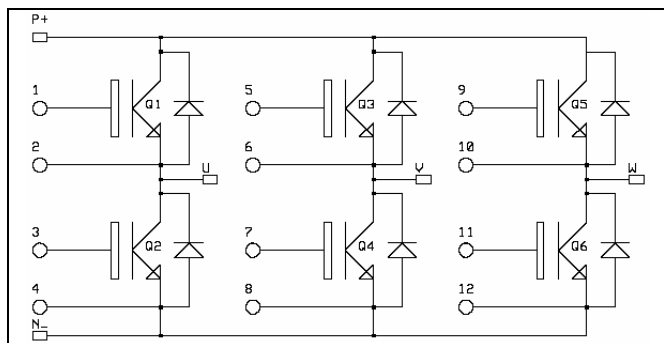
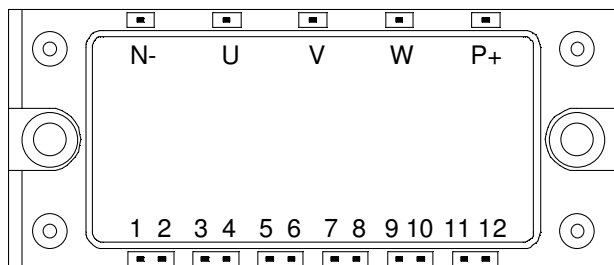


**3 Phase bridge
NPT IGBT Power Module**

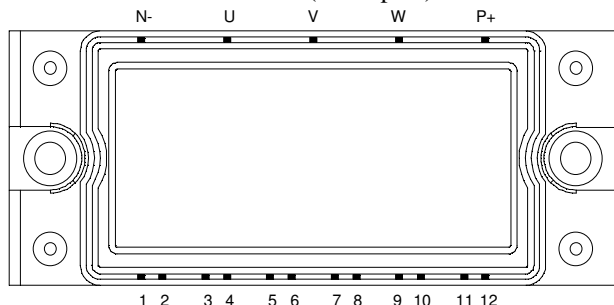
**$V_{CES} = 1200V$
 $I_C = 10A @ T_c = 80^\circ C$**



Pin out: APTGF10X120E2 (Long pins)



Pin out: APTGF10X120P2 (Short pins)



Application

- AC Motor control

Features

- Non Punch Through (NPT) IGBT®
 - Low voltage drop
 - Low tail current
 - Switching frequency up to 20 kHz
 - Soft recovery parallel diodes
 - Low diode VF
 - Low leakage current
 - Avalanche energy rated
 - RBSOA and SCSOA rated
- Kelvin emitter for easy drive
- Very low stray inductance
- High level of integration

Benefits

- Stable temperature behavior
- Very rugged
- Solderable terminals for easy PCB mounting
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive TC of VCEsat
- Low profile

All ratings @ $T_j = 25^\circ C$ unless otherwise specified

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1200	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	A
		$T_C = 80^\circ C$	
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	30
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	80
SCSOA	Short Circuit Safe Operating Area	$T_j = 125^\circ C$	100A@1200V

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
BV_{CES}	Collector - Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 500\mu A$	1200			V
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V$ $V_{CE} = 1200V$	$T_j = 25^\circ C$ $T_j = 125^\circ C$	200 800	400	μA
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15V$ $I_C = 10A$	$T_j = 25^\circ C$ $T_j = 125^\circ C$	2.7 3.3	3.2 3.9	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 0.35 mA$	4.5	5.5	6.5	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$			120	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0V$		600		pF
C_{oes}	Output Capacitance	$V_{CE} = 25V$		60		
C_{res}	Reverse Transfer Capacitance	$f = 1MHz$		38		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching ($125^\circ C$) $V_{GE} = \pm 15V$ $V_{Bus} = 600V$ $I_C = 10A$ $R_G = 150\Omega$		55	110	ns
T_r	Rise Time			50	100	
$T_{d(off)}$	Turn-off Delay Time			380	570	
T_f	Fall Time			80	120	

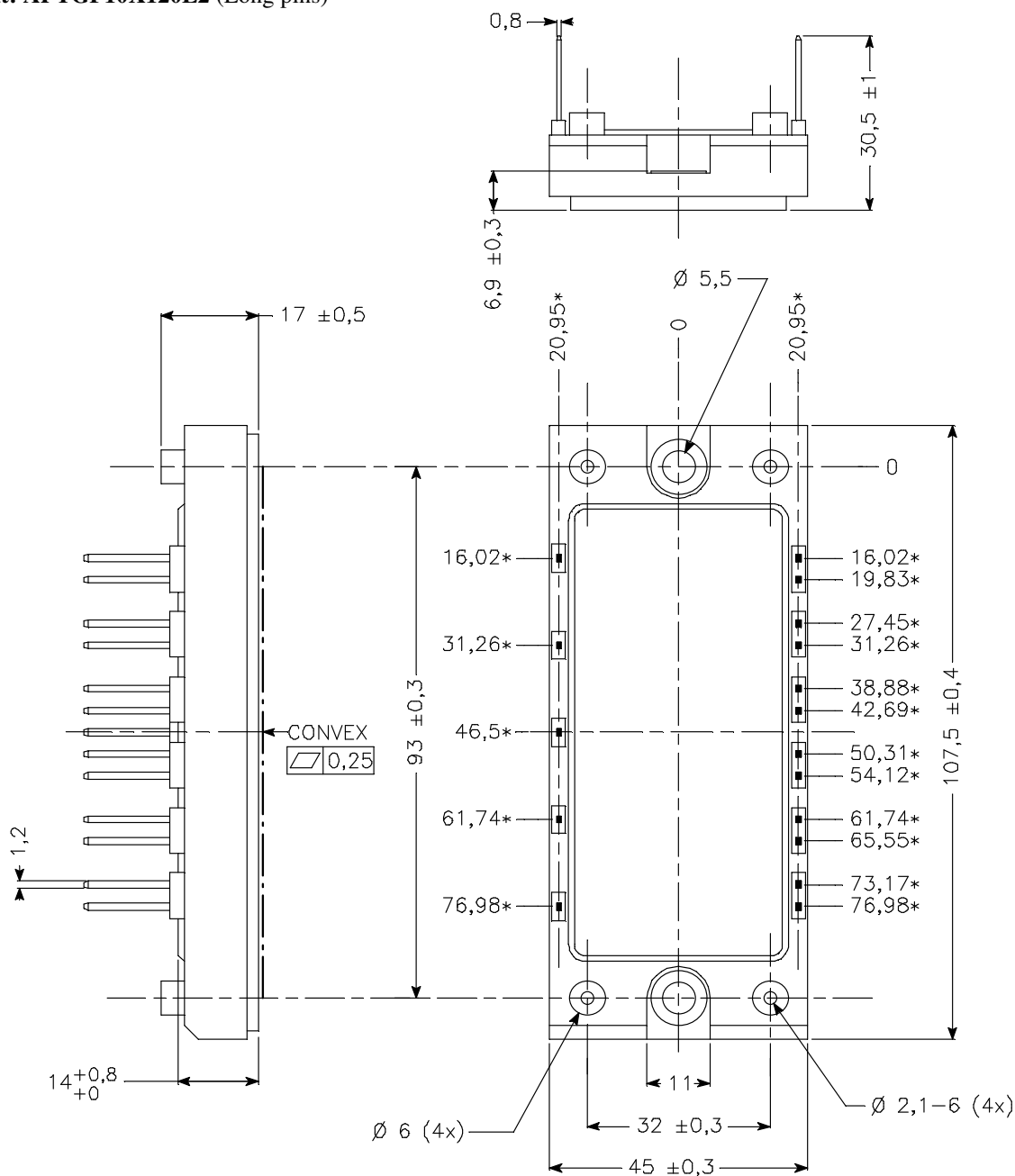
Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 10A$ $V_{GE} = 0V$	$T_j = 25^\circ C$ $T_j = 125^\circ C$	2.9 2.6	3.4	V
t_{rr}	Reverse Recovery Time	$I_F = 10A$ $V_R = 600V$ $di/dt = 400A/\mu s$	$T_j = 125^\circ C$	0.5		μs
Q_{rr}	Reverse Recovery Charge	$I_F = 10A$ $V_R = 600V$ $di/dt = 400A/\mu s$	$T_j = 25^\circ C$ $T_j = 125^\circ C$	0.4 1.2		μC

Thermal and package characteristics

Symbol	Characteristic			Min	Typ	Max	Unit
R _{thJC}	Junction to Case			IGBT		1.55	°C/W
				Diode		2	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz			2500			V
T _J	Operating junction temperature range			-40		150	°C
T _{STG}	Storage Temperature Range			-40		125	
T _C	Operating Case Temperature			-40		125	
Torque	Mounting torque	To Heatsink	M5	2		3.5	N.m
Wt	Package Weight					185	g

Pin out: APTGF10X120E2 (Long pins)



ALL DIMENSIONS MARKED " * " ARE TOLERANCED AS : $\begin{array}{|c|c|} \hline \oplus & \ominus \\ \hline \end{array} \begin{array}{|c|} \hline \phi 0,4 \\ \hline \end{array}$

Pin out: APTGF10X120P2 (Short pins)



APT's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.