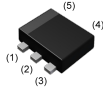
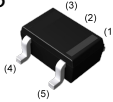
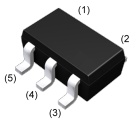


| Parameter     | DTr1 and DTr2 |
|---------------|---------------|
| $V_{CC}$      | 50V           |
| $I_{C(MAX.)}$ | 100mA         |
| $R_1$         | 22k $\Omega$  |
| $R_2$         | 22k $\Omega$  |

## ●Features

- 1)Two DTC124E chips in a EMT or UMT or SMT package.
- 2)Mounting cost and area can be cut in half.

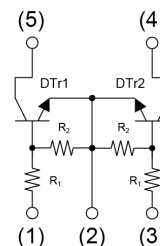
## ●Outline

|                                                                                                                          |                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <p>SOT-553</p>  <p>EMG1<br/>(EMT5)</p> | <p>SOT-353</p>  <p>UMG1N<br/>(UMT5)</p> |
| <p>SOT-25</p>  <p>FMG1A<br/>(SMT5)</p> |                                                                                                                            |

## ●Inner circuit

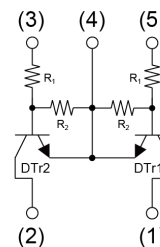
### EMG1 / UMG1N

- (1) DTr1 IN(Base)
- (2) DTr1 / DTr2 GND(Emitter)
- (3) DTr2 IN(Base)
- (4) DTr2 OUT(Collector)
- (5) DTr1 OUT(Collector)



### FMG1A

- (1) DTr1 OUT(Collector)
- (2) DTr2 OUT(Collector)
- (3) DTr2 IN(Base)
- (4) DTr1 / DTr2 GND(Emitter)
- (5) DTr1 IN(Base)



## ●Application

INVERTER, INTERFACE, DRIVER

## ●Packaging specifications

| Part No. | Package        | Package size | Taping code | Reel size (mm) | Tape width (mm) | Basic ordering unit.(pcs) | Marking |
|----------|----------------|--------------|-------------|----------------|-----------------|---------------------------|---------|
| EMG1     | SOT-553 (EMT5) | 1616         | T2R         | 180            | 8               | 8000                      | G1      |
| UMG1N    | SOT-353 (UMT5) | 2021         | TR          | 180            | 8               | 3000                      | G1      |
| FMG1A    | SOT-25 (SMT5)  | 2928         | T148        | 180            | 8               | 3000                      | G1      |

● **Absolute maximum ratings** ( $T_a = 25^\circ\text{C}$ )

<For DTr1 and DTr2 in common>

| Parameter                    |       | Symbol            | Values      | Unit             |
|------------------------------|-------|-------------------|-------------|------------------|
| Supply voltage               |       | $V_{CC}$          | 50          | V                |
| Input voltage                |       | $V_{IN}$          | -10 to 40   | V                |
| Output current               |       | $I_O$             | 30          | mA               |
| Collector current            |       | $I_{C(MAX)}^{*1}$ | 100         | mA               |
| Power dissipation            | EMG1  | $P_D^{*2*3}$      | 150         | mW               |
|                              | UMG1N | $P_D^{*2*3}$      | 150         |                  |
|                              | FMG1A | $P_D^{*2*4}$      | 300         |                  |
| Junction temperature         |       | $T_j$             | 150         | $^\circ\text{C}$ |
| Range of storage temperature |       | $T_{stg}$         | -55 to +150 | $^\circ\text{C}$ |

● **Electrical characteristics** ( $T_a = 25^\circ\text{C}$ )

<For DTr1 and DTr2 in common>

| Parameter            | Symbol       | Conditions                                  | Values |      |      | Unit       |
|----------------------|--------------|---------------------------------------------|--------|------|------|------------|
|                      |              |                                             | Min.   | Typ. | Max. |            |
| Input voltage        | $V_{I(off)}$ | $V_{CC} = 5V, I_O = 100\mu A$               | -      | -    | 0.5  | V          |
|                      | $V_{I(on)}$  | $V_O = 0.2V, I_O = 5mA$                     | 3.0    | -    | -    |            |
| Output voltage       | $V_{O(on)}$  | $I_O = 10mA, I_I = 0.5mA$                   | -      | 100  | 300  | mV         |
| Input current        | $I_I$        | $V_I = 5V$                                  | -      | -    | 360  | $\mu A$    |
| Output current       | $I_{O(off)}$ | $V_{CC} = 50V, V_I = 0V$                    | -      | -    | 500  | nA         |
| DC current gain      | $G_I$        | $V_O = 5V, I_O = 5mA$                       | 56     | -    | -    | -          |
| Input resistance     | $R_I$        | -                                           | 15.4   | 22   | 28.6 | k $\Omega$ |
| Resistance ratio     | $R_2/R_1$    | -                                           | 0.8    | 1.0  | 1.2  | -          |
| Transition frequency | $f_T^{*1}$   | $V_{CE} = 10V, I_E = -5mA,$<br>$f = 100MHz$ | -      | 250  | -    | MHz        |

\*1 Characteristics of built-in transistor

\*2 Each terminal mounted on a reference land.

\*3 120mW per element must not be exceeded.

\*4 200mW per element must not be exceeded.

● **Electrical characteristic curves** ( $T_a = 25^\circ\text{C}$ )

<For DTr1 and DTr2 in common>

Fig.1 Input Voltage vs. Output Current  
(ON Characteristics)

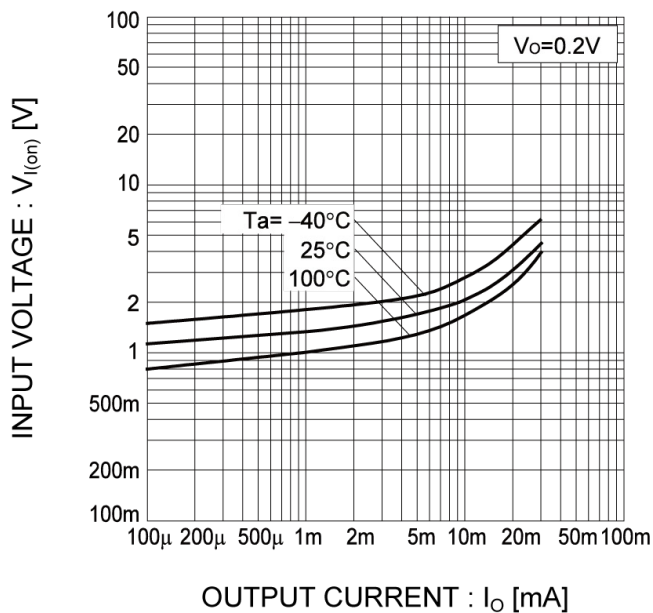


Fig.2 Output Current vs. Input Voltage  
(OFF Characteristics)

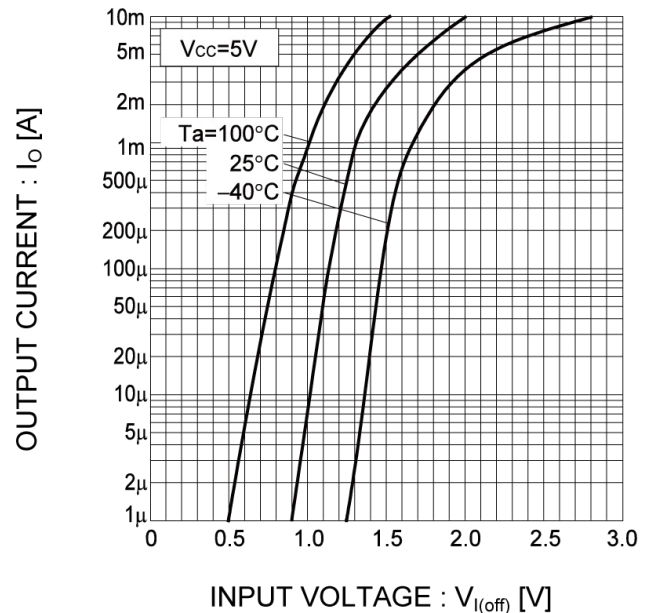


Fig.3 Output Current vs. Output Voltage

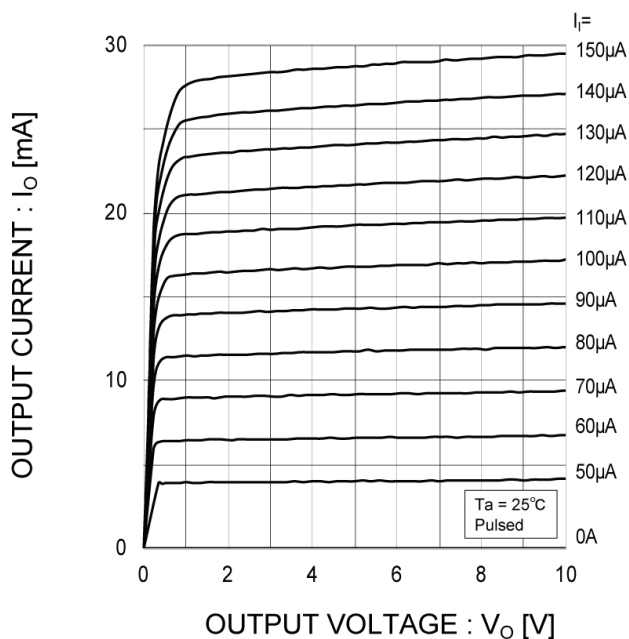
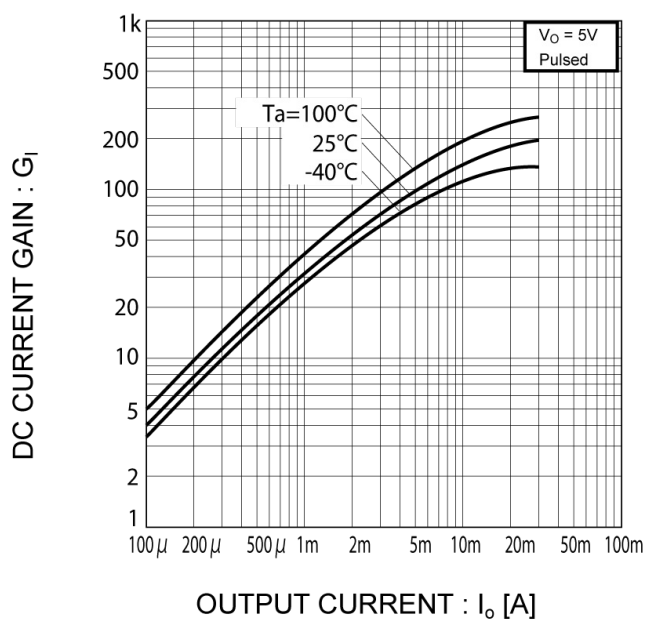


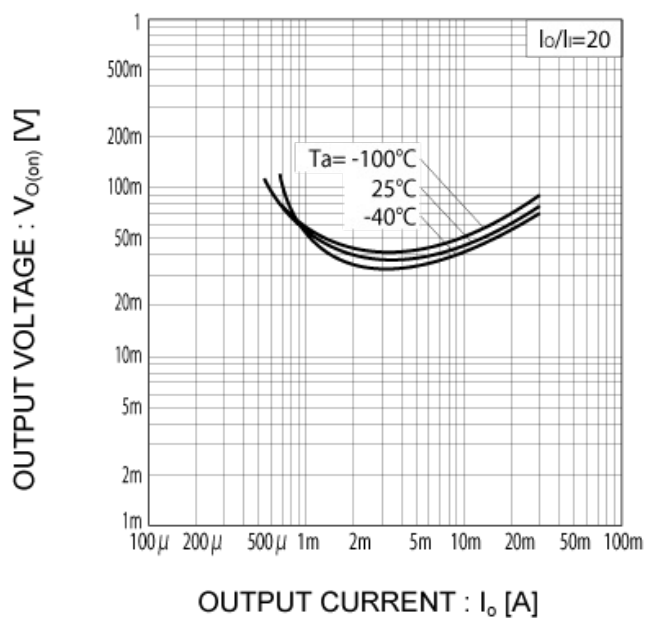
Fig.4 DC Current Gain vs. Output Current



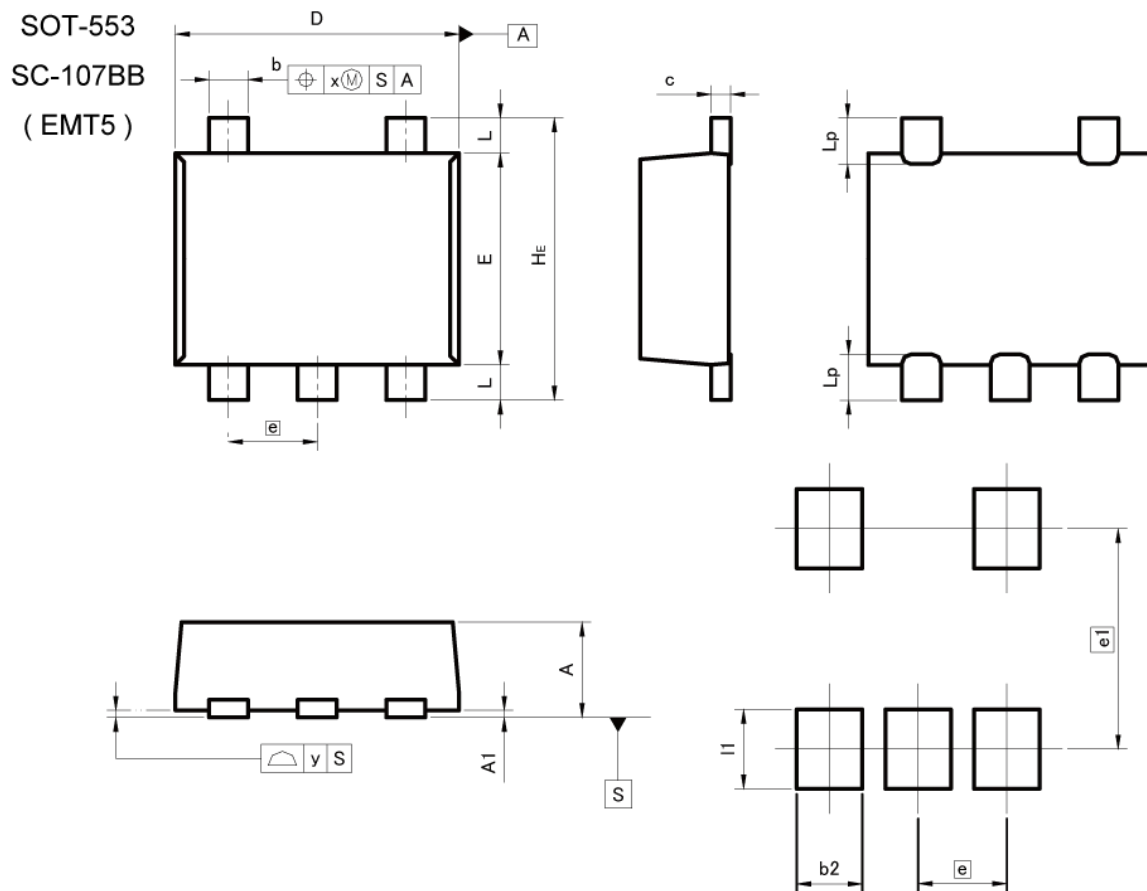
**●Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )**

&lt;For DTr1 and DTr2 in common&gt;

Fig.5 Output Voltage vs. Output Current



## ●Dimensions



Pattern of terminal position areas  
[Not a 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 |

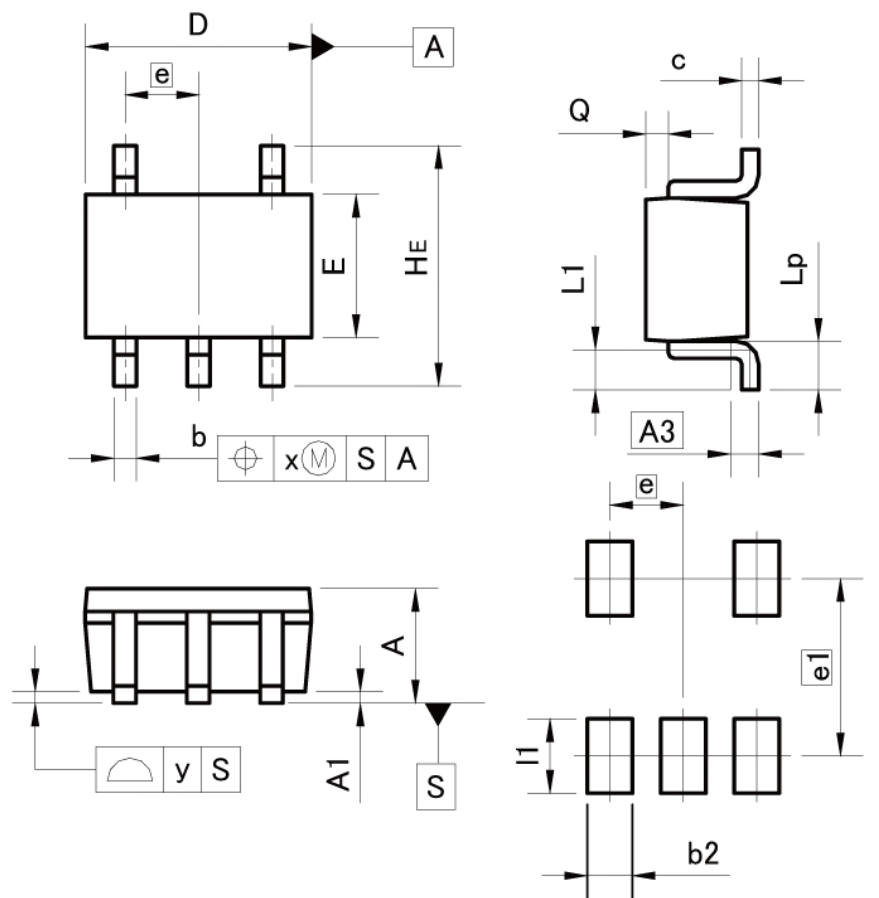
  

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | —          | 0.37 | —      | 0.015 |
| e1  | 1.25       |      | 0.049  |       |
| I1  | —          | 0.45 | —      | 0.018 |

Dimension in mm/inches

## ●Dimensions

SOT-353  
SC-88A  
( UMT5 )



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

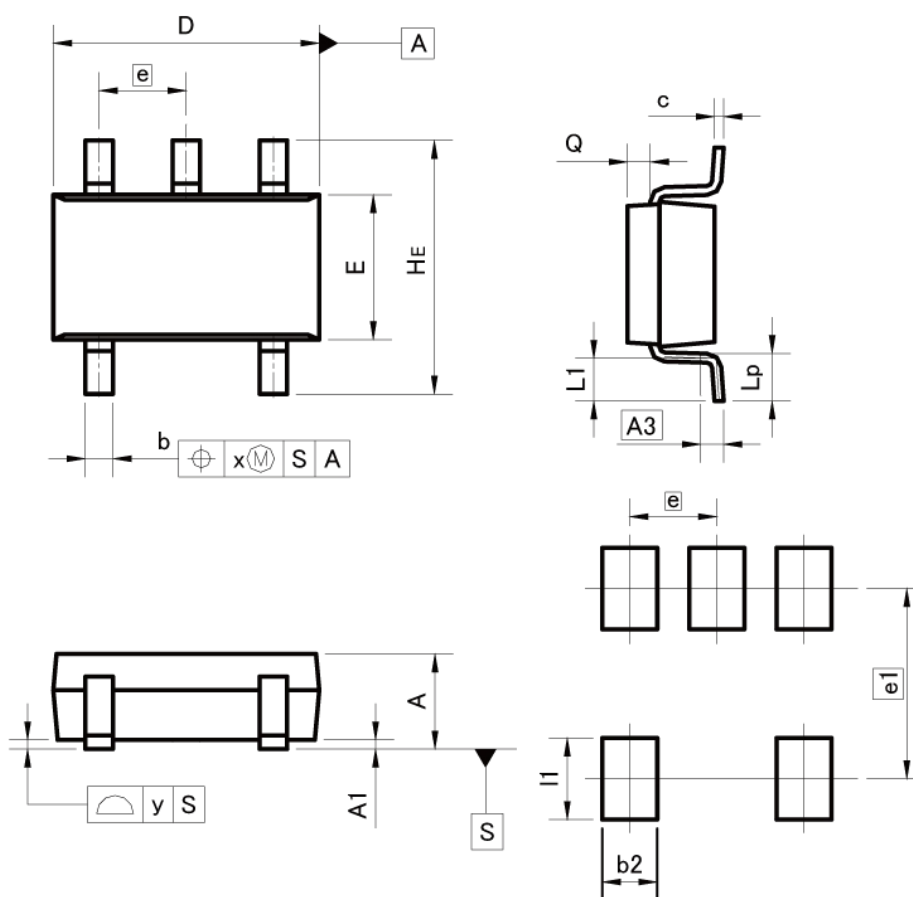
| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| A   | 0.80       | 1.00 | 0.031  | 0.039 |
| A1  | 0.00       | 0.10 | 0.000  | 0.004 |
| A3  | 0.25       |      | 0.010  |       |
| b   | 0.15       | 0.30 | 0.006  | 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 |
| y   | —          | 0.10 | —      | 0.004 |

| DIM | MILIMETERS |      | INCHES |       |
|-----|------------|------|--------|-------|
|     | MIN        | MAX  | MIN    | MAX   |
| b2  | —          | 0.40 | —      | 0.016 |
| e1  | 1.55       |      | 0.061  |       |
| l1  | —          | 0.65 | —      | 0.026 |

Dimension in mm/inches

## ●Dimensions

SOT-25  
SC-74A  
(SMT5)



Pattern of terminal position areas  
[Not a 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   | 0.25       | 0.40 | 0.010  | 0.016 |
| 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   | —          | 0.20 | —      | 0.008 |
| 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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