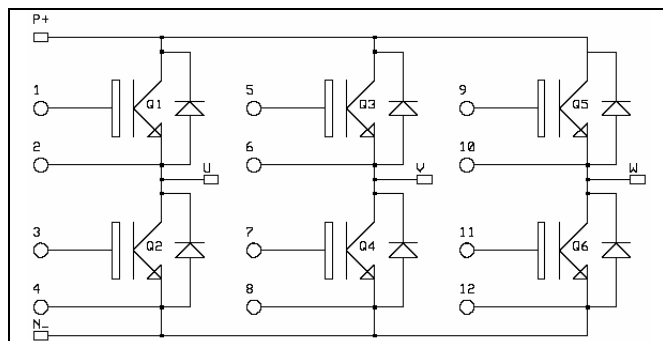


3 Phase bridge NPT IGBT Power Module

$V_{CES} = 1700V$
 $I_C = 50A @ T_c = 80^\circ C$



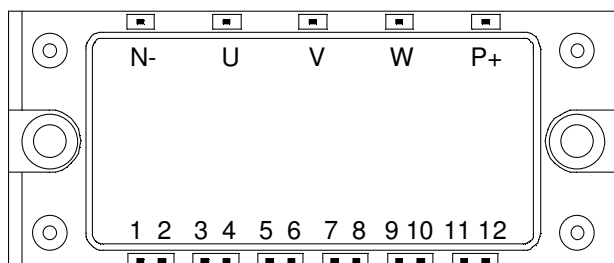
Application

- 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

Pin out: APTGS50X170E2 (Long pins)



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

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

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1700	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	100
		$T_C = 80^\circ C$	50
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	150
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	350
RBSOA	Reverse Bias Safe Operation Area	$T_j = 125^\circ C$	100A@1600V

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

Electrical Characteristics

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		0.02 1	0.1	mA
V _{CE(on)}	Collector Emitter on Voltage	V _{GE} = 15V I _C = 50A		2.7 3.2	3.3	V
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 2.2 mA	3		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		3500		pF
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = ±15V V _{Bus} = 900V I _C = 50A R _G = 30Ω		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 = 50A R _G = 30Ω		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			30		mJ

Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _F	Diode Forward Voltage	I _F = 50A V _{GE} = 0V		2.2 2.0	2.6	V
E _r	Reverse Recovery Energy	I _F = 50A V _R = 900V di/dt = 750A/μs		2 4		mJ
Q _{rr}	Reverse Recovery Charge	I _F = 50A V _R = 900V di/dt = 750A/μs		6 12		μC

Thermal and package characteristics

Symbol	Characteristic			Min	Typ	Max	Unit
R _{thJC}	Junction to Case			IGBT		0.37	°C/W
				Diode		0.63	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz			3400			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	2		3.5	N.m
Wt	Package Weight					185	g

