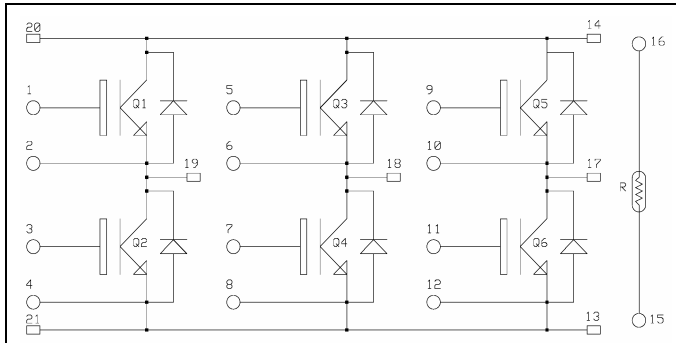


3 Phase bridge Trench IGBT® Power Module

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

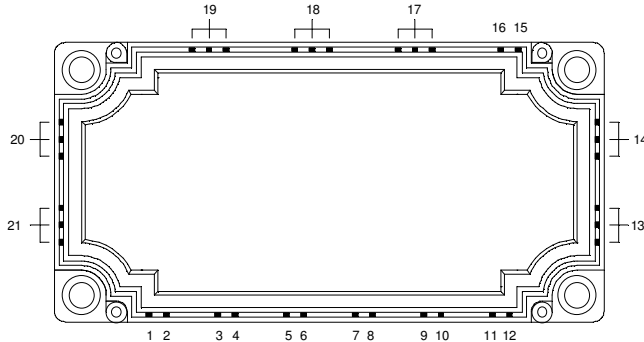


Application

- 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	$T_C = 25^\circ C$	A
		$T_C = 80^\circ C$	
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°C	1.4	1.7	2.1	V
			T _j = 125°C		2.0		
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) $V_{GE} = \pm 15V$ $V_{Bus} = 600V$ $I_C = 100A$ $R_G = 3.9\Omega$		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		

Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R_{25}	Resistance @ 25°C		5		k Ω
$B_{25/50}$	$T_{25} = 298.16\text{ K}$		3375		K

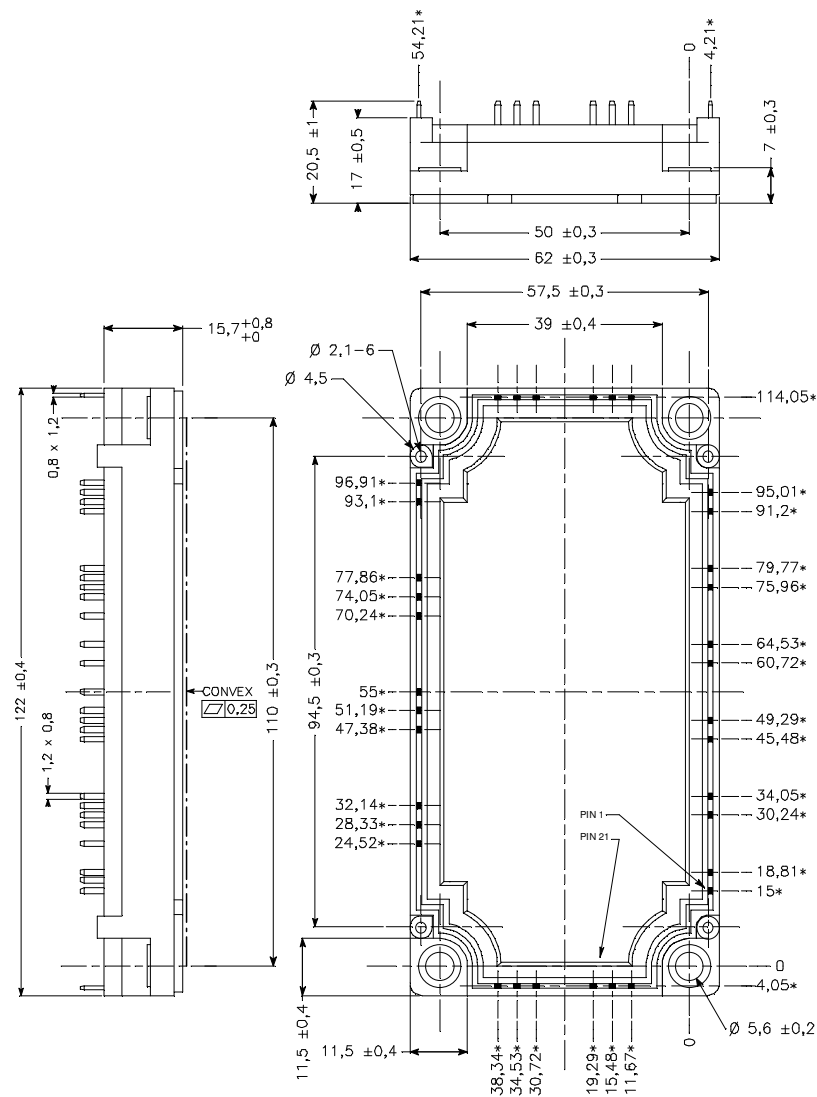
$$R_T = \frac{R_{25}}{\exp\left[B_{25/50}\left(\frac{1}{T_{25}} - \frac{1}{T}\right)\right]}$$

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 TOLERANCED AS: ± 0.4

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