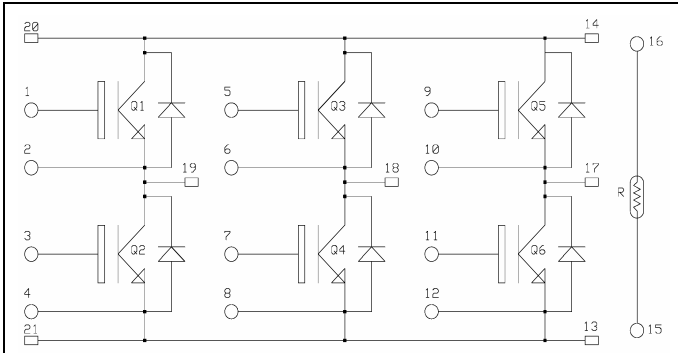


3 Phase bridge NPT IGBT Power Module

$V_{CES} = 1700V$
 $I_C = 75A @ T_c = 80^\circ C$



Application

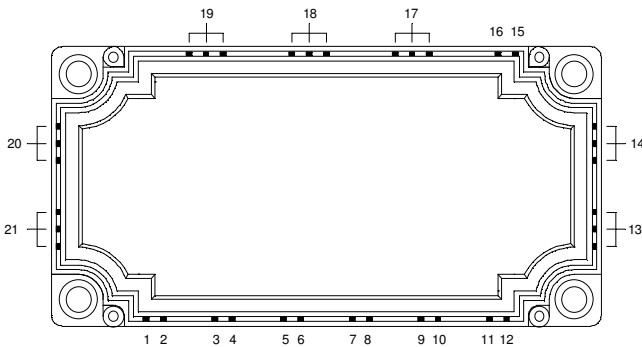
- AC Motor control

Features

- Non Punch Through (NPT) Low Loss 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
- Internal thermistor for temperature monitoring

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	1700	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	150
		$T_C = 80^\circ C$	75
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	250
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	625
RBSOA	Reverse Bias Operating Area	$T_j = 125^\circ C$	150A@1600V

 **CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling 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 = 1mA	1700			V
I _{CES}	Zero Gate Voltage Collector Current	V _{GE} = 0V V _{CE} = 1700V		0.03	0.15	mA
		T _j = 25°C T _j = 125°C				
V _{CE(on)}	Collector Emitter on Voltage	V _{GE} = 15V I _C = 75A		2.7	3.3	V
		T _j = 25°C T _j = 125°C		3.2		
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 3.5 mA	4.5		6.5	V
I _{GES}	Gate - Emitter Leakage Current	V _{GE} = 20V, V _{CE} = 0V			100	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{ies}	Input Capacitance	V _{GE} = 0V, V _{CE} = 25V f = 1MHz		5000		pF
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = ±15V V _{Bus} = 900V I _C = 75A R _G = 20Ω		100		ns
T _r	Rise Time			100		
T _{d(off)}	Turn-off Delay Time			800		
T _f	Fall Time			30		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (125°C) V _{GE} = ±15V V _{Bus} = 900V I _C = 75A R _G = 20Ω		100		ns
T _r	Rise Time			100		
T _{d(off)}	Turn-off Delay Time			900		
T _f	Fall Time			30		
E _{off}	Turn off Energy			22		mJ

Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 75A V _{GE} = 0V		2.2	2.6	V
		T _j = 25°C T _j = 125°C		2.0		
E _r	Reverse Recovery Energy	I _F = 75A V _R = 900V di/dt = 900A/μs		3.5		mJ
		T _j = 25°C T _j = 125°C		6.5		
Q _{rr}	Reverse Recovery Charge	I _F = 75A V _R = 900V di/dt = 900A/μs		9		μC
		T _j = 25°C T _j = 125°C		19		

Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R ₂₅	Resistance @ 25°C		5		kΩ
B _{25/50}	T ₂₅ = 298.16 K		3375		K

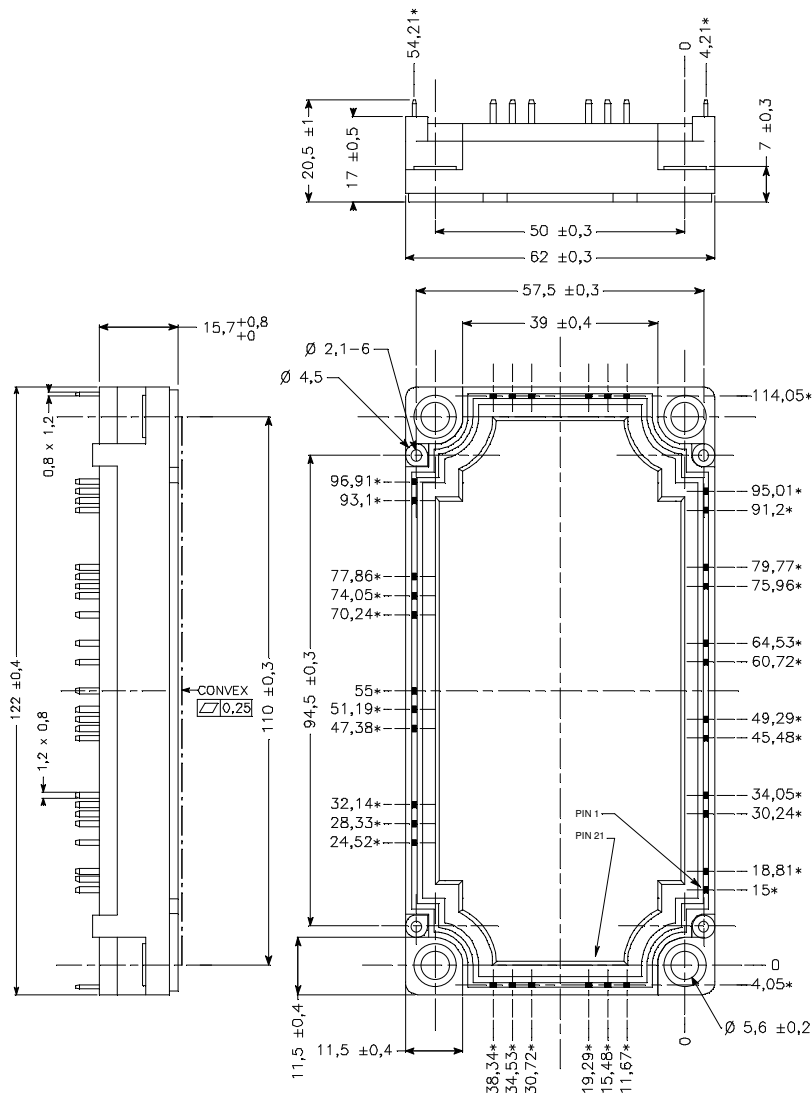
$$R_T = \frac{R_{25}}{\exp \left[B_{25/50} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

T: Thermistor temperature
R_T: Thermistor value at T

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R _{thJC}	Junction to Case	IGBT		0.2	°C/W	
		Diode		0.47		
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: $\pm 0,4$

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

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