



LR1142

CMOS IC

HIGH PSRR, LOW DROPOUT, 500mA ADJUSTABLE LDO REGULATOR

DESCRIPTION

The UTC **LR1142** is a CMOS-based 500mA voltage regulator with low supply current, low dropout, adjustable output voltage. The device offering high PSRR and low dropout. The quiescent current is as low as 35 μ A, further prolonging the battery life. The UTC **LR1142** also works with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications, critical in handheld wireless devices.

The UTC **LR1142** consumes typical 0.7 μ A in shutdown mode. The other features include low dropout voltage, high output accuracy, current limit protection, and enable/shutdown control.

FEATURES

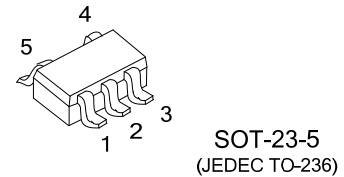
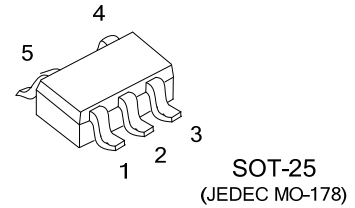
- * Wide operating voltage range: 2.5V~5.5V
- * Adjustable output voltage
- * Enable/shutdown control
- * Low-noise for RF application
- * Ultra-Fast response in line/load transient
- * Current limit protection
- * Output only 1 μ F capacitor required for stability
- * High power supply rejection ratio

ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
LR1142L-xx-AE5-A-R	LR1142G-xx-AE5-A-R	SOT-23-5	Tape Reel
LR1142L-xx-AE5-B-R	LR1142G-xx-AE5-B-R	SOT-23-5	Tape Reel
LR1142L-xx-AF5-A-R	LR1142G-xx-AF5-A-R	SOT-25	Tape Reel
LR1142L-xx-AF5-B-R	LR1142G-xx-AF5-B-R	SOT-25	Tape Reel

Note: xx: Output Voltage, refer to Marking Information.

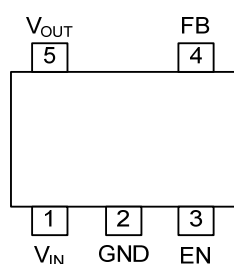
LR1142G-xx-AE5-A-R	(1)Packing Type (2)Pin Code (3)Package Type (4)Output Voltage Code (5)Green Package	(1) R: Tape Reel (2) refer to PIN CONFIGURATION (3) AE5: SOT-23-5, AF5: SOT-25 (4) xx: refer to Marking Information (5) G: Halogen Free and Lead Free, L: Lead Free
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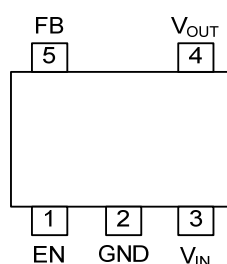
MARKING INFORMATION

PACKAGE	VOLTAGE CODE	MARKING
SOT-23-5 SOT-25	AD: ADJ	

PIN CONFIGURATION



LR1142-A

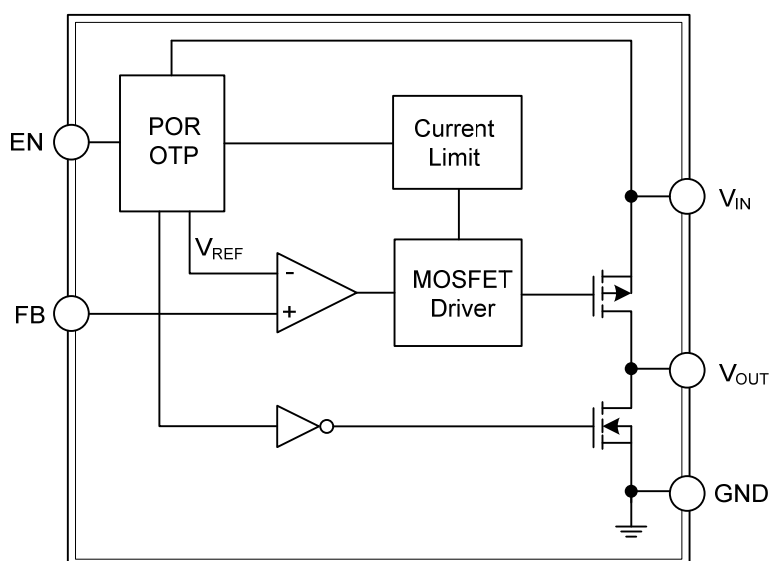


LR1142-B

PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
LR1142-A	LR1142-B		
1	3	V_{IN}	Voltage Input.
2	2	GND	Ground.
3	1	EN	Chip Enable (Active High).
4	5	FB	Output Voltage Feedback.
5	4	V_{OUT}	Voltage Output.

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Input Voltage	V_{IN}	6	V
EN Input Voltage		6	V
Power Dissipation ($T_A=25^{\circ}\text{C}$)	P_D	0.36	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-65 ~ +150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Ambient Temperature Range	T_A	-20		85	$^{\circ}\text{C}$

Note: The device is not guaranteed to function outside its operating conditions.

■ THERMAL DATA

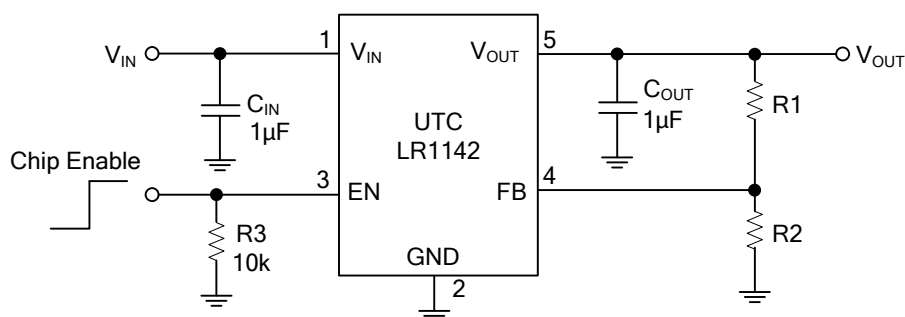
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	280	$^{\circ}\text{C/W}$

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_{OUT}+1\text{V}$, $T_A=25^{\circ}\text{C}$, $C_{IN}=C_{OUT}=1\mu\text{F}$, $I_{OUT}=20\text{mA}$, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Input Voltage Range		V_{IN}		2.5		5.5	V
Reference Voltage		V_{REF}		0.784	0.8	0.816	V
Quiescent Current		I_Q	$I_{OUT}=0\text{mA}$		35	50	μA
Shutdown Current		I_{SHDN}	$V_{EN}=0\text{V}$		0.7	1.5	μA
Current Limit		I_{LIM}		500	750		mA
Dropout Voltage		V_{DROP}	$V_{OUT}=3.3\text{V}$, $I_{OUT}=500\text{mA}$		370		mV
Load Regulation		ΔV_{LOAD}	$1\text{mA}<I_{OUT}<500\text{mA}$, $2.5\text{V}\leq V_{IN}<5.5\text{V}$			1	%
Line Regulation		ΔV_{LINE}	$V_{IN}=(V_{OUT}+0.5\text{V})\sim 5.5\text{V}$, $I_{OUT}=1\text{mA}$		0.01	0.2	%/V
EN Threshold	Logic-Low Voltage	V_{IL}		0		0.6	V
	Logic-High Voltage	V_{IH}		1.6		5.5	V
EN Pin Current		I_{EN}			0.1	1	μA
FB Pin Current		I_{FB}			0.1	1	μA
Power Supply Rejection Ratio		PSRR	$f=1\text{kHz}$, $I_{OUT}=10\text{mA}$		57		dB
			$f=10\text{kHz}$, $I_{OUT}=10\text{mA}$		40		dB
Output Noise Voltage		V_{ON}	$V_{OUT}=1.5\text{V}$, $C_{OUT}=1\mu\text{F}$, $I_{OUT}=0\text{mA}$		30		μV_{RMS}

■ TYPICAL APPLICATION CIRCUIT



$$V_{OUT} = V_{REF} \left(1 + \frac{R1}{R2}\right)$$

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