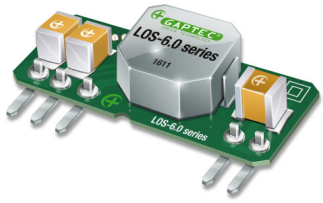
GAPTEC®
GREEN TECHNOLOGY



LOS_6.0 Series

Wide Input Non-Isolated & Regulated, Single Positive/Negative Output

Switching Regulator

- Efficiency up to 94%
- Operating temperature range: -40°C ~ +85°C
- Short circuit protection (SCP)
- Input under-voltage lockout
- SIP package
- Compliant to RoHs directive 2002/95/EC

The LOS-6 series are high efficiency switching regulators. The product is featured with high efficiency, low loss, short circuit protection and no heat sink requirement.

They are widely used in wireless networks, Telecom/Datacom, distributed power architectures, industry control systems, semiconductor equipment, microprocessor power applications, etc.

SHORT CIRCUIT PROTECTED

100% RoHS compliant

Common specifications

Short circuit protection:	Hiccup, automatic recovery
Temperature rise at full load:	25°C MAX, 15°C TYP
Cooling:	Free air convection
Operation temperature range:	-40°C~+85°C (with derating)
Storage temperature range:	-55°C ~+125°C
Thermal shock:	MIL-STD-810F
Over temperature protection:	135°C TYP
Operating case temperature:	100°C
Storage humidity range:	< 95%RH
MTBF (+25°C MIL-HDBK-217F):	3.247x10^6 hours TYP
Weight:	2.8g

Input specifications

Item	Test conditions	Min	Typ	Max	Units
Voltage tolerance	• 05 series Vo (set) • 12 series Vo (set)	2.4 8.3	5 12	5.5 14	VDC VDC
Input current	Vin = Vin(min); Io = Io (max)			6	A
Input filter*	C filter				
No Load Current	• Vo (set) = 0.75VDC, Vin = 5 • Vo (set) = 0.75VDC, Vin = 12 • Vo (set) = 3.3VDC Vin = 5 • Vo (set) = 5.0VDC Vin = 12		20 19 45 100		mA mA mA mA
Under Voltage Lockout	Start-up Voltage • Vin = 5 • in = 12 Shutdown Voltage • Vin = 5 • in = 12		 2.2 4.5 2 3.8		 V V V V
Input reflected ripple current	5~20MHz, 1uH source impedance		35		mAp-p

* It's necessary to equip the external input capacitors at the input of the module. The capacitors should connect as close as possible to the input terminals that ensuring module stability. The external Cin is 2×150µF low-ESR polymer capacitors // 2×47µF ceramic capacitors at least.

Output specifications

Item	Test conditions	Min	Typ	Max	Units
Output current				6	A
Voltage tolerance	Full load and Vin(nom.)			±2	%
Minimum load				0	%
Line regulation	Vin = Vin (min) to Vin (max) at Full Load		±0.3		%
Load regulation	0% to 100% load		±0.5		%
Ripple + Noise*	20MHz Bandwidth			20 60	mVrms mVp-p
Temperature coefficient			±0.4		%/°C
Dynamic load response*	Load change step (50% to 100% or 100% to 50% of Io (max) Setting time (Vo<10% peak deviation)		25		mS
Peak deviation	ΔIo/Δt = 2.5A/uS, Vin(nom)		200		mV
Dynamic load response**	Load change step (50% to 100% or 100% to 50% of Io (max) Setting time (Vo<10% peak deviation)		50		mS
Peak deviation	ΔIo/Δt = 2.5A/uS, Vin(nom)		50		mV
Output current limit			220		%
External load capacitance	• ESR≥1mΩ • ESR≥10mΩ			1000 3000	uF uF
Switching frequency		300			KHz
Output voltage overshoot-startup	Vin = Vin (min) to Vin (max); F.L.		1		%
Voltage adjustability	(see fig.1) • 05 series • 12 series	 0.7525 0.7525		 3.3 5	 V V

* External with Cout = 1µF ceramic//10µF tantalum capacitors.
** External with Cout = 2×150µF polymer capacitors.

Example:
LOS_12-06
LO = Series; S = SIP; 12 = Vin (nominal); 06 = Output current: 6A

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LOS-6 Series

Wide Input Non-Isolated & Regulated, Single Positive/Negative Output

Feature specifications					
Item	Test conditions	Min	Typ	Max	Units
Remote ON/OFF Positive logic (option)	ON = (Vin-4)<Vr<Vin (Max) OFF = 0V<Vr<0.3V			10 1	uA mA
Remote ON/OFF Negative logic (standard)	ON = 0V<Vr< 0.3V@IIN OFF = 2.5V<Vr<Vin(Max)@ IIN			10 1	uA mA
Input current of remote control pin		0.01		1	mA
Remote off state input current Nominal Vin			5		mA
Rise time	Time for Vo to rise from 10% to 90%of Vo (set)			6	ms
Turn-on delay time	Case 1 and 2, see notes below		3		ms

Note:
Case 1: On/Off input is set to logic low (module on) and then input power is applied (delay from instant at which Vin = Vin (min) until Vo = 10% of Vo (set)
Case 2: Input power is applied for at least one second and then the On/Off input is set to logic low (delay from instant at which Von/off=0.3V until Vo = 10% of Vo(set)

Trim figure:

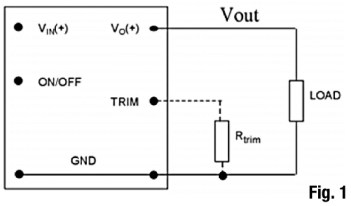


Fig. 1

Trim table:

Vo (set)	RTrim (KΩ)
0.7525	Open
3.3	3.6
5	1.78

Positive remote On/Off figure:

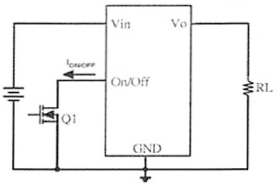


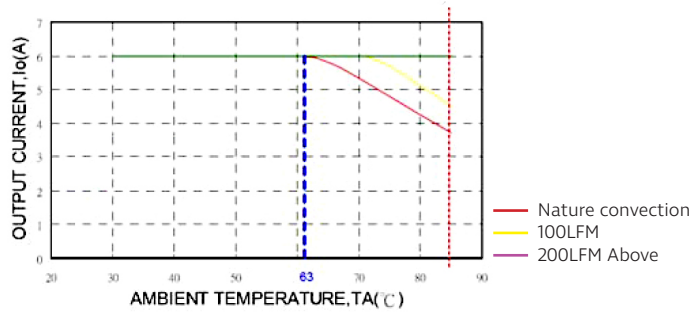
Fig. 2

Part Number	ON/OFF logic	Input Voltage [VDC]	Output Voltage [VDC]	Output Current [min/max load; A]	Efficiency [%, typ]
LOX_05-06	negative positive (option suffix /PL)	2.4 ~ 5.5VDC Vin (min) = Vo (Set) +0.5	0.75 ~ 3.3	0/6	94
LOX_12-06	negative positive (option suffix /PL)	Vo (set) <3.63V Vin = 8.3~14VDC Vo (set) > 3.63V Vin = 8.3~13.2VDC	0.75 ~ 5.0	0/6	89

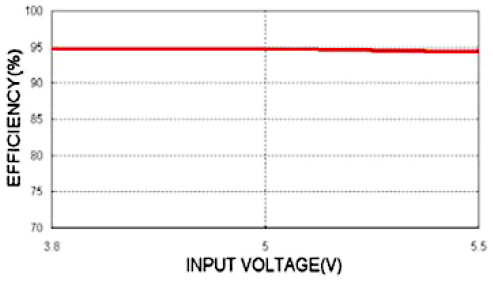
X = S : SIP package

Typical characteristics

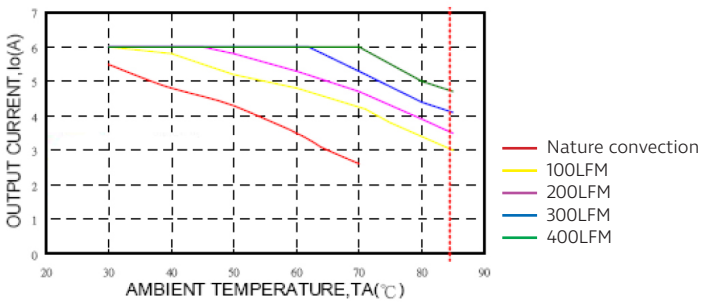
Derating Curve, LOS_05-06



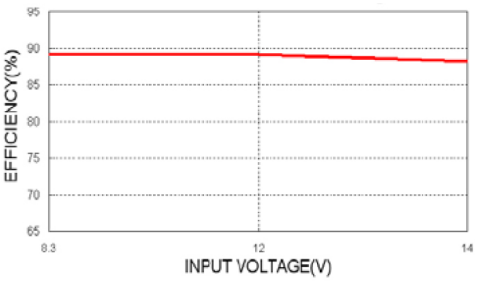
Efficiency vs. input voltage, Vo = 3.3V, LOS_05-06



Derating Curve, LOS_12-06



Efficiency vs. input voltage, Vo = 3.3V, LOS_12-06

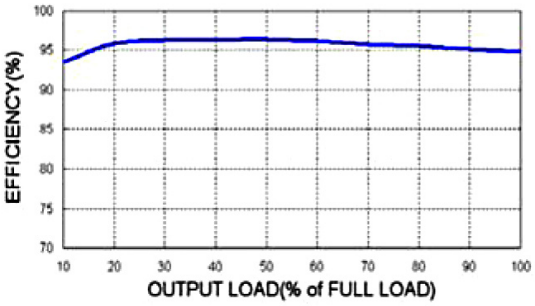


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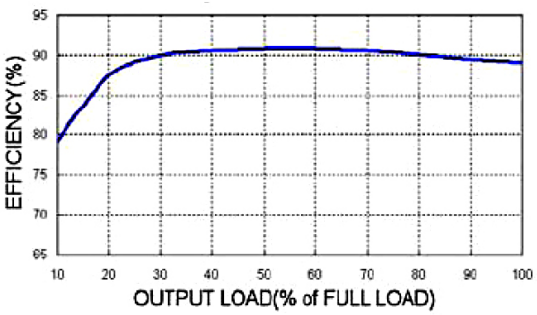
Specifications subject to change without notice.

Efficiency

Efficiency vs. output load, Vo= 3.3V, LOS_05-06

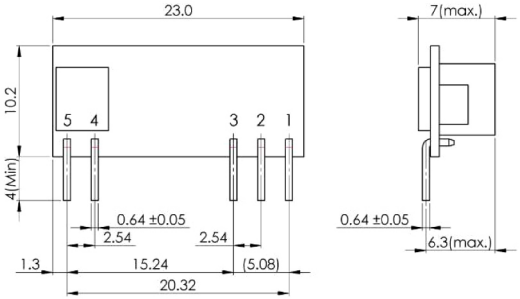


Efficiency vs. output load, Vo= 3.3V, LOS_12-06



Mechanical dimensions

SIP



Note:

1. The max. capacitive load should be tested within the input voltage range and under full load conditions;
2. Without any special statement, all indexes are only specific to positive output application;
3. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta = 25°C, humidity < 75% when inputting nominal voltage and outputting rated load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;
5. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact with our technician for specific information;
6. Specifications subject to change without prior notice.

CAUTION: This power module is not internally fused. An input line fuse must always be used.

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