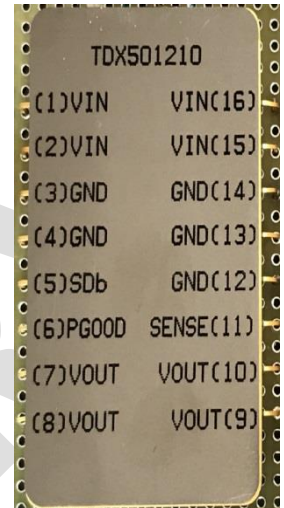


Features

- High Reliability
- All Passives Fully Integrated
- 4.6V to 6.0V Input Voltage Range
- Fixed Output Voltages 3.6 to 1V at up to 10A Continuous
- Shutdown Pin for Power Sequencing
- Peak Efficiency > 90% (TBD)
- Power Good Output Signal
- 500kHz Switching Frequency
- Remote Voltage Sense
- 1% Initial Output Accuracy @ 25C
- Cycle-by-Cycle Current Limit
- Operating Range -40°C to +85°C
- Based on Flight-Proven Buck Controller with Integrated FETs
- 100 krad TID (Si) Radiation Tolerant
- Additional Environmental Screening Available
- MIL-PRF-38534 Element Evaluated Components



16-pin HTCC Hermetic Flat Pack Package

Applications

- 3.6 to 1V Supply for Space:
 - Microprocessors/FPGAs
 - ADC's
 - DAC's
 - Digital I/O's

Description

The TD5 series of high reliability DC-DC converter point-of-load module with all passive components integrated, requiring no external capacitors or inductors. It includes under voltage lockout, cycle-by-cycle current limit protection, and thermal shutdown. The TD5 uses a space flight-proven, monolithic DC-DC Controller, which has intrinsic radiation tolerance. The module is packaged in a hermetic 16-lead Ceramic Flat Pack package.

Ordering Information

TD 50 33 10

Part Series	Nominal Input Voltage		Output Voltage		Output Current		Screening	
TD	50	5 V	33	3.3 V	2	2 A	None	Standard
			25	2.5 V	6	6 A	/ES	Extended
			18	1.8 V	10	10 A	/S	Space
			12	1.2 V				
			10	1.0 V				

Electrical Characteristics ($T_{CASE} = -55$ to $+125^{\circ}C$, $V_{IN} = 4.6-6.0V$, unless otherwise noted)

Parameters	Sym.	Min.	Typ.	Max.	Units	Conditions
V_{IN} Supply Voltage Range	V_{IN}	4.6	5.0	6.0	V	
Maximum Output Current	I_{MAX}	2			A	
		6			A	
		10			A	
Supply Current	I_{DDSB}		6.26	15.56	mA	SDB=GND, $V_{IN}=6V$
Supply Current	I_{DD0}		TBD	TBD	mA	SDB=5V, $V_{IN}=6.0V$, $I_{OUT}=0mA$
Output Voltage	V_{OUT}		1.0		V	Load=0mA
			1.2		V	Load=0mA
			1.8		V	Load=0mA
			2.5		V	Load=0mA
			3.3		V	Load=0mA
DC Load Regulation	V_{OUTLR1}		TBD		%	Load=0mA to Max Load
DC Line Regulation	V_{OUTLR2}		TBD		%	Load=0mA, $V_{IN}=4.6$ to $6.0V$
Switching Frequency	FSW	340	500	660	kHz	Load=0mA
Efficiency	η			94	%	Load=3A, $V_{IN}=5.0V$, $T_{CASE}=25^{\circ}C$
PGOOD Upper Threshold	PG_{TU}		TBD		V	V_{OUT} going high

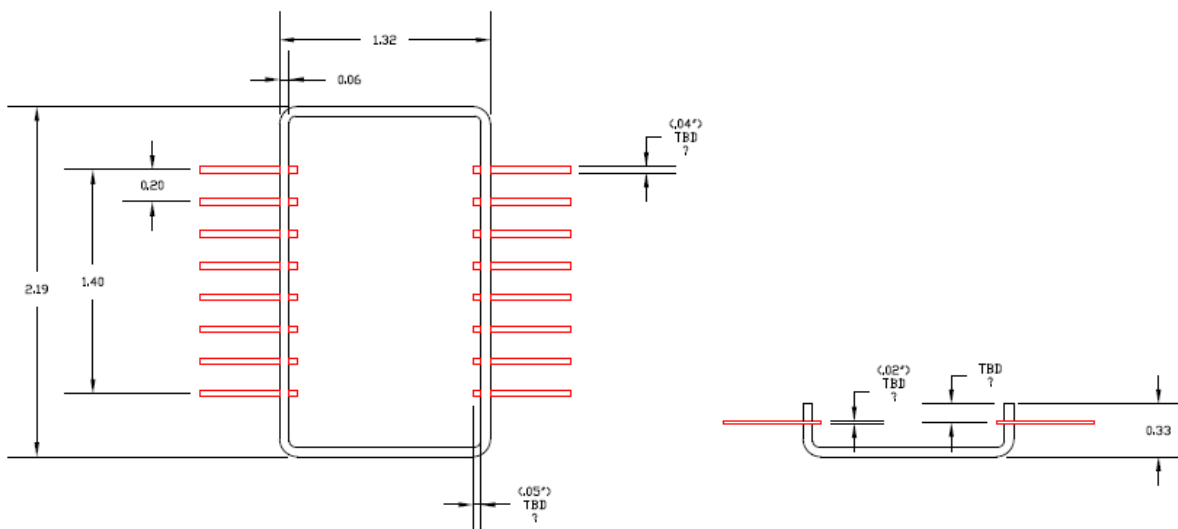
PGOOD Lower Threshold	PG_{TL}		TBD		V	V_{OUT} going low
PGOOD Hysteresis	PG_{HYS}		TBD		V	
Under-Voltage Lockout (UVLO)	V_{UVLOR}	3.68	4.2	4.44	V	V_{IN} Rising
	V_{UVLOF}	3.4	3.8	4.10	V	V_{IN} Falling
UVLO Hysteresis	$V_{UVLOHYS}$		400		mV	
SDB Turn-On Threshold	V_{IH}	2.2			V	
	V_{IL}			1.25	V	
V_{SENSE} Input Leakage Current	I_{VSENSE}			0.2	μA	$V_{SENSE}=3.3V$
Startup Time	TSU		TBD		μs	Load=0mA, SDB=0V to 5V

Table 3. Environmental Screening (100% Tested Per MIL-STD-883 as reference to MIL-PRF-38534)

Test	Mil-STD-883 Test Method, Condition	N Suffix (Standard) Non-QML	/ES (Extended) Non-QML	/H Class H	/K Class K
Non-Destructive Bond Pull	TM2023				•
Internal Visual	TM2010, TM2017, TM2032 (MIL-STD-750, TM2072, TM2073)	•	•	•	•
Temperature Cycling	TM1010, Condition C -65°C to 150°C, Ambient			•	•
	TM1010, Condition B -55°C to 150°C, Ambient		•		
Constant Acceleration	TM2001, 3000g, Y1 Direction			•	•
	TM2001, 500g, Y1 Direction		•		
PIND	TM2020, Condition A				•
Burn-In	TM1015, 320 hrs, 125°C, Case Typ				•
	TM1015, 160 hrs, 125°C, Case Typ			•	
	96 hrs, 125°C, Case Typ		•		
	24 hrs, 125°C, Case Typ	•			
Final Electrical	MIL-PRF-38534, Group A Subgroups 1-6 -55°C, 25°C, 125°C			•	•
	MIL-PRF-38534, Group A Subgroups 1 and 4 25°C	•	•		

Package Specifications

Package Drawing:



PIN	Function	PIN	Function
1	+Vin	9	Vout
2	+Vin	10	Vout
3	GND	11	Sense
4	GND	12	GND
5	Sdb	13	GND
6	PGOOD	14	GND
7	Vout	15	+Vin
8	Vout	16	+Vin