

Electrical Specifications (continued)

Parameter	Device	Symbol	Min	Typ	Max	Unit
Output Voltage Set-point ( $V_{IN}=V_{IN,nom}$ , $I_O=I_{O,nom}$ , $T_{ref}=25^{\circ}C$ )	All	$V_{O, set}$	-1.5	—	+1.5	% $V_{O, set}$
Output Voltage (Over all operating input voltage, resistive load, and temperature conditions until end of life)	All	$V_{O, set}$	-5.0	—	+3.0	% $V_{O, set}$
Adjustment Range Selected by an external resistor	ATS030 ATS020 ATH030*		0.8 0.8 0.8		2.75 3.63 3.63	Vdc Vdc Vdc
* $V_O \geq 3.3V$ only possible for $V_{IN} \geq 4.75V$						
Output Regulation Line ( $V_{IN}=V_{IN, min}$ to $V_{IN, max}$ ) Load ( $I_O=I_{O, min}$ to $I_{O, max}$ ) Temperature ( $T_{ref}=T_{A, min}$ to $T_{A, max}$ )	All All (-P version) All		— — — —	— — — 0.5	20 40 70 1	mV mV mV % $V_{O, set}$
Output Ripple and Noise on nominal output ( $V_{IN}=V_{IN, nom}$ and $I_O=I_{O, min}$ to $I_{O, max}$ $C_{OUT} = 0.1\mu F // 10 \mu F$ ceramic capacitors) Peak-to-Peak (5Hz to 20MHz bandwidth) Peak-to-Peak (5Hz to 20MHz bandwidth) Peak-to-Peak (5Hz to 20MHz bandwidth)	$V_O \leq 2.5V$ $2.5V < V_O \leq 3.63V$ $V_O > 3.63V$		— — —		50 75 100	mV <sub>pk-pk</sub> mV <sub>pk-pk</sub> mV <sub>pk-pk</sub>
External Capacitance ESR $\geq 1 m\Omega$ ESR $\geq 10 m\Omega$	All All	$C_{O, max}$ $C_{O, max}$	0 0	— —	2,000 10,000	$\mu F$ $\mu F$
Output Current ( $V_{IN} = 4.5$ to $5.5Vdc$ ) ( $V_{IN} = 6$ to $14Vdc$ ) ( $V_{IN} = 6$ to $14Vdc$ )	ATH Series ATS030 Series ATS020 Series	$I_O$ $I_O$ $I_O$	0 0 0		30 30 20	Adc Adc Adc
Output Current Limit Inception (Hiccup Mode)	All	$I_{O, lim}$	—	140	—	% $I_{Omax}$
Output Short-Circuit Current ( $V_O \leq 250mV$ ) ( Hiccup Mode )	All	$I_{O, s/c}$	—	3.5	—	Adc
Efficiency ATH Series: $V_{IN}=5Vdc$ , $T_A=25^{\circ}C$ $I_O=I_{O, max}$ , $V_O=V_{O, set}$  ATS Series: $V_{IN}=12Vdc$ , $T_A=25^{\circ}C$ $I_O=I_{O, max}$ , $V_O=V_{O, set}$	$V_{O, set} = 0.8dc$ $V_{O, set} = 1.2Vdc$ $V_{O, set} = 1.5Vdc$ $V_{O, set} = 1.8Vdc$ $V_{O, set} = 2.5Vdc$ $V_{O, set} = 3.3Vdc$  $V_{O, set} = 0.8dc$ $V_{O, set} = 1.2Vdc$ $V_{O, set} = 1.8Vdc$ $V_{O, set} = 2.5Vdc$ $V_{O, set} = 3.3Vdc$	$\eta$ $\eta$ $\eta$ $\eta$ $\eta$ $\eta$  $\eta$ $\eta$ $\eta$ $\eta$ $\eta$		82.2 85.8 89.5 89.2 92.0 92.2  77.5 83.5 86.5 91.3 92.1		% % % % % %  % % % % %
Switching Frequency, Fixed	All	$f_{sw}$	—	300	—	KHz

**Electrical Specifications** (continued)

Parameter	Device	Symbol	Min	Typ	Max	Unit
Dynamic Load Response						
( $dI_O/dt=5A/\mu s$ ; $V_{IN}=12V$ , $V_O=3.3V$ ; $T_A=25^\circ C$ ) Load Change from $I_O= 50\%$ to $100\%$ of $I_{O,max}$ ; No external output capacitors						
Peak Deviation	All	$V_{pk}$	—	350		mV
Settling Time ( $V_O<10\%$ peak deviation)	All	$t_s$	—	25	—	$\mu s$
( $dI_O/dt=5A/\mu s$ ; $V_{IN}=V_{IN, nom}$ ; $T_A=25^\circ C$ ) Load Change from $I_O= 100\%$ to $50\%$ of $I_{O, max}$ ; No external output capacitors						
Peak Deviation	All	$V_{pk}$	—	350		mV
Settling Time ( $V_O<10\%$ peak deviation)	All	$t_s$	—	25	—	$\mu s$
( $dI_O/dt=5A/\mu s$ ; $V_{IN}=V_{IN, nom}$ ; $T_A=25^\circ C$ ) Load Change from $I_O= 50\%$ to $100\%$ of $I_{O,max}$ ; 2x150 $\mu F$ polymer capacitor						
Peak Deviation	All	$V_{pk}$	—	250	—	mV
Settling Time ( $V_O<10\%$ peak deviation)	All	$t_s$	—	40	—	$\mu s$
( $dI_O/dt=5A/\mu s$ ; $V_{IN}=V_{IN, nom}$ ; $T_A=25^\circ C$ ) Load Change from $I_O= 100\%$ to $50\%$ of $I_{O,max}$ ; 2x150 $\mu F$ polymer capacitor						
Peak Deviation	All	$V_{pk}$	—	250	—	mV
Settling Time ( $V_O<10\%$ peak deviation)	All	$t_s$	—	40	—	$\mu s$

**General Specifications**

Parameter	Min	Typ	Max	Unit
Calculated MTBF ( $V_{IN}=12V$ , $V_O=3.3Vdc$ , $I_O= 0.8I_{O, max}$ , $T_A=40^\circ C$ ) Per Telecordia Method		3,016,040		Hours
Weight	—	6.2 (0.22)	—	g (oz.)