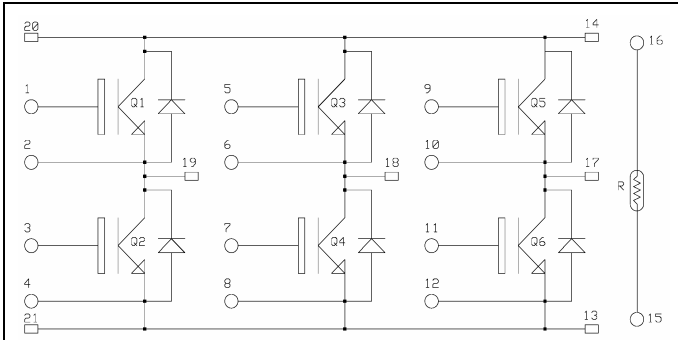


3 Phase bridge Trench IGBT[®] Power Module

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

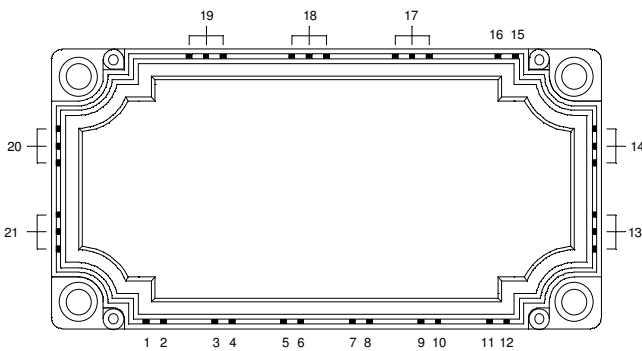


Application

- 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
- 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	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°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°C T _j = 125°C	1.4 2.0	1.7 2.1	V
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 4 mA	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		7200		pF
C _{oes}	Output Capacitance	V _{CE} = 25V		400		
C _{res}	Reverse Transfer Capacitance	f = 1MHz		300		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = ±15V V _{Bus} = 600V I _C = 100A R _G = 3.9Ω		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} = ±15V V _{Bus} = 600V I _C = 100A R _G = 3.9Ω		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°C T _j = 125°C	1.6 1.6	2.1	V
E _r	Reverse Recovery Energy	I _F = 100A V _R = 600V di/dt = 900A/μs	T _j = 25°C T _j = 125°C	5 9		mJ
Q _{rr}	Reverse Recovery Charge	I _F = 100A V _R = 600V di/dt = 900A/μs	T _j = 25°C T _j = 125°C	10 19		μC

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

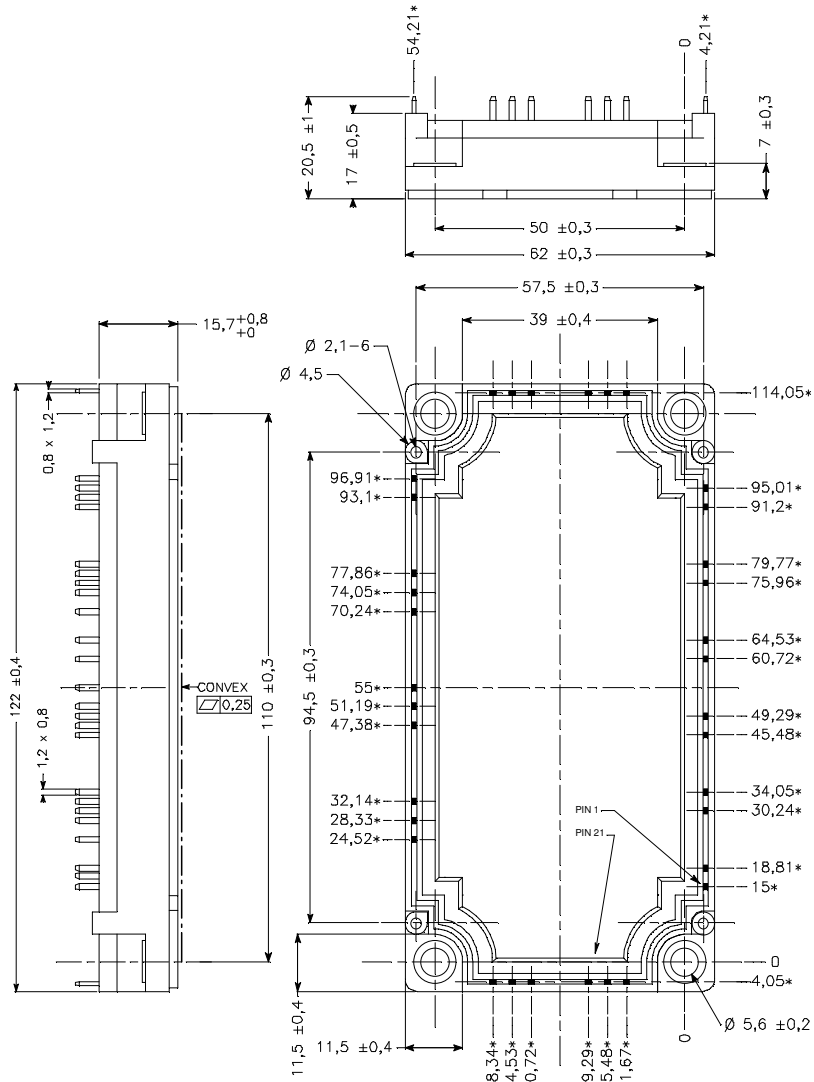
$$R_T = \frac{R_{25}}{\exp\left[B_{25/50}\left(\frac{1}{T_{25}} - \frac{1}{T}\right)\right]}$$

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		0.26	°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	°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 : $\varnothing 0,4$

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