

UTC LR478 LINEAR INTEGRATED CIRCUIT

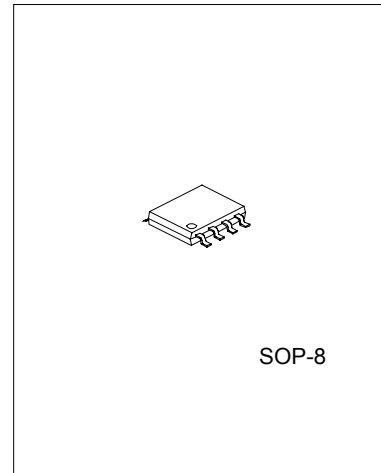
REGULATOR+RESET IC

DESCRIPTION

The UTC LR1478 developed for use in CD-ROM drives, combines a 3V regulator adapted to low power consumption with a much-sought reset function (regulator input monitoring), with internal delay circuit, set to detect 4.2V.

FEATURES

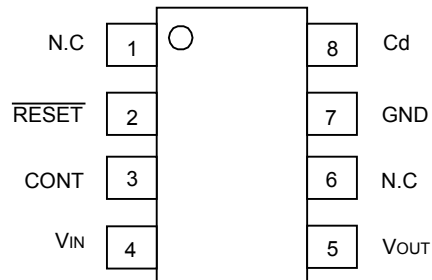
- *Large output current: 300mA(max.)
- *High ripple rejection rate: 80dB(typ.)
- *Internal thermal shutdown circuit
- *Internal current-limiting circuit
- *Easy to set delay time from voltage detection to reset release



OUTPUT DETECTION VOLTAGE RANK LIST

PART NUMBER	REGULATOR OUTPUT VOLTAGE (V)	DETECTION VOLTAGE (V)
LR478-3.4V	3.40 ± 0.05	4.20 ± 0.09
LR478-3.3V	3.30 ± 0.05	4.20 ± 0.09
LR478-2.5V	2.50 ± 0.05	4.20 ± 0.09

PIN CONFIGURATION



UTC LR478

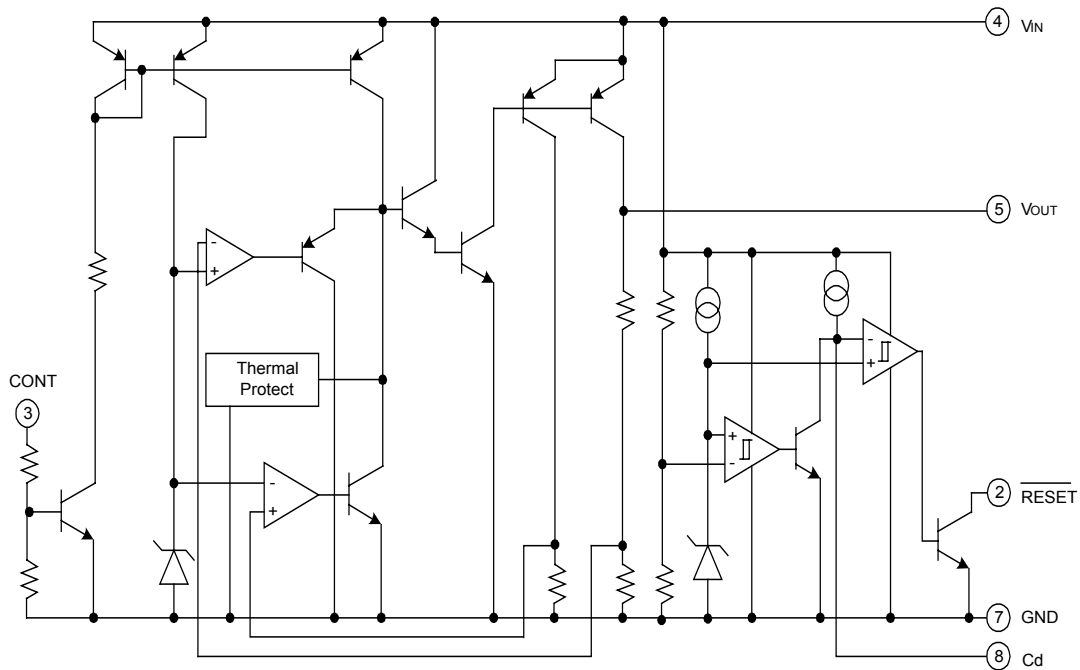
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PIN DESCRIPTION

PIN NO.	PIN NAME	FUNCTIONS	EQUIVALENT CIRCUIT DIAGRAM						
1	N.C								
2	$\overline{\text{RESET}}$	Input voltage detection output Input voltage detection output pin RESET pin logic <table border="1" style="margin-top: 10px;"> <thead> <tr> <th></th> <th>$\overline{\text{RESET}}$</th> </tr> </thead> <tbody> <tr> <td>$V_{IN} < V_S$</td> <td>L</td> </tr> <tr> <td>$V_{IN} > V_S$</td> <td>H</td> </tr> </tbody> </table>		$\overline{\text{RESET}}$	$V_{IN} < V_S$	L	$V_{IN} > V_S$	H	
	$\overline{\text{RESET}}$								
$V_{IN} < V_S$	L								
$V_{IN} > V_S$	H								
3	CONT	Output voltage on/off-control pin <table border="1" style="margin-top: 10px;"> <thead> <tr> <th>V_{CONT}</th> <th>Output</th> </tr> </thead> <tbody> <tr> <td>L</td> <td>OFF</td> </tr> <tr> <td>H</td> <td>ON</td> </tr> </tbody> </table> Connect cont-terminal with V_{IN} when it is not used.	V_{CONT}	Output	L	OFF	H	ON	
V_{CONT}	Output								
L	OFF								
H	ON								
4	V_{IN}	Voltage supply input pin							
5	V_{OUT}	Regulator Output pin							
6	N.C								
7	GND	GND pin							
8	C_d	Delay time capacitor pin RESET pin output delay time can be set by the capacitance connected to the C_d pin. $t_{PLH} = 100000 \cdot C$ t_{PLH} : transmission delay time[s] C : capacitor value [F]							

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BLACK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V _{IN}	-0.3 ~ +10	V
Output Current	I _{OUT}	400	mA
Power Dissipation	P _D	700*	mW
Operating Temperature	T _{OPR}	-30 ~ +85	°C
Storage Temperature Range	T _{STG}	-40 ~ +125	°C

Note: *When mounted on a 25×40×1^t mm glass epoxy board.

RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	RATINGS	UNIT
Operating Voltage	V _{OP}	0 ~ 10	V
Output Current	I _{OUT}	0 ~ 300	mA
Operating Temperature	T _{OPR}	-20 ~ +85	°C

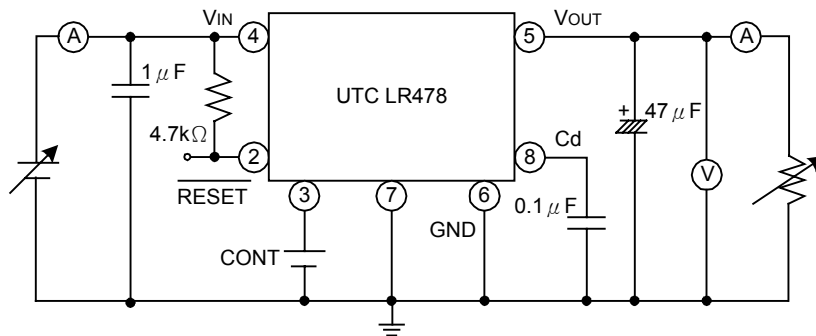
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ELECTRICAL CHARACTERISTICS (V_{CONT}=1.6V, T_a=25°C, unless otherwise specified)

PARAMETER	SYMBOL	MEASUREMENT CONDITIONS	MIN	TYP	MAX	UNIT
No-load Input Current 1	I _{ccq 1}	V _{IN} =5V, I _{OUT} =0mA		3	8	mA
No-load Input Current 2	I _{ccq 2}	V _{IN} =4V, I _{OUT} =0mA		4		mA
Input Current (OFF)	I _{ccq 3}	V _{IN} =5V, V _{CONT} =0.4V		250		μA
Regulator						
Output Voltage	V _{OUT}	V _{IN} =5V, I _{OUT} =30mA	3.33	3.40	3.47	V
Input-Output Different Voltage	V _{IO}	V _{IN} =3.2V, I _{OUT} =150mA		0.15	0.3	V
Line Regulation	ΔV ₁	V _{IN} =4.4~5.5V, I _{OUT} =30mA		10	20	mV
Load Regulation	ΔV ₂	V _{IN} =5V, I _{OUT} =0~300mA		20	120	mV
V _{OUT} Temperature Coefficient*	ΔV _{OUT} /ΔT	V _{IN} =5V, I _{OUT} =30mA T _J = -20~+80°C		100		ppm/°C
Ripple rejection*	RR	V _{IN} =5V, I _{OUT} =30mA, f=120Hz V _{RIPPLE} =1VP-P	50	80		dB
Output Noise Voltage*	V _n	V _{IN} =5V, I _{OUT} =30mA, f=20~80kHz		40	120	μVrms
CONT Terminal Current	I _{ON}	V _{CONT} =1.6V		5	10	μA
High Threshold Voltage	H		1.6		V _{IN} +0.3	V
Low Threshold Voltage	L		-0.3		0.4	V
Reset						
Detection Voltage	V _S	V _{IN} =H→L	4.11	4.20	4.29	V
V _S temperature Coefficient*	ΔV _S /ΔT	T _J = -20~+80°C		100		ppm/°C
Hysteresis Voltage	ΔV _S	V _{IN} =H→L→H	100		200	mV
Low-level Output Voltage	V _{OL}	V _{IN} =3.9V, R _L =4.7K		100	200	mV
Output Leakage Current	I _{OH}	V _{IN} =5V			±0.1	μA
Output Current 1	I _{OL1}	V _{IN} =3.9V, R _L =0	5			mA
Output Current 2*	I _{OL2}	V _{IN} =3.9V, R _L =0, T _a = -20~80°C	3			mA
"H" transmission delay time*	t _{PLH}	C _d =0.0 μF		30	90	μs
Reset delay time	t _{PLH 1}	V _{IN} =4V→5V, C _d =0.1 μF	5	10	20	ms
"L" transmission delay time*	t _{PLH}			30	90	μs
Threshold Operating Voltage	V _{opL}	V _{OL} =0.4V		0.65	0.85	V

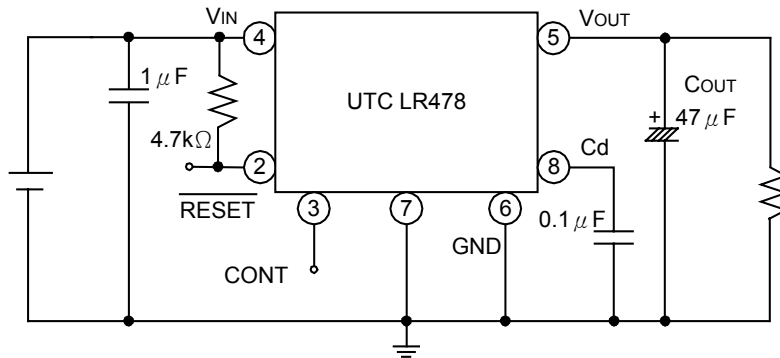
Note1: Design guaranteed

MEASURING CIRCUIT



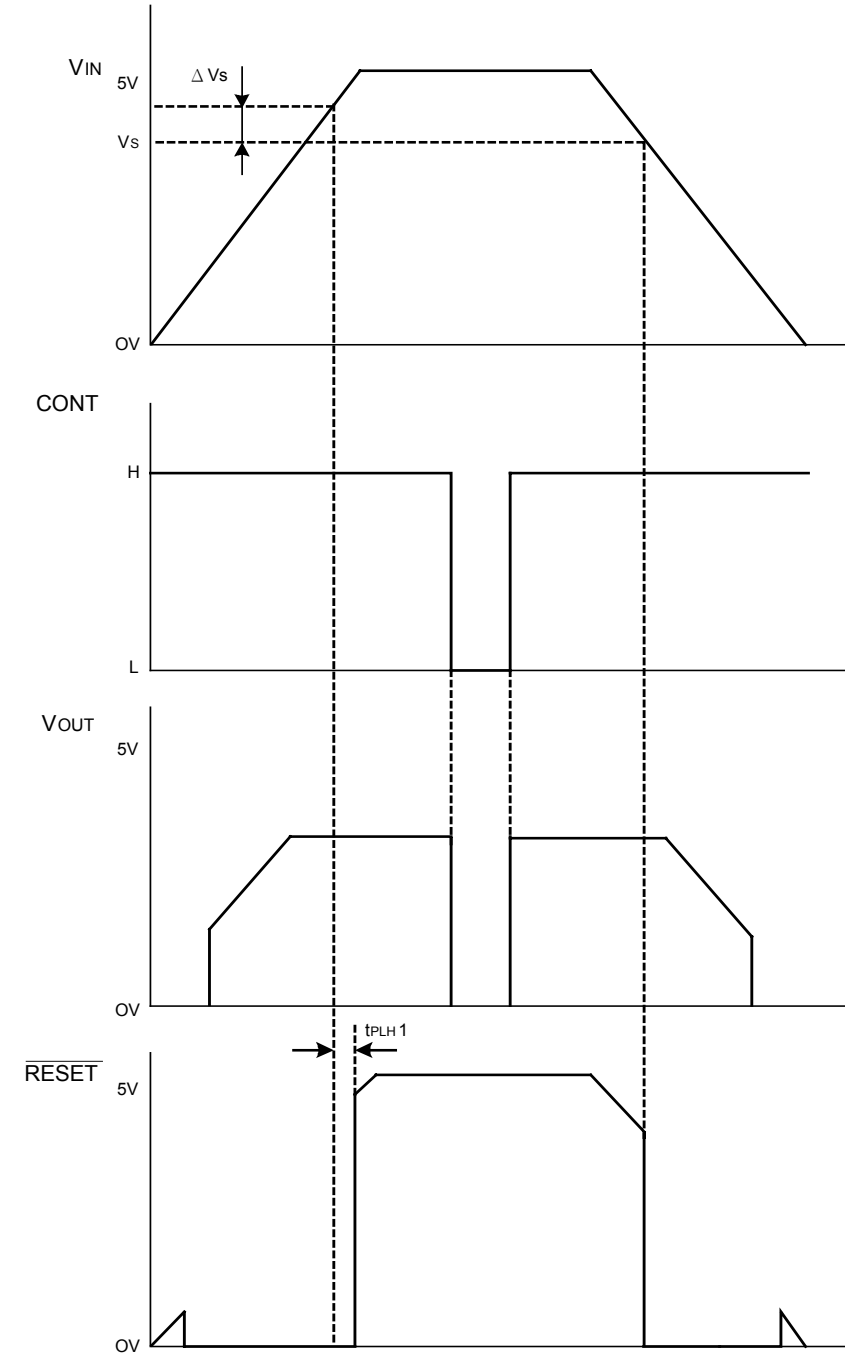
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APPLICATION CIRCUIT



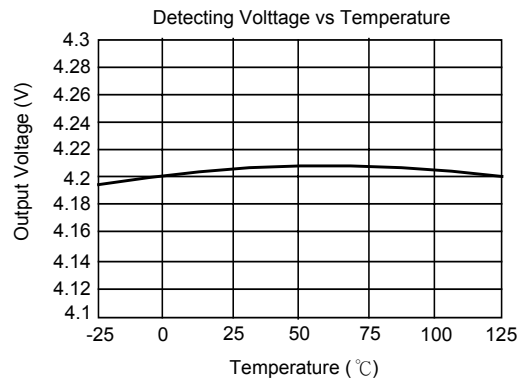
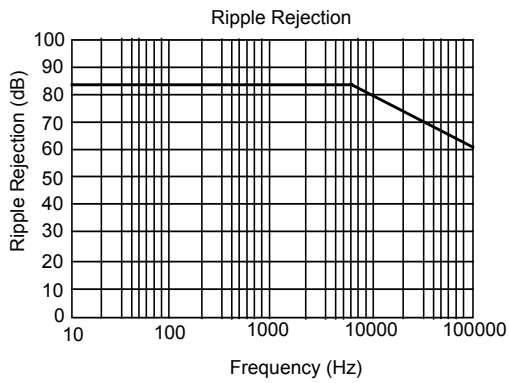
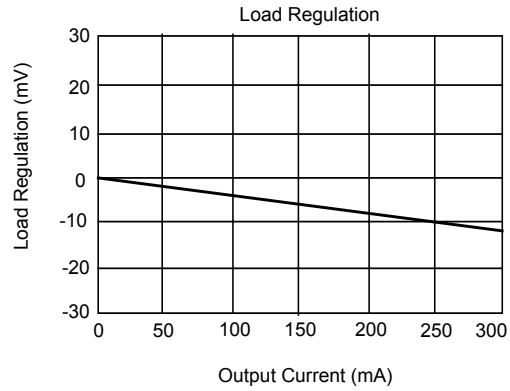
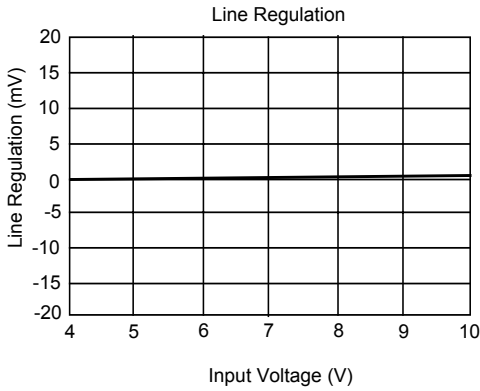
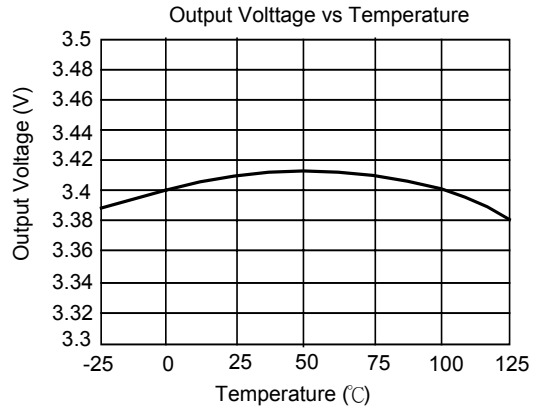
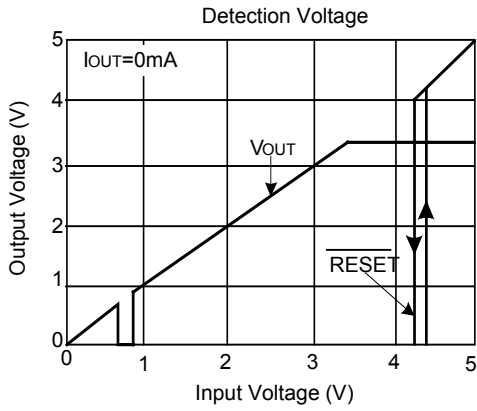
Note1: This regulator is not internally compensated and thus requires an external output-capacitor (C_{OUT}) for stability.

TIMING CHART

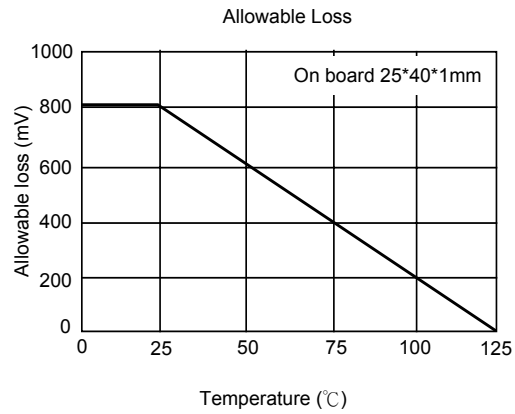


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CHARACTERISTICS CURVE



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