

SCHMID-M

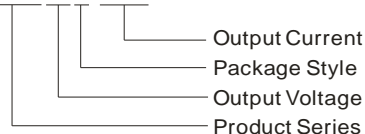
SK78XXT-1000 Series

**WIDE INPUT, NON-ISOLATED & REGULATED
SMD PACKAGE SINGLE OUTPUT**



PART NUMBER SYSTEM

SK7805T-1000



Output Current
Package Style
Output Voltage
Product Series



FEATURES

- Efficiency up to 93%
- Low ripple and noise
- 1.0AMP SMD package
- Low ripple and noise
- Adjustable output voltage
- Remote ON/OFF control
- Short circuit protection
- Low shutdown current
- Operating temperature range: -40°C ~ +85°C

APPLICATIONS

The SK78XXT-1000 series with high efficiency switching regulators are ideally supply for space constrained mobile applications. there is no need for any heatsinks. The additional features include remote ON/OFF control and adjustable output voltage. Super low ripple and noise of typically only 20mV and low shutdown current.

SELECTION GUIDE

Model	Input Voltage(VDC)		Input Current (mA)	Output Voltage(VDC)		Output Current (mA)	Efficiency (% ,max)	
	Nominal	Range		Nominal	Adjust Range		Vin(Min)	Vin (Max)
SK7801T-1000	12	4.75-15	165	1.5	fixed	1000	76	74
SK78X2T-1000		4.75-15	190	1.8	1.5-3.6		79	77
SK7802T-1000		5.0-18	245	2.5	1.5-3.9		83	81
SK7803T-1000		5.0-18	320	3.3	1.8-5.5		84	84
SK7805T-1000		7.0-18	460	5.0	2.5-6.5		90	88
SK78X6T-1000		8.5-18	580	6.5	fixed		93	91

Note: To adjust the output voltage must be met $V_{in}-V_o > 2V$. Input Current measured at nominal input voltage and rated output load.

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
No-load Input Power		--	0.018	0.054	W
Reverse Input		Forbid			
Input Filter		Capacitance Filter (1 μ F)			

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage accuracy	100% load, input voltage range	--	± 2	± 3	%
Line Regulation		--	± 0.2	± 0.5	
Load Regulation		Nominal input, from 10% to 100% load	--	± 0.4	
Switching Frequency	PWM type	--	1.4	--	MHz
Output Current Limit		--	1.8	--	A
Temperature Drift	-40°C ~ +85 °C	--	--	± 0.02	%/°C
Ripple & Noise*	20MHz bandwidth	--	20	35	mVp-p
	20MHz bandwidth (Refer to Figure 4)	--	10	15	
Over-temperature protect	IC inside	--	150	--	°C
Transient peak deviation	Nominal input, from 10% to 100% load	--	± 75	± 100	mV
Transient recovery time		--	--	100	μ S

Short Circuit Protection		Hiccup Mode, Continuous, automatic recovery			
Max. Capacitive Load		--	--	1000	μF
ON/OFF Control Voltage	ON	Open or $1.2V < V_c < 6V$			
	OFF	$V_c < 0.6V$			
ON/OFF Control Current	ON: Open or $1.2 < V_c < 6V$ OFF: GND or $V_c < 0.4V$	--	100	200	μA
Shutdown Input Current		--	120	200	

Note:* Ripple and noise tested by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
MTBF	MIL-HDBK-217F @25°C	1000	--	--	K hours
Hop swap		Forbid			
Case material		Plastic (UL94-V0)			
Weight		--	2.3	--	g

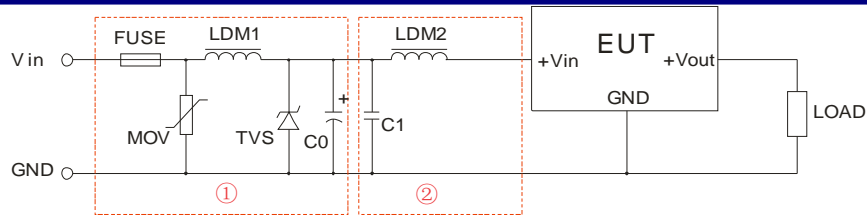
ENVIRONMENTAL SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (above 71°C)	-40	--	+85	°C
Storage Temperature		-55	--	+125	
The Max. Case Temperature	Operating temperature curve range	--	--	100	
Lead Temperature	1.5mm from case for 10 seconds	--	--	260	
Cooling		Free air convection			

EMC SPECIFICATIONS

EMI	CE	CISPR22/EN55022	CLASS A	(Without External Circuit)
		CISPR22/EN55022	CLASS B	(External Circuit Refer to Figure1-②)
	RE	CISPR22/EN55022	CLASS A	(External Circuit Refer to Figure1-②)
EMS	ESD	IEC/EN 61000-4-2	Contact ±6KV/ Air ±8KV	perf. Criteria B
	RS	IEC/EN 61000-4-3	10V/m	perf. CriteriaA
	EFT	IEC/EN 61000-4-4	±2KV	perf. Criteria B (External Circuit Refer to Figure1-①)
	Surge	IEC/EN 61000-4-5	±2KV	perf. Criteria B (External Circuit Refer to Figure1-①)
	CS	IEC/EN 61000-4-6	3Vr.ms	perf. Criteria A
	Voltage dips、short and interruptions immunity	IEC/EN 61000-4-29	0%-70%	perf. Criteria B

EMC RECOMMENDED CIRCUIT



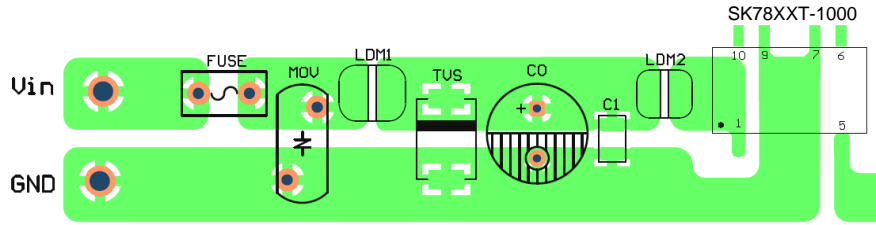
(Figure 1)

Recommended external circuit parameters:

FUSE	Choose according to practical input current
MOV	10D560
LDM1	82μH
TVS	SMCJ36A
C0	120μF/50V
C1	4.7μF/50V
LDM2	33μH

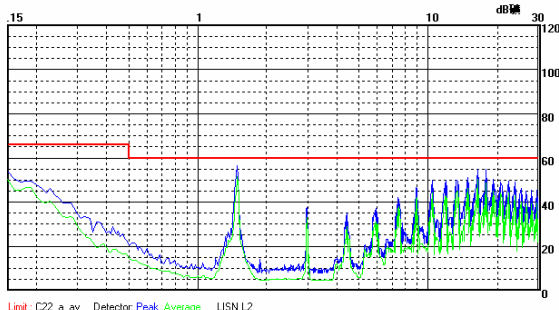
Note: In Figure 1, part ① is EMS Recommended external circuit, part ② is EMI recommended external circuit. Choose according to requirements.

EMC RECOMMENDED CIRCUIT PCB LAYOUT

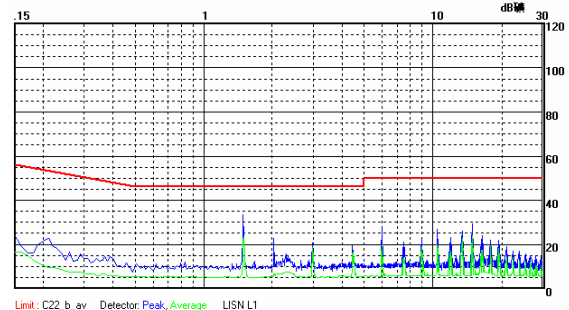


(Figure 2)

EMC TEST WAVEFORM

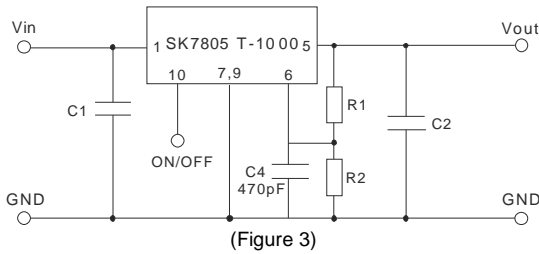


CE (Without external circuit)



CE (refer to Figure 1)

TYPICAL APPLICATION CIRCUIT



(Figure 3)

EXTERNAL CAPACITOR TABLE

Part Number	C1 (Ceramic Capacitor)	C2 (Ceramic Capacitor)
SK78XXT-1000	10 μ F/25V	22 μ F/16V

1. C1, C2 is required for best performance and should be fitted close to the converter pins.
2. The capacitance of C1, C2 sees external capacitor table, it can be increased properly if required, and tantalum or low ESR electrolytic capacitors may also suffice.
3. No parallel connection or plug and play.

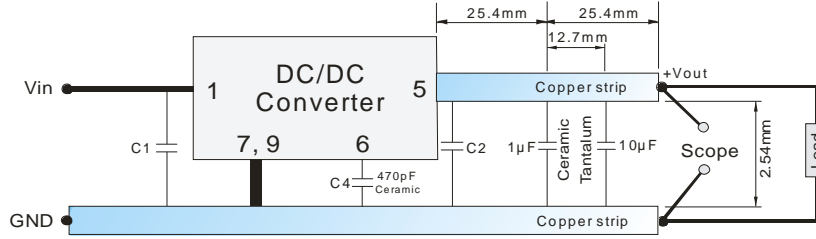
ADJUSTMENT RESISTOR VALUES

Part Number	SK78X2T-1000		SK7802T-1000		SK7803T-1000		SK7805T-1000	
	1.8(V)		2.5(V)		3.3(V)		5.0(V)	
Vadj (V)	R1(K Ω)	R2(K Ω)	R1(K Ω)	R2(K Ω)	R1(K Ω)	R2(K Ω)	R1(K Ω)	R2(K Ω)
1.5	188.1	-	15.4	-	-	-	-	-
1.8	-	-	68.6	-	15.4	-	-	-
2.5	-	81.4	-	-	87	-	9.7	-
3.0	-	32.2	-	88.7	339	-	30.5	-
3.3	-	18.6	-	41.3	-	-	48.8	-
3.6	-	9.5	-	20.1	-	121	75	-
3.9	-	-	-	8.0	-	51.0	115	-
4.5	-	-	-	-	-	16.6	338	-
4.9	-	-	-	-	-	8.0	1835	-
5.0	-	-	-	-	-	6.5	-	-
5.1	-	-	-	-	-	5.2	-	426
5.5	-	-	-	-	-	1.1	-	58.7
6.0	-	-	-	-	-	-	-	16.9
6.5	-	-	-	-	-	-	-	3.2

The R1, R2 in the above table are used to set the output voltage. If no need to adjust the output voltage, connect a ceramic capacitor to GND with 470pF typical value for increase immunity. Insure the output voltage is in the adjust range or else may cause permanent damage to the device. Fine-tune output voltage must appease $V_{in}-V_o > 2V$.

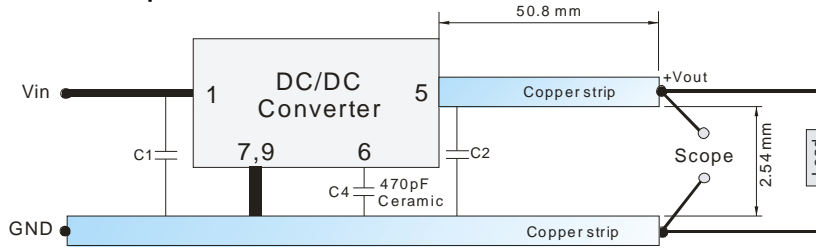
TEST CONFIGURATIONS (TA=25°C)

1. Efficiency and Output Voltage Ripple Test



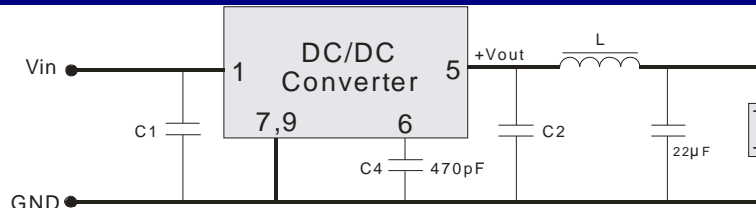
(Figure 4)

2. Start-up and Load Transient Response Test



(Figure 5)

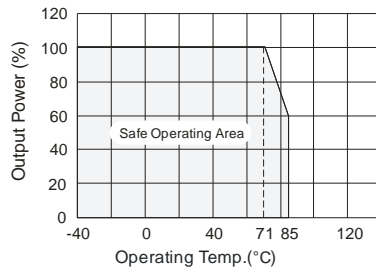
APPLICATION EXAMPLE



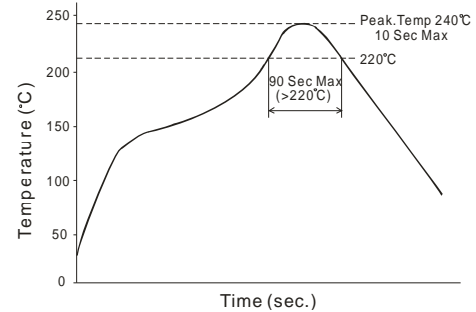
(Figure 6)

To reduce output ripple, it is recommended to add a LC filter to output port. L: Recommended parameter 10µH ~ 47µH.

TYPICAL TEMPERATURE CURVE

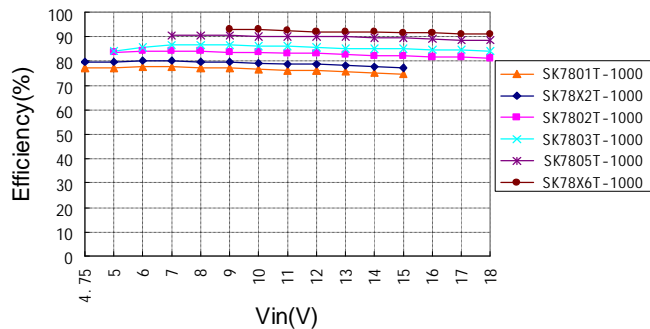


RECOMMENDED REFLOW SOLDERING PROFILE

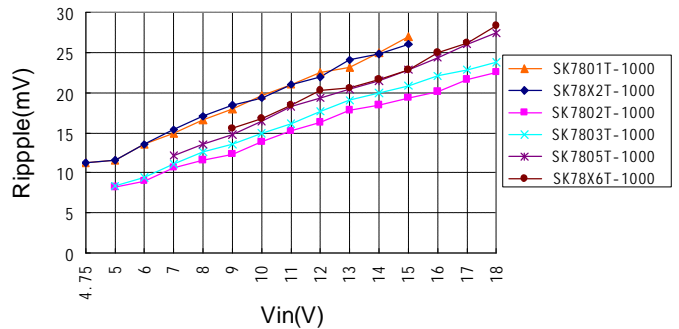


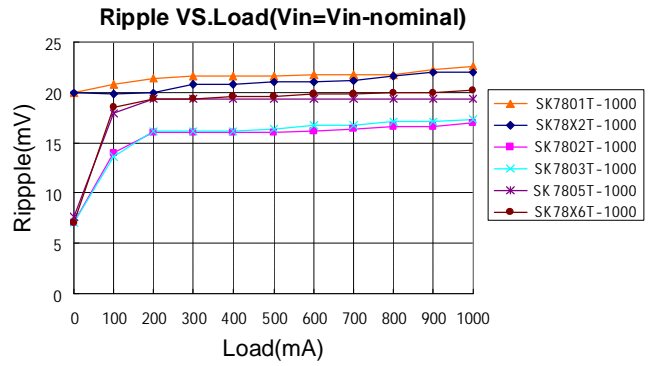
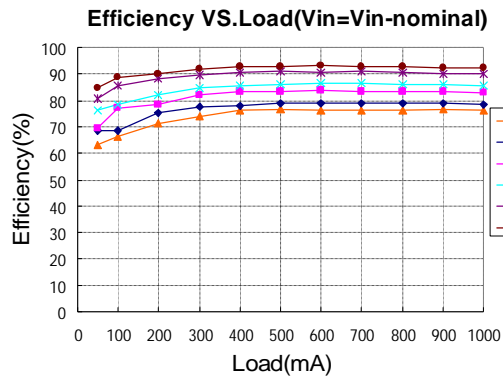
TYPICAL CHARACTER CURVE

Efficiency VS.Vin(full load)

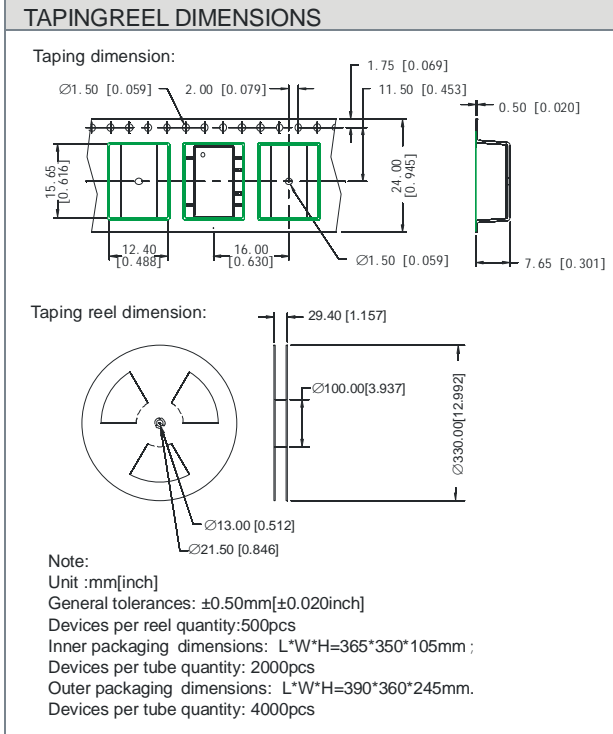
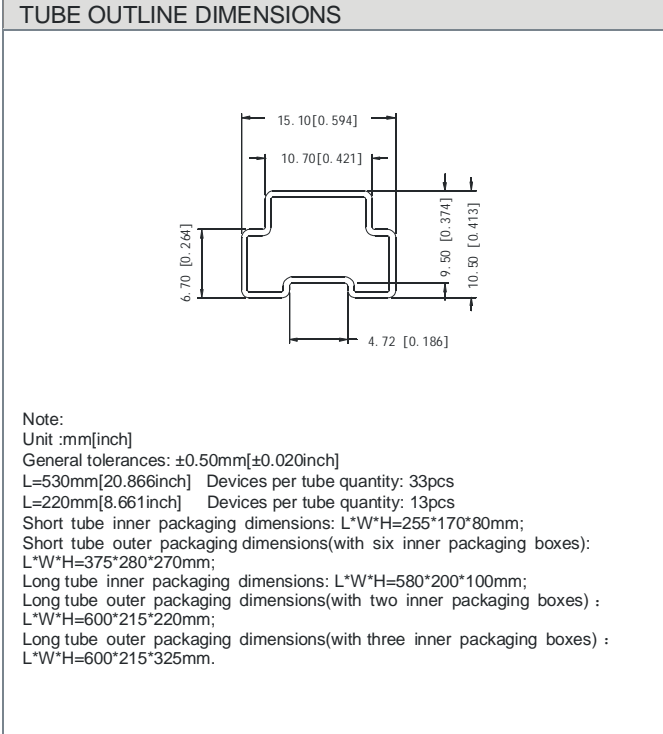
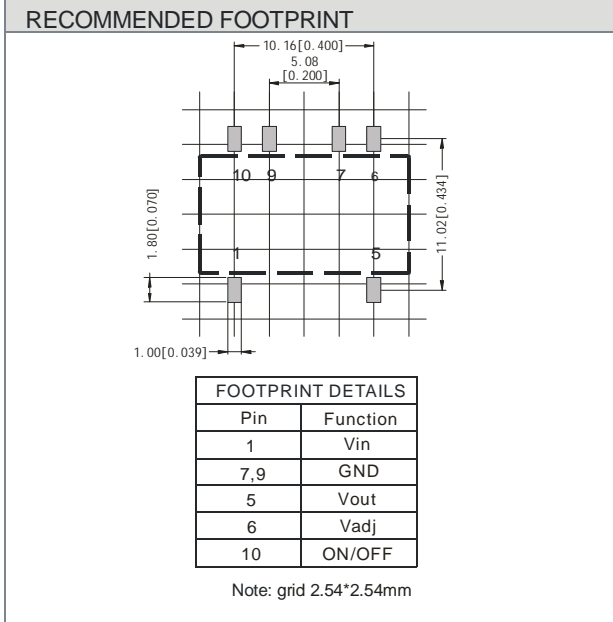
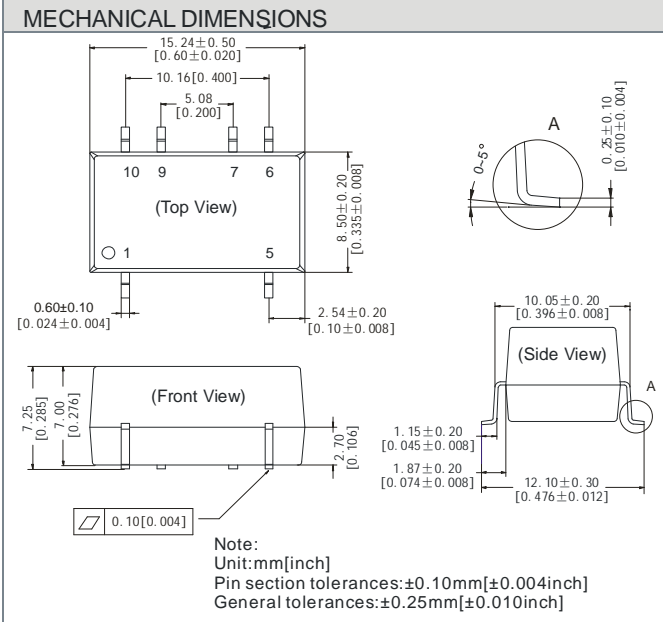


Ripple VS.Vin(full load)





OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING



Note:

1. Max. Capacitive Load tested at input voltage range and full load.
2. All specifications measured at $T_a=25^{\circ}\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
3. In this datasheet, all the test methods of indications are based on our corporate standards.
4. All characteristics are for listed model, non-standard models may perform differently, please contact our technical person for more detail.
5. Contact us for your specific requirement.
6. Specifications subject to change without prior notice.