

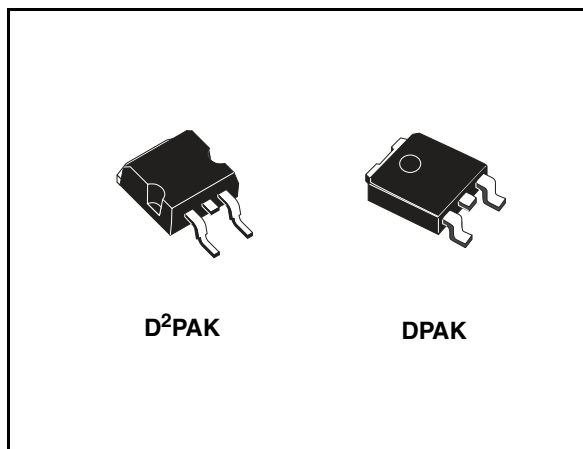
### 5 A low drop positive voltage regulator adjustable and fixed

#### Features

- Typical dropout 1.3 V (at 5 A)
- Three terminal adjustable or fixed output voltage 1.8 V, 3.3 V.
- Guaranteed output current up to 5 A
- Output tolerance  $\pm 1\%$  at 25 °C and  $\pm 2\%$  in full temperature range for the "A" version
- Output tolerance  $\pm 2\%$  at 25 °C and  $\pm 3\%$  in full temperature range internal power and thermal limit
- Wide operating temp. range -40 °C to 125 °C
- Package available: D<sup>2</sup>PAK and DPAK
- Pinout compatibility with standard adjustable VREG

#### Description

The KD1084xx is a low drop voltage regulator able to provide up to 5 A of output current. Dropout is guaranteed at a maximum of 1.5 V at the maximum output current, decreasing at lower loads. The KD1084xx is pin to pin compatible with the older 3-terminal adjustable regulators but has better performances in term of drop and output tolerance.



A 2.85 V output version is suitable for SCSI-2 active termination. Unlike PNP regulators, where a part of the output current is wasted as quiescent current, the KD1084xx quiescent current flows into the load, so increase efficiency. Only a 10  $\mu$ F minimum capacitor is need for stability.

The devices are supplied in D<sup>2</sup>PAK and DPAK. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within  $\pm 1\%$  at 25 °C for "A" version and  $\pm 2\%$  at 25 °C for standard version.

**Table 1. Device summary**

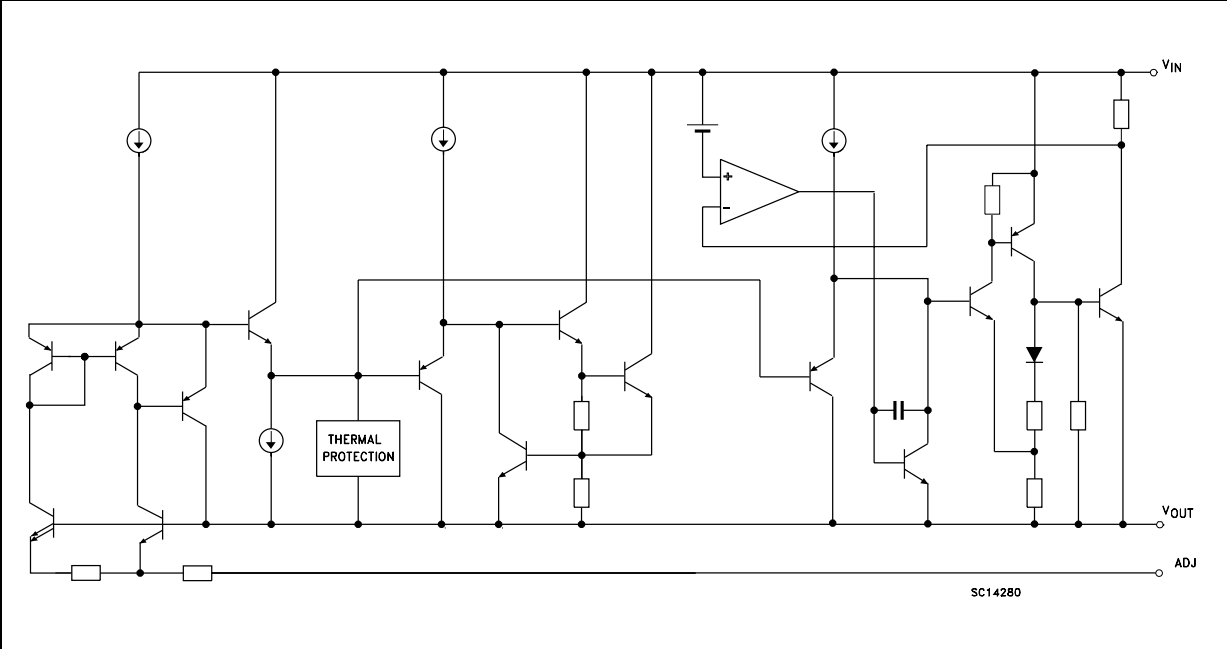
| Part numbers | Order codes        |              |                |           |
|--------------|--------------------|--------------|----------------|-----------|
|              | D <sup>2</sup> PAK | DPAK         | Output voltage | Tolerance |
| KD1084AXX18  | KD1084AD2T18R      |              | 1.8 V          | 1%        |
| KD1084XX33   |                    | KD1084DT33R  | 3.3 V          | 2%        |
| KD1084AXX33  |                    | KD1084ADT33R | 3.3 V          | 1%        |
| KD1084XX     |                    | KD1084DT-R   | ADJ            | 2%        |
| KD1084AXX    |                    | KD1084ADT-R  | ADJ            | 1%        |

# Contents

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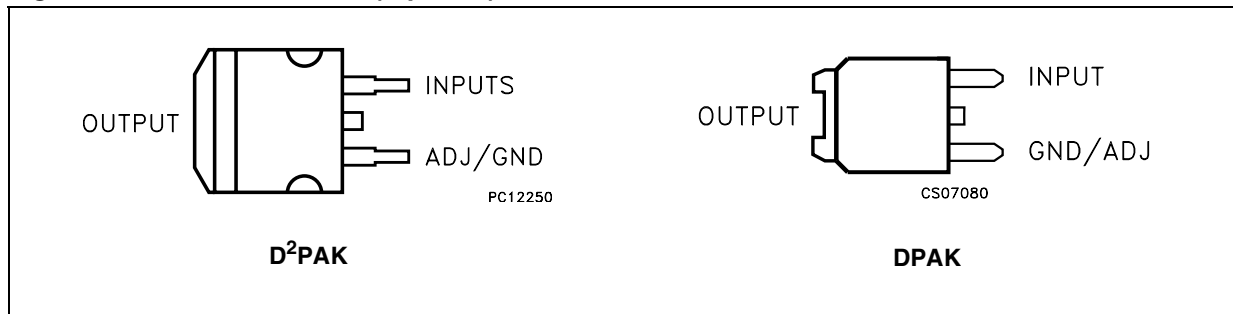
# 1 Diagram

Figure 1. Schematic diagram



## 2 Pin configuration

Figure 2. Pin connections (top view)



### 3 Maximum ratings

**Table 2. Absolute maximum ratings**

| Symbol    | Parameter                            | Value              | Unit |
|-----------|--------------------------------------|--------------------|------|
| $V_I$     | DC input voltage                     | 12                 | V    |
| $I_O$     | Output current                       | Internally limited |      |
| $P_D$     | Power dissipation                    | Internally limited |      |
| $T_{STG}$ | Storage temperature range            | -55 to +150        | °C   |
| $T_{OP}$  | Operating junction temperature range | -40 to +125        | °C   |

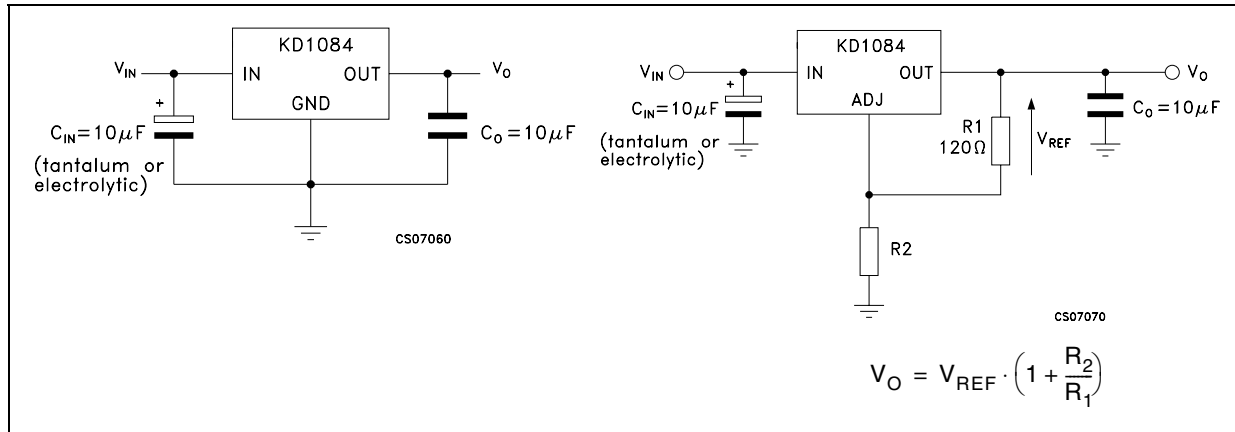
*Note: Absolute maximum ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.*

**Table 3. Thermal data**

| Symbol     | Parameter                           | DPAK | D <sup>2</sup> PAK | Unit |
|------------|-------------------------------------|------|--------------------|------|
| $R_{thJC}$ | Thermal resistance junction-case    | 8    | 3                  | °C/W |
| $R_{thJA}$ | Thermal resistance junction-ambient | 100  | 62.5               | °C/W |

# 4 Schematic application

Figure 3. Application circuit



## 5 Electrical characteristics

**Table 4. Electrical characteristics of KD1084A#18** ( $V_I = 4.8\text{ V}$ ,  $C_I = C_O = 10\ \mu\text{F}$  (tant.),  $T_A = -40\text{ to }125\text{ }^\circ\text{C}$ , unless otherwise specified)

| Symbol       | Parameter                              | Test conditions  | Min.  | Typ.  | Max.  | Unit |
|--------------|--|--|-------|-------|-------|------|
| $V_O$        | Output voltage                         | $I_O = 0\text{ mA}$ , $T_J = 25^\circ\text{C}$   | 1.782 | 1.8   | 1.818 | V    |
|              |  | $I_O = 0\text{ to }5\text{ A}$ , $V_I = 3.4\text{ to }10\text{ V}$                                 | 1.764 | 1.8   | 1.836 | V    |
| $\Delta V_O$ | Line regulation                        | $I_O = 0\text{ mA}$ , $V_I = 3.4\text{ to }10\text{ V}$ $T_J = 25^\circ\text{C}$                   |       | 0.5   | 6     | mV   |
|              |  | $I_O = 0\text{ mA}$ , $V_I = 3.4\text{ to }10\text{ V}$  |       | 1     | 6     | mV   |
| $\Delta V_O$ | Load regulation                        | $I_O = 0\text{ to }5\text{ A}$ , $T_J = 25^\circ\text{C}$  |       | 3     | 15    | mV   |
|              |  | $I_O = 0\text{ to }5\text{ A}$   |       | 7     | 20    | V    |
| $V_d$        | Dropout voltage                        | $I_O = 5\text{ A}$   |       | 1.3   | 1.5   | V    |
| $I_q$        | Quiescent current                      | $V_I \leq 10\text{ V}$   |       | 5     | 10    | mA   |
| $I_{sc}$     | Short circuit current                  | $V_I - V_O = 5\text{ V}$   | 5.5   | 7     |       | A    |
|              | Thermal regulation                     | $T_A = 25^\circ\text{C}$ , 30ms pulse  |       | 0.003 | 0.015 | %/W  |
| SVR          | Supply voltage rejection               | $f = 120\text{ Hz}$ , $C_O = 25\ \mu\text{F}$ , $I_O = 5\text{ A}$<br>$V_I = 5.3 \pm 1.5\text{ V}$ | 60    | 75    |       | dB   |
| eN           | RMS Output noise voltage (% of $V_O$ ) | $T_A = 25^\circ\text{C}$ , $f = 10\text{ Hz to }10\text{ kHz}$                                     |       | 0.003 |       | %    |
| S            | Temperature stability                  |  |       | 0.5   |       | %    |
| S            | Long term stability                    | $T_A = 125^\circ\text{C}$ , 1000Hrs  |       | 0.5   |       | %    |

**Table 5. Electrical characteristics of KD1084A#33** ( $V_I = 6.3\text{ V}$ ,  $C_I = C_O = 10\ \mu\text{F}$  (tant.),  
 $T_A = -40\text{ to }125\text{ }^\circ\text{C}$ , unless otherwise specified)

| Symbol       | Parameter                                 | Test conditions  | Min.  | Typ.  | Max.  | Unit |
|--------------|---|--|-------|-------|-------|------|
| $V_O$        | Output voltage                            | $I_O = 0\text{ mA}$ , $T_J = 25^\circ\text{C}$   | 3.267 | 3.3   | 3.333 | V    |
|              |   | $I_O = 0\text{ to }5\text{ A}$ , $V_I = 4.9\text{ to }10\text{ V}$                                 | 3.234 | 3.35  | 3.366 | V    |
| $\Delta V_O$ | Line regulation                           | $I_O = 0\text{ mA}$ , $V_I = 4.9\text{ to }10\text{ V}$ $T_J = 25^\circ\text{C}$                   |       | 0.5   | 6     | mV   |
|              |   | $I_O = 0\text{ mA}$ , $V_I = 4.9\text{ to }10\text{ V}$  |       | 1     | 6     | mV   |
| $\Delta V_O$ | Load regulation                           | $I_O = 0\text{ to }5\text{ A}$ , $T_J = 25^\circ\text{C}$  |       | 3     | 15    | mV   |
|              |   | $I_O = 0\text{ to }5\text{ A}$   |       | 7     | 20    | V    |
| $V_d$        | Dropout voltage                           | $I_O = 5\text{ A}$   |       | 1.3   | 1.5   | V    |
| $I_q$        | Quiescent current                         | $V_I \leq 10\text{ V}$   |       | 5     | 10    | mA   |
| $I_{sc}$     | Short circuit current                     | $V_I - V_O = 5\text{ V}$   | 5.5   | 7     |       | A    |
|              | Thermal regulation                        | $T_A = 25^\circ\text{C}$ , 30ms pulse  |       | 0.003 | 0.015 | %/W  |
| SVR          | Supply voltage rejection                  | $f = 120\text{ Hz}$ , $C_O = 25\ \mu\text{F}$ , $I_O = 5\text{ A}$<br>$V_I = 6.8 \pm 1.5\text{ V}$ | 60    | 72    |       | dB   |
| eN           | RMS Output noise voltage<br>(% of $V_O$ ) | $T_A = 25^\circ\text{C}$ , $f = 10\text{ Hz to }10\text{ kHz}$                                     |       | 0.003 |       | %    |
| S            | Temperature stability                     |  |       | 0.5   |       | %    |
| S            | Long term stability                       | $T_A = 125^\circ\text{C}$ , 1000Hrs  |       | 0.5   |       | %    |



**Table 6. Electrical characteristics of KD1084A** ( $V_I = 4.25\text{ V}$ ,  $C_I = C_O = 10\ \mu\text{F}$  (tant.),  
 $T_A = -40\text{ to }125^\circ\text{C}$ , unless otherwise specified)

| Symbol              | Parameter                                 | Test conditions  | Min.  | Typ.  | Max.  | Unit          |
|---------------------|---|--|-------|-------|-------|---------------|
| $V_O$               | Output voltage                            | $I_O = 10\text{ mA}$ , $T_J = 25^\circ\text{C}$  | 1.237 | 1.25  | 1.263 | V             |
|                     |   | $I_O = 10\text{ mA to }5\text{ A}$ , $V_I = 2.85\text{ to }10\text{V}$   | 1.225 | 1.25  | 1.275 | V             |
| $\Delta V_O$        | Line regulation                           | $I_O = 10\text{ mA}$ , $V_I = 2.85\text{ to }10\text{V}$ $T_J = 25^\circ\text{C}$  |       | 0.015 | 0.2   | mV            |
|                     |   | $I_O = 10\text{ mA}$ , $V_I = 2.85\text{ to }10\text{V}$   |       | 0.035 | 0.2   | mV            |
| $\Delta V_O$        | Load regulation                           | $I_O = 10\text{ mA to }5\text{ A}$ , $T_J = 25^\circ\text{C}$  |       | 0.1   | 0.3   | mV            |
|                     |   | $I_O = 10\text{ mA to }5\text{ A}$   |       | 0.2   | 0.4   | V             |
| $V_d$               | Dropout voltage                           | $I_O = 5\text{ A}$   |       | 1.3   | 1.5   | V             |
| $I_{O(\text{min})}$ | Quiescent current                         | $V_I \leq 10\text{V}$  |       | 3     | 10    | mA            |
| $I_{sc}$            | Short circuit current                     | $V_I - V_O = 5\text{V}$  | 5.5   | 7     |       | A             |
|                     | Thermal regulation                        | $T_A = 25^\circ\text{C}$ , 30ms pulse  |       | 0.003 | 0.015 | %/W           |
| SVR                 | Supply voltage rejection                  | $f = 120\text{ Hz}$ , $C_O = 25\ \mu\text{F}$ , $C_{ADJ} = 25\ \mu\text{F}$ ,<br>$I_O = 5\text{ A}$ , $V_I = 4.75 \pm 1.5\text{V}$ | 60    | 72    |       | dB            |
| $I_{ADJ}$           | Adjust pin current                        | $V_I = 4.25\text{V}$ , $I_O = 10\text{ mA}$  |       | 55    | 120   | $\mu\text{A}$ |
| $\Delta I_{ADJ}$    | Adjust pin current change                 | $V_I = 2.85\text{ to }10\text{V}$ , $I_O = 10\text{ mA to }5\text{A}$  |       | 0.2   | 5     | $\mu\text{A}$ |
| eN                  | RMS Output noise voltage<br>(% of $V_O$ ) | $T_A = 25^\circ\text{C}$ , $f = 10\text{Hz to }10\text{kHz}$   |       | 0.003 |       | %             |
| S                   | Temperature stability                     |  |       | 0.5   |       | %             |
| S                   | Long term stability                       | $T_A = 125^\circ\text{C}$ , 1000Hrs  |       | 0.5   |       | %             |

**Table 7. Electrical characteristics of KD1084#33** ( $V_I = 5.85$  V,  $C_I = C_O = 10$   $\mu$ F (tant.),  $T_A = -40$  to  $125^\circ\text{C}$ , unless otherwise specified)

| Symbol       | Parameter                              | Test conditions  | Min.  | Typ.  | Max.  | Unit |
|--------------|--|--|-------|-------|-------|------|
| $V_O$        | Output voltage                         | $I_O = 0$ mA, $T_J = 25^\circ\text{C}$                                     | 3.234 | 3.3   | 3.366 | V    |
|              |  | $I_O = 0$ to 5A, $V_I = 4.9$ to 10V  | 3.2   | 3.3   | 3.4   | V    |
| $\Delta V_O$ | Line regulation                        | $I_O = 0$ mA, $V_I = 4.9$ to 10V $T_J = 25^\circ\text{C}$                  |       | 0.5   | 6     | mV   |
|              |  | $I_O = 0$ mA, $V_I = 4.9$ to 10V   |       | 1     | 6     | mV   |
| $\Delta V_O$ | Load regulation                        | $I_O = 0$ to 5A, $T_J = 25^\circ\text{C}$                                  |       | 3     | 15    | mV   |
|              |  | $I_O = 0$ to 5A  |       | 7     | 20    | V    |
| $V_d$        | Dropout voltage                        | $I_O = 5$ A  |       | 1.3   | 1.5   | V    |
| $I_q$        | Quiescent current                      | $V_I \leq 10$ V  |       | 5     | 10    | mA   |
| $I_{sc}$     | Short circuit current                  | $V_I - V_O = 5$ V  | 5.5   | 7     |       | A    |
|              | Thermal regulation                     | $T_A = 25^\circ\text{C}$ , 30ms pulse                                      |       | 0.003 | 0.015 | %/W  |
| SVR          | Supply voltage rejection               | $f = 120$ Hz, $C_O = 25\mu\text{F}$ , $I_O = 5$ A<br>$V_I = 6.8 \pm 1.5$ V | 60    | 72    |       | dB   |
| eN           | RMS Output noise voltage (% of $V_O$ ) | $T_A = 25^\circ\text{C}$ , $f = 10$ Hz to 10kHz                            |       | 0.003 |       | %    |
| S            | Temperature stability                  |  |       | 0.5   |       | %    |
| S            | Long term stability                    | $T_A = 125^\circ\text{C}$ , 1000Hrs  |       | 0.5   |       | %    |

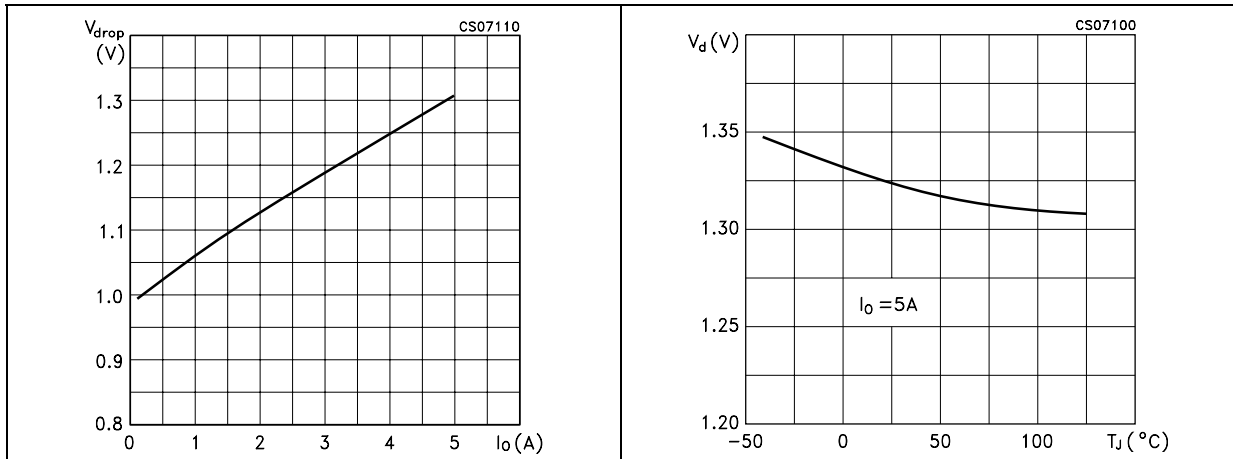
**Table 8. Electrical characteristics of KD1084** ( $V_I = 4.25\text{ V}$ ,  $C_I = C_O = 10\ \mu\text{F}$  (tant.),  
 $T_A = -40\text{ to }125\text{ }^\circ\text{C}$ , unless otherwise specified)

| Symbol                  | Parameter                                 | Test conditions  | Min.  | Typ.  | Max.  | Unit          |
|-------------------------|---|--|-------|-------|-------|---------------|
| $V_O$                   | Output voltage                            | $I_O = 10\text{ mA}$ , $T_J = 25^\circ\text{C}$  | 1.225 | 1.25  | 1.275 | V             |
|                         |   | $I_O = 10\text{ mA to }5\text{ A}$ , $V_I = 2.85\text{ to }10\text{ V}$  | 1.213 | 1.25  | 1.287 | V             |
| $\Delta V_O$            | Line regulation                           | $I_O = 10\text{ mA}$ , $V_I = 2.85\text{ to }10\text{ V}$ $T_J = 25^\circ\text{C}$   |       | 0.015 | 0.2   | mV            |
|                         |   | $I_O = 10\text{ mA}$ , $V_I = 2.85\text{ to }10\text{ V}$  |       | 0.035 | 0.2   | mV            |
| $\Delta V_O$            | Load regulation                           | $I_O = 10\text{ mA to }5\text{ A}$ , $T_J = 25^\circ\text{C}$  |       | 1     | 0.3   | mV            |
|                         |   | $I_O = 10\text{ mA to }5\text{ A}$   |       | 0.2   | 0.4   | V             |
| $V_d$                   | Dropout voltage                           | $I_O = 5\text{ A}$   |       | 1.3   | 1.5   | V             |
| $I_{O(\text{min})}$     | Quiescent current                         | $V_I \leq 10\text{ V}$   |       | 3     | 10    | mA            |
| $I_{sc}$                | Short circuit current                     | $V_I - V_O = 5\text{ V}$   | 5.5   | 7     |       | A             |
|                         | Thermal regulation                        | $T_A = 25^\circ\text{C}$ , 30ms pulse  |       | 0.003 | 0.015 | %/W           |
| SVR                     | Supply voltage rejection                  | $f = 120\text{ Hz}$ , $C_O = 25\ \mu\text{F}$ , $C_{\text{ADJ}} = 25\ \mu\text{F}$ ,<br>$I_O = 5\text{ A}$ , $V_I = 4.75 \pm 1.5\text{ V}$ | 60    | 72    |       | dB            |
| $I_{\text{ADJ}}$        | Adjust pin current                        | $V_I = 4.25\text{ V}$ , $I_O = 10\text{ mA}$   |       | 55    | 120   | $\mu\text{A}$ |
| $\Delta I_{\text{ADJ}}$ | Adjust pin current change                 | $V_I = 2.85\text{ to }10\text{ V}$ , $I_O = 10\text{ mA to }5\text{ A}$  |       | 0.2   | 5     | $\mu\text{A}$ |
| eN                      | RMS Output noise voltage<br>(% of $V_O$ ) | $T_A = 25^\circ\text{C}$ , $f = 10\text{ Hz to }10\text{ kHz}$   |       | 0.003 |       | %             |
| S                       | Temperature stability                     |  |       | 0.5   |       | %             |
| S                       | Long term stability                       | $T_A = 125^\circ\text{C}$ , 1000Hrs  |       | 0.5   |       | %             |

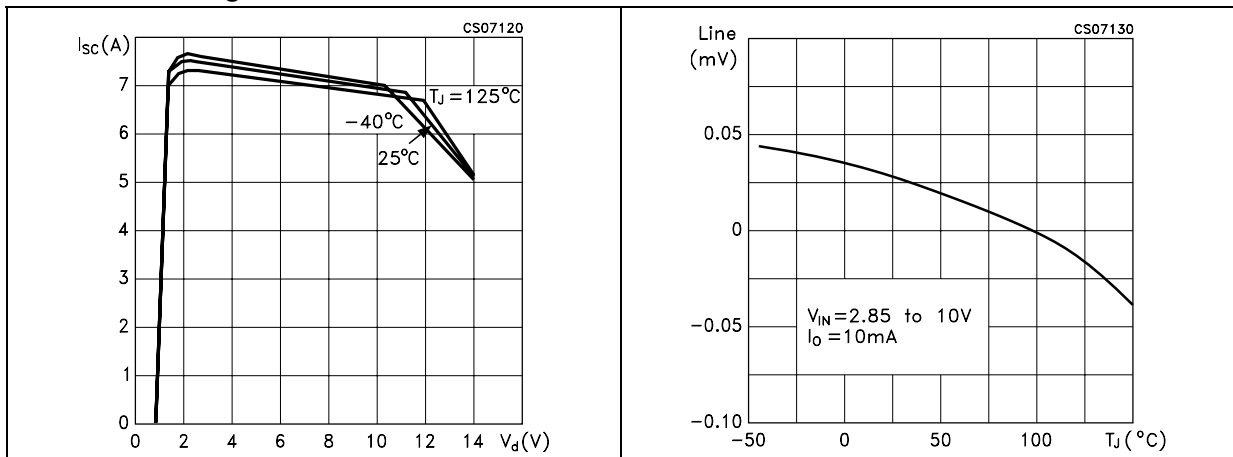
# 6 Typical application

Unless otherwise specified  $T_J = 25\text{ }^\circ\text{C}$ ,  $C_I = C_O = 10\text{ }\mu\text{F}$  (tant.)

**Figure 4. Dropout voltage vs output current**      **Figure 5. Dropout voltage vs temperature**



**Figure 6. Short circuit current vs dropout voltage**      **Figure 7. Line regulation vs temperature**



**Figure 8. Output voltage vs temperature**      **Figure 9. Load regulation vs temperature**

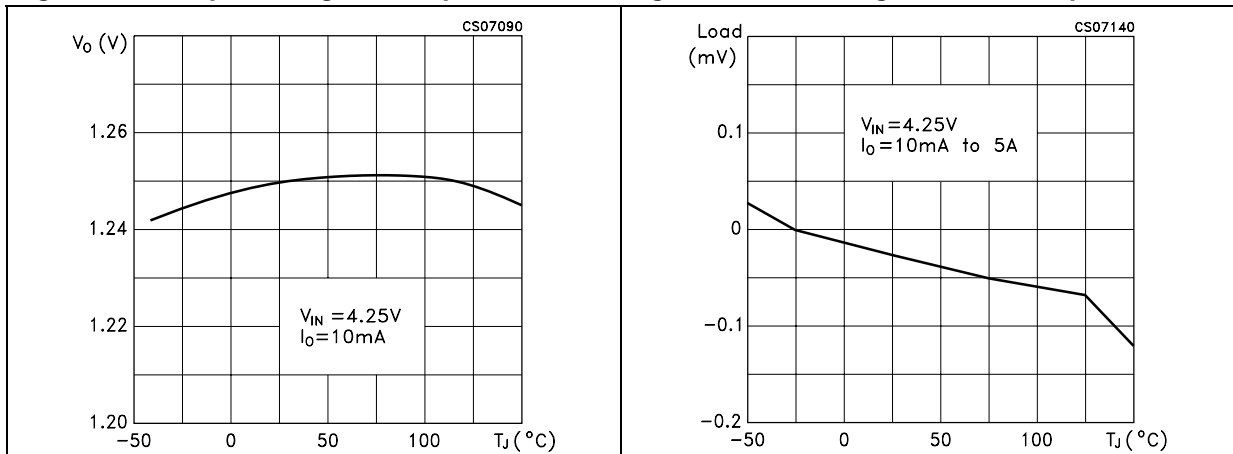


Figure 10. Supply voltage rejection vs frequency

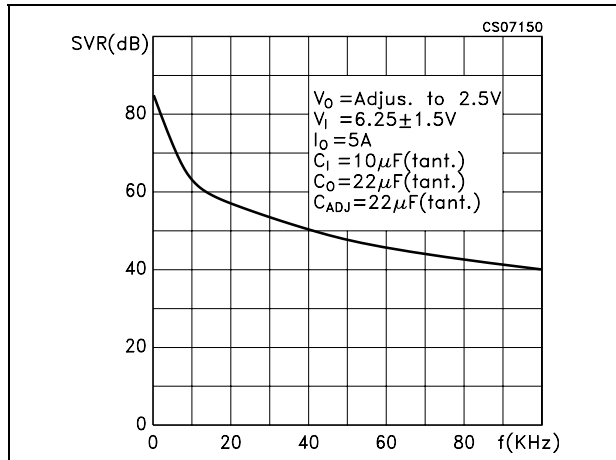


Figure 11. Adjust pin current vs output current

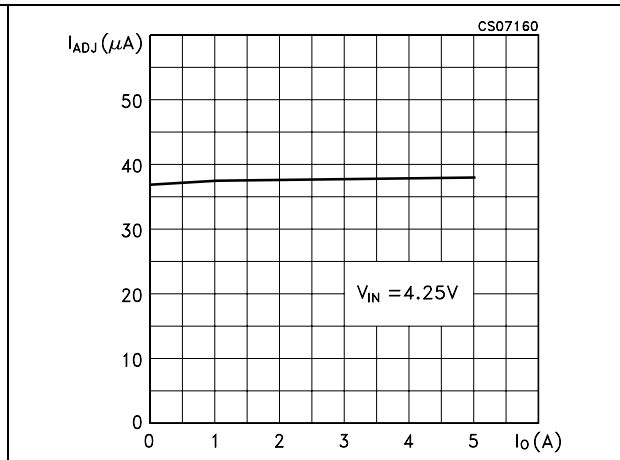


Figure 12. Line transient

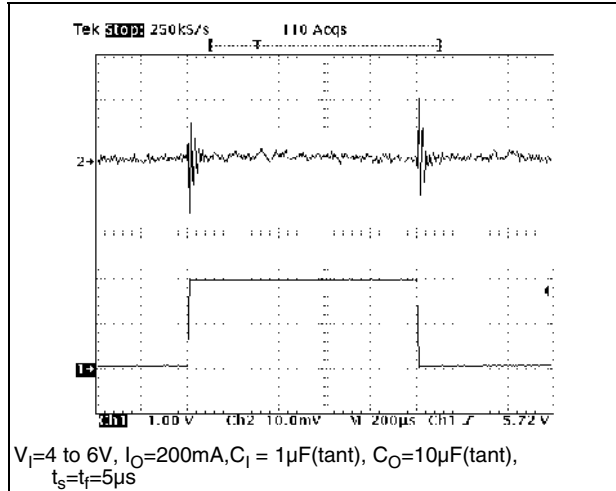
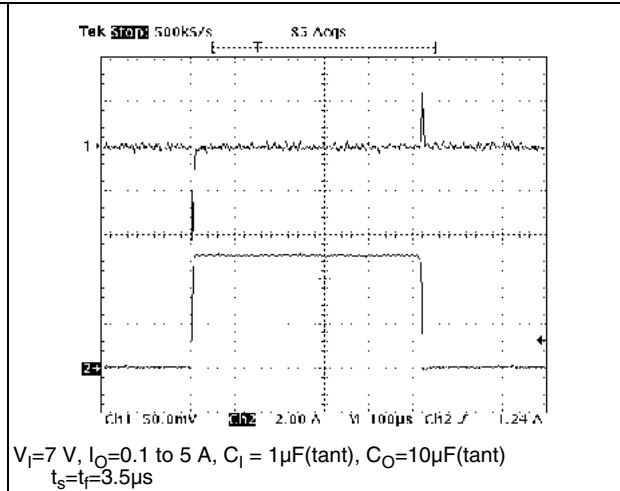


Figure 13. Load transient

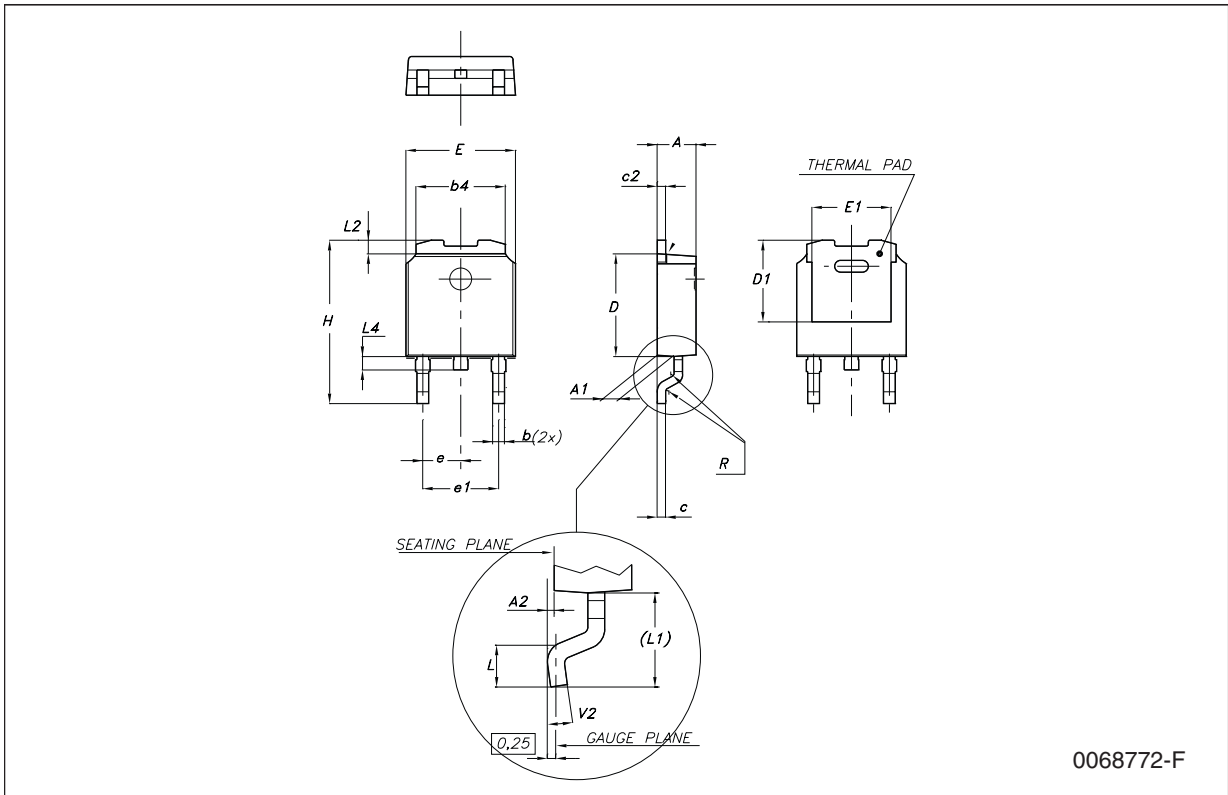


## 7 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second Level Interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: [www.st.com](http://www.st.com).

**DPAK mechanical data**

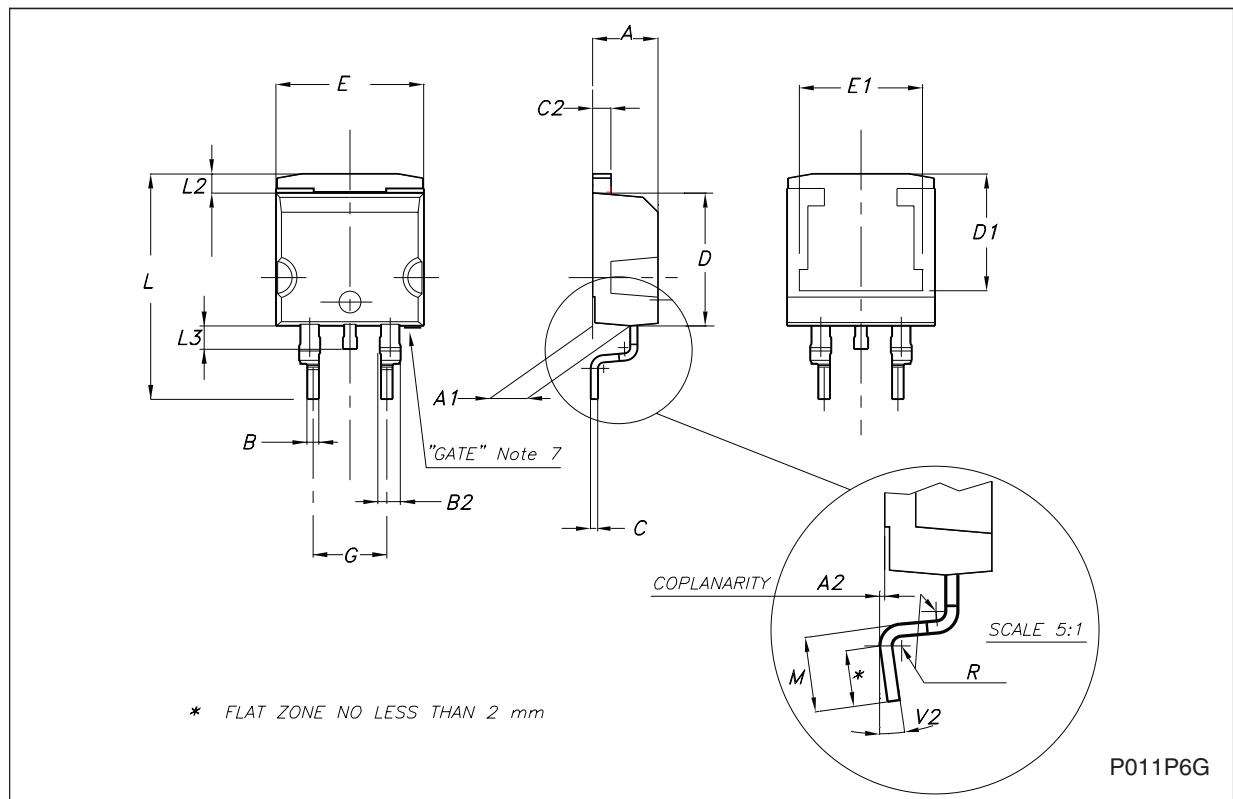
| Dim. | mm.  |      |      | inch. |       |       |
|------|------|------|------|-------|-------|-------|
|      | Min. | Typ. | Max. | Min.  | Typ.  | Max.  |
| A    | 2.2  |      | 2.4  | 0.086 |       | 0.094 |
| A1   | 0.9  |      | 1.1  | 0.035 |       | 0.043 |
| A2   | 0.03 |      | 0.23 | 0.001 |       | 0.009 |
| B    | 0.64 |      | 0.9  | 0.025 |       | 0.035 |
| b4   | 5.2  |      | 5.4  | 0.204 |       | 0.212 |
| C    | 0.45 |      | 0.6  | 0.017 |       | 0.023 |
| C2   | 0.48 |      | 0.6  | 0.019 |       | 0.023 |
| D    | 6    |      | 6.2  | 0.236 |       | 0.244 |
| D1   |      | 5.1  |      |       | 0.200 |       |
| E    | 6.4  |      | 6.6  | 0.252 |       | 0.260 |
| E1   |      | 4.7  |      |       | 0.185 |       |
| e    |      | 2.28 |      |       | 0.090 |       |
| e1   | 4.4  |      | 4.6  | 0.173 |       | 0.181 |
| H    | 9.35 |      | 10.1 | 0.368 |       | 0.397 |
| L    | 1    |      |      | 0.039 |       |       |
| (L1) |      | 2.8  |      |       | 0.110 |       |
| L2   |      | 0.8  |      |       | 0.031 |       |
| L4   | 0.6  |      | 1    | 0.023 |       | 0.039 |
| R    |      | 0.2  |      |       | 0.008 |       |
| V2   | 0°   |      | 8°   | 0°    |       | 8°    |



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**D<sup>2</sup>PAK mechanical data**

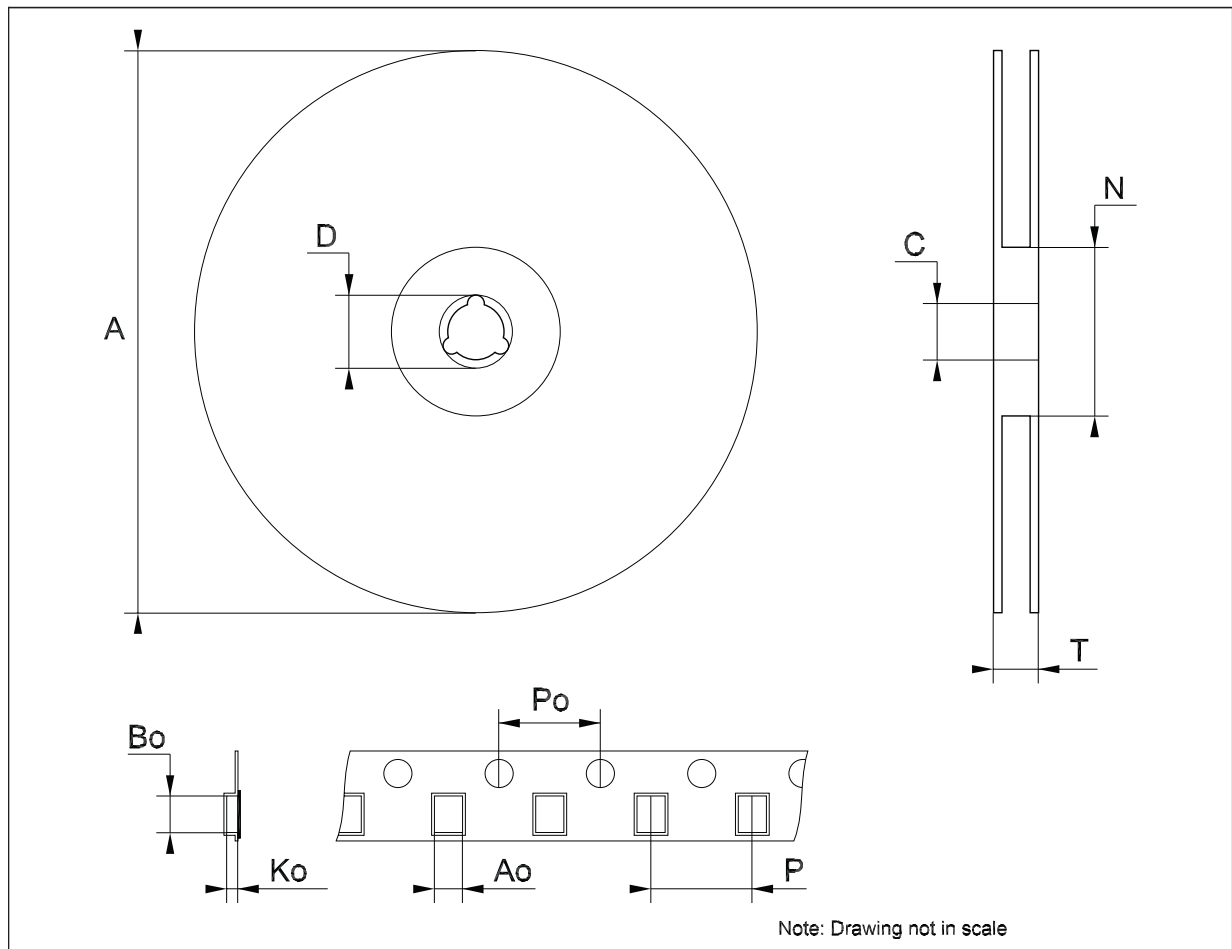
| Dim. | mm.  |      |       | inch. |       |       |
|------|------|------|-------|-------|-------|-------|
|      | Min. | Typ. | Max.  | Min.  | Typ.  | Max.  |
| A    | 4.4  |      | 4.6   | 0.173 |       | 0.181 |
| A1   | 2.49 |      | 2.69  | 0.098 |       | 0.106 |
| A2   | 0.03 |      | 0.23  | 0.001 |       | 0.009 |
| B    | 0.7  |      | 0.93  | 0.027 |       | 0.036 |
| B2   | 1.14 |      | 1.7   | 0.044 |       | 0.067 |
| C    | 0.45 |      | 0.6   | 0.017 |       | 0.023 |
| C2   | 1.23 |      | 1.36  | 0.048 |       | 0.053 |
| D    | 8.95 |      | 9.35  | 0.352 |       | 0.368 |
| D1   |      | 8    |       |       | 0.315 |       |
| E    | 10   |      | 10.4  | 0.393 |       | 0.409 |
| E1   |      | 8.5  |       |       | 0.335 |       |
| G    | 4.88 |      | 5.28  | 0.192 |       | 0.208 |
| L    | 15   |      | 15.85 | 0.590 |       | 0.624 |
| L2   | 1.27 |      | 1.4   | 0.050 |       | 0.055 |
| L3   | 1.4  |      | 1.75  | 0.055 |       | 0.068 |
| M    | 2.4  |      | 3.2   | 0.094 |       | 0.126 |
| R    |      | 0.4  |       |       | 0.016 |       |
| V2   | 0°   |      | 8°    | 0°    |       | 8°    |





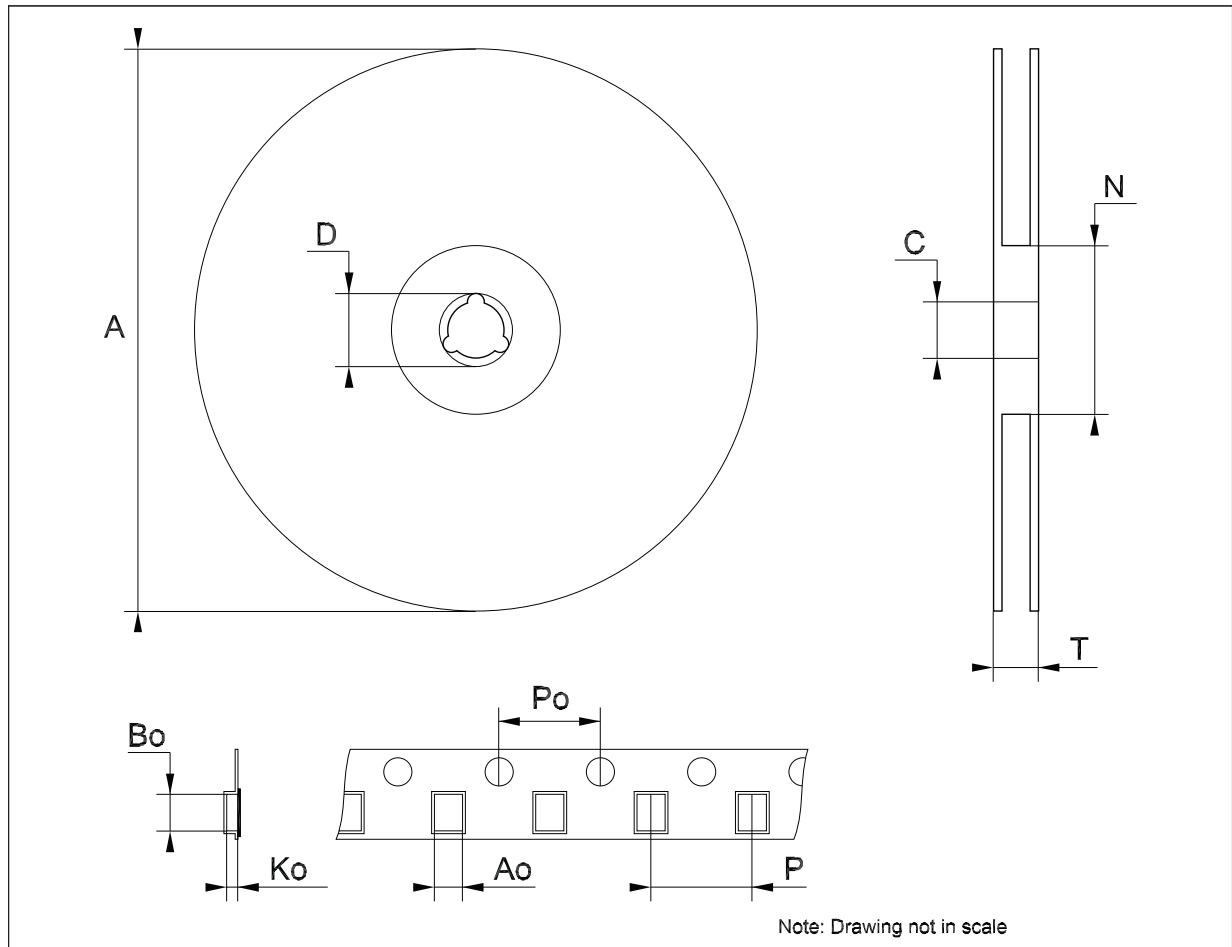
**Tape & reel DPAK-PPAK mechanical data**

| Dim. | mm.   |       |       | inch. |       |        |
|------|-------|-------|-------|-------|-------|--------|
|      | Min.  | Typ.  | Max.  | Min.  | Typ.  | Max.   |
| A    |       |       | 330   |       |       | 12.992 |
| C    | 12.8  | 13.0  | 13.2  | 0.504 | 0.512 | 0.519  |
| D    | 20.2  |       |       | 0.795 |       |        |
| N    | 60    |       |       | 2.362 |       |        |
| T    |       |       | 22.4  |       |       | 0.882  |
| Ao   | 6.80  | 6.90  | 7.00  | 0.268 | 0.272 | 0.276  |
| Bo   | 10.40 | 10.50 | 10.60 | 0.409 | 0.413 | 0.417  |
| Ko   | 2.55  | 2.65  | 2.75  | 0.100 | 0.104 | 0.105  |
| Po   | 3.9   | 4.0   | 4.1   | 0.153 | 0.157 | 0.161  |
| P    | 7.9   | 8.0   | 8.1   | 0.311 | 0.315 | 0.319  |



**Tape & reel D<sup>2</sup>PAK-P<sup>2</sup>PAK-D<sup>2</sup>PAK/A-P<sup>2</sup>PAK/A mechanical data**

| Dim. | mm.   |       |       | inch. |       |       |
|------|-------|-------|-------|-------|-------|-------|
|      | Min.  | Typ.  | Max.  | Min.  | Typ.  | Max.  |
| A    |       |       | 180   |       |       | 7.086 |
| C    | 12.8  | 13.0  | 13.2  | 0.504 | 0.512 | 0.519 |
| D    | 20.2  |       |       | 0.795 |       |       |
| N    | 60    |       |       | 2.362 |       |       |
| T    |       |       | 14.4  |       |       | 0.567 |
| Ao   | 10.50 | 10.6  | 10.70 | 0.413 | 0.417 | 0.421 |
| Bo   | 15.70 | 15.80 | 15.90 | 0.618 | 0.622 | 0.626 |
| Ko   | 4.80  | 4.90  | 5.00  | 0.189 | 0.193 | 0.197 |
| Po   | 3.9   | 4.0   | 4.1   | 0.153 | 0.157 | 0.161 |
| P    | 11.9  | 12.0  | 12.1  | 0.468 | 0.472 | 0.476 |



## 8 Revision history

**Table 9. Document revision history**

| Date        | Revision | Changes                                       |
|-------------|----------|---|
| 06-Sep-2005 | 4        | Order codes updated.                          |
| 02-Apr-2007 | 5        | Order codes updated.                          |
| 30-May-2007 | 6        | Order codes updated.                          |
| 18-Dec-2007 | 7        | Added <a href="#">Table 1</a> .               |
| 21-Feb-2008 | 8        | Modified: <a href="#">Table 1 on page 1</a> . |
| 16-Jul-2008 | 9        | Modified: <a href="#">Table 1 on page 1</a> . |

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