

General Description

The LTP3558A is a high voltage, low power consumption and high performance LDO. The family uses an advanced CMOS process and a P-MOSFET pass device to achieve fast start-up, with high output voltage accuracy. The LTP3558A is stable with a 1.0 μF to 10 μF ceramic output capacitor, and uses a precision voltage reference and feedback loop to achieve a worst-case accuracy of 1% over all load, line, process, and temperature variations.

Features

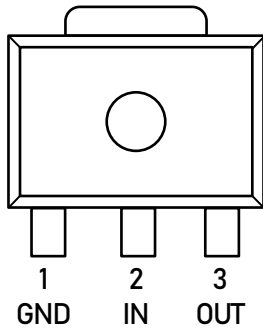
- Wide Input Voltage Range: up to 36 V
- Output Current: 200 mA
- Standard Fixed Output Voltage Options: 3.3 V, 5.0 V
- Other Output Voltage Options Available on Request
- Low I_Q : 1.5 μA
- Low Dropout Voltage
- Short current protection: 100 mA
- Excellent Load and Line Transient Response
- Line Regulation: 0.01%/V Typically
- Available Packages: SOT89-3

Order Information

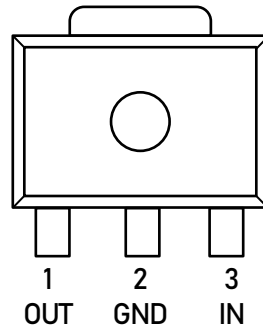
Model	Package	Ordering Number ^{Note1}	Packing Option
LTP3558A	SOT89-3	LTP3558A-xxXT4	Tape and Reel, 1000
	SOT89-3	LTP3558A-xxRXT4	Tape and Reel, 1000

Note1: xx stands for output voltage, e.g. if xx = 18, the output voltage is 1.8V; if xx = 30, the output voltage is 3.0V.

Pin Configuration



SOT89-3

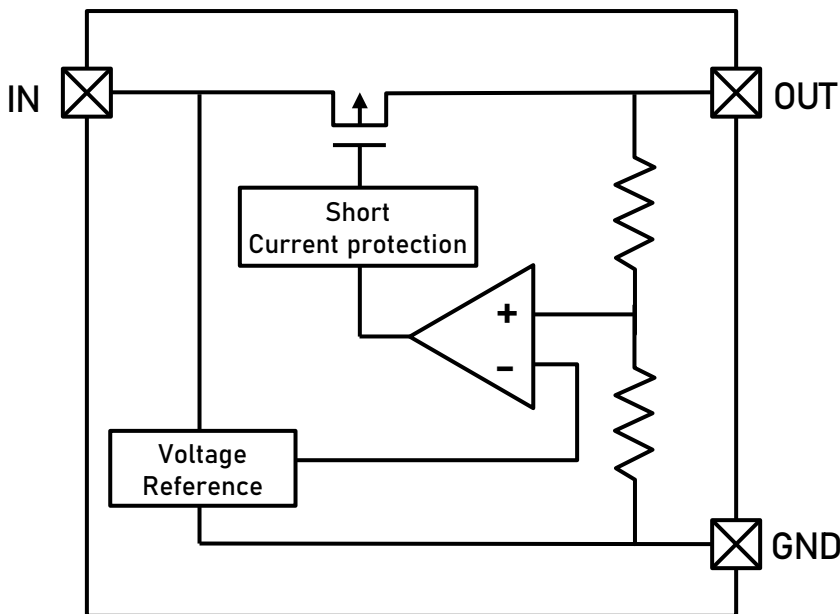


SOT89-3

Pin Function

Pin No.		Pin Name	Pin Function
SOT89-3	SOT89-3		
1	2	GND	Ground.
2	3	IN	Supply input pin. Must be closely decoupled to GND with a 1 μ F or greater ceramic capacitor.
3	1	OUT	Output pin. Bypass a 1 μ F or greater ceramic capacitor from this pin to ground.

Block Diagram



CAUTION: These devices are sensitive to electrostatic discharge; follow proper IC Handling Procedures.
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Functional Description

Input Capacitor

A 1 μF to 10 μF ceramic capacitor is recommended to connect between V_{in} and GND pins to decouple input power supply glitch and noise. The amount of the capacitance may be increased without limit. This input capacitor must be located as close as possible to the device to assure input stability and less noise. For PCB layout, a wide copper trace is required for both V_{in} and GND.

Output Capacitor

An output capacitor is required for the stability of the LDO. The recommended output capacitance is from 1 μF to 10 μF , Equivalent Series Resistance (ESR) is from 5 m Ω to 100 m Ω , and temperature characteristics are X7R or X5R. Higher capacitance values help to improve load/line transient response. The output capacitance may be increased to keep low undershoot/overshoot. Place output capacitor as close as possible to OUT and GND pins.

Low Quiescent Current

The LTP3558A, consuming only around 1.5 μA for all input range and output loading, provides great power saving in portable and low power applications.

Short Current Limit Protection

When output current at the OUT pin is higher than current limit threshold or the OUT pin is short-circuit to GND, the short current limit protection will be triggered and clamp the output current to approximately 100mA to prevent over-current and to protect the regulator from damage due to overheating.

Absolute Maximum Ratings

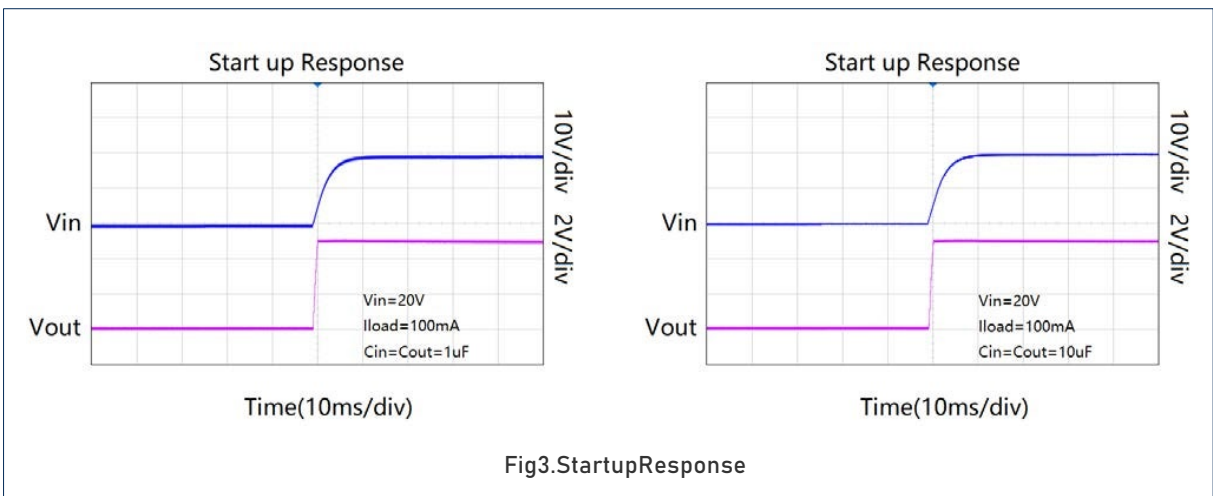
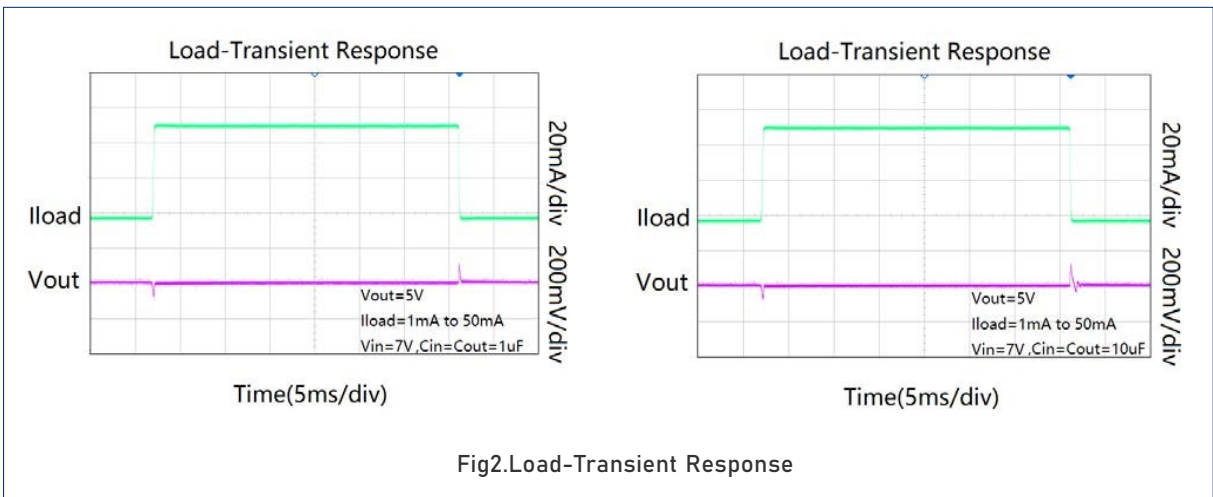
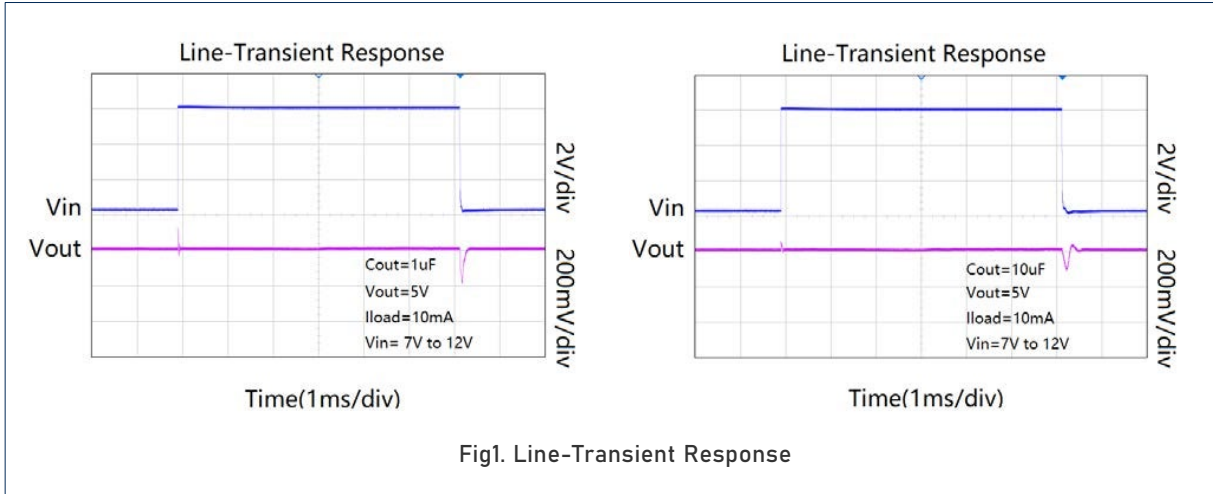
Parameter	Rating	Unit
IN pin to GND pin	-0.3 to 40	V
OUT pin to GND pin	-0.3 to 6	V
Thermal Resistance (Junction to Ambient)	SOT89-3	135 °C/W
Operating Junction Temperature	-40 to 125	°C
Storage Temperature	-65 to 150	°C
Lead Temperature (Soldering, 10 sec)	300	°C
ESD (HBM mode)	ESDA/JEDEC JS-001-2017	±2000V

Electrical Characteristics

($V_{IN} = V_{OUT} + 2$ V, $T_a = 25^\circ\text{C}$, $C_{IN} = 10$ μF , $C_{OUT} = 10$ μF , unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage Operation Range	V_{IN}				36	V
Dropout Voltage	V_{DROP}	$V_{OUT} = 5.0$ V, $I_{OUT} = 150$ mA		720		mV
		$V_{OUT} = 5.0$ V, $I_{OUT} = 100$ mA		420		
		$V_{OUT} = 3.3$ V, $I_{OUT} = 150$ mA		820		
		$V_{OUT} = 3.3$ V, $I_{OUT} = 100$ mA		520		
DC Supply Quiescent Current	I_Q			1.5	3	μA
Regulated Output Voltage	V_{OUT}	$I_{OUT} = 1$ mA	$V_{OUT} \times 0.99$		$V_{OUT} \times 1.01$	V
Output Voltage Line Regulation	R_{egLINE}	$V_{IN} = V_{OUT} + 1$ V to 30 V, $I_{OUT} = 10$ mA		0.01	0.04	%
Output Voltage Load Regulation	R_{egLOAD}	I_{OUT} from 1 mA to 150 mA $V_{IN} = V_{OUT} + 2$ V		5	20	mV
		I_{OUT} from 1 mA to 150 mA $V_{IN} = 10$ V		25	60	mV
Maximum Output Current	I_{OUT}	$V_{IN} = V_{OUT} + 2$ V	200			mA
Short Current Protection	I_{SHORT}	OUT short to GND		100		mA
Output Noise	e_N	10 Hz to 100 kHz, $I_{OUT} = 30$ mA,		90		μV_{RMS}

TYPICAL PERFORMANCE CHARACTERISTICS



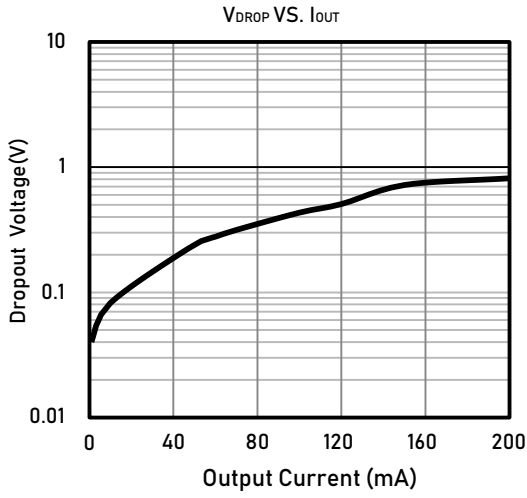


Fig4. Dropout Voltage VS Output Current

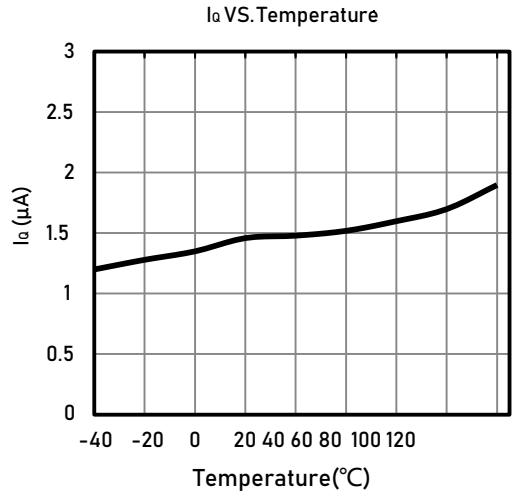
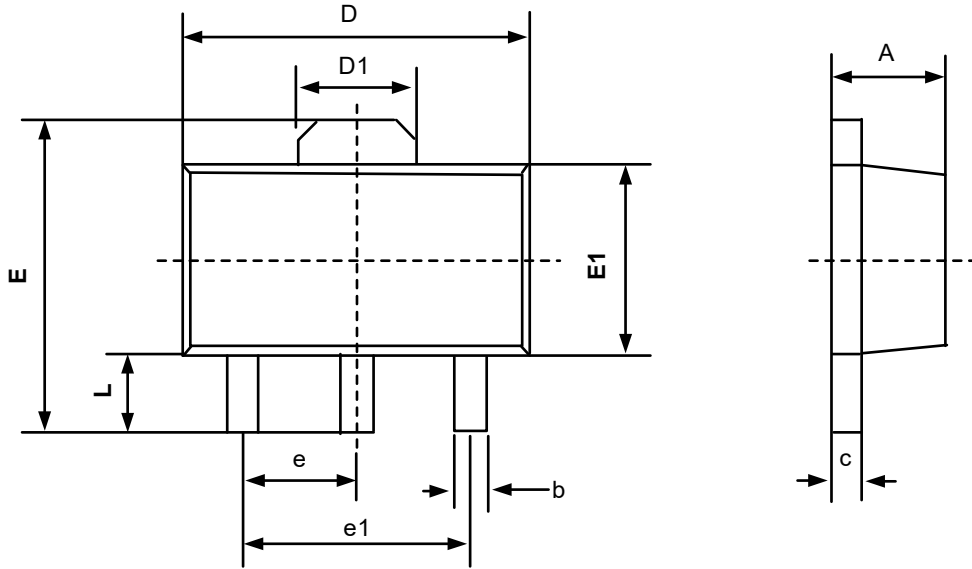


Fig5. DC Supply Quiescent Current VS Temperature

Package Dimension

SOT89-3



Unit: mm

Symbol	Dimensions In Millimeters	
	Min	Max
A	1.400	1.600
b	0.320	0.520
c	0.350	0.440
D	4.400	4.600
D1	1.550REF	
E	3.940	4.250
E1	2.300	2.600
e	1.500BSC	
e1	3.000BSC	
L	0.900	1.200