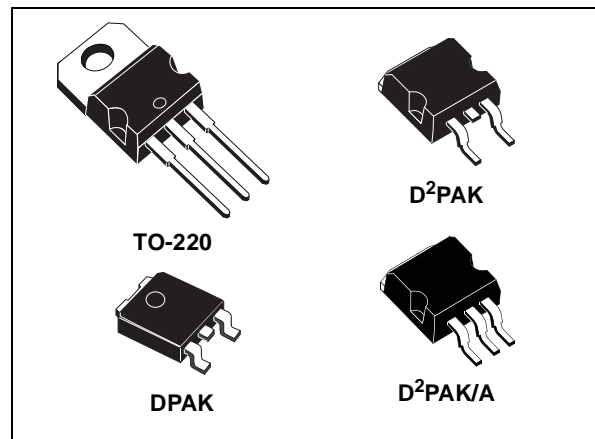




# KD1084 SERIES

## 5A LOW DROP POSITIVE VOLTAGE REGULATOR ADJUSTABLE AND FIXED

- TYPICAL 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
- 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 TEMPERATURE RANGE -40°C TO 125°C
- PACKAGE AVAILABLE : TO-220, D<sup>2</sup>PAK, D<sup>2</sup>PAK/A, DPAK
- PINOUT COMPATIBILITY WITH STANDARD ADJUSTABLE VREG

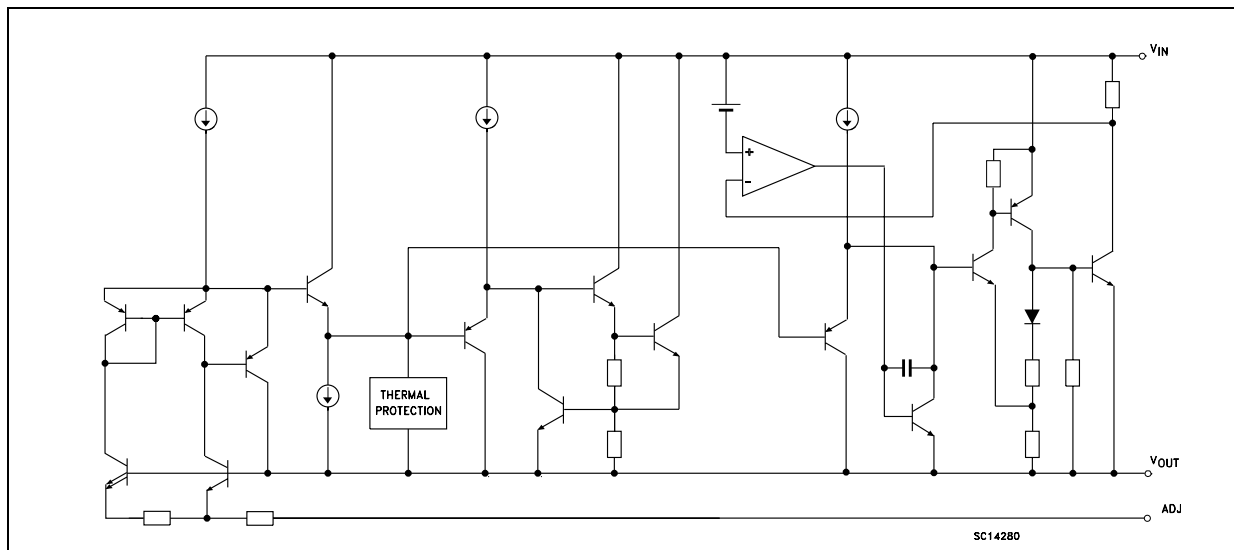


A 2.85V output version is suitable for SCSI-2 active termination. Unlike PNP regulators, where a part of the output current is wasted as quiescent current, the KD1084 quiescent current flows into the load, so increase efficiency. Only a 10 $\mu$ F minimum capacitor is need for stability. The devices are supplied in TO-220, D<sup>2</sup>PAK, D<sup>2</sup>PAK/A 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.

### 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 .

### SCHEMATIC DIAGRAM



## KD1084 SERIES

### ABSOLUTE MAXIMUM RATINGS

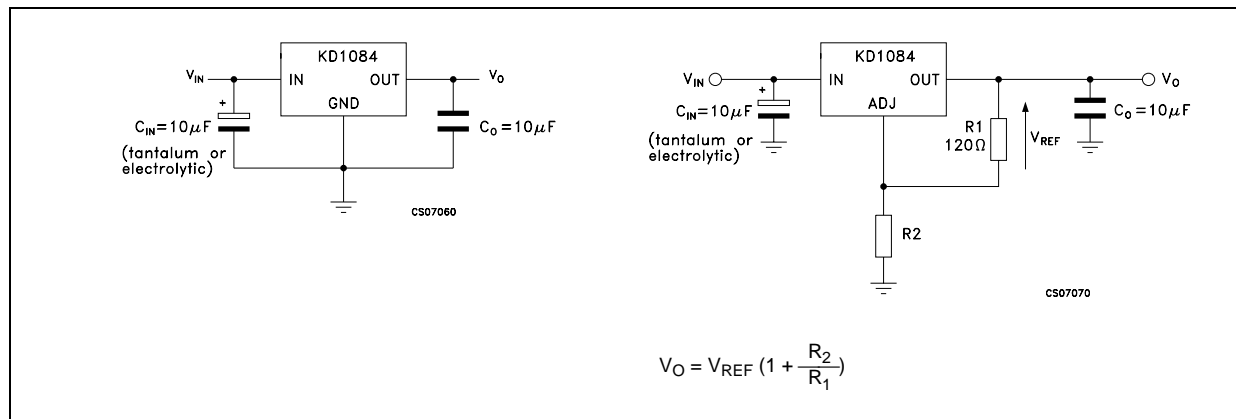
Symbol	Parameter <sup>2</sup>	Value	Unit
$V_I$	DC Input Voltage	12	V
$I_O$	Output Current	Internally Limited	mA
$P_D$	Power Dissipation	Internally Limited	mW
$T_{stg}$	Storage Temperature Range	-55 to +150	°C
$T_{op}$	Operating Junction Temperature Range	-40 to +125	°C

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

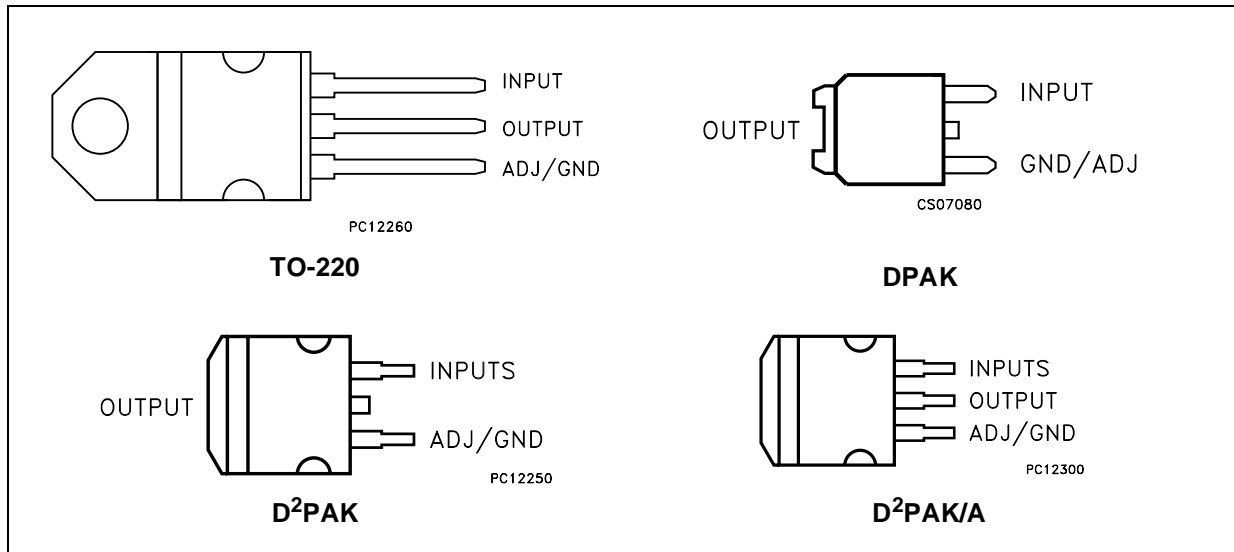
### THERMAL DATA

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

### APPLICATION CIRCUITS



**CONNECTION DIAGRAM (top view)**



**ORDERING CODES**

TO-220	D <sup>2</sup> PAK (**)	D <sup>2</sup> PAK/A	DPAK	OUTPUT VOLTAGE	TOLERANCE
KD1084V15 (*)	KD1084D2T15	KD1084D2M15	KD1084DT15	1.5 V	2%
KD1084AV15 (*)	KD1084AD2T15	KD1084AD2M15	KD1084ADT15	1.5 V	1%
KD1084V18	KD1084D2T18	KD1084D2M18	KD1084DT18	1.8 V	2%
KD1084AV18	KD1084AD2T18	KD1084AD2M18	KD1084ADT18	1.8 V	1%
KD1084V25	KD1084D2T25	KD1084D2M25	KD1084DT25 (*)	2.5 V	2%
KD1084AV25	KD1084AD2T25	KD1084AD2M25	KD1084ADT25 (*)	2.5 V	1%
KD1084V28 (*)	KD1084D2T28 (*)	KD1084D2M28 (*)	KD1084DT28 (*)	2.85 V	2%
KD1084AV28 (*)	KD1084AD2T28 (*)	KD1084AD2M28 (*)	KD1084ADT28 (*)	2.85 V	1%
KD1084V33	KD1084D2T33	KD1084D2M33	KD1084DT33	3.3 V	2%
KD1084AV33	KD1084AD2T33	KD1084AD2M33	KD1084ADT33	3.3 V	1%
KD1084V36	KD1084D2T36	KD1084D2M36	KD1084DT36	3.6 V	2%
KD1084AV36	KD1084AD2T36	KD1084AD2M36	KD1084ADT36	3.6 V	1%
KD1084V50	KD1084D2T50	KD1084D2M50	KD1084DT50 (*)	5.0 V	2%
KD1084AV50	KD1084AD2T50	KD1084AD2M50	KD1084ADT50 (*)	5.0 V	1%
KD1084V	KD1084D2T	KD1084D2M	KD1084DT	ADJ	2%
KD1084AV	KD1084AD2T	KD1084AD2M	KD1084ADT	ADJ	1%

(\*) Available on request

(\*\*) Available in Tape & Reel with the suffix "R" for fixed versions and "-R" for adjustable version

## KD1084 SERIES

**ELECTRICAL CHARACTERISTICS OF KD1084A#15** ( $V_I=4.5V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 3.1$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 3.1$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to 5A		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 5 \pm 1.5V$	60	75		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A#18** ( $V_I=4.8V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 3.4$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 3.4$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to 5A		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 5.3 \pm 1.5V$	60	75		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A#25** ( $V_I=5.5V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 4.1$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 4.1$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to 5A		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A#285** ( $V_I=5.85V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 4.5$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 4.5$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to 5A		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6.35 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

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**ELECTRICAL CHARACTERISTICS OF KD1084A#33** ( $V_I=6.3V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	3.267	3.3	3.333	V
		$I_O = 0 \text{ to } 5A$ $V_I = 4.9 \text{ to } 10V$	3.234	3.35	3.366	V
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 4.9 \text{ to } 10V$ $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 4.9 \text{ to } 10V$		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0 \text{ to } 5A$ $T_J = 25^\circ C$		3	15	mV
		$I_O = 0 \text{ to } 5A$		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6.8 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz to } 10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A#36** ( $V_I=6.6V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	3.564	3.6	3.636	V
		$I_O = 0 \text{ to } 5A$ $V_I = 5.2 \text{ to } 10V$	3.528	3.6	3.672	V
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 5.2 \text{ to } 10V$ $T_J = 25^\circ C$		0.5	10	mV
		$I_O = 0 \text{ mA}$ $V_I = 5.2 \text{ to } 10V$		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0 \text{ to } 5A$ $T_J = 25^\circ C$		3	15	mV
		$I_O = 0 \text{ to } 5A$		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 7.1 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz to } 10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A#5** ( $V_I=8V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	4.95	5	5.05	V
		$I_O = 0$ to $5A$ $V_I = 6.6$ to $10V$	4.9	5	5.1	V
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 6.6$ to $10V$ $T_J = 25^\circ C$		0.5	10	mV
		$I_O = 0 \text{ mA}$ $V_I = 6.6$ to $10V$		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $5A$ $T_J = 25^\circ C$		5	20	mV
		$I_O = 0$ to $5A$		10	35	V
$V_d$	Dropout Voltage	$I_O = 5A$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 8.5 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to $10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084A** ( $V_I=4.25V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

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

## KD1084 SERIES

**ELECTRICAL CHARACTERISTICS OF KD1084#15** ( $V_I=4.5V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_J = 25^\circ C$	1.47	1.5	1.536	V
		$I_O = 0$ to 5A $V_I = 3.1$ to 10V	1.455	1.5	1.545	V
$\Delta V_O$	Line Regulation	$I_O = 0$ mA $V_I = 3.1$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0$ mA $V_I = 3.1$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120$ Hz, $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 5 \pm 1.5V$	60	75		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10Hz$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084#18** ( $V_I=4.8V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0$ mA $V_I = 3.4$ to 10V $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0$ mA $V_I = 3.4$ to 10V		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120$ Hz, $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 5.3 \pm 1.5V$	60	75		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10Hz$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%



**ELECTRICAL CHARACTERISTICS OF KD1084#25** ( $V_I=5.5V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 4.1$ to $10V$ $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 4.1$ to $10V$		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $5A$ $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to $5A$		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to $10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084#285** ( $V_I=5.85V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 4.5$ to $10V$ $T_J = 25^\circ C$		0.5	6	mV
		$I_O = 0 \text{ mA}$ $V_I = 4.5$ to $10V$		1	6	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $5A$ $T_J = 25^\circ C$		3	15	mV
		$I_O = 0$ to $5A$		7	20	V
$V_d$	Dropout Voltage	$I_O = 5 \text{ A}$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6.35 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to $10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

## KD1084 SERIES

**ELECTRICAL CHARACTERISTICS OF KD1084#33** ( $V_I=6.3V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_J = 25^\circ C$	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 $T_J = 25^\circ C$		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 $T_J = 25^\circ C$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120$ Hz, $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 6.8 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10Hz$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084#36** ( $V_I=6.6V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0$ mA $T_J = 25^\circ C$	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
$\Delta V_O$	Line Regulation	$I_O = 0$ mA $V_I = 5.2$ to 10V $T_J = 25^\circ C$		0.5	10	mV
		$I_O = 0$ mA $V_I = 5.2$ to 10V		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to 5A $T_J = 25^\circ C$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120$ Hz, $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 7.1 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10Hz$ to 10KHz		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084#5** ( $V_I=8V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

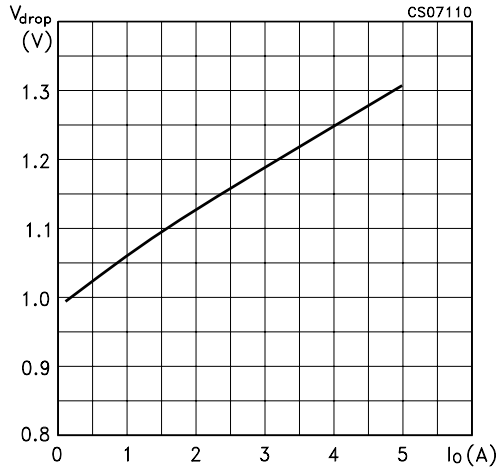
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 0 \text{ mA}$ $T_J = 25^\circ C$	4.9	5	5.1	V
		$I_O = 0$ to $5A$ $V_I = 6.6$ to $10V$	4.85	5	5.15	V
$\Delta V_O$	Line Regulation	$I_O = 0 \text{ mA}$ $V_I = 6.6$ to $10V$ $T_J = 25^\circ C$		0.5	10	mV
		$I_O = 0 \text{ mA}$ $V_I = 6.6$ to $10V$		1	10	mV
$\Delta V_O$	Load Regulation	$I_O = 0$ to $5A$ $T_J = 25^\circ C$		5	20	mV
		$I_O = 0$ to $5A$		10	35	V
$V_d$	Dropout Voltage	$I_O = 5A$		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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $I_O = 5A$ $V_I = 8.5 \pm 1.5V$	60	72		dB
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to $10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**ELECTRICAL CHARACTERISTICS OF KD1084** ( $V_I=4.25V$ ,  $C_I = C_O = 10\mu F$  (Tant.),  $T_A = -40$  to  $125^\circ C$ , unless otherwise specified.)

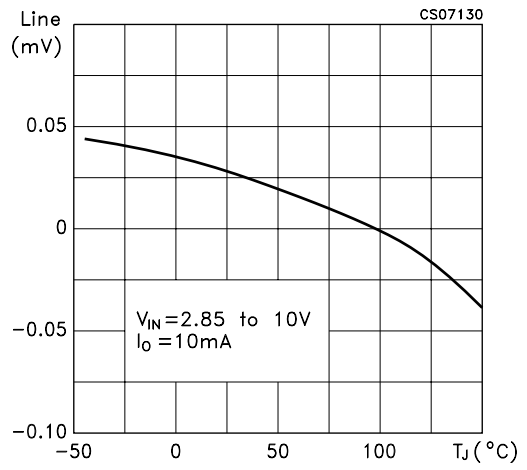
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_O$	Output Voltage	$I_O = 10\text{mA}$ $T_J = 25^\circ C$	1.225	1.25	1.275	V
		$I_O = 10\text{mA}$ to $5A$ $V_I = 2.85$ to $10V$	1.213	1.25	1.287	V
$\Delta V_O$	Line Regulation	$I_O = 10\text{mA}$ $V_I = 2.85$ to $10V$ $T_J = 25^\circ C$		0.015	0.2	%
		$I_O = 10\text{mA}$ $V_I = 2.85$ to $10V$		0.035	0.2	%
$\Delta V_O$	Load Regulation	$I_O = 10\text{mA}$ to $5A$ $T_J = 25^\circ C$		1	0.3	%
		$I_O = 10\text{mA}$ 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	$T_A = 25^\circ C$ , 30ms pulse		0.003	0.015	%/W
SVR	Supply Voltage Rejection	$f = 120 \text{ Hz}$ , $C_O = 25 \mu F$ , $C_{ADJ} = 25 \mu F$ , $I_O = 5A$ $V_I = 4.75 \pm 1.5V$	60	72		dB
$I_{ADJ}$	Adjust Pin Current	$V_I = 4.25V$ $I_O = 10 \text{ mA}$		55	120	$\mu A$
$\Delta I_{ADJ}$	Adjust Pin Current Change	$I_O = 10\text{mA}$ to $5A$ $V_I = 2.85$ to $10V$		0.2	5	$\mu A$
eN	RMS Output Noise Voltage (% of $V_O$ )	$T_A = 25^\circ C$ $f = 10\text{Hz}$ to $10\text{KHz}$		0.003		%
S	Temperature Stability			0.5		%
S	Long Term Stability	$T_A = 125^\circ C$ 1000Hrs		0.5		%

**TYPICAL CHARACTERISTICS** (unless otherwise specified  $T_j = 25^\circ\text{C}$ ,  $C_I=10\mu\text{F}$  (tant.),  $C_O=10\mu\text{F}$  (tant.))

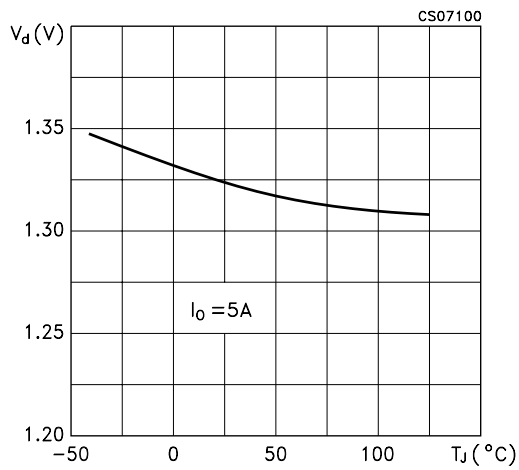
**Figure 1 : Dropout Voltage vs Output Current**



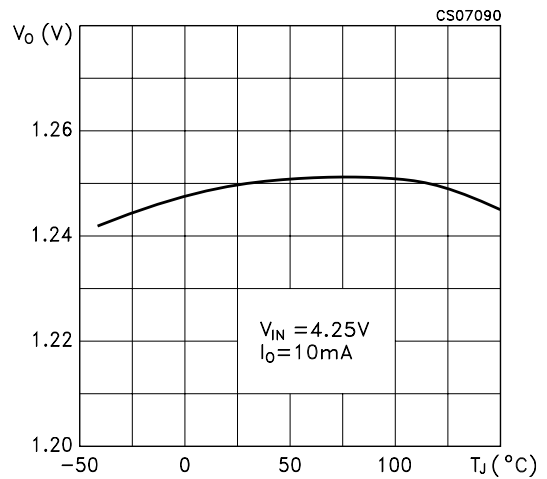
**Figure 4 : Line Regulation vs Temperature**



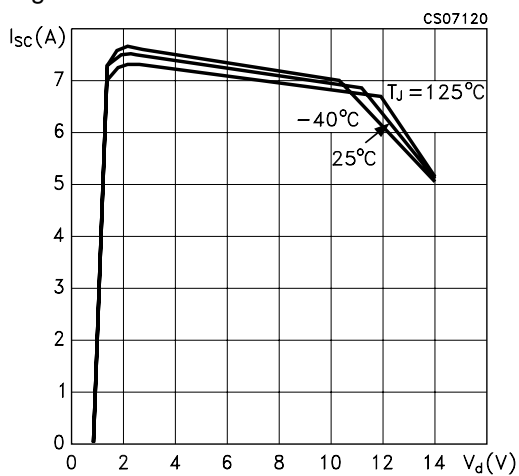
**Figure 2 : Dropout Voltage vs Temperature**



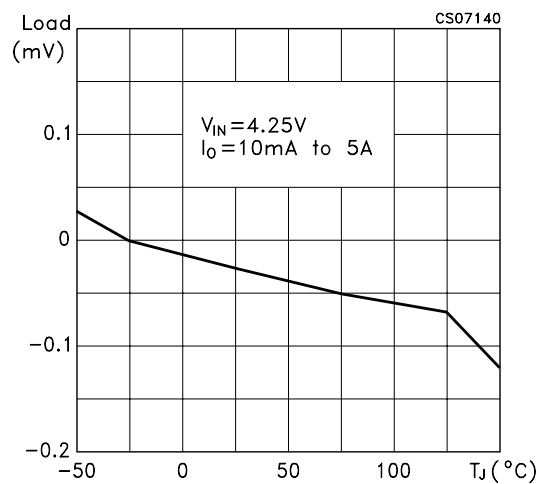
**Figure 5 : Output Voltage vs Temperature**



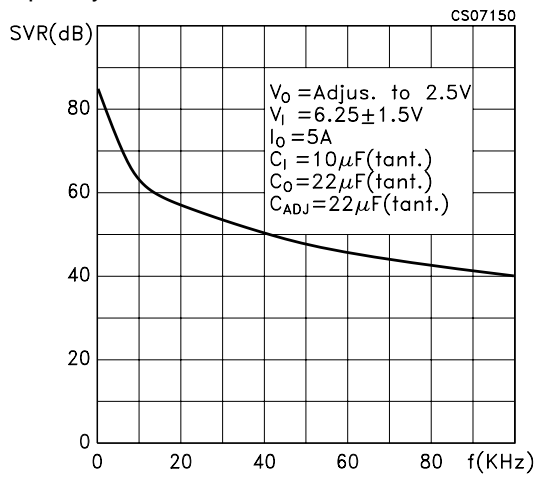
**Figure 3 : Short Circuit Current vs Dropout Voltage**



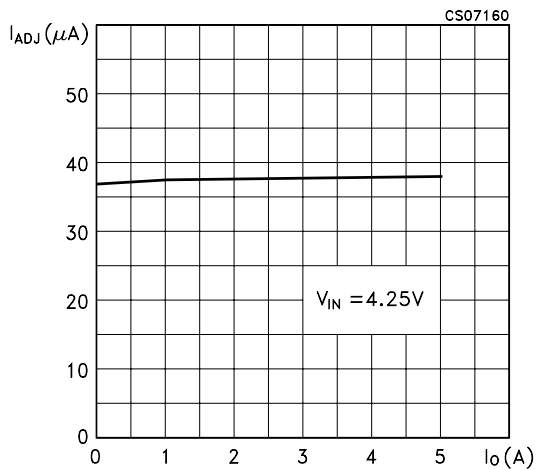
**Figure 6 : Load Regulation vs Temperature**



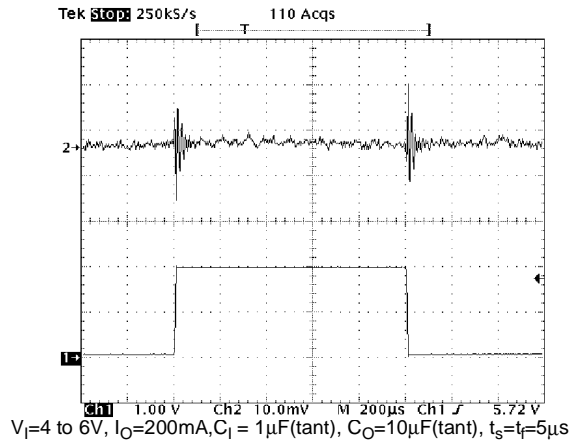
**Figure 7 : Supply Voltage Rejection vs Frequency**



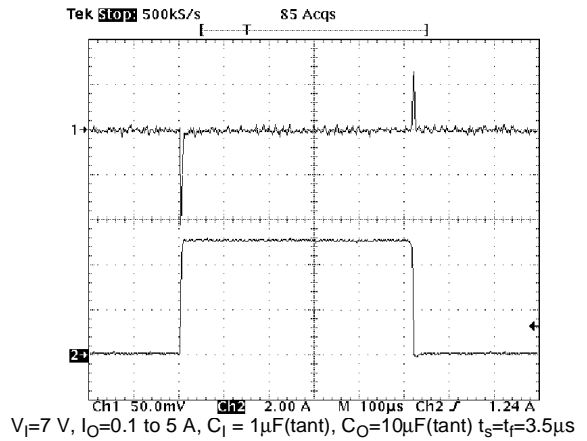
**Figure 8 : Adjust Pin Current vs Output Current**



**Figure 9 : Line Transient**

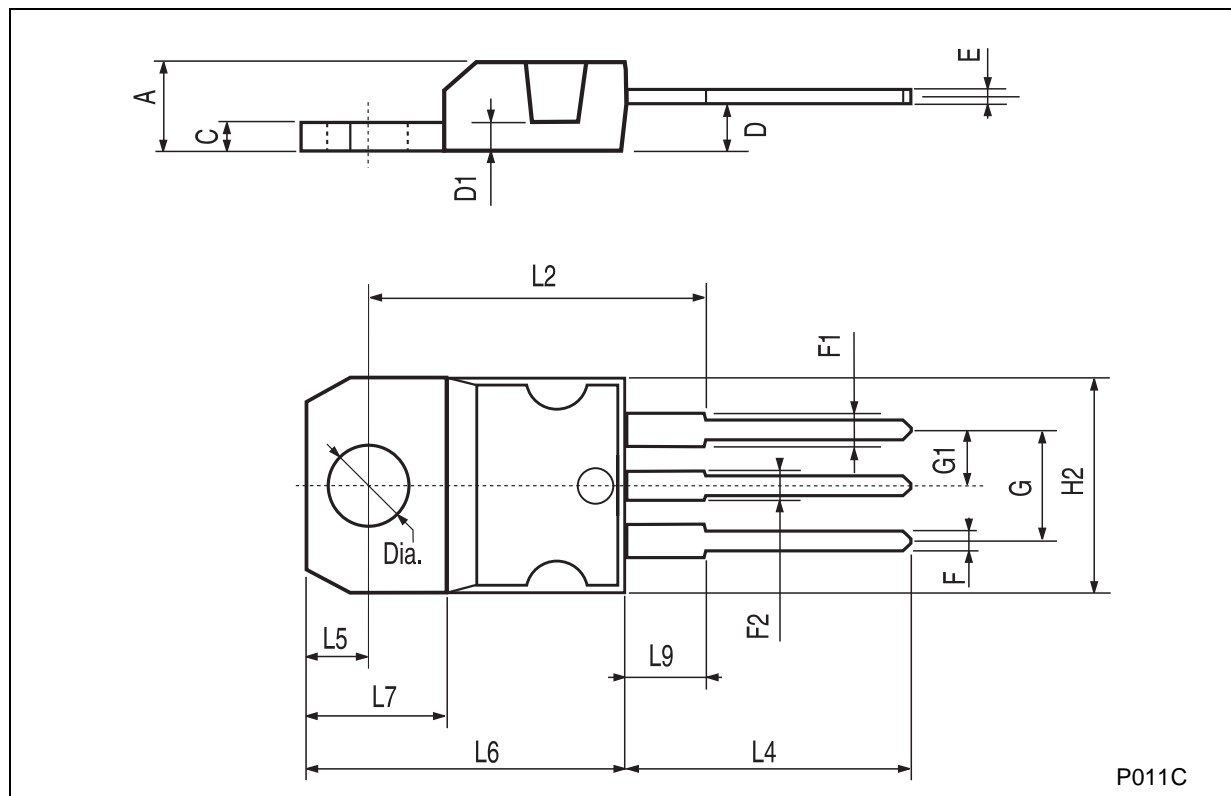


**Figure 10 : Load Transient**



**TO-220 MECHANICAL DATA**

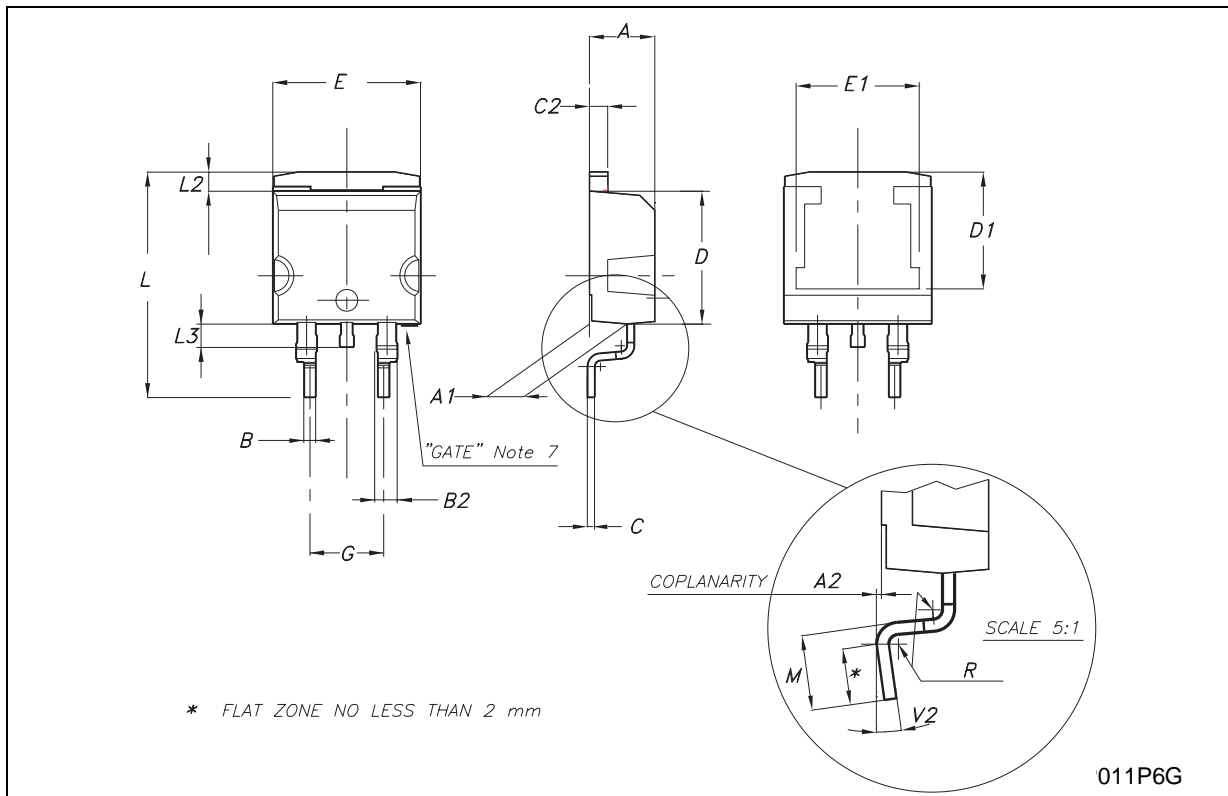
DIM.	mm.			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
C	1.23		1.32	0.048		0.051
D	2.40		2.72	0.094		0.107
D1		1.27			0.050	
E	0.49		0.70	0.019		0.027
F	0.61		0.88	0.024		0.034
F1	1.14		1.70	0.044		0.067
F2	1.14		1.70	0.044		0.067
G	4.95		5.15	0.194		0.203
G1	2.4		2.7	0.094		0.106
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

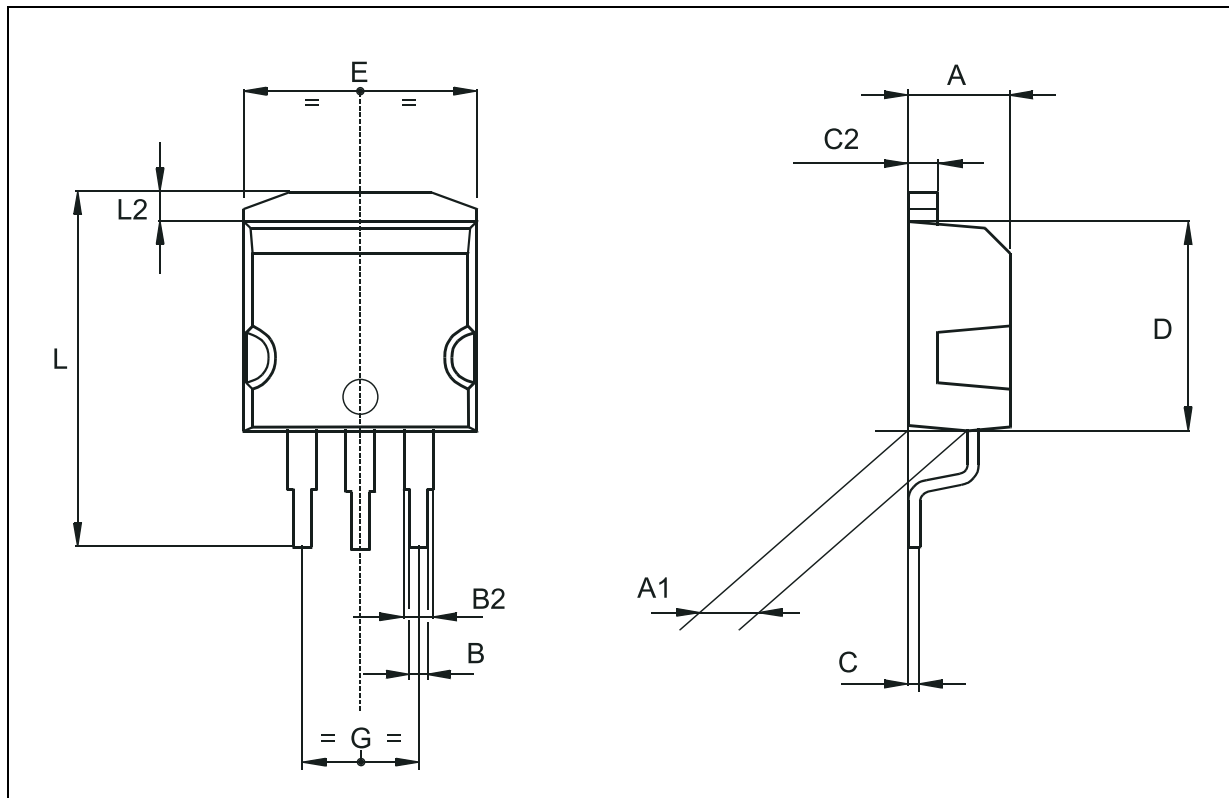
**D<sup>2</sup>PAK MECHANICAL DATA**

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°



**D<sup>2</sup>PAK/A MECHANICAL DATA**

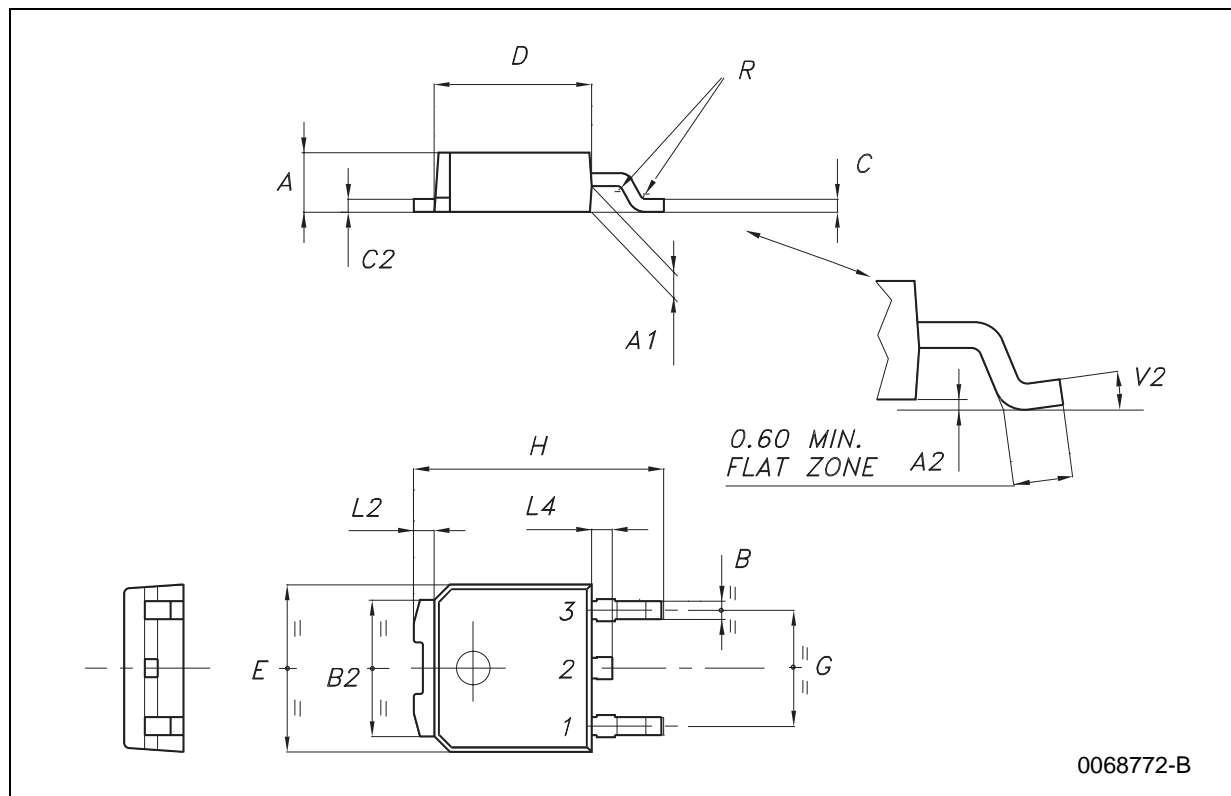
DIM.	mm.			inch		
	MIN.	TYP	MAX.	MIN.	TYP.	MAX.
A	4.40		4.60	0.173		0.181
A1	2.49		2.69	0.098		0.106
B	0.7		0.93	0.027		0.036
B2	1.14		1.7	0.044		0.067
C	0.45		0.60	0.017		0.023
C2	1.21		1.36	0.047		0.053
D	8.95		9.35	0.352		0.368
E	10		10.4	0.393		0.409
G	4.88		5.28	0.192		0.208
L	15		15.85	0.590		0.106
L2	1.27		1.4	0.050		0.055





**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
B2	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
E	6.4		6.6	0.252		0.260
G	4.4		4.6	0.173		0.181
H	9.35		10.1	0.368		0.397
L2		0.8			0.031	
L4	0.6		1	0.023		0.039



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