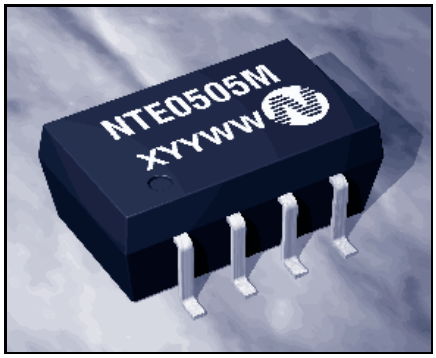
C&D TECHNOLOGIES
Power Solutions

NTE SERIES

Isolated 1W Single Output SM DC-DC Converters



FEATURES

- Wide Temperature Performance at Full 1 Watt Load, –40°C to 85°C
- Lead Frame Technology
- CECC00802 Reflow (280°C)
- Single Isolated Output
- 1kVDC Isolation
- Efficiency to 78%
- Power Density 1.8W/cm^3
- 3.3V, 5V & 12V Input
- 3.3V, 5V, 9V, 12V and 15V Output
- Footprint Over Pins 1.64cm^2
- UL 94V-0 Package Material
- No Heatsink Required
- Internal SMD Construction
- Toroidal Magnetics
- Plastic Encapsulated
- MTTF up to 2.9 Million Hours
- Custom Solutions Available
- Multi Layer Ceramic Capacitors
- Lead Free Compatible

DESCRIPTION

The NTE series of miniature surface mounted DC-DC Converters employ leadframe technology and transfer moulding techniques to bring all of the benefits of IC style packaging to hybrid circuitry. The devices are fully compatible with CECC00802 to 280°C which allows them to be placed and reflowed with IC's, thus reducing time and cost in production. The co-planarity of the pin positions is based upon IEC 191-6:1990. The devices are suitable for all applications where high volume production is envisaged.

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SELECTION GUIDE

	Nominal Input Voltage	Output Voltage	Output Current	Input Current at Rated Load	Efficiency	Isolation Capacitance	MTTF[1]
OrderCode[5]	(V)	(V)	(mA)	(mA)	(%)	(pF)	kHrs
NTE0303M	3.3	3.3	303	410	73	30	1234
NTE0305M	3.3	5	200	390	78	35	632
NTE0503M	5	3.3	303	270	74	40	619
NTE0505M	5	5	200	294	68	35	2418
NTE0505ME	5	5	200	260	77	40	419
NTE0509M	5	9	111	267	75	43	1174
NTE0512M	5	12	83	260	77	42	634
NTE0515M	5	15	66	256	78	44	360
NTE1205M	12	5	200	124	67	47	621
NTE1209M	12	9	111	114	73	77	488
NTE1212M	12	12	83	113	74	88	360
NTE1215M	12	15	66	111	75	95	252

When operated **with** additional external load capacitance the rise time of the input voltage will determine the maximum external capacitance value for guaranteed start up. The slower the rise time of the input voltage the greater the maximum value of the additional external capacitance for reliable start up.

INPUT CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Voltage Range	Continuous operation, 3.3V input types	2.97	3.30	3.63	V
	Continuous operation, 5V input types	4.5	5	5.5	
	Continuous operation, 12V input types	10.8	12	13.2	
Reflected Ripple Current			30	47	mA p-p

OUTPUT CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Rated Power[2]	T_A = -40°C to 85°C			1.0	W
Voltage Set Point Accuracy	See tolerance envelope				
Line regulation	High V_{IN} to low V_{IN}		1.0	1.2	%/%
Load Regulation[3]	10% load to rated load, 0303M, 0305M, 0503M, 0505ME		10	14	%
	10% load to rated load, 5V output types		12.8	15	
	10% load to rated load, 9V output types		8.3	9.0	
	10% load to rated load, 12V output types		6.8	7.5	
	10% load to rated load, 15V output types		6.3	7.0	
Ripple and Noise	BW=DC to 20MHz, 0303M, 0305M, 0503M, 0505ME types		40	60	mV p-p
	BW=DC to 20MHz, 5V output types		62	85	
	BW=DC to 20MHz, 9V output types		49	75	
	BW=DC to 20MHz, 12V output types		39	65	
	BW=DC to 20MHz, 15V output types		38	76	

ABSOLUTE MAXIMUM RATINGS

Short circuit duration[4]	1second
Internal power dissipation	600mW
Lead temperature 1.5mm from case for 10 seconds	300°C
Input Voltage V_{IN} , NTE03 types	5.5V
Input Voltage V_{IN} , NTE05 types	7V
Input voltage V_{IN} , NTE12 types	15V

1 Calculated using MIL-HDBK-217F with nominal input voltage at full load.
2 See derating curve.
3 12V input types have typically 3% less load regulation change.
4 Supply voltage must be discontinued at the end of the short circuit duration.
5 If components are required in tape and reel format suffix order code with -R, e.g. NTE0505M-R
All specifications typical at T_A=25°C, nominal input voltage and rated output current unless otherwise specified.

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ISOLATION CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Isolation Test Voltage	Flash tested for 1 second	1000			VDC
Resistance	Viso=1000VDC	10			GΩ

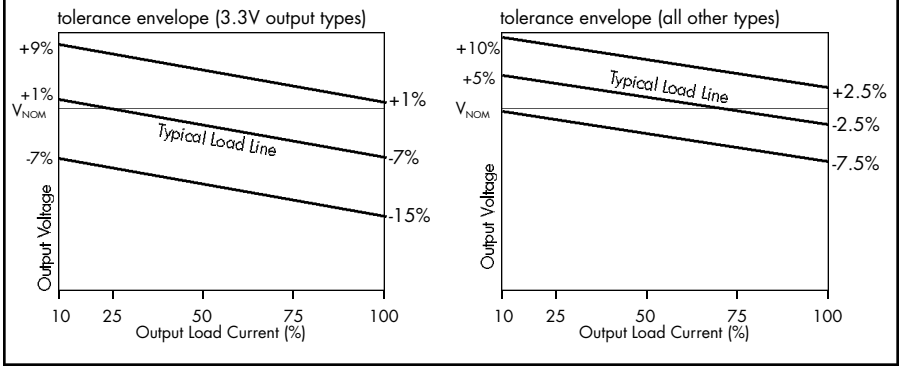
GENERAL CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Switching Frequency	All variants		110		kHz

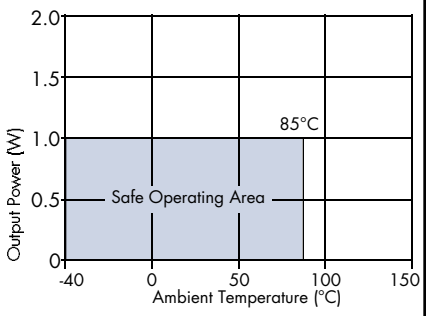
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	MIN	TYP	MAX	Units
Specification	All output types	–40		85	°C
Storage		–55		125	°C
Case Temperature above ambient	0303M, 0305M, 0503M, 0505ME		30		°C
	0505M, 1205M		40		
	All other output types		40		
Cooling	Free air convection				

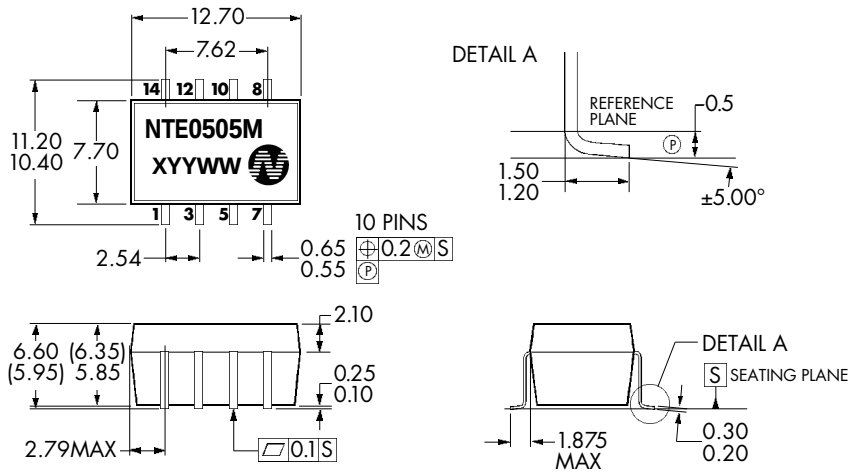
PERFORMANCE CHARACTERISTICS



TEMPERATURE DERATING



MECHANICAL DIMENSIONS



PIN	
1	GND
3	V_{IN}
5	NA
7	0V
8	+V
10	NA
12	NA
14	NA

NA – Not available for electrical connection

Weight: 1.21g

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

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