

General Description

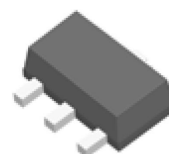
The D75XX series is a set of three-terminal high current low voltage regulator implemented in CMOS technology. They can deliver 150mA output current and allow an input voltage as high as 30V. They are available with several fixed output voltages ranging from 3.0V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current.

Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

The D75XX series is available in TO92 and SOT89-3 package.



TO92



SOT89-3

Features

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- High Input Voltage up to 30V
- 150mA High Output Current ($P_d \leq 250\text{mW}$)
- $\pm 3\%$ Output Voltage Accuracy

Applications

- Battery-Powered Equipment
- Communication Equipment
- Audio/Video Equipment

Package Information

Part NO.	Order NO.	Package Description	Package Marking	Package Option
D75XX	D75XXW	TO92	CHMC D75XX SXXXX	1000/Bag 2000/Tape
D75XX	D75XXL	SOT89-3	D75XX SXXXX	1000/Reel

CHMC:Trademark

D75XX:Part NO.

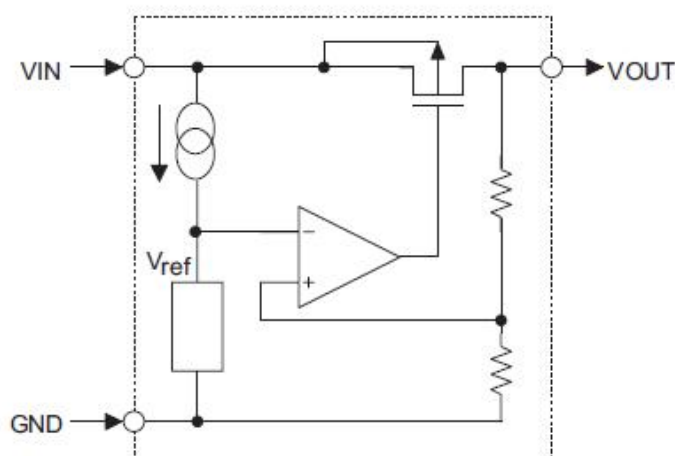
SXXXX:Lot NO.

Selection Table

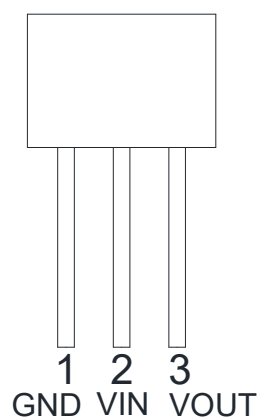
Part No.	Output Voltage	Tolerance
D7530	3.0V	$\pm 3\%$
D7533	3.3V	$\pm 3\%$
D7536	3.6V	$\pm 3\%$
D7540	4.0V	$\pm 3\%$
D7544	4.4V	$\pm 3\%$
D7550	5.0V	$\pm 3\%$

Note: "XX" stands for output voltages.

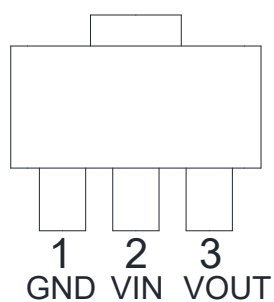
Functional Block Diagram



Pin Configuration



D75XX(TO92)



D75XX(SOT89-3)

Pin Description

TO92

Pin Number	Pin Name	Function Description
1	Gnd	Ground
2	Vin	Power supply
3	Vout	Output

SOT89-3

Pin Number	Pin Name	Function Description
1	Gnd	Ground
2	Vin	Power supply
3	Vout	Output

Absolute Maximum Ratings

Parameter Name	Symbol	Value	Unit
Supply Voltage	V _{CC}	-0.3~33	V
Power Consumption (SOT89-3 and TO92)	P _{DMAX}	250	mW
Storage Temperature	T _{stg}	-50 ~ +150	°C
Operating Temperature	T _{opr}	-40 ~ +125	°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics**D7530, +3.0V Output Type (Ta=25℃)**

Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min	Typ	Max	
Output Voltage Tolerance	V _{OUT}	5V	I _{OUT} =10mA	2.91	3.00	3.09	V
Output Current	I _{OUT}	5V		100	150		mA
Load Regulation	ΔV _{OUT}	5V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	5V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		4V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	5V	I _{OUT} =10mA -25℃<Ta<125℃		±0.45		mV/℃

D7533, +3.3V Output Type (Ta=25℃)

Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min.	Typ.	Max.	
Output Voltage Tolerance	V _{OUT}	5.5V	I _{OUT} =10mA	3.201	3.300	3.399	V
Output Current	I _{OUT}	5.5V		100	150		mA
Load Regulation	ΔV _{OUT}	5.5V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	5.5V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		4.5V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	5.5V	I _{OUT} =10mA -25℃<Ta<125℃		±0.5		mV/℃

D7536, +3.6V Output Type (Ta=25°C)

Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min	Typ	Max	
Output Voltage Tolerance	V _{OUT}	5.6V	I _{OUT} =10mA	3.492	3.600	3.708	V
Output Current	I _{OUT}	5.6V		100	150		mA
Load Regulation	ΔV _{OUT}	5.6V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	5.6V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		4.6V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	5.6V	I _{OUT} =10mA -25°C<Ta<125°C		±0.6		mV/°C

D7540, +4.0V Output Type (Ta=25°C)

Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min	Typ	Max	
Output Voltage Tolerance	V _{OUT}	6.0V	I _{OUT} =10mA	3.880	4.000	4.120	V
Output Current	I _{OUT}	6.0V		100	150		mA
Load Regulation	ΔV _{OUT}	6.0V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	6.0V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		5.0V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	6.0V	I _{OUT} =10mA -25°C<Ta<125°C		±0.65		mV/°C

D7544, +4.4V Output Type (Ta=25℃)

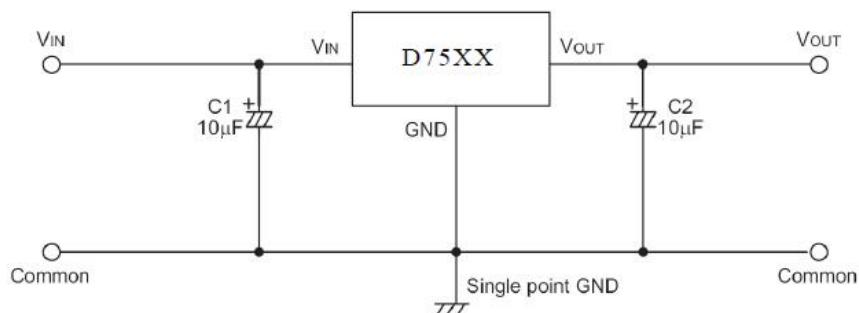
Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min	Typ	Max	
Output Voltage Tolerance	V _{OUT}	6.4V	I _{OUT} =10mA	4.268	4.400	4.532	V
Output Current	I _{OUT}	6.4V		100	150		mA
Load Regulation	ΔV _{OUT}	6.4V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	6.4V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		5.4V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	6.4V	I _{OUT} =10mA -25℃<Ta<125℃		±0.7		mV/℃

D7550, +5.0V Output Type (Ta=25℃)

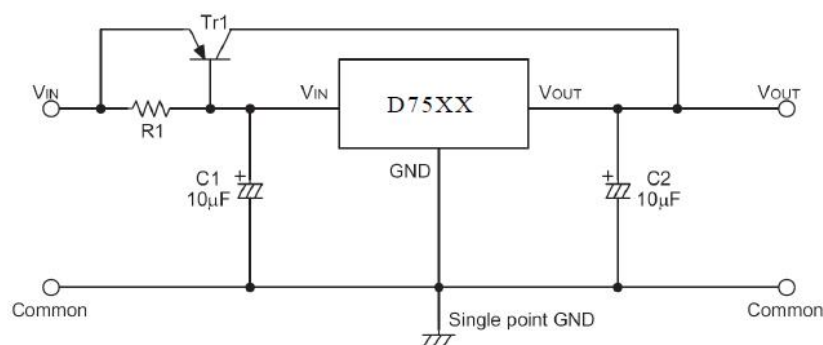
Parameter Name	Symbol	Test Conditions		Value			Unit
		V _{IN}	Conditions	Min	Typ	Max	
Output Voltage Tolerance	V _{OUT}	7V	I _{OUT} =10mA	4.85	5.00	5.15	V
Output Current	I _{OUT}	7V		100	150		mA
Load Regulation	ΔV _{OUT}	7V	1mA≤I _{OUT} ≤100mA		60	150	mV
Voltage Drop	V _{DIF}		I _{OUT} =1mA		100		mV
Current Consumption	I _{SS}	7V	No load		3.5	7	uA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$		6V≤V _{IN} ≤30V I _{OUT} =1mA		0.2		%/V
Input Voltage	V _{IN}					30	V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta}$	7V	I _{OUT} =10mA -25℃<Ta<125℃		±0.75		mV/℃

Typical Application

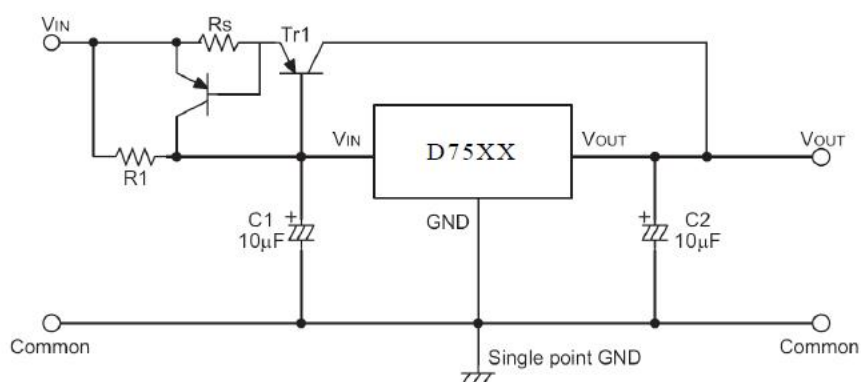
Basic Circuit



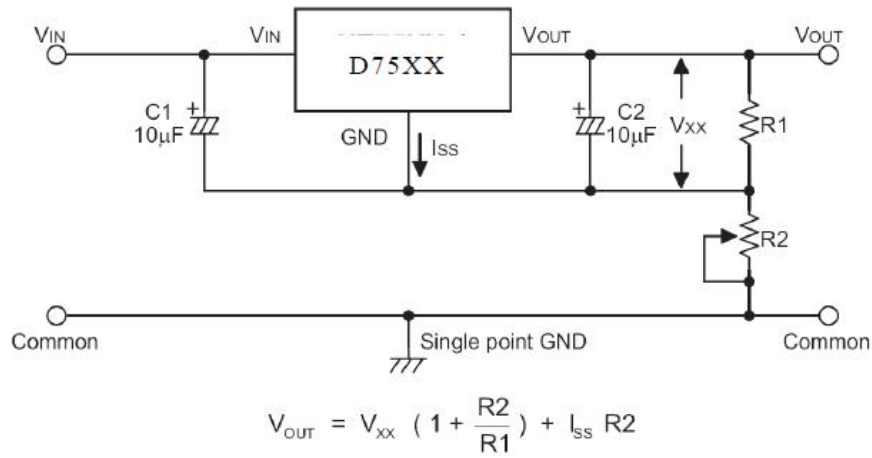
High Output Current Positive Voltage Regulator



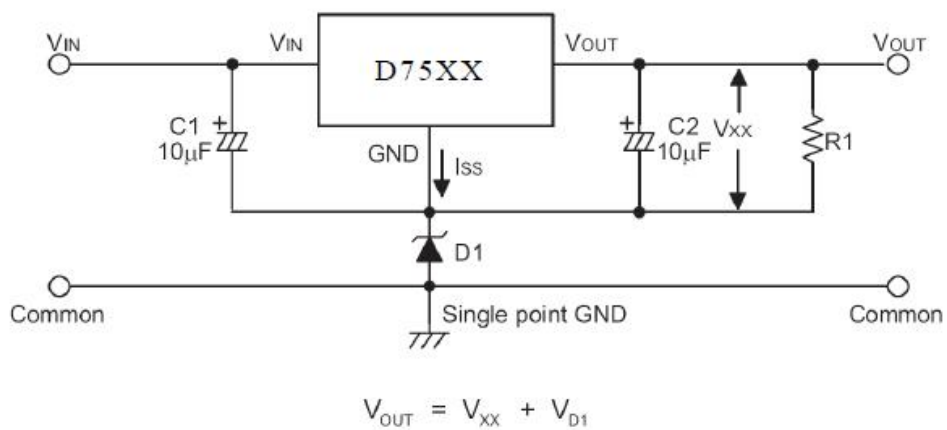
Short-Circuit Protection for $Tr1$



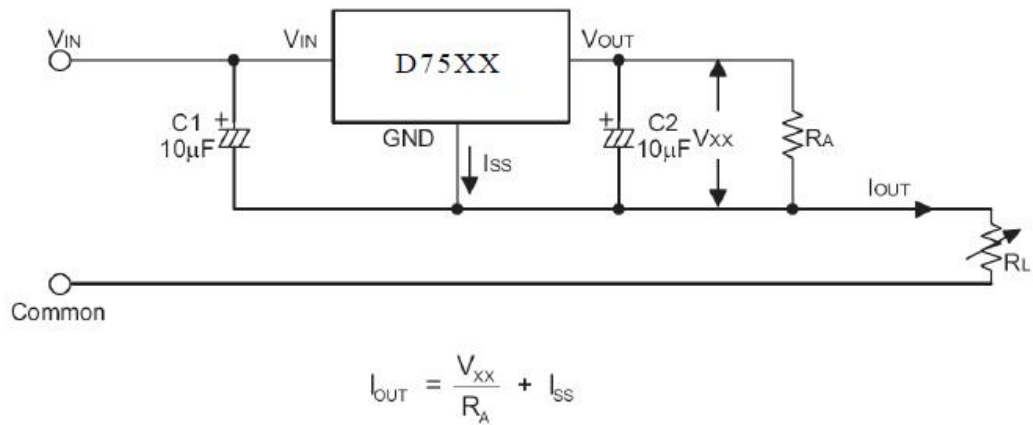
Circuit for Increasing Output Voltage



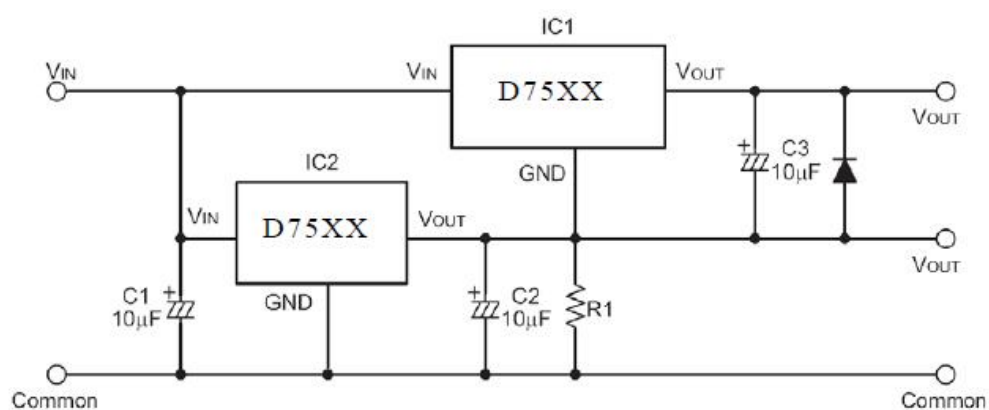
Circuit for Increasing Output Voltage



Constant Current Regulator

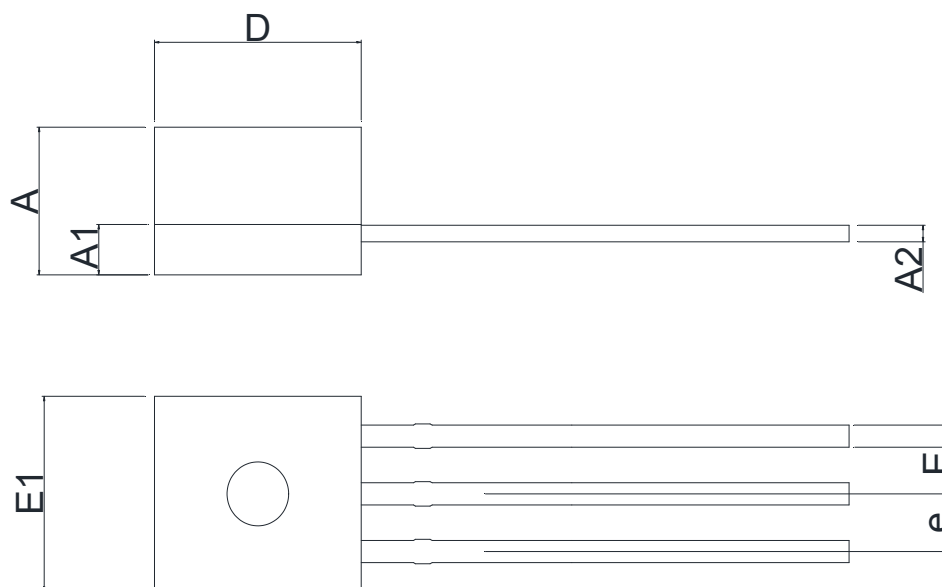


Dual Supply



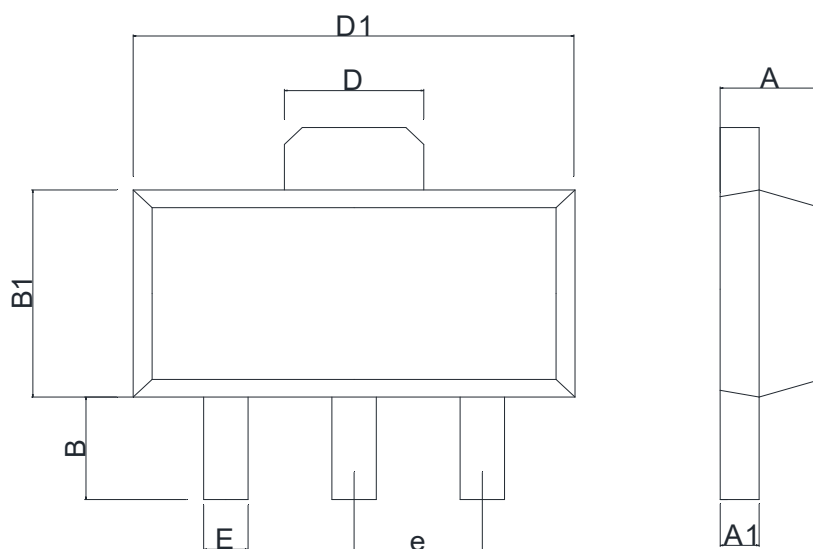
Outline Dimensions

TO92



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
A2	0.280	0.510	0.011	0.020
D	4.300	4.700	0.169	0.185
E	0.360	0.560	0.014	0.022
E1	4.300	4.700	0.169	0.185
e	1.270 (BSC)		0.050 (BSC)	

SOT89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.550	0.057	0.061
A1	0.390	0.410	0.015	0.016
B	0.950	1.050	0.037	0.041
B1	2.350	2.550	0.092	0.100
E	0.350	0.450	0.013	0.017
D1	4.400	4.600	0.173	0.181
D	1.550 REF		0.061 REF	
e	1.500 (BSC)		0.059 (BSC)	

Statements

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