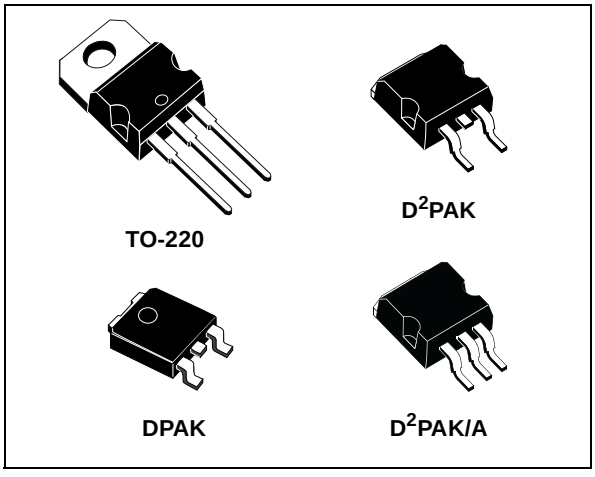
KD1084 SERIES

5A LOW DROP POSITIVE VOLTAGE REGULATOR ADJUSTABLE AND FIXED

■passattdiTYPICAL DROPOUT 1.3V (AT 5A)

- THREE TERMINAL ADJUSTABLE OR FIXED OUTPUT VOLTAGE 1.5V, 1.8V, 2.5V, 2.85V, 3.3V, 3.6V, 5V.
- GUARANTEED OUTPUT CURRENT UP TO 5A
- OUPUT TOLERANCE ±1% AT 25°C AND ±2% IN FULL TEMPERATURE RANGE FOR THE "A" VERSION
- OUPUT TOLERANCE ±2% AT 25°C AND ±3% IN FULL TEMPERATURE RANGE INTERNAL POWER AND THERMAL LIMIT
- WIDE OPERATING TEMPERATURE RANGE -40°C TO 125°C
- PACKAGE AVAILABLE: TO-220, D^2PAK, D^2PAK/A, DPAK
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VREG



DESCRIPTION

The KD1084 is a LOW DROP Voltage Regulator able to provide up to 5A of Output Current. Dropout is guaranteed at a maximum of 1.5V at the maximum output current, decreasing at lower loads. The KD1084 is pin to pin compatible with the older 3-terminal adjustable regulators, but has better performances in term of drop and output tolerance.

A 2.85V 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 KD1084 quiescent current flows into the load, so increase efficiency. Only a 10µF minimum capacitor is need for stability.

The devices are supplied in TO-220, D^2PAK, D^2PAK/A and DPAK. On chip trimming allows the regulator to reach a very tight output voltage tolerance, within ±1% at 25°C for "A" version and ±2% at 25°C for standard version.

Figure 1: Schematic Diagram

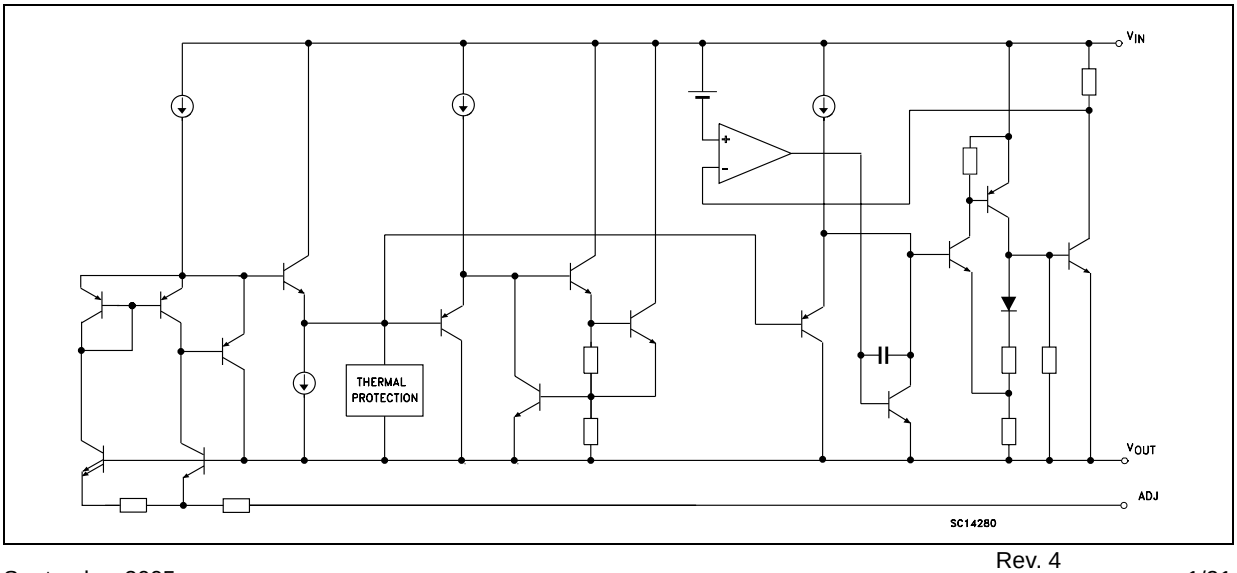


Table 1: Absolute Maximum Ratings

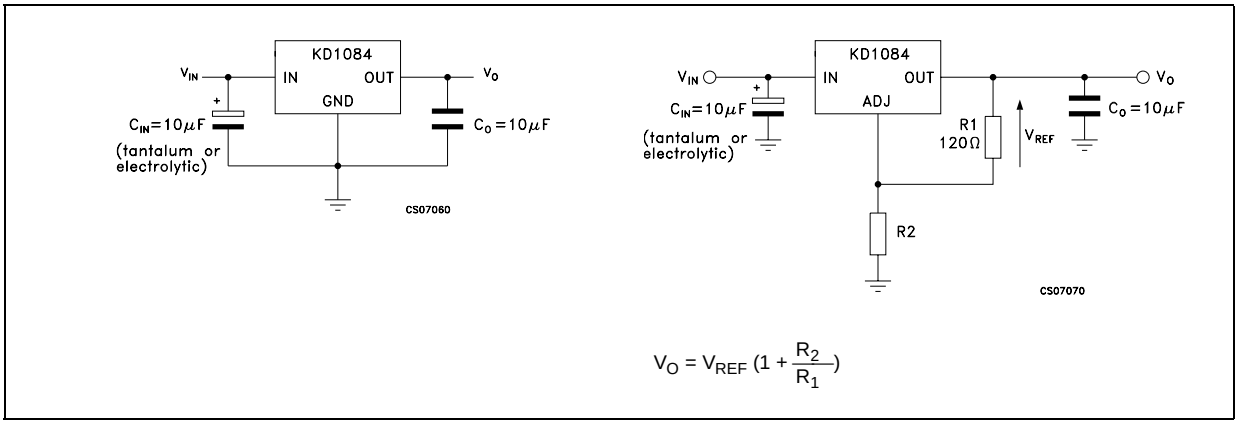
Symbol	Parameter	Value	Unit
V_I	DC Input Voltage	12	V
I_O	Output Current	Internally Limited	mA
P_D	Power Dissipation	Internally Limited	mW
T_{stg}	Storage Temperature Range	-55 to +150	°C
T_{op}	Operating Junction Temperature Range	-40 to +125	°C

Absolute Maximum Ratings are those values beyond which damage to the device may occur. Functional operation under these condition is not implied.

Table 2: Thermal Data

Symbol	Parameter	TO-220	D^2PAK D^2PAK/A	DPAK	Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-case	3	3	3	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-ambient	50	62.5	50	°C/W

Figure 2: Application Circuits



$$V_O = V_{REF}\left(1 + \frac{R_2}{R_1}\right)$$

Figure 3: Connection Diagram (top view)

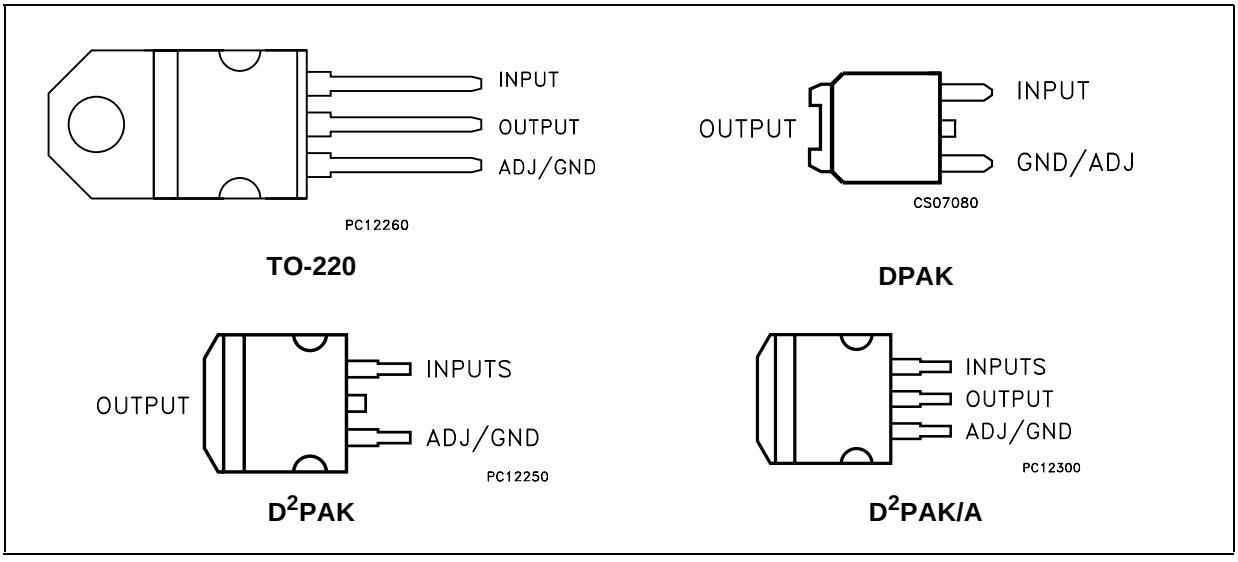


Table 3: Order Codes

TO-220	D^2PAK	D^2PAK/A	DPAK	OUTPUT VOLTAGE	TOLERANCE
KD1084V15 (*)	KD1084D2T15R	KD1084D2M15R	KD1084DT15R	1.5 V	2%
KD1084AV15 (*)	KD1084AD2T15R	KD1084AD2M15R	KD1084ADT15R	1.5 V	1%
KD1084V18	KD1084D2T18R	KD1084D2M18R	KD1084DT18R	1.8 V	2%
KD1084AV18	KD1084AD2T18R	KD1084AD2M18R	KD1084ADT18R	1.8 V	1%
KD1084V25	KD1084D2T25R	KD1084D2M25R	KD1084DT25R	2.5 V	2%
KD1084AV25	KD1084AD2T25R	KD1084AD2M25R	KD1084ADT25R	2.5 V	1%
KD1084V28 (*)	KD1084D2T28R (*)	KD1084D2M28R (*)	KD1084DT28R (*)	2.85 V	2%
KD1084AV28 (*)	KD1084AD2T28R (*)	KD1084AD2M28R (*)	KD1084ADT28R (*)	2.85 V	1%
KD1084V33	KD1084D2T33R	KD1084D2M33R	KD1084DT33R	3.3 V	2%
KD1084AV33	KD1084AD2T33R	KD1084AD2M33R	KD1084ADT33R	3.3 V	1%
KD1084V36	KD1084D2T36R	KD1084D2M36R	KD1084DT36R	3.6 V	2%
KD1084AV36	KD1084AD2T36R	KD1084AD2M36R	KD1084ADT36R	3.6 V	1%
KD1084V50	KD1084D2T50R	KD1084D2M50R	KD1084DT50R	5.0 V	2%
KD1084AV50	KD1084AD2T50R	KD1084AD2M50R	KD1084ADT50R	5.0 V	1%
KD1084V	KD1084D2T-R	KD1084D2M-R	KD1084DT-R	ADJ	2%
KD1084AV	KD1084AD2T-R	KD1084AD2M-R	KD1084ADT-R	ADJ	1%

(*) Available on request

Table 4: Electrical Characteristics Of KD1084A#15 (V_I=4.5V, $C_I = C_O$ =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.485	1.5	1.515	V
		I_O = 0 to 5A V_I = 3.1 to 10V	1.47	1.5	1.53	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.1 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 3.1 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	$V_I - V_O$ = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A $V_I = 5 \pm 1.5$V	60	75		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 5: Electrical Characteristics Of KD1084A#18 (V_I=4.8V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.782	1.8	1.818	V
		I_O = 0 to 5A V_I = 3.4 to 10V	1.764	1.8	1.836	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.4 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 3.4 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 5.3 ± 1.5V	60	75		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 6: Electrical Characteristics Of KD1084A#25 (V_I=5.5V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	2.475	2.5	2.525	V
		I_O = 0 to 5A V_I = 4.1 to 10V	2.45	2.5	2.55	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.1 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.1 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 7: Electrical Characteristics Of KD1084A#285 (V_I=5.85V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	2.821	2.85	2.879	V
		I_O = 0 to 5A V_I = 4.5 to 10V	2.793	2.85	2.907	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.5 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.5 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6.35 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 8: Electrical Characteristics Of KD1084A#33 (V_I=6.3V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	3.267	3.3	3.333	V
		I_O = 0 to 5A V_I = 4.9 to 10V	3.234	3.35	3.366	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.9 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.9 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6.8 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 9: Electrical Characteristics Of KD1084A#36 (V_I=6.6V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	3.564	3.6	3.636	V
		I_O = 0 to 5A V_I = 5.2 to 10V	3.528	3.6	3.672	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 5.2 to 10V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 5.2 to 10V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 7.1 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 10: Electrical Characteristics Of KD1084A#5 (V_I=8V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	4.95	5	5.05	V
		I_O = 0 to 5A V_I = 6.6 to 10V	4.9	5	5.1	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 6.6 to 10V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 6.6 to 10V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°C		5	20	mV
		I_O = 0 to 5A		10	35	V
V_d	Dropout Voltage	I_O =5 A		1.3	1.5	V
I_q	Quiescent Current	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 8.5 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 11: Electrical Characteristics Of KD1084A (V_I=4.25V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 10mA T_J = 25°C	1.237	1.25	1.263	V
		I_O = 10mA to 5A V_I = 2.85 to 10V	1.225	1.25	1.275	V
ΔV_O	Line Regulation	I_O = 10mA V_I = 2.85 to 10V T_J = 25°C		0.015	0.2	%
		I_O = 10mA V_I = 2.85 to 10V		0.035	0.2	%
ΔV_O	Load Regulation	I_O = 10mA to 5A T_J = 25°C		0.1	0.3	%
		I_O = 10mA to 5A		0.2	0.4	%
V_d	Dropout Voltage	I_O = 5A		1.3	1.5	V
$I_{O(min)}$	Minimum Load Current	V_I = 10V		3	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, C_{ADJ} = 25 µF, I_O = 5A V_I = 4.75 ± 1.5V	60	72		dB
I_{ADJ}	Adjust Pin Current	V_I = 4.25V I_O = 10 mA		55	120	µA
ΔI_{ADJ}	Adjust Pin Current Change	I_O = 10mA to 5A V_I = 2.85 to 10V		0.2	5	µA
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 12: Electrical Characteristics Of KD1084#15 (V_I=4.5V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.47	1.5	1.536	V
		I_O = 0 to 5AV_I = 3.1 to 10V	1.455	1.5	1.545	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.1 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 3.1 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5AT_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 5 ± 1.5V	60	75		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 13: Electrical Characteristics Of KD1084#18 (V_I=4.8V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	1.764	1.8	1.836	V
		I_O = 0 to 5A V_I = 3.4 to 10V	1.746	1.8	1.854	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 3.4 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 3.4 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 5.3 ± 1.5V	60	75		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 14: Electrical Characteristics Of KD1084#25 (V_I=5.5V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	2.45	2.5	2.55	V
		I_O = 0 to 5A V_I = 4.1 to 10V	2.425	2.5	2.575	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.1 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.1 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 15: Electrical Characteristics Of KD1084#285 (V_I=5.85V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	2.793	2.85	2.907	V
		I_O = 0 to 5A V_I = 4.5 to 10V	2.765	2.85	2.935	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.5 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.5 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6.35 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 16: Electrical Characteristics Of KD1084#33 (V_I=6.3V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°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
ΔV_O	Line Regulation	I_O = 0 mA V_I = 4.9 to 10V T_J = 25°C		0.5	6	mV
		I_O = 0 mA V_I = 4.9 to 10V		1	6	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 6.8 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 17: Electrical Characteristics Of KD1084#36 (V_I=6.6V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	3.528	3.6	3.672	V
		I_O = 0 to 5A V_I = 5.2 to 10V	3.492	3.6	3.708	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 5.2 to 10V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 5.2 to 10V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°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	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 7.1 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 18: Electrical Characteristics Of KD1084#5 (V_I=8V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 0 mA T_J = 25°C	4.9	5	5.1	V
		I_O = 0 to 5A V_I = 6.6 to 10V	4.85	5	5.15	V
ΔV_O	Line Regulation	I_O = 0 mA V_I = 6.6 to 10V T_J = 25°C		0.5	10	mV
		I_O = 0 mA V_I = 6.6 to 10V		1	10	mV
ΔV_O	Load Regulation	I_O = 0 to 5A T_J = 25°C		5	20	mV
		I_O = 0 to 5A		10	35	V
V_d	Dropout Voltage	I_O =5 A		1.3	1.5	V
I_q	Quiescent Current	$V_I \leq$ 10V		5	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, I_O = 5A V_I = 8.5 ± 1.5V	60	72		dB
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

Table 19: Electrical Characteristics Of KD1084 (V_I=4.25V, C_I = C_O =10µF (Tant.), T_A = -40 to 125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_O	Output Voltage	I_O = 10mA T_J = 25°C	1.225	1.25	1.275	V
		I_O = 10mA to 5A V_I = 2.85 to 10V	1.213	1.25	1.287	V
ΔV_O	Line Regulation	I_O = 10mA V_I = 2.85 to 10V T_J = 25°C		0.015	0.2	%
		I_O = 10mA V_I = 2.85 to 10V		0.035	0.2	%
ΔV_O	Load Regulation	I_O = 10mA to 5A T_J = 25°C		1	0.3	%
		I_O = 10mA to 5A		0.2	0.4	%
V_d	Dropout Voltage	I_O = 5A		1.3	1.5	V
$I_{O(min)}$	Minimum Load Current	V_I = 10V		3	10	mA
I_{sc}	Short Circuit Current	V_I - V_O = 5V	5.5	7		A
	Thermal Regulation	T_A = 25°C, 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	f = 120 Hz, C_O = 25 µF, C_{ADJ} = 25 µF, I_O = 5A V_I = 4.75 ± 1.5V	60	72		dB
I_{ADJ}	Adjust Pin Current	V_I = 4.25V I_O = 10 mA		55	120	µA
ΔI_{ADJ}	Adjust Pin Current Change	I_O = 10mA to 5A V_I = 2.85 to 10V		0.2	5	µA
eN	RMS Output Noise Voltage (% of V_O)	T_A = 25°C f =10Hz to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	T_A = 125°C 1000Hrs		0.5		%

TYPICAL CHARACTERISTICS (unless otherwise specified T_j = 25°C, C_I=10µF (tant.), C_O=10µF (tant.)

Figure 4: Dropout Voltage vs Output Current

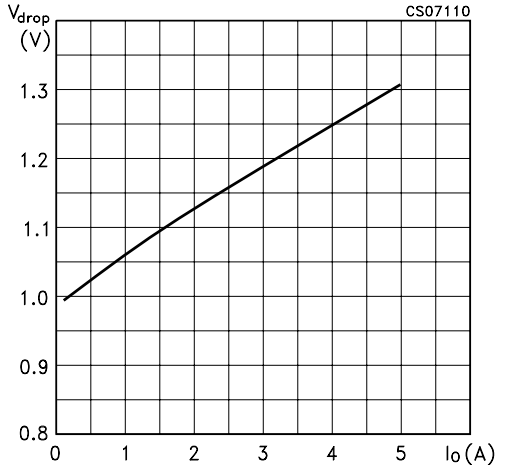


Figure 5: Dropout Voltage vs Temperature

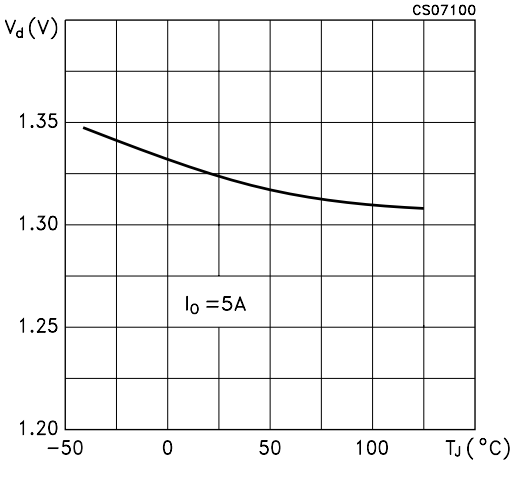


Figure 6: Short Circuit Current vs Dropout Voltage

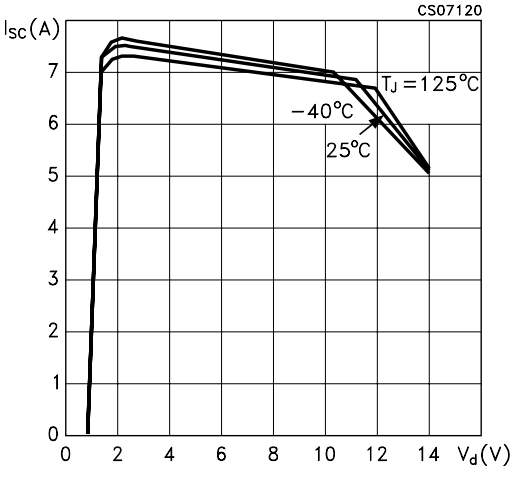


Figure 7: Line Regulation vs Temperature

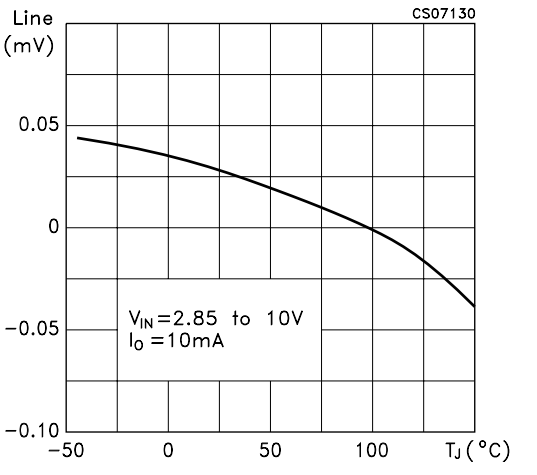


Figure 8: Output Voltage vs Temperature

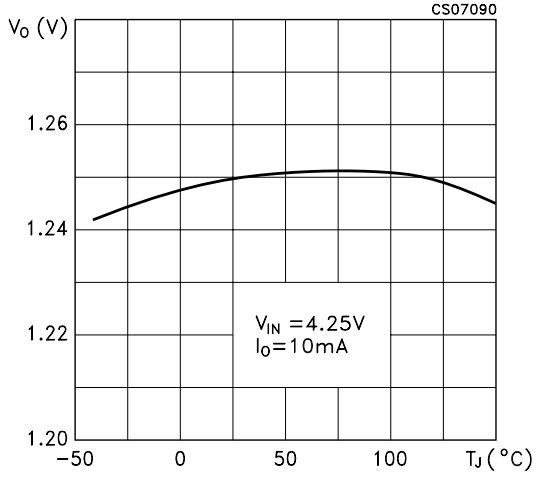


Figure 9: Load Regulation vs Temperature

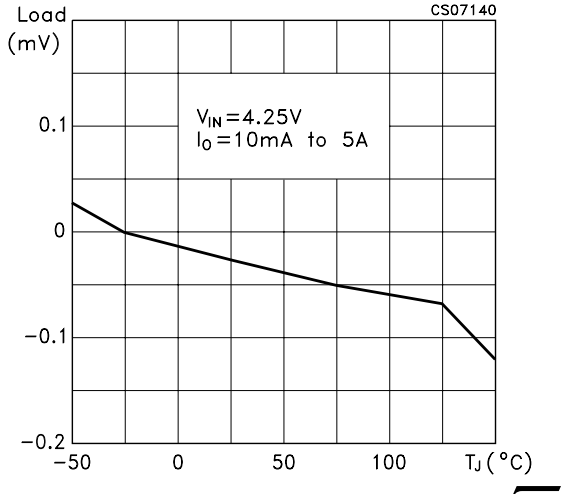


Figure 10: Supply Voltage Rejection vs Frequency

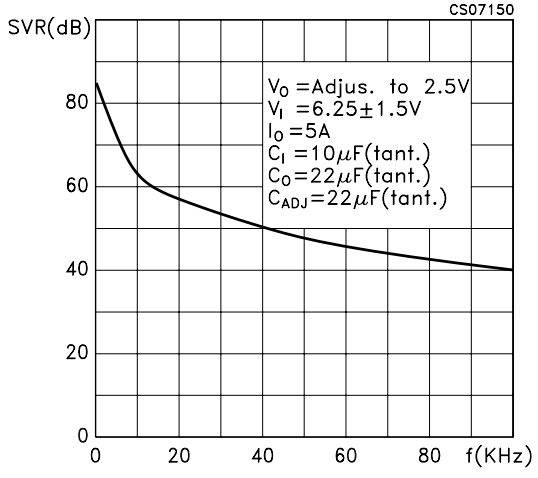


Figure 11: Adjust Pin Current vs Output Current

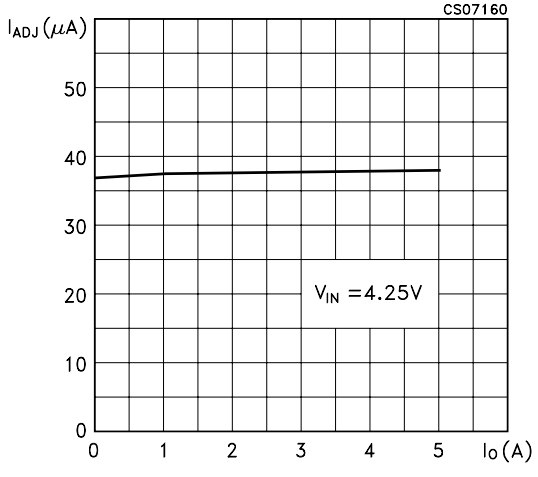
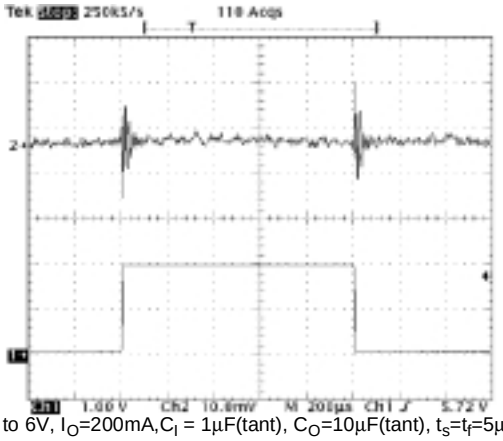
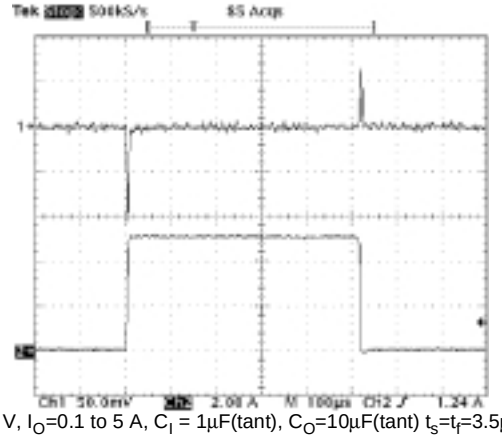


Figure 12: Line Transient



V_I=4 to 6V, I_O=200mA,C_I = 1μF(tant), C_O=10μF(tant), t_s=t_f=5μs

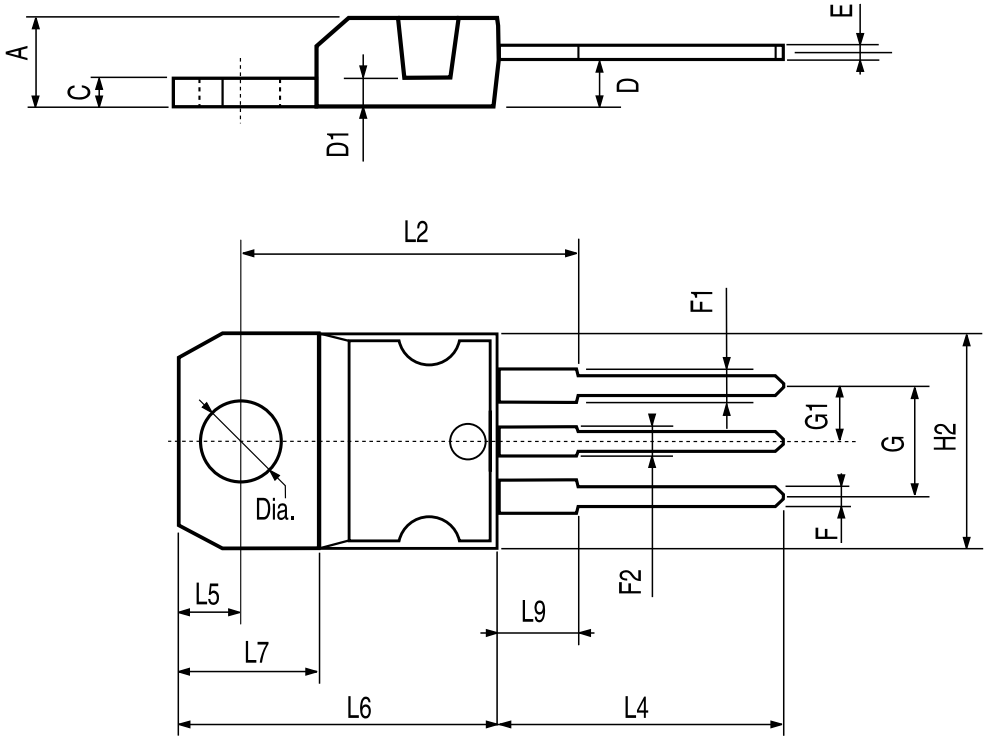
Figure 13: Load Transient



V_I=7 V, I_O=0.1 to 5 A, C_I = 1μF(tant), C_O=10μF(tant) t_s=t_f=3.5μs

TO-220 MECHANICAL DATA

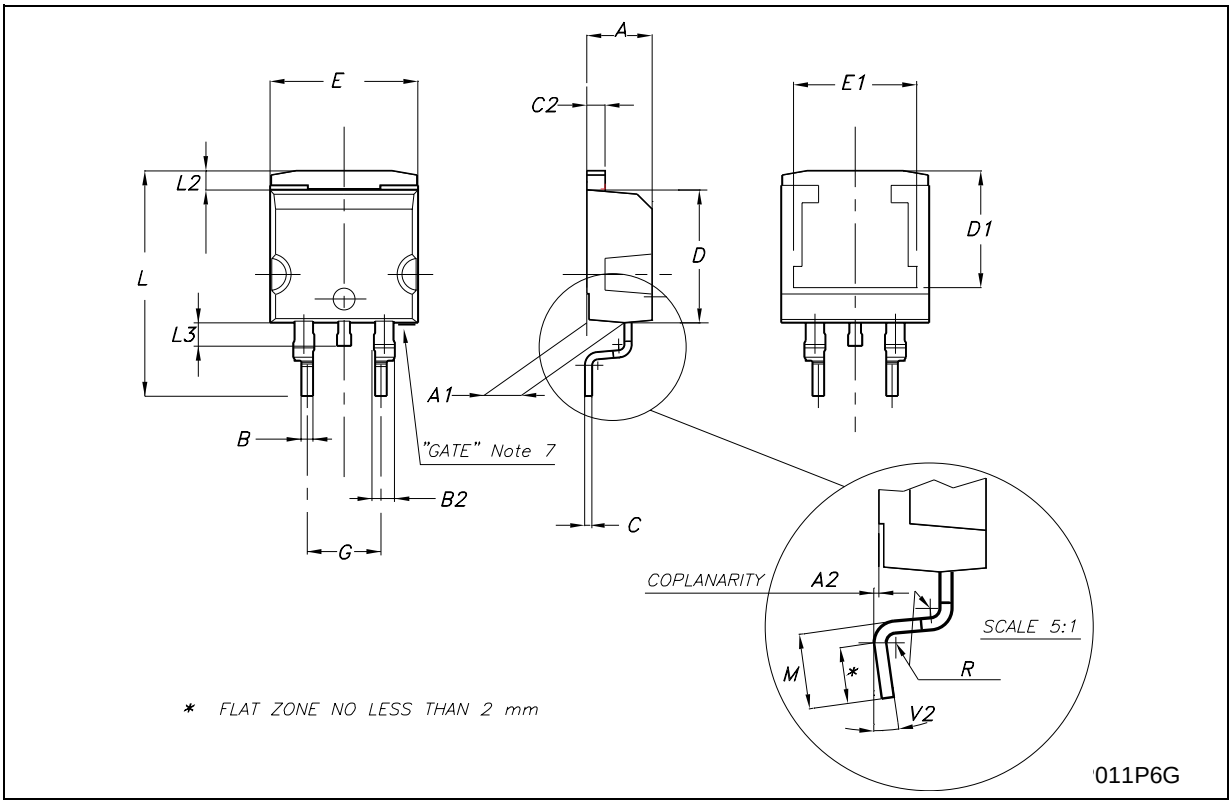
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
H2	10.0		10.40	0.393		0.409
L2		16.4			0.645	
L4	13.0		14.0	0.511		0.551
L5	2.65		2.95	0.104		0.116
L6	15.25		15.75	0.600		0.620
L7	6.2		6.6	0.244		0.260
L9	3.5		3.93	0.137		0.154
DIA.	3.75		3.85	0.147		0.151



P011C

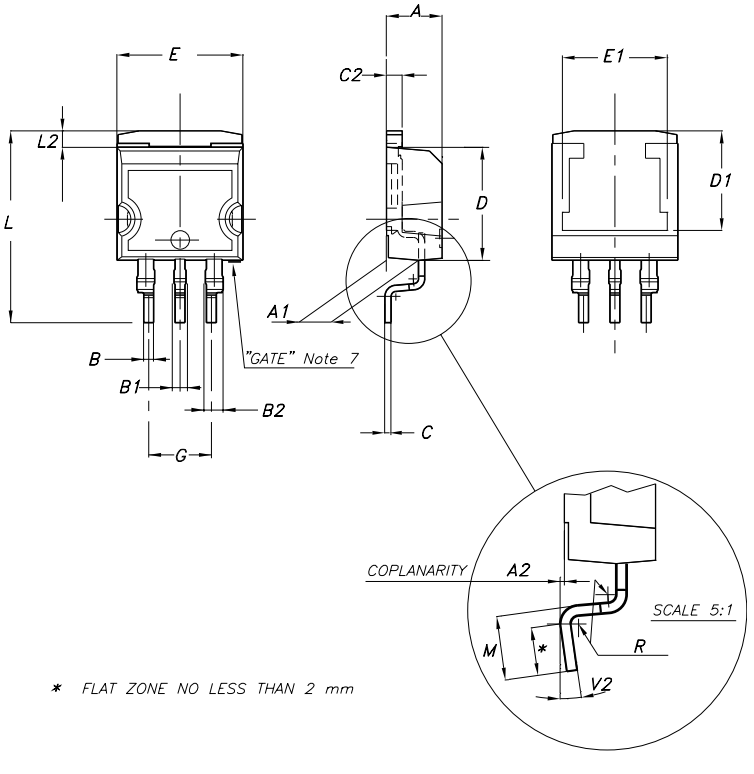
D²PAK MECHANICAL DATA

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°



D²PAK/A MECHANICAL DATA

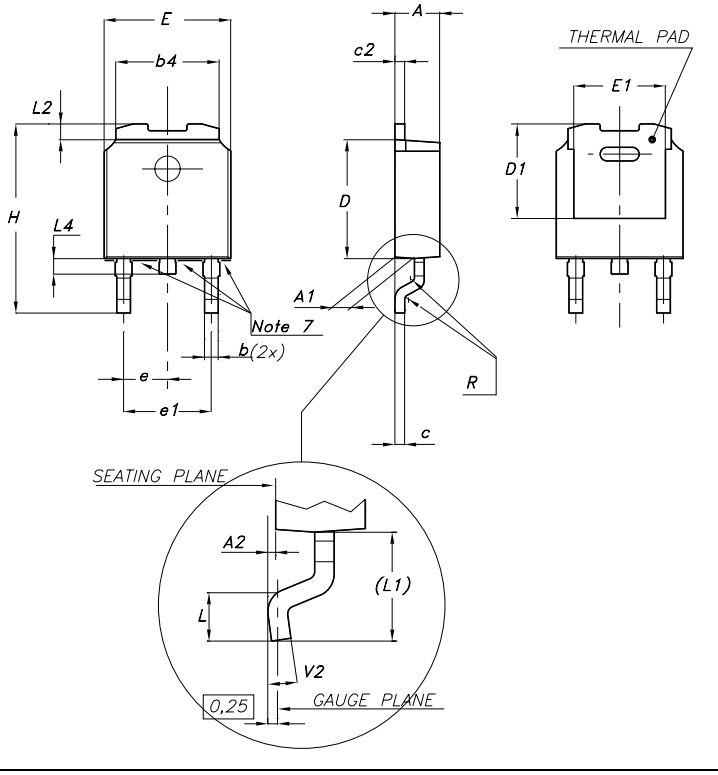
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
A1	2.49		2.69	0.098		0.106
A2	0.03		0.23	0.001		0.009
B	0.7		0.93	0.028		0.037
B1	0.8		1.3	0.031		0.051
B2	1.14		1.7	0.045		0.067
C	0.45		0.60	0.018		0.024
C2	1.23		1.36	0.048		0.054
D	8.95		9.35	0.352		0.368
D1		8			0.315	
E	10		10.4	0.394		0.409
E1		8.5			0.335	
G	4.88		5.28	0.192		0.208
L	15		15.85	0.591		0.624
L2	1.27		1.4	0.050		0.055
M	2.4		3.2	0.094		0.126
R		0.4			0.016	
V2	0°		8°	0°		8°



7106164/D

DPAK MECHANICAL DATA

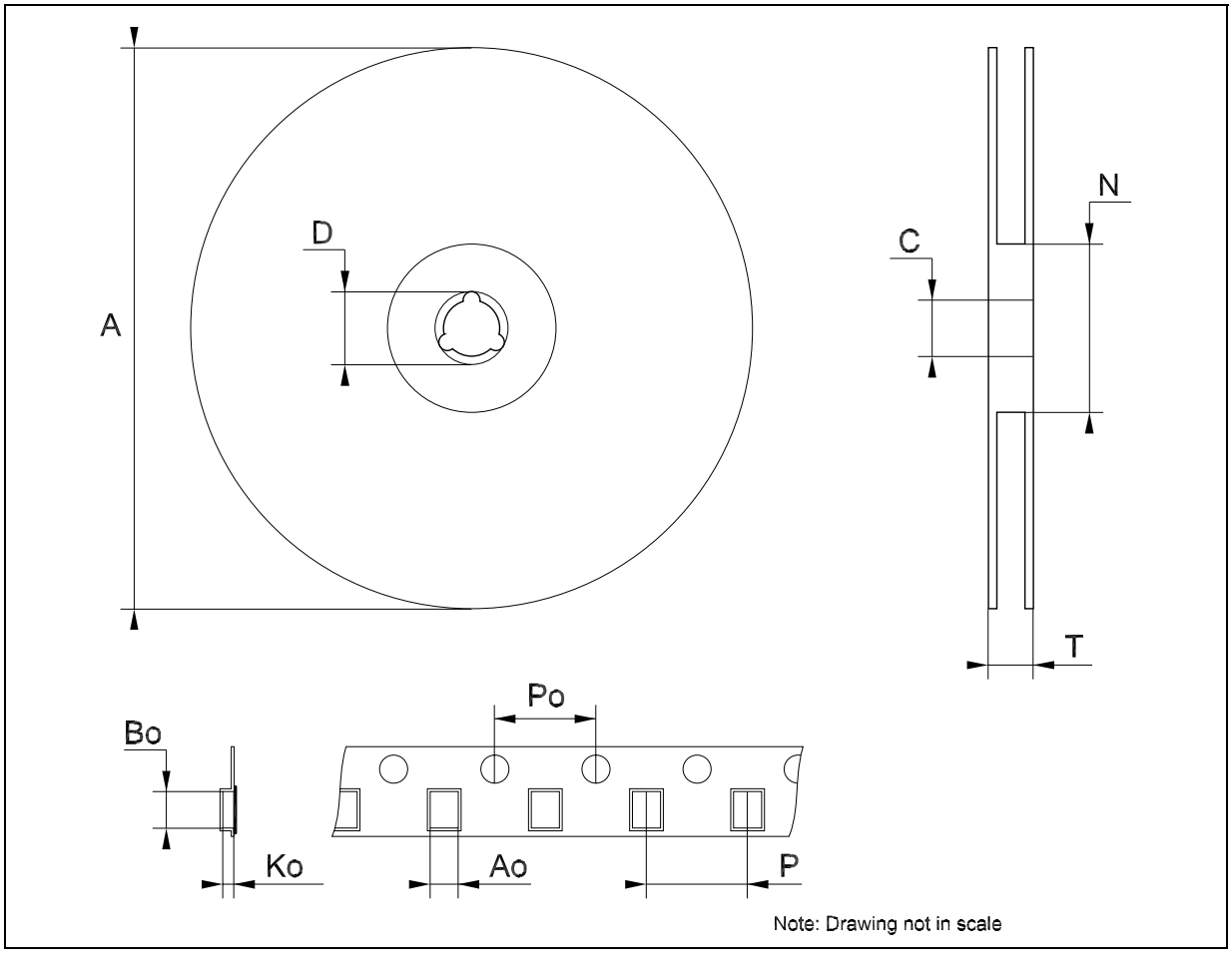
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	2.2		2.4	0.086		0.094
A1	0.9		1.1	0.035		0.043
A2	0.03		0.23	0.001		0.009
B	0.64		0.9	0.025		0.035
b4	5.2		5.4	0.204		0.212
C	0.45		0.6	0.017		0.023
C2	0.48		0.6	0.019		0.023
D	6		6.2	0.236		0.244
D1		5.1			0.200	
E	6.4		6.6	0.252		0.260
E1		4.7			0.185	
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



0068772-F

Tape & Reel D^2PAK-P^2PAK-D^2PAK/A-P^2PAK/A MECHANICAL DATA

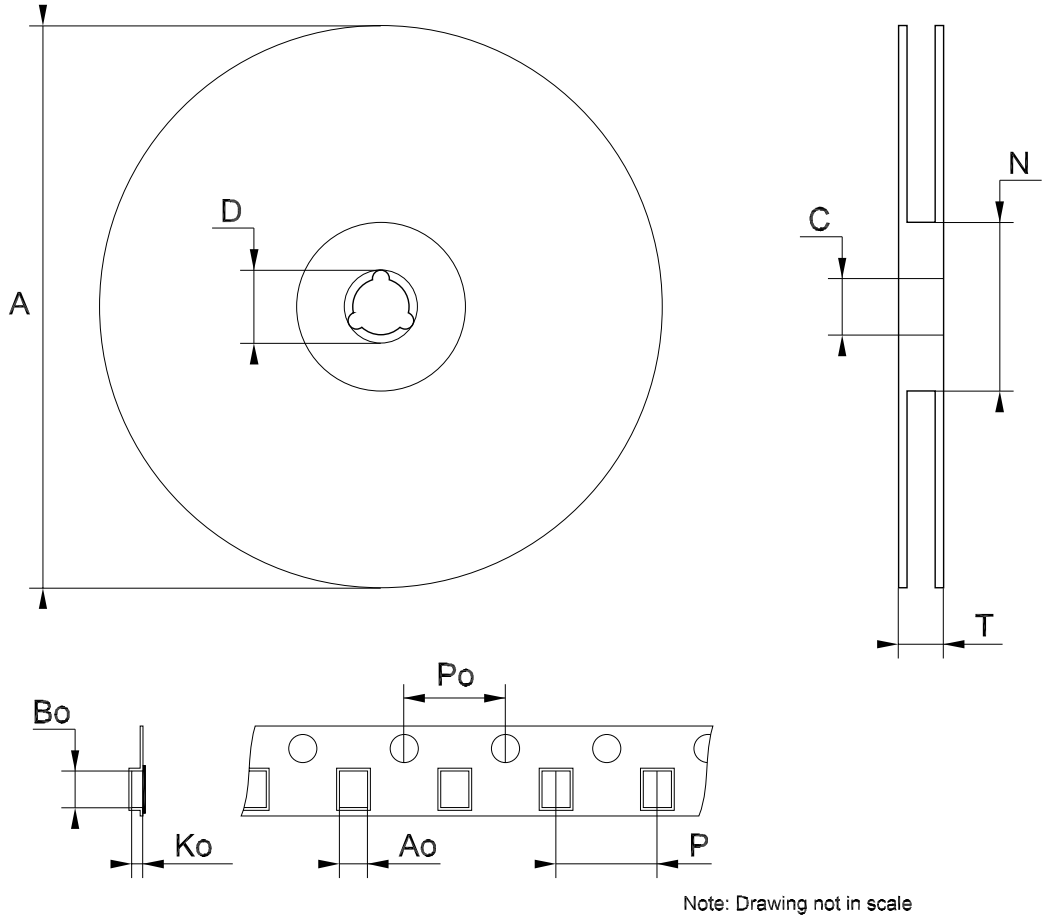
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A			180			7.086
C	12.8	13.0	13.2	0.504	0.512	0.519
D	20.2			0.795		
N	60			2.362		
T			14.4			0.567
Ao	10.50	10.6	10.70	0.413	0.417	0.421
Bo	15.70	15.80	15.90	0.618	0.622	0.626
Ko	4.80	4.90	5.00	0.189	0.193	0.197
Po	3.9	4.0	4.1	0.153	0.157	0.161
P	11.9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



Note: Drawing not in scale

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	0.2.76
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



Note: Drawing not in scale

Table 20: Revision History

Date	Revision	Description of Changes
06-Sep-2005	4	Order Codes has been updated.