

Low-Output Voltage Low-Saturation Three-Pin Regulator Monolithic IC MM1270

Outline

MM1270 is targeted at the one-battery output voltage market, and is a compact low input/output voltage differential stable power supply with ultra-low current consumption.

Features

- | | |
|--------------------------------------|-------------------|
| 1. Input voltage | 10V max. |
| 2. Input/output voltage differential | 0.05V typ. |
| 3. Input current for no load | 15µA typ. |
| 4. Output voltage | 1.08V, 1.03V typ. |
| 5. Current limiter circuit included | |
| 6. On/Off logic | |

CE pin	Output
LOW	OFF
HIGH	ON

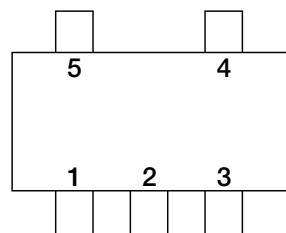
Package

SOT-25A (MM1270CN, MM1270ZN)

Applications

1. Pagers
2. Headphone stereos
3. Portable equipment

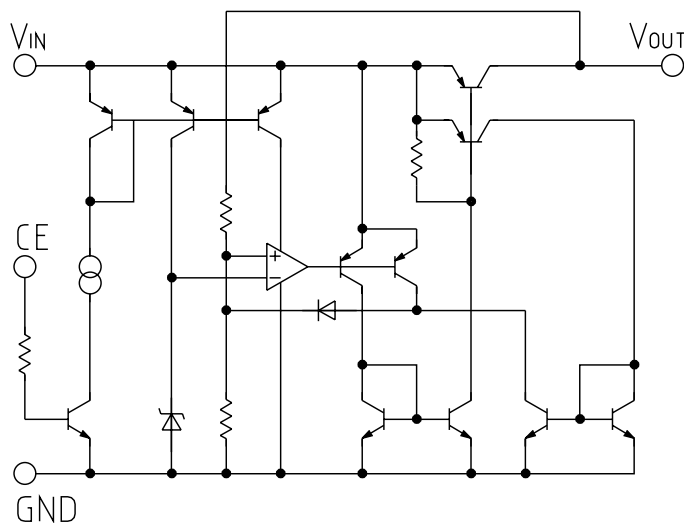
Pin Assignment



SOT-25A
(TOP VIEW)

1	V _{OUT}
2	GND
3	GND
4	CE
5	V _{IN}

Equivalent Circuit Diagram



Absolute Maximum Ratings

Item	Symbol	Rating	Units
Storage temperature	T _{STG}	-40~+125	°C
Operating temperature	T _{OPR}	-20~+75	°C
Power supply voltage	V _{CC max.}	-0.3~+10	V
CE pin voltage	V _{CE max.}	-0.3~+10	V
Output current	I _{o max.}	60	mA
Allowable loss	P _d	150	mW

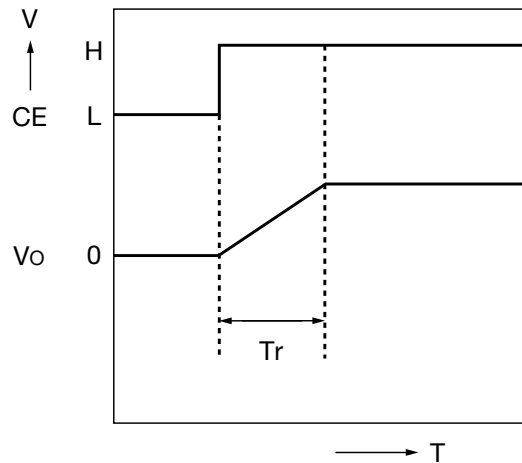
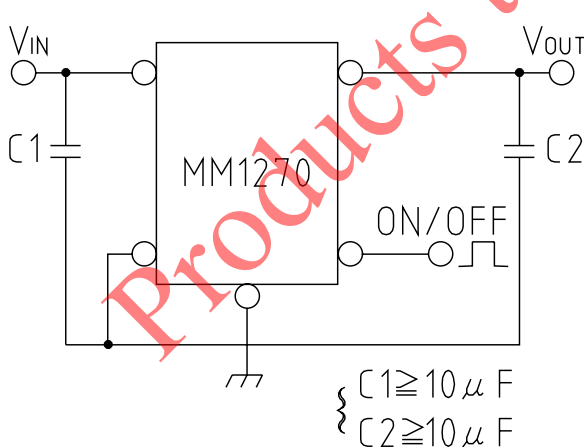
Recommended Operating Conditions

Input voltage	V _{IN}	1.2~2.0	V
Output current	I _o	0~10.0	mA

Electrical Characteristics (Ta=25°C)

Item	Symbol	Measurement conditions	Min.	Typ.	Max.	Units
Output voltage	Z rank	VIN=1.5V Io=1mA	1.05	1.08	1.11	V
	C rank		1.00	1.03	1.06	
	D rank		1.200	1.235	1.270	
No load input current	Iccq1	VIN=1.5V Io=0mA		15	35	μA
Minimum I/O voltage differential	Vd min.	VIN=1.0V Io=5mA		0.05	0.10	V
Input fluctuation ratio	ΔV1	VIN=1.2V~1.25V Io=5mA		3	30	mV
		VIN=1.25V~1.6V Io=5mA		10	20	
Load fluctuation ratio	ΔV2	VIN=1.5V Io=0~5mA		5	20	mV
Output voltage temperature coefficient	ΔVo/T	Tj=-20~+75°C		+800		ppm/°C
Ripple rejection rate	RR	VIN=1.5V f=120Hz VRIPPLE=0.1VP-P Io=5mA		30		dB
Output noise voltage	VN	VIN=Vo+1V Io=100mA f=10~80kHz		150		μVrms
Input current for OFF	Iccq2	VIN=1.5V, VCE=0.2V			1	μA
CE pin current for OFF	IOFF	VCE=0.2V	-1			μA
CE pin current for ON	ION	VCE=1.5V			5	μA
CE pin HIGH level	H		0.8		10	V
CE pin LOW level	L		-0.3		0.2	V
Current limit	I max.	VIN=1.5V Ro=0Ω	20	40	60	mA

Equivalent Circuit Diagram

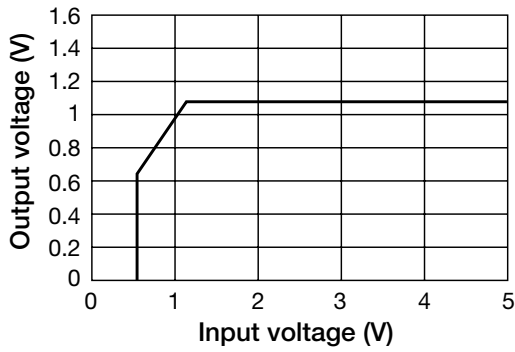


*Formula for output rise time.

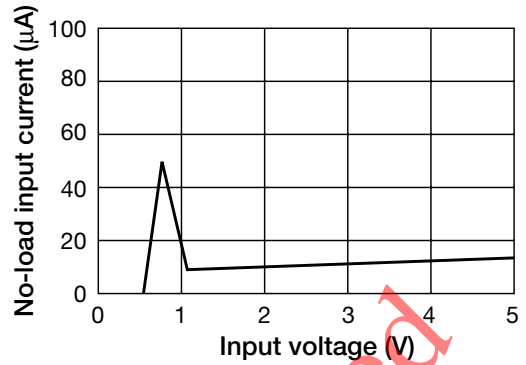
$$Tr (\mu S) = C_{OUT} (\mu F) \times \frac{Vo (V)}{I_{max} (A)}$$

- * Note 1: Locate the input/output capacitor as close as possible to the IC.
- * Note 2: When not using output control, short the CE pin to the Vin pin
- * Note 3: The cause of oscillation is due to set wiring and capacitance changes in capacitor caused by temperatures changes, so please take extra care in placing the wires.

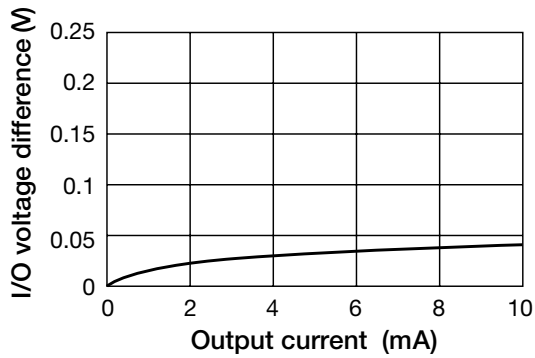
■ Output voltage characteristic ($I_{OUT}=0mA$)



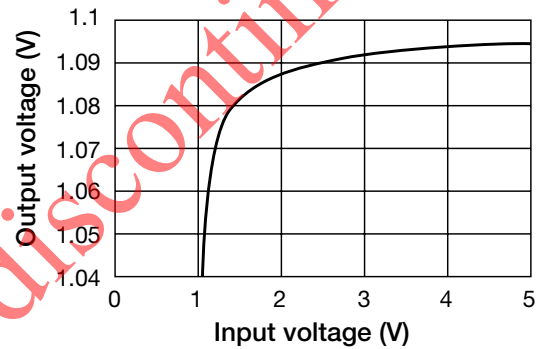
■ No-load input current



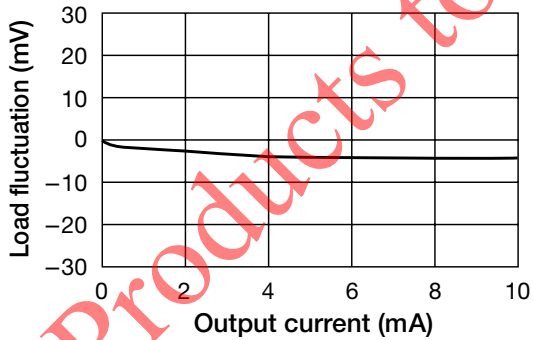
■ I/O voltage difference ($V_{IN}=1.0V$)



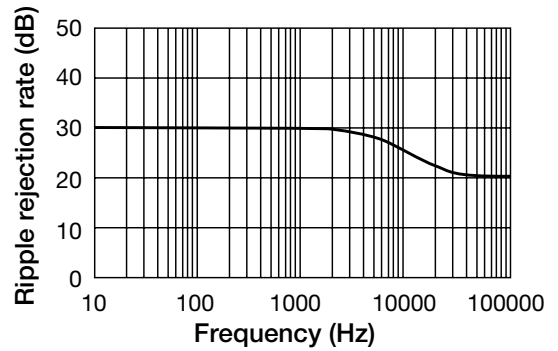
■ Input fluctuation



■ Load fluctuation



■ Ripple rejection rate ($V_{IN}=1.2V$)



■ Output VS temperature

