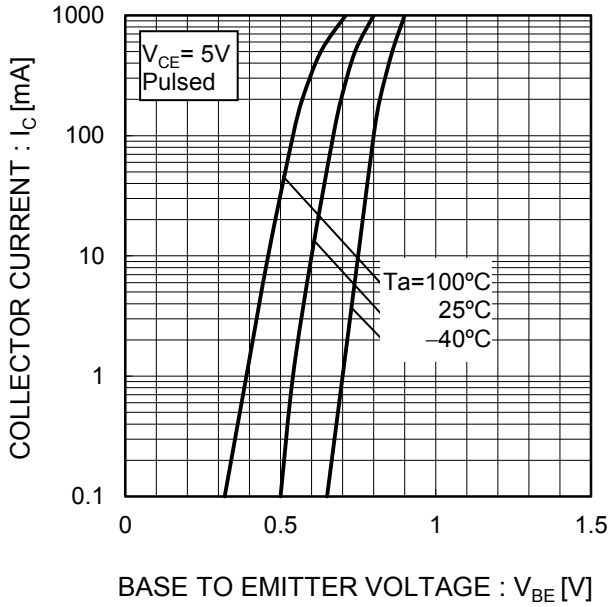


Fig.2 Typical Output Characteristics

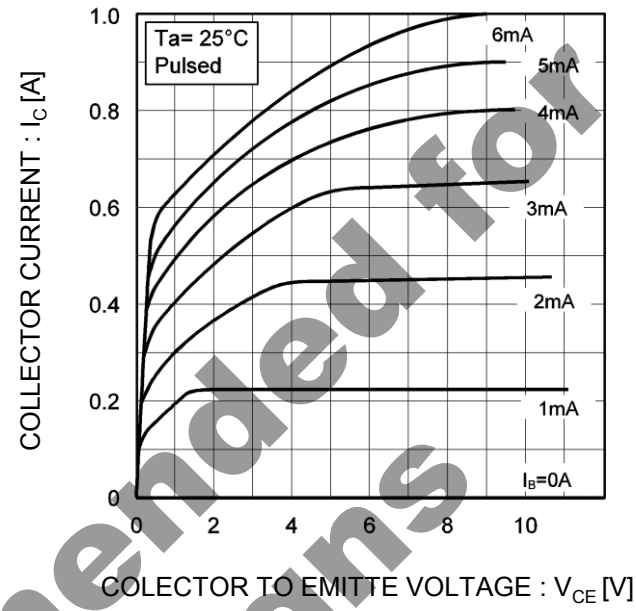


Fig.3 DC Current Gain vs. Collector Current(I)

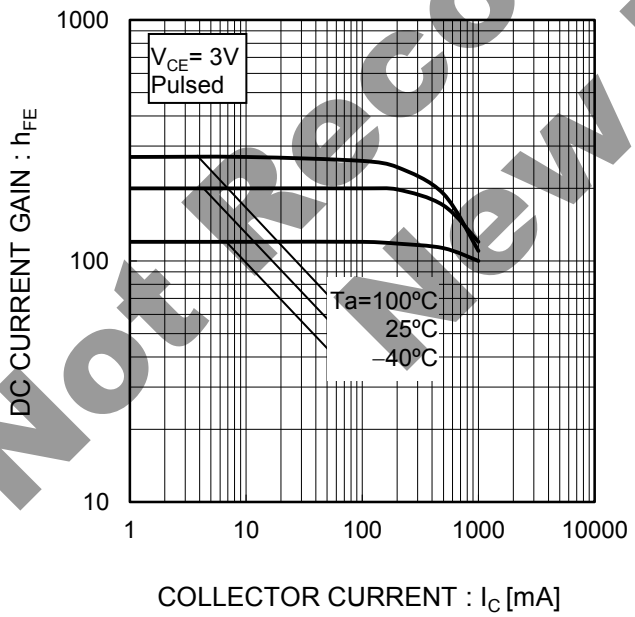
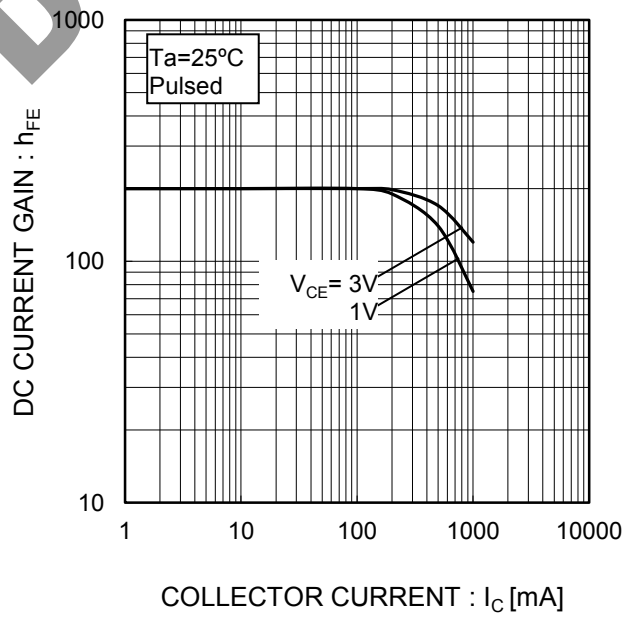


Fig.4 DC Current Gain vs. Collector Current(II)



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

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

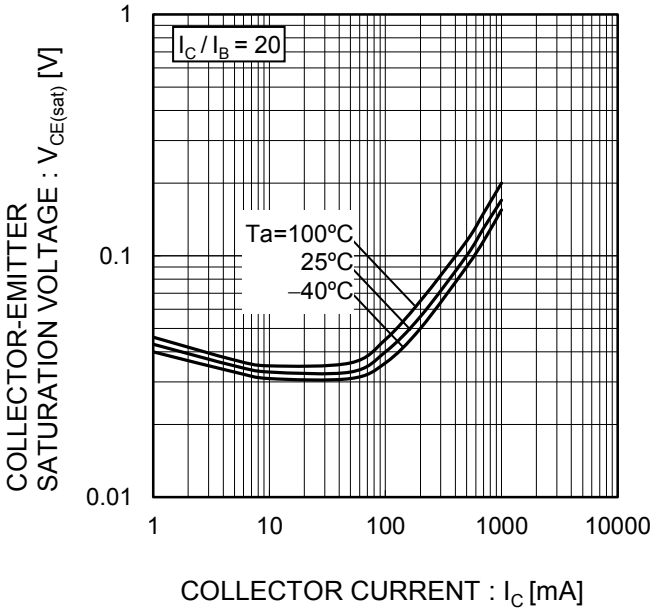


Fig.6 Collector-Emitter Saturation Voltage vs. Collector Current (II)

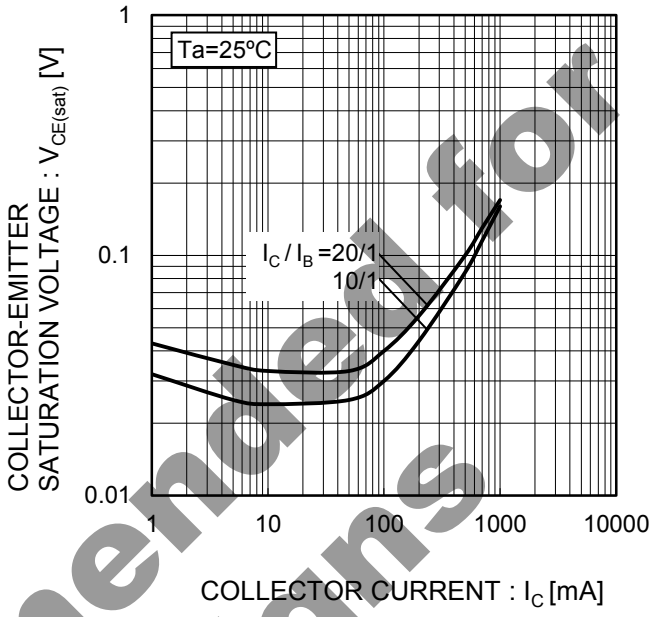


Fig.7 Base-Emitter Saturation Voltage vs. Collector Current

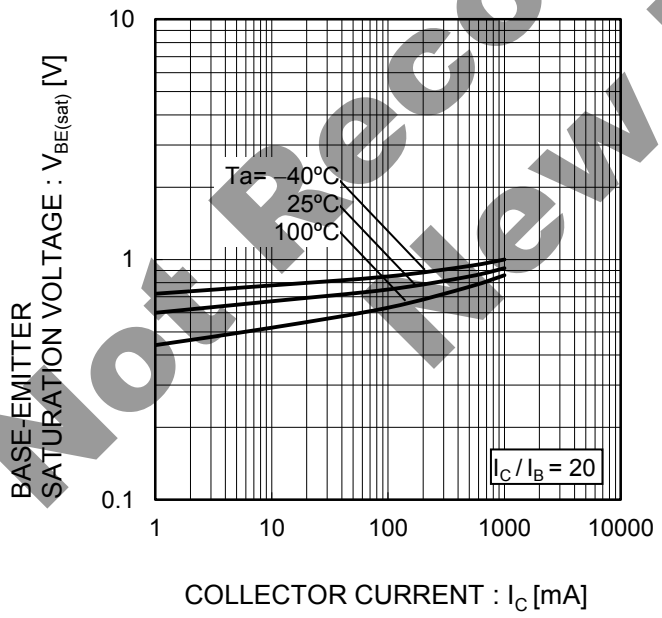
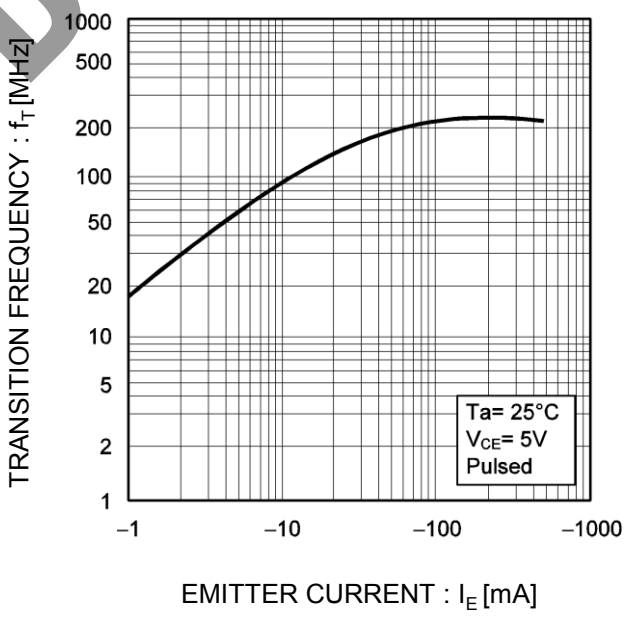


Fig.8 Gain Bandwidth Product vs. Emitter Current



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

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

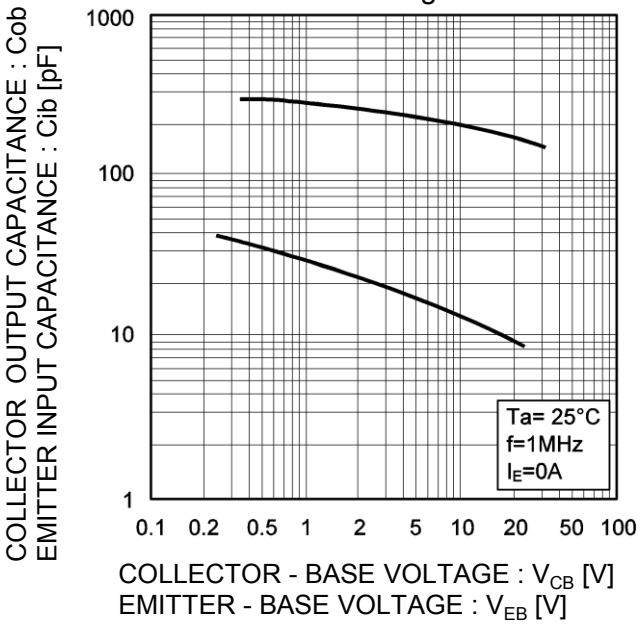


Fig.10 Safe Operating Area

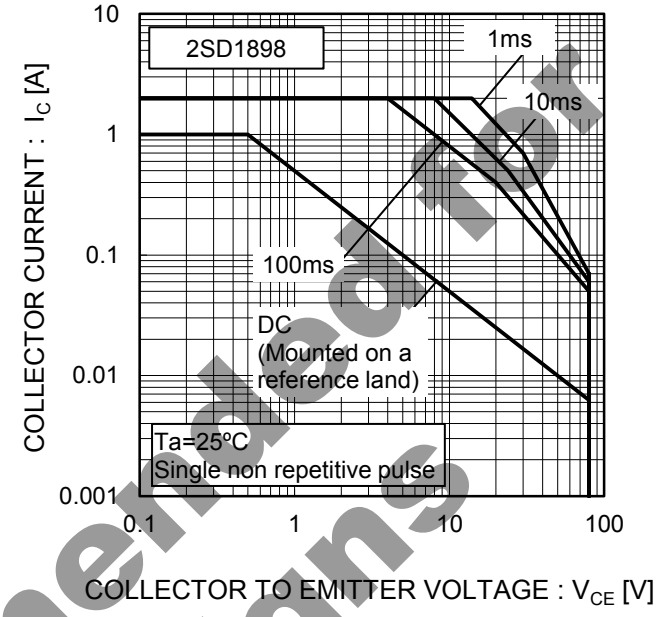
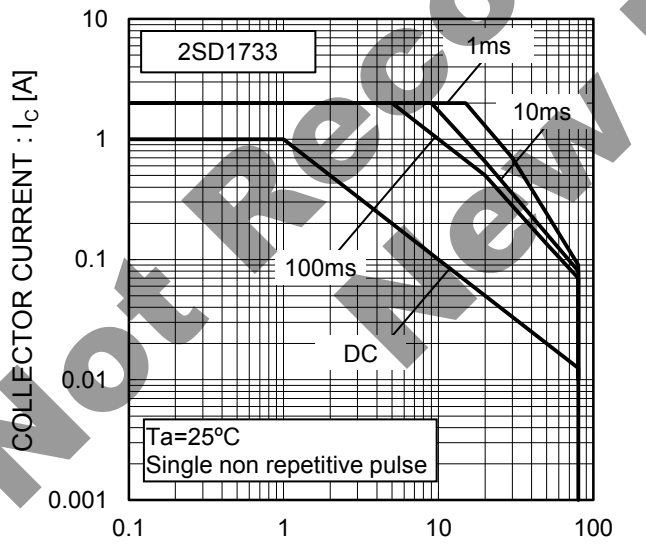
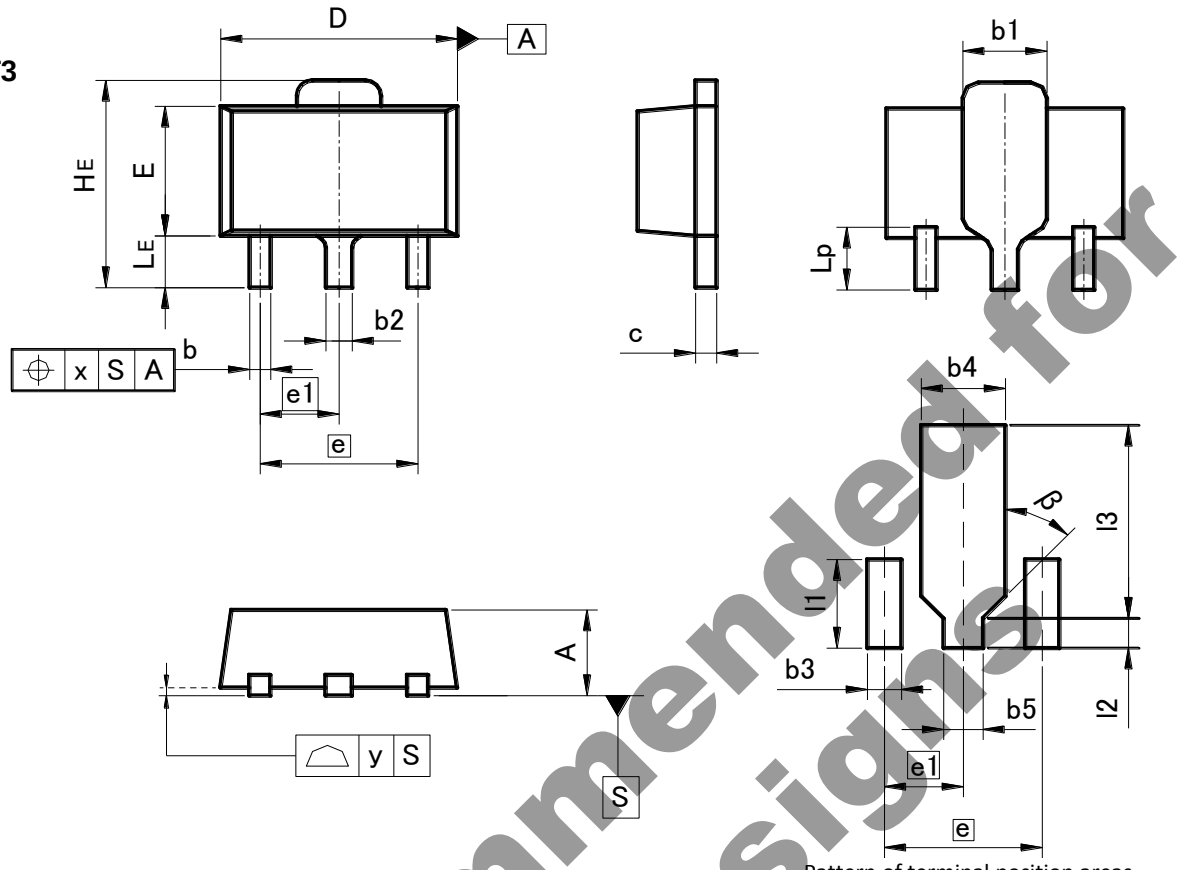


Fig.11 Safe Operating Area



●**Dimensions** (Unit : mm)

MPT3



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

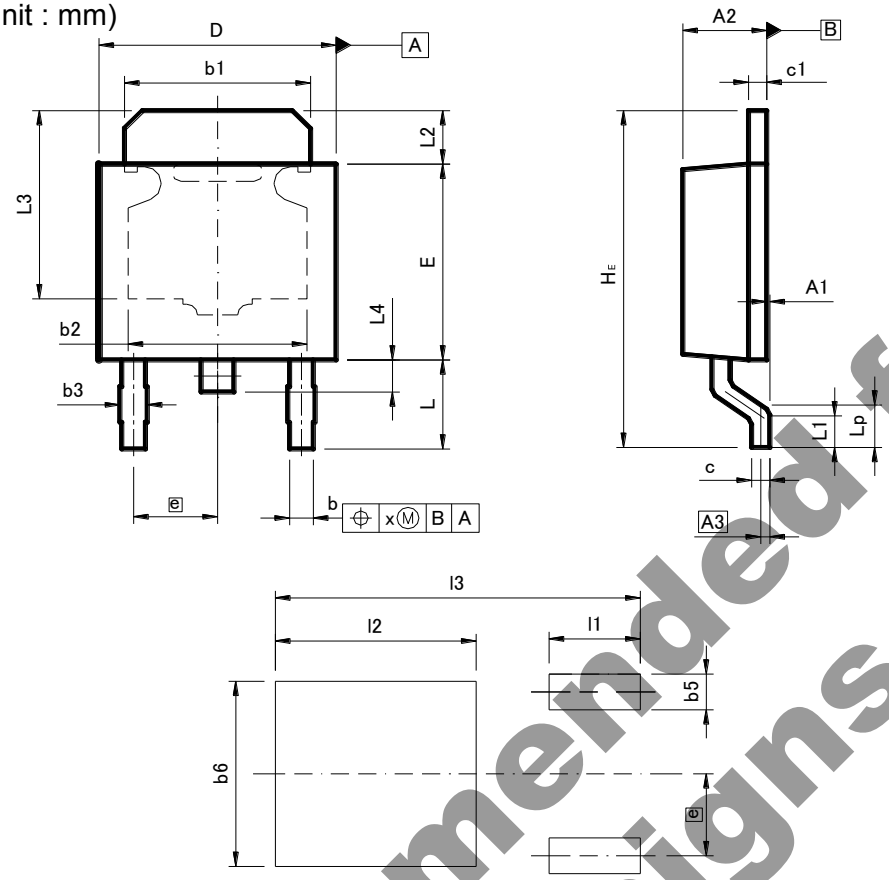
DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.40	1.50	0.055	0.059
b	0.30	0.50	0.012	0.020
b1	1.50	1.70	0.059	0.067
b2	0.40	0.60	0.016	0.024
c	0.35	0.50	0.014	0.020
D	4.40	4.70	0.173	0.185
E	2.40	2.70	0.094	0.106
e	3.00		0.118	
e1	1.50		0.059	
HE	3.70	4.30	0.146	0.169
LE	0.80	1.20	0.031	0.047
Lp	1.01	1.41	0.040	0.056
x	–	0.15	–	0.006
y	–	0.10	–	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b3	–	0.65	–	0.026
b4	–	1.70	–	0.067
b5	–	0.75	–	0.030
l1	–	1.71	–	0.067
l2	–	0.58	–	0.023
l3	–	3.72	–	0.146
β	45°		45°	

Dimension in mm / inches

●**Dimensions** (Unit : mm)

CPT3



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

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A1	0.00	0.15	0.000	0.006
A2	2.20	2.50	0.087	0.098
A3	0.25		0.010	
b	0.55	0.75	0.022	0.030
b1	5.00	5.30	0.197	0.209
b2	5.00		0.197	
b3	0.75		0.030	
c	0.40	0.60	0.016	0.024
c1	0.40	0.60	0.016	0.024
D	6.30	6.70	0.248	0.264
E	5.40	5.80	0.213	0.228
e	2.30		0.091	
HE	9.00	10.00	0.354	0.394
L	2.20	2.80	0.087	0.110
L1	0.80	1.40	0.031	0.055
L2	1.20	1.80	0.047	0.071
L3	5.30		0.209	
L4	0.90		0.035	
Lp	1.00	1.60	0.039	0.063
x	–	0.25	–	0.010

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b5	–	1.00	–	0.04
b6	–	5.20	–	0.205
l1	–	2.50	–	0.098
l2	–	5.50	–	0.217
l3	–	10.00	–	0.394

Dimension in mm / inches

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