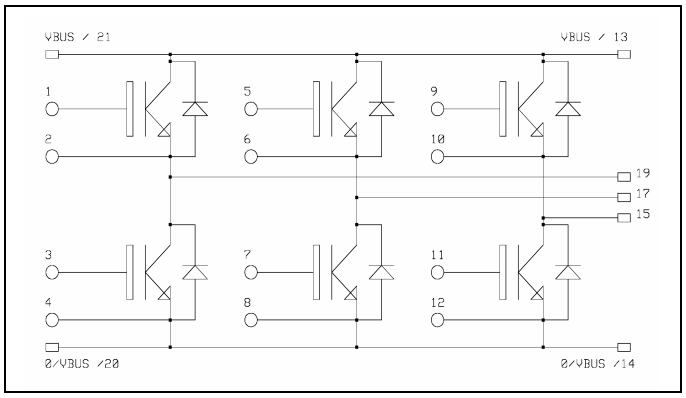
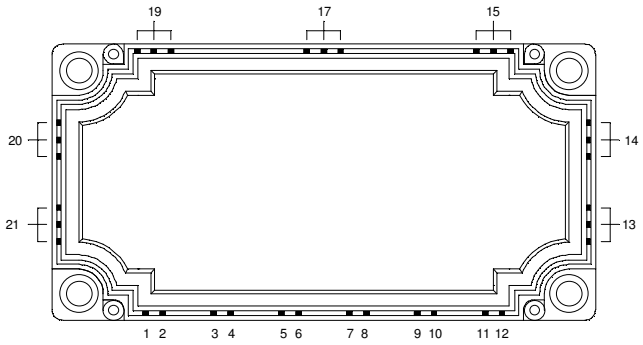
3 Phase bridge
NPT IGBT Power Module

V_{CES} = 1200V
I_C = 50A @ Tc = 80°C





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

Absolute maximum ratings

Symbol	*Parameter*		*Max ratings*	*Unit*
V_{CES}	Collector - Emitter Breakdown Voltage		1200	V
I_C	Continuous Collector Current	T_C = 25°C	78	A
		T_C = 80°C	50	
I_{CM}	Pulsed Collector Current	T_C = 25°C	150	
V_{GE}	Gate – Emitter Voltage		±20	V
P_D	Maximum Power Dissipation	T_C = 25°C	400	W
SCSOA	Short Circuit Save Operating Area	T_j = 125°C	500A@1200V	

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

Electrical Characteristics

All ratings @ T_j = 25°C unless otherwise specified

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
BV_{CES}	Collector - Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 3mA		1200			V
I_{CES}	Zero Gate Voltage Collector Current	V_{GE} = 0V V_{CE} = 1200V	T_j = 25°C		0.8	1	mA
			T_j = 125°C		4		
$V_{CE(on)}$	Collector Emitter on Voltage	V_{GE} =15V I_C = 50A	T_j = 25°C	2.0	2.5	3.0	V
			T_j = 125°C		3.1	3.7	
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE} = V_{CE}, I_C = 2 mA		4.5		6.5	V
I_{GES}	Gate – Emitter Leakage Current	V_{GE} = 20V, V_{CE} = 0V				200	nA

Dynamic Characteristics

Symbol	*Characteristic*	*Test Conditions*	*Min*	*Typ*	*Max*	*Unit*
C_{ies}	Input Capacitance	V_{GE} = 0V V_{CE} = 25V f = 1MHz		3300		pF
C_{oes}	Output Capacitance			500		
C_{res}	Reverse Transfer Capacitance			220		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) V_{GE} = ±15V V_{Bus} = 600V I_C = 50A R_G = 22Ω		44		ns
T_r	Rise Time			56		
$T_{d(off)}$	Turn-off Delay Time			380		
T_f	Fall Time			70		

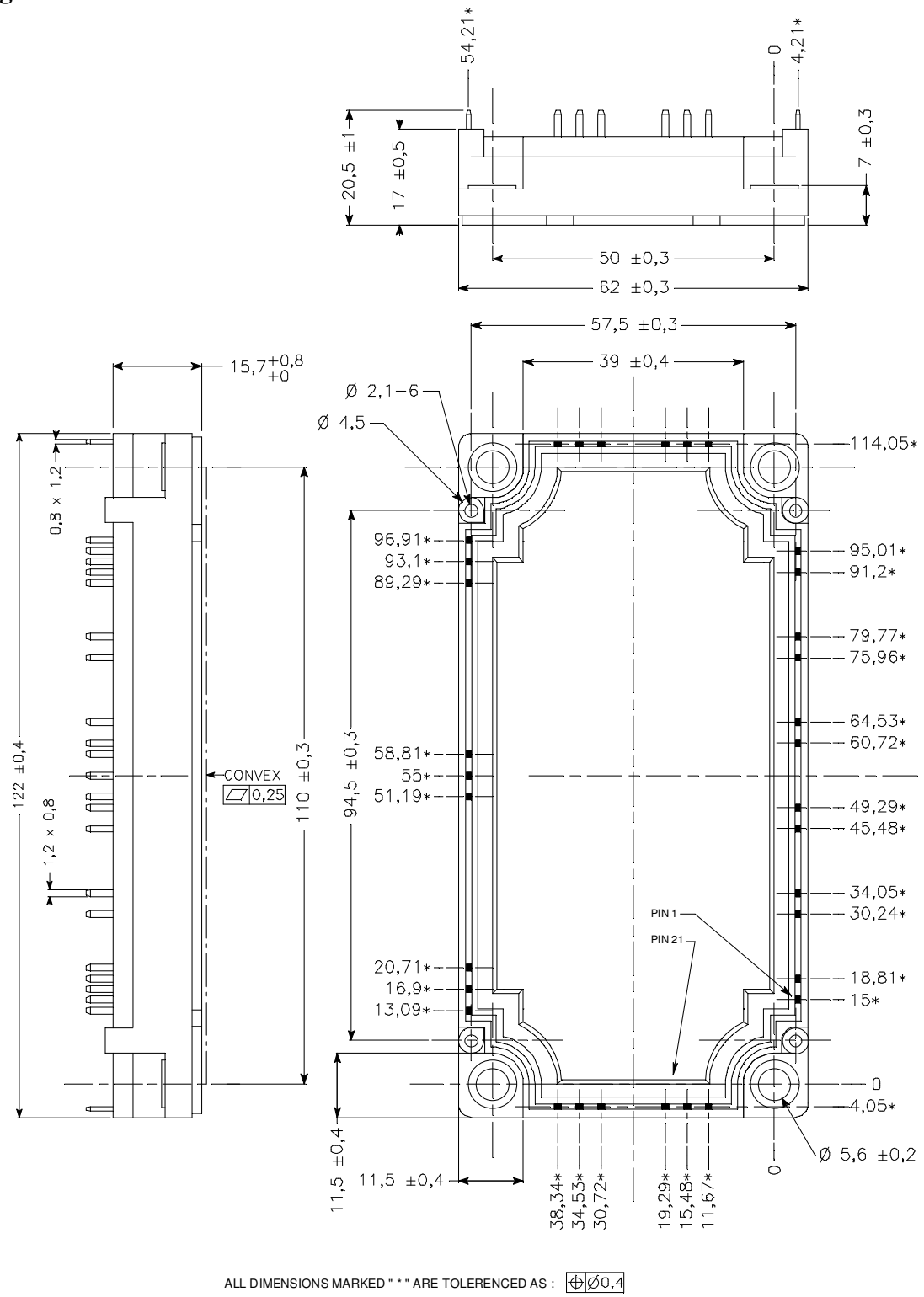
Reverse diode ratings and characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
V_F	Diode Forward Voltage	I_F = 50A V_{GE} = 0V	T_j = 25°C		2.3	2.8	V
			T_j = 125°C		1.8		
t_{rr}	Reverse Recovery Time	I_F = 50A V_R = 600V di/dt =800A/µs	T_j = 125°C		200		ns
Q_{rr}	Reverse Recovery Charge	I_F = 50A V_R = 600V di/dt =800A/µs	T_j = 25°C		2.8		µC
			T_j = 125°C		8		

Thermal and package characteristics

Symbol	*Characteristic*			*Min*	*Typ*	*Max*	*Unit*
R_{thJC}	Junction to Case		IGBT			0.35	°C/W
			Diode			0.7	
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	3		4.5	N.m
Wt	Package Weight					300	g

Package outline



ALL DIMENSIONS MARKED " * " ARE TOLERENCED AS : ⌖ Ø0,4

APT reserves the right to change, without notice, the specifications and information contained herein

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.