TEAclipper-PIC-xV-PT™

TEAclipper PIC programmer core processors

Summary

TEAclipper-PIC-HV-PT and TEAclipper-PIC-LV-PT are the core processors used in TEAclipper/PIC programming clips. They allow custom field programming products to be manufactured in applications where a different form factor is required to the TEAclipper/PIC.

TEAclipper/PIC devices make it easy to sell code written for PICs and also to deliver updates to products already delivered to customers. For applications where the technology is required in other formats, the core processor is also available separately.

Features

TEAclipper/PI-xV-PT feature:

- All the same features as the TEAclipper/PIC devices themselves. (Refer to TEAclipper/PIC data sheet for full details.)
- Based on the PIC18F66J16 microcontroller. No resonator required.
- 64-pin TQFP package.
- TEAclipper/PI-HV-PT can generate *Vpp* programming voltages of up to 13V.
- TEAclipper/PI-LV-PT can only generate *Vpp* programming voltages up to the target board *Vdd*.

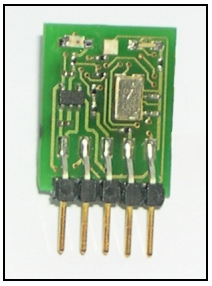
Applications

- Firmware programming & archiving
- Firmware sales through physical dispatch of TEAclippers to customers
- Protection from design theft by subcontractors
- Delivery of in-the-field firmware updates for already-deployed products. Costs nothing to implement at product design-time.
- Firmware sales through web marketing by *www.hexwax.com*, FlexiPanel's firmware publishing service.

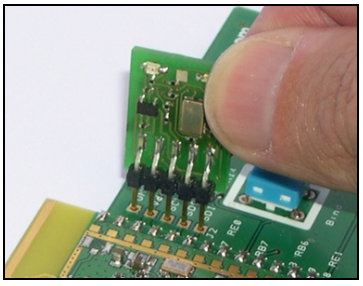
Ordering Information

Part No	***Description***
TEACL-PIC-HV-PT	TEAclipper/PIC high voltage core processor
TEACL-PIC-LV-PT	TEAclipper/PIC low voltage core processor

FlexiPanel Ltd
2 Marshall St, 3rd Floor
London W1F 9BB, UK
www.flexipanel.com
email: support@flexipanel.com



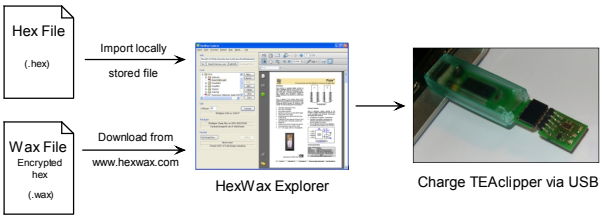
TEAclipper/PIC



Programming a target PCB

How TEAclippers Work

The *HexWax Explorer* application is used to load TEAclippers with firmware, either stored locally or downloaded from *www.hexwax.com* via the TEAclipper USB adapter.



HexWax Explorer

Charge TEAclipper via USB

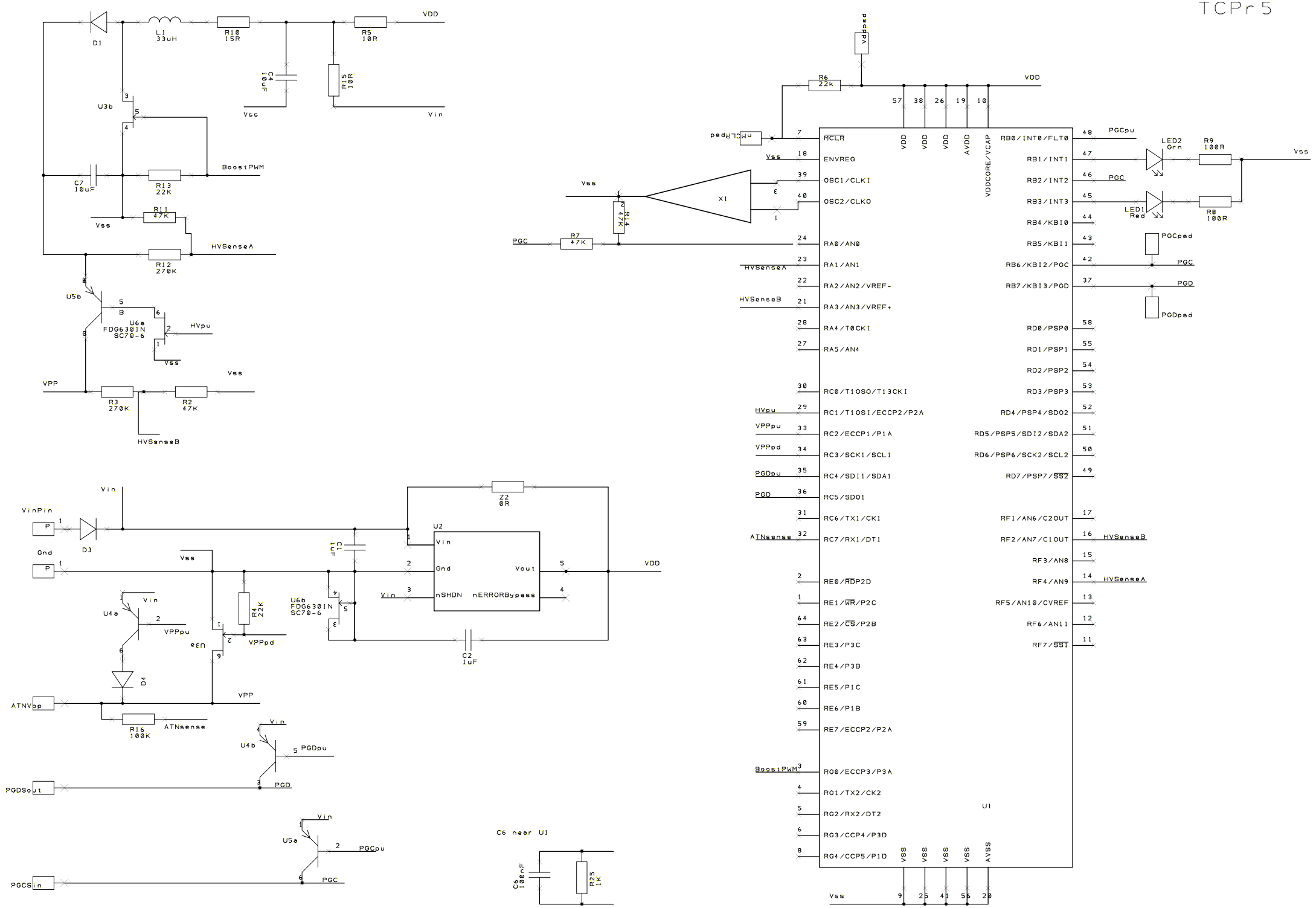
PICs are then programmed by temporarily inserting the TEAclipper into the target device's circuit. The connection can be a PCB header or simply leaning against plate-through holes on a PCB. For prototyping, TEAclippers can be inserted into breadboards.

TEAclipper-PIC-xV-PT chips allow you to replicate the TEAclipper technology in a custom circuit of your own. This allows you to create custom field-programming products.

TEAclipper Circuit

The following pages provide a reference design for TEAclipper/PIC-HV and TEAclipper/PIC-LV devices:

1. Reference schematic.
2. Bill of materials for TEAclipper/PIC-HV
3. Bill of materials for TEAclipper/PIC-LV


D1
L1 33uH
R10 15R
R5 10R
VDD
C4 10uF
R15 10R
Vss
Vin
U3b
C7 10uF
R13 22K
BoostPWM
R11 47K
Vss
HVSenseA
R12 270K
U5b
U6a FDG6301N SC70-6
HVpu
Vss
VPP
R3 270K
R2 47K
Vss
HVSenseB
Vdpad
R6 22k
VDD
MCLRpad
Vss
X1
R14 4.7K
PGC
R7 47K
MCLR
ENVREG
OSC1/CLKI
OSC2/CLKO
RA0/AN0
RA1/AN1
RA2/AN2/VREF-
RA3/AN3/VREF+
RA4/T0CKI
RA5/AN4
RC0/T1OSO/T13CKI
RC1/T1OSI/ECCP2/P2A
RC2/ECCP1/P1A
RC3/SCK1/SCL1
RC4/SDI1/SDA1
RC5/SDO1
RC6/TX1/CK1
RC7/RX1/DT1
RE0/RDP2D
RE1/WR/P2C
RE2/CS/P2B
RE3/P3C
RE4/P3B
RE5/P1C
RE6/P1B
RE7/ECCP2/P2A
RG0/ECCP3/P3A
RG1/TX2/CK2
RG2/RX2/DT2
RG3/CCP4/P3D
RG4/CCP5/P1D
VDD
VSS
AVDD
AVSS
VDDCORE/VCAP
RB0/INT0/FLT0
RB1/INT1
RB2/INT2
RB3/INT3
RB4/KBI0
RB5/KBI1
RB6/KBI2/PGC
RB7/KBI3/PGD
RD0/PSP0
RD1/PSP1
RD2/PSP2
RD3/PSP3
RD4/PSP4/SDO2
RD5/PSP5/SDI2/SDA2
RD6/PSP6/SCK2/SCL2
RD7/PSP7/SS2
RF1/AN6/C2OUT
RF2/AN7/C1OUT
RF3/AN8
RF4/AN9
RF5/AN10/CVREF
RF6/AN11
RF7/SS1
U1
PGCpu
LED2 Grn
R9 100R
Vss
PGC
LED1 Red
R8 100R
PGCpad
PGC
PGD
PGDpad
HVSenseB
HVSenseA
HVpu
VPPpu
VPPpd
PGDpu
PGD
ATNsense
BoostPWM
Vin
VinPin
D3
Gnd
Vss
C1 1uF
Z2 0R
U2
Vin
Gnd
nSHDN
Vout
nERRORBypass
VDD
U6b FDG6301N SC70-6
C2 1uF
U4a
VPPpu
R4 22K
U3a
VPPpd
D4
VPP
ATNVpp
R16 100K
ATNsense
U4b
PGDpu
PGD
PGDSout
U5a
PGCpu
PGC
PGCSin
C6 near U1
C6 100nF
R25 1K

Bill of materials TEAclipper/PIC HV, version TCPHRr5

Name	***Component***	***Example***
D1, D3, D4	1PS76SB10 low Vf (<400mV) diode	Digikey 568-3406-1-ND
J1	5-pin 0.1" header SMT	DigiKey S1013-36-ND cut to 5 pins
C4, C7	10uF 0805 Ceramic 16V	Digikey 490-3347-1-ND
C1, C2	1uF 0402	
C6	100nF 0402	
L1	33uH	DigiKey PCD1096CT-ND
LED1	Red 0805 right angle 2.0V	Digikey 160-1468-1-ND
LED2	Green 0805 right angle 2.0V	Digikey 160-1469-1-ND
U1	TEAclipper-PIC-HV-PT	HexWax
U2	Microchip TC series 2.5V reg SOT-23-5	Digikey TC10552.5VCT713CT-ND
U3, U6	FDG6301N SC70-6	Digikey FDG6301NCT-ND
U4, U5	PNP array UP0411	Digikey UP0411100LCT-ND
R4, R6, R13, R7, R14	22k 0402	
R2, R11	47k 0402	
R3, R12	270k 0402	
R5, R10	Zero ohm link	
R16	100K 0402	
R25	1K 0402	
Z2	Do not populate	
R15	Do not populate	
R8, R9	100R 0402	
X1	Do not populate	
No parts critical, substitutions OK		

Bill of materials TEAclipper/PIC LV, version TCPLRr5

Name	***Component***	***Example***
D1	Do not populate	
D3, D4	1PS76SB10 low Vf (<400mV) diode	Digikey 568-3406-1-ND
J1	5-pin 0.1" header SMT	DigiKey S1013-36-ND cut to 5 pins
C4, C7	Do not populate	
C1, C2	1uF 0402	
C6	100nF 0402	
L1	Do not populate	
LED1	Red 0805 right angle 2.0V	Digikey 160-1468-1-ND
LED2	Green 0805 right angle 2.0V	Digikey 160-1469-1-ND
U1	TEAclipper-PIC-LV-PT	HexWax
U2	Microchip TC series 2.5V reg SOT-23-5	Digikey TC10552.5VCT713CT-ND
U3, U6	Do not populate	
U4, U5	PNP array UP0411	Digikey UP0411100LCT-ND
R6, R13, R7, R14	22k 0402	
R2	47k 0402	
R3	270k 0402	
R4, R5, R10, R11, R12	Do not populate	
R16	Zero ohm link 0402	
R25	1K 0402	
Z2	Do not populate	
R15	Do not populate	
R8, R9	100R 0402	
X1	Do not populate	
No parts critical, substitutions OK		