

features

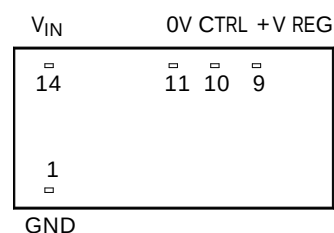
- ☐ Output Regulation <1.5%
- ☐ Controllable Output
- ☐ 1kVDC Isolation
- ☐ Single Isolated Output
- ☐ SIP & DIP Package Styles
- ☐ Efficiency to 62%
- ☐ Power Density 0.85W/cm³
- ☐ 5V, 12V, 24V & 48V Input
- ☐ 5V, 9V, 12V, 12.75V & 15V Output
- ☐ Footprint from 1.17cm²
- ☐ UL 94V-0 Package Material
- ☐ No Heatsink Required
- ☐ SMD Construction
- ☐ Toroidal Magnetics
- ☐ Fully Encapsulated
- ☐ No External Components
- ☐ MTTF up to 2.4 Million hours
- ☐ PCB Mounting
- ☐ Custom Solutions Available

description

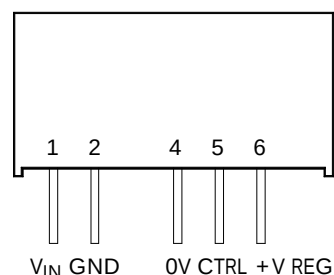
The NMF series of DC-DC Converters is used where a tightly regulated supply is required. They are ideal for situations where the input voltage is not tightly controlled. The output control pin makes the device particularly suitable for Flash PROM applications where an on/off controlled voltage source is required.

pin connections

14 Pin DIP (top view)



7 Pin SIP



NMF SERIES

Isolated 1W Regulated Single Output

absolute maximum ratings over operating free air* temperature range

Input voltage V_{IN} NMF05 types	7V
Input voltage V_{IN} NMF12 types	15V
Input voltage V_{IN} NMF24 types	28V
Input voltage V_{IN} NMF48 types	54V
Output power total	1W
Short-circuit duration	1s
Maximum output voltage rise time after control pin high	35 μ s
Isolation voltage (flash tested for 1 second)	1000VDC
Operating free air temperature range	0°C to 70°C ¹
Storage temperature range	-55°C to 150°C
Lead temperature 1.5mm from case for 10 seconds	300°C

electrical specifications

(measured at $T_A = 25^\circ\text{C}$, at nominal input voltage)

Input voltage range NMF05 types	5V $\pm$ 5%
Input voltage range NMF12 types	12V $\pm$ 5%
Input voltage range NMF24 types	24V $\pm$ 5%
Input voltage range NMF48 types	48V $\pm$ 5%
Load voltage regulation (10% to 100% full load)	0.9% typical 1.5% max.
Line voltage regulation (10% to 100% full load)	0.25%/1% V_{IN}
Output voltage accuracy (control pin open circuit)	$\pm$ 5%
Input reflected ripple (20MHz Band limited)	40mV p-p max.
Output ripple (20MHz Band limited)	60mV p-p max.
Insulation resistance at 500VDC	100M Ω min.
Efficiency at full load, 5V output type	50% typical 45% min.
Efficiency at full load, 9V, 12V & 15V output types	62% typical 55% min.
Temperature drift (V_{OUT})	0.03% per $^\circ\text{C}$ max.
Temperature rise above ambient at full load	8°C
Weight NMF05/12/24 DIP and SIP types (typical)	2.3 grams
Weight NMF48 DIP and SIP types (typical)	2.9 grams
Switching frequency at full load (typical)	80kHz
No load power consumption (typical)	100mW

* Free air – requires a minimum of 10mm air space around the component.

¹ See derating curve.

selection guide

5V and 12V input types

Part Number	Output Voltage (V)	Output Current (mA)	Power Out (mW)	Package Style
NMFXX05D	5	100	500	1
NMFXX09D	9	100	900	
NMFXX12D	12	83	1000	
NMFXX15D	15	67	1000	
NMFXX05S	5	100	500	3
NMFXX09S	9	100	900	
NMFXX12S	12	83	1000	
NMFXX15S	15	67	1000	

flash PROM types

Part Number	Output Voltage (V)	Output Current (mA)	Power Out (mW)	Package Style
NMF0512D	12	83	1000	1
NMF0512S	12	83	1000	3
NMF0513D	12.75	78	1000	1
NMF0513S	12.75	78	1000	3

NMF SERIES

Isolated 1W Regulated Single Output

selection guide

24V and 48V input types

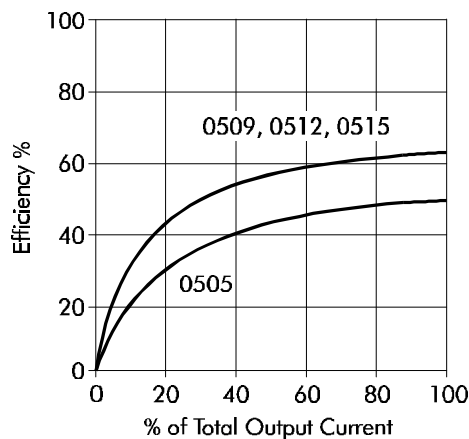
Part Number	Output Voltage (V)	Output Current (mA)	Power Out (mW)	Package Style
NMFXX05D	5	100	500	2
NMFXX09D	9	100	900	
NMFXX12D	12	83	1000	
NMFXX15D	15	67	1000	
NMFXX05S	5	100	500	4
NMFXX09S	9	100	900	
NMFXX12S	12	83	1000	
NMFXX15S	15	67	1000	

typical isolation capacitance (pF)

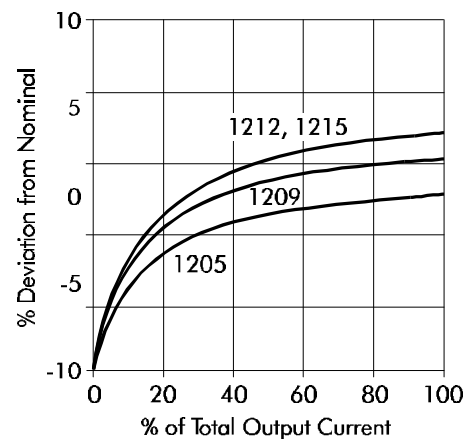
Part Number	Output Voltage (V)				
	05	09	12	13	15
NMF05XXX	28	32	33	31	39
NMF12XXX	48	63	68	-	69
NMF24XXX	84	106	132	-	152
NMF48XXX	54	75	92	-	109

typical characteristics

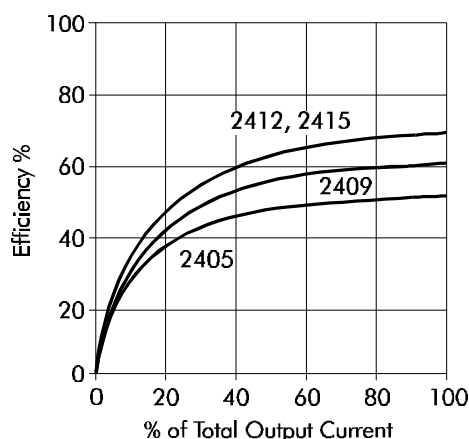
NMF05 series



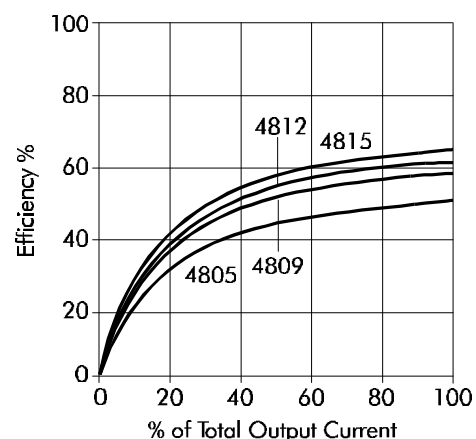
NMF12 series



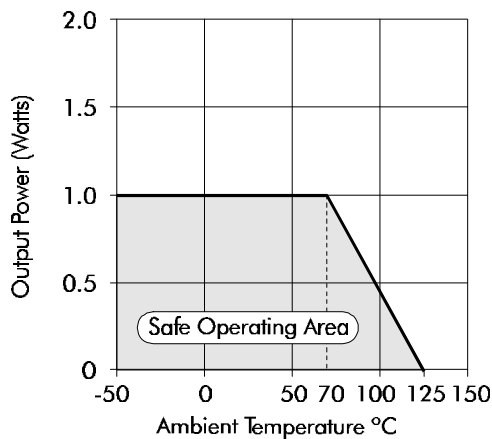
NMF24 series



NMF48 series



temperature derating graph



See application notes on page 2-132

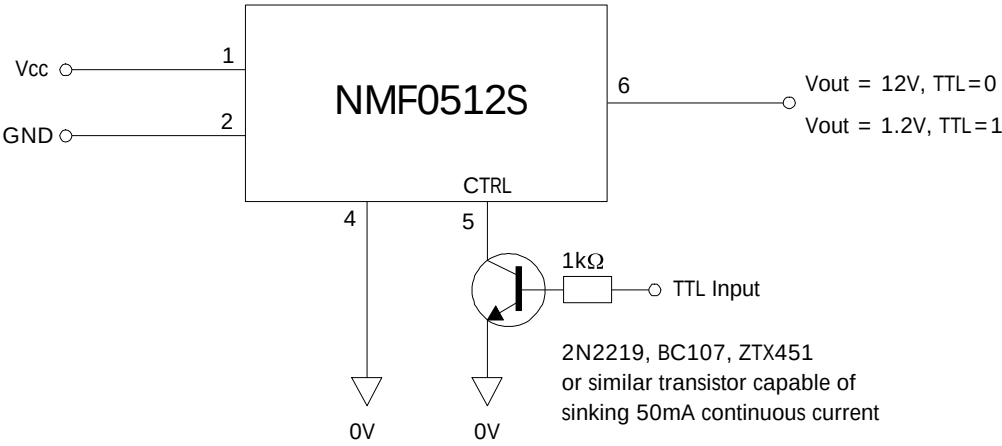
Note : All data taken at $T_A = 25^\circ\text{C}$.

NMF SERIES

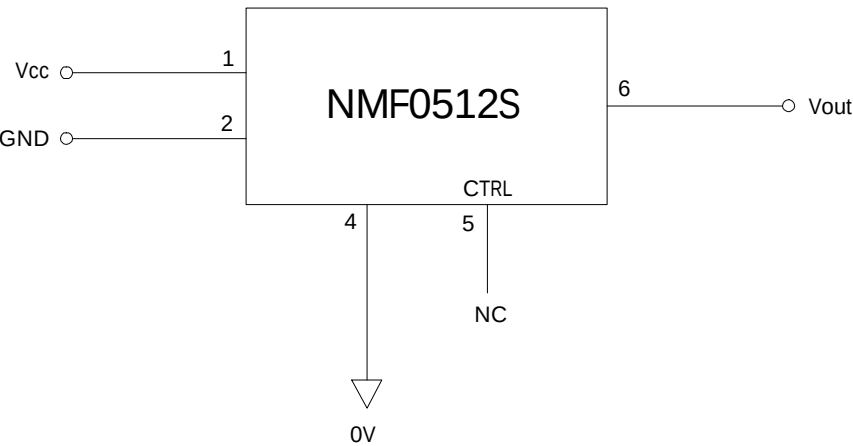
Isolated 1W Regulated Single Output

typical applications

Flash PROM programming voltage control



normal isolated regulated output



mean time to failure (MTTF) in thousands of hours

Part Number	-25°C	25°C	70°C
NMF0505	2406	1307	144
NMF0509	1243	825	134
NMF0512/13	691	512	121
NMF0515	399	316	103
NMF1205	604	456	117
NMF1209	489	379	110
NMF1212	372	290	101
NMF1215	267	218	89
NMF2405	1281	843	135
NMF2409	856	613	126
NMF2412	552	422	114
NMF2415	348	279	98
NMF4805	244	200	85
NMF4809	223	283	82
NMF4812	195	162	76
NMF4815	165	135	69

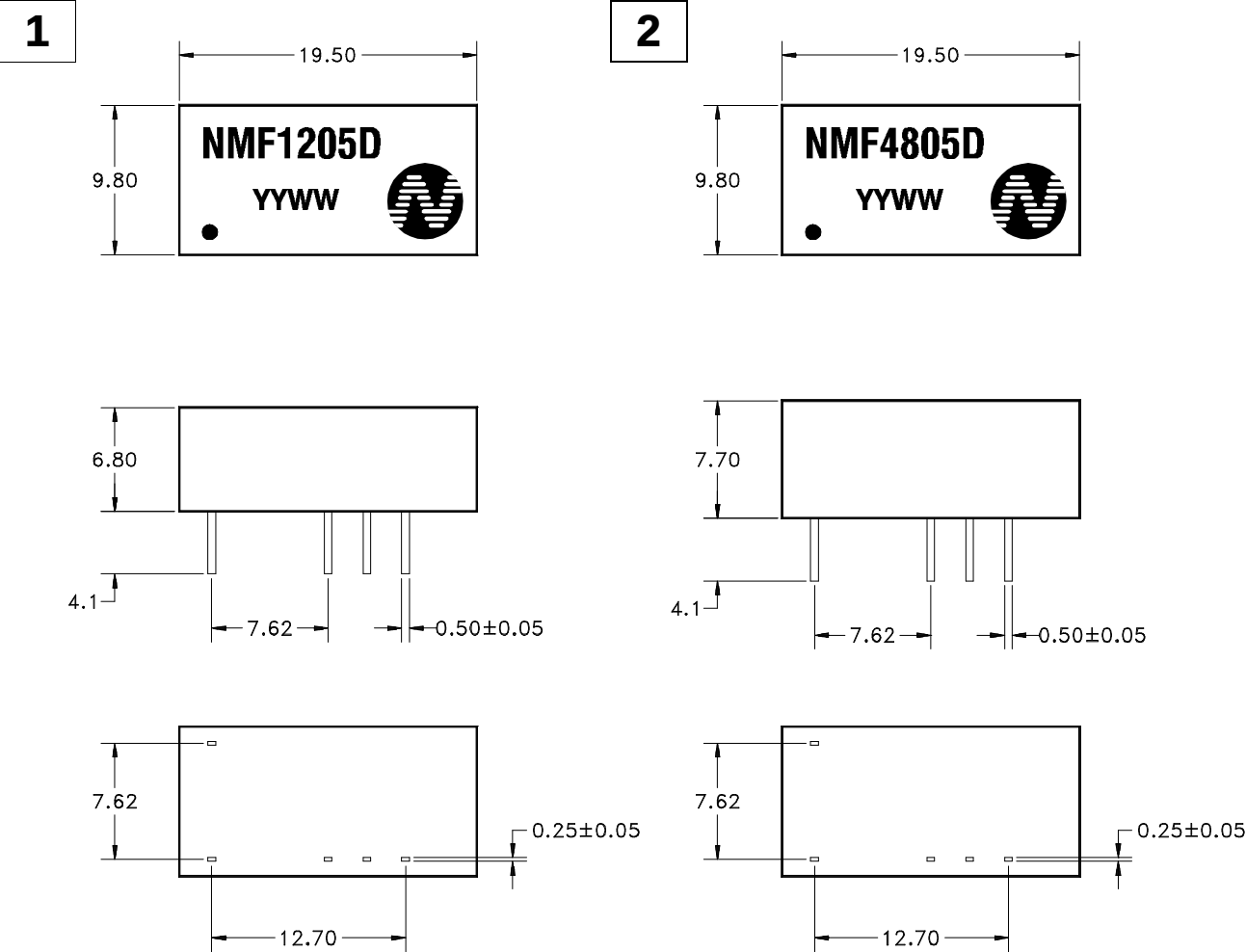
Note : MTTF figures derived from hybrid model of MIL-HDBK-217F.

NMF SERIES

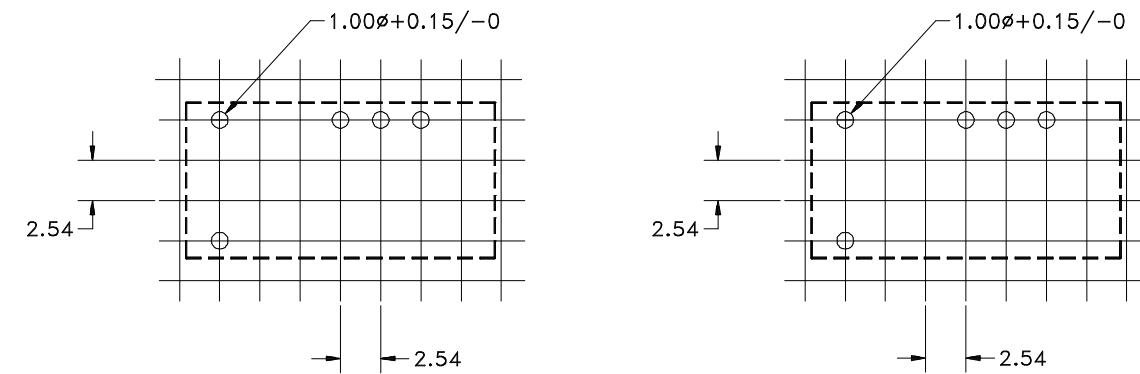
Isolated 1W Regulated Single Output

outline dimensions

14 Pin DIP package styles



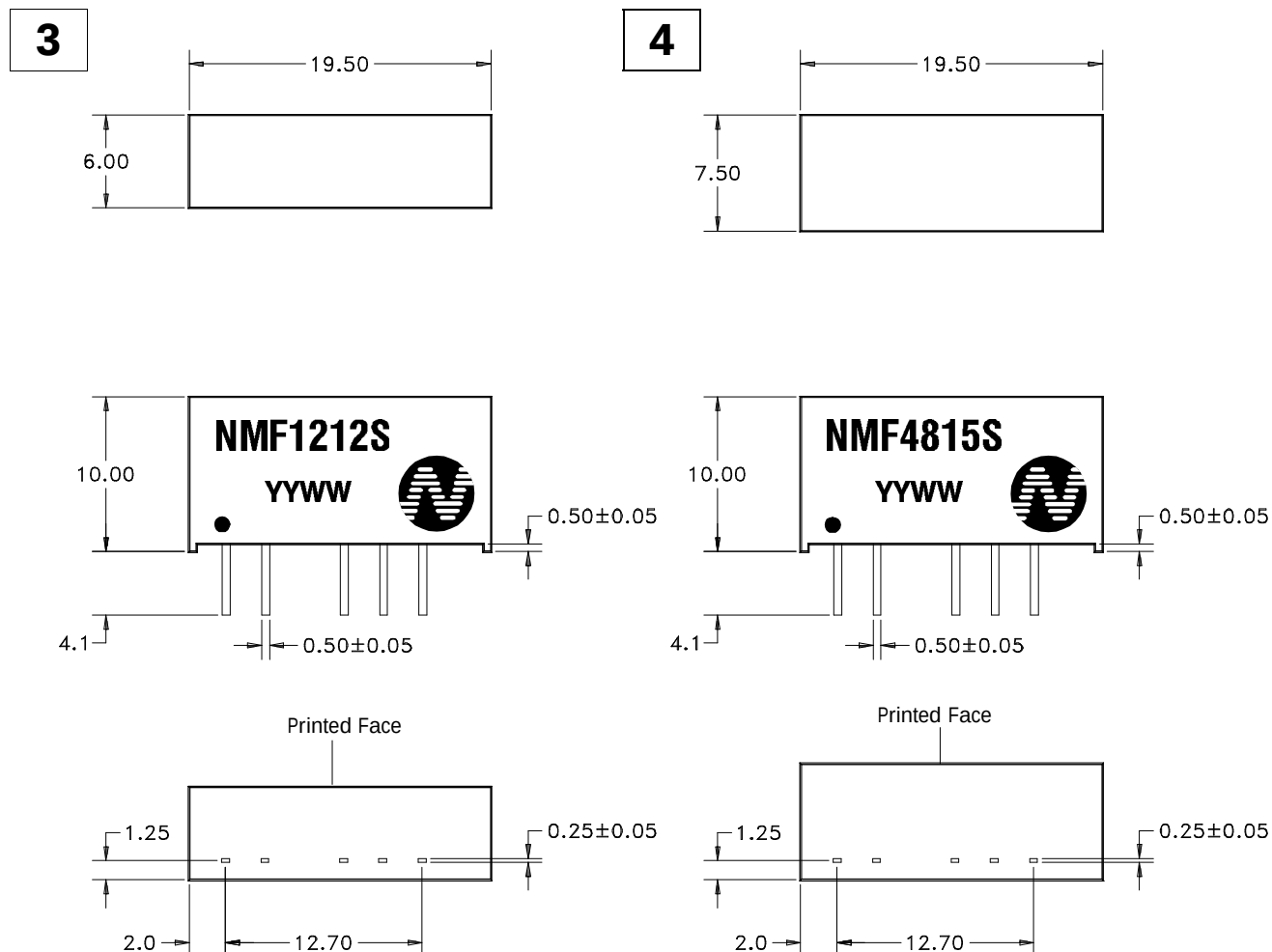
recommended footprint details



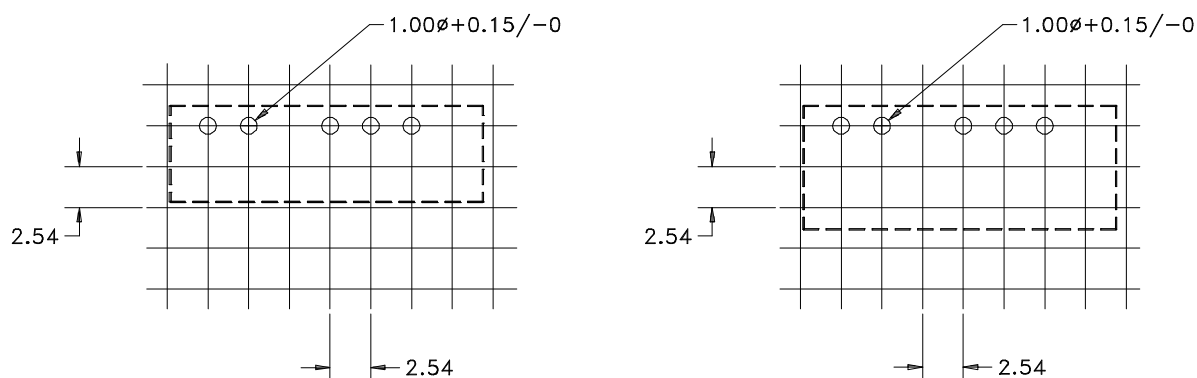
All pins on a 2.54mm pitch.
All dimensions in mm XX.X ±0.50, XX.XX ±0.25

outline dimensions

7 Pin SIP package styles



recommended footprint details



All pins on a 2.54mm pitch.

All dimensions in mm XX.X ± 0.50, XX.XX ± 0.25