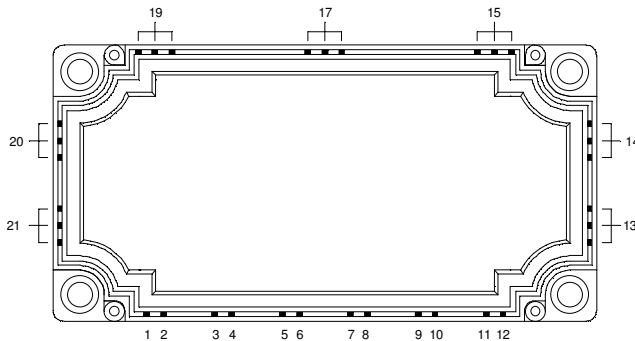
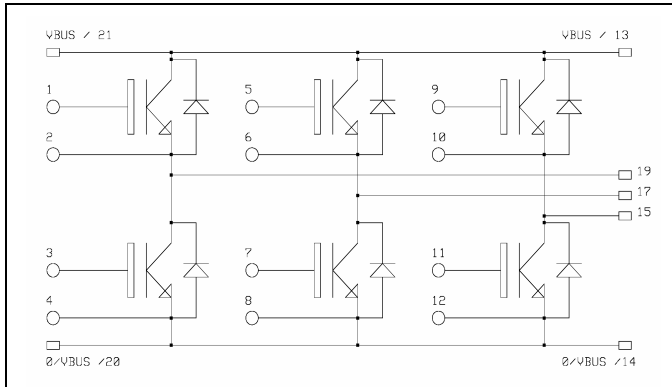


3 Phase bridge Trench IGBT® Power Module

$V_{CES} = 1200V$
 $I_C = 100A @ T_c = 80^\circ C$



Application

- AC Motor control

Features


- Trench + Field Stop IGBT® Technology
 - 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	$T_C = 25^\circ C$	140
		$T_C = 80^\circ C$	100
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	280
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	480
RBSOA	Reverse Bias Operating Area	$T_j = 125^\circ C$	200A@1100V

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

Electrical Characteristics

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

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
BV_{CES}	Collector - Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 5mA$	1200			V	
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V, V_{CE} = 1200V$			5	mA	
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15V$ $I_C = 100A$	$T_j = 25^\circ\text{C}$	1.4	1.7	2.1	V
			$T_j = 125^\circ\text{C}$		2.0		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 4mA$	5.0		6.5	V	
I_{GES}	Gate - Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$			400	nA	

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0V$ $V_{CE} = 25V$ $f = 1MHz$		7200		pF
C_{oes}	Output Capacitance			400		
C_{res}	Reverse Transfer Capacitance			300		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = \pm 15V$ $V_{Bus} = 600V$ $I_C = 100A$ $R_G = 3.9\Omega$		260		ns
T_r	Rise Time			30		
$T_{d(off)}$	Turn-off Delay Time			420		
T_f	Fall Time			70		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = \pm 15V$ $V_{Bus} = 600V$ $I_C = 100A$ $R_G = 3.9\Omega$		290		ns
T_r	Rise Time			45		
$T_{d(off)}$	Turn-off Delay Time			520		
T_f	Fall Time			90		
E_{off}	Turn off Energy			12		mJ

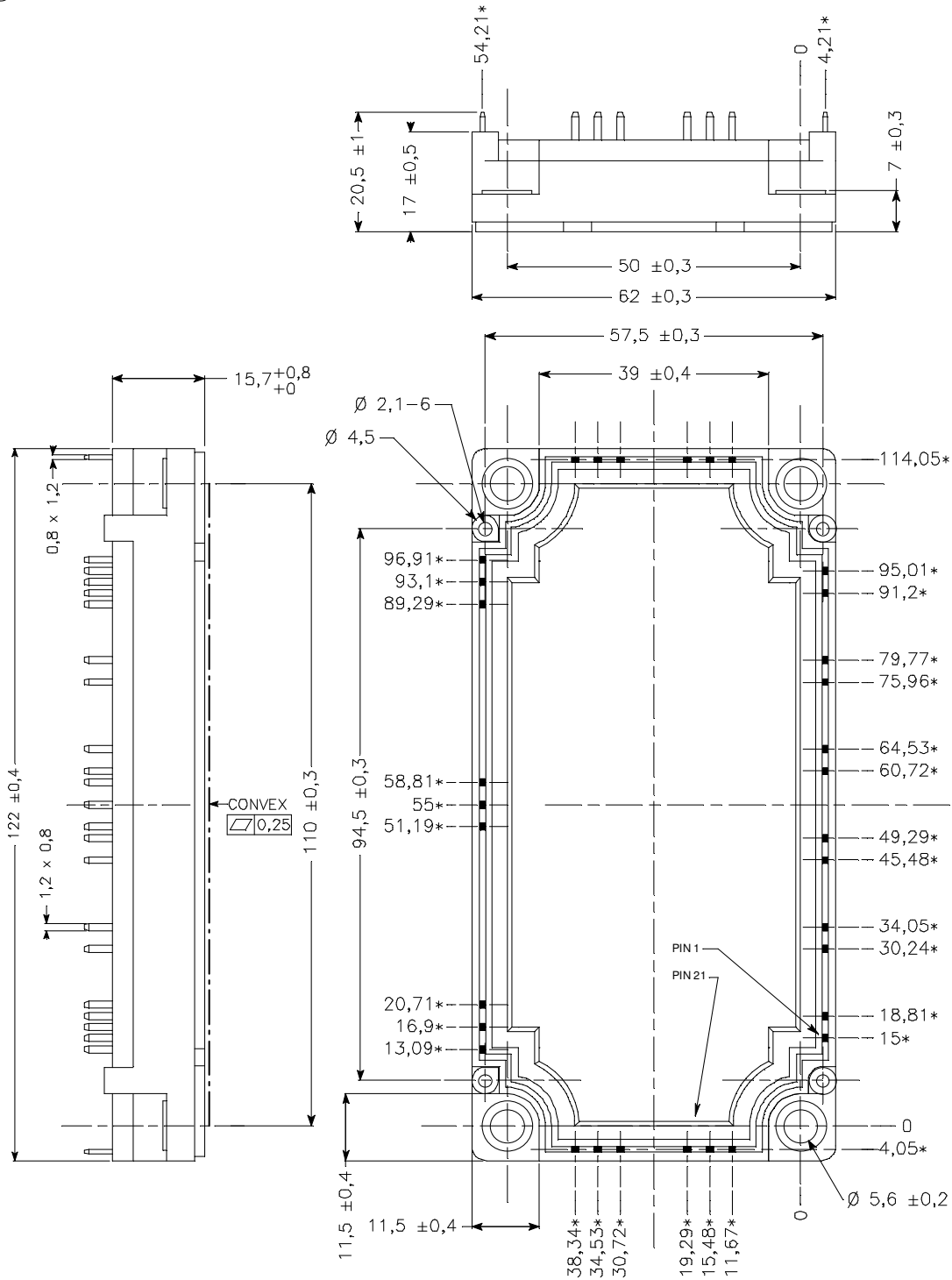
Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
V_F	Diode Forward Voltage	$I_F = 100A$ $V_{GE} = 0V$	$T_j = 25^\circ\text{C}$		1.6	2.1	V
			$T_j = 125^\circ\text{C}$		1.6		
E_r	Reverse Recovery Energy	$I_F = 100A$ $V_R = 600V$ $di/dt = 900A/\mu s$	$T_j = 25^\circ\text{C}$		5		mJ
			$T_j = 125^\circ\text{C}$		9		
Q_{rr}	Reverse Recovery Charge	$I_F = 100A$ $V_R = 600V$ $di/dt = 900A/\mu s$	$T_j = 25^\circ\text{C}$		10		μC
			$T_j = 125^\circ\text{C}$		19		

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thJC}	Junction to Case	IGBT		0.26	$^\circ\text{C/W}$	
		Diode		0.48		
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	$^\circ\text{C}$	
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 : $\text{Ø}0,4$

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

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