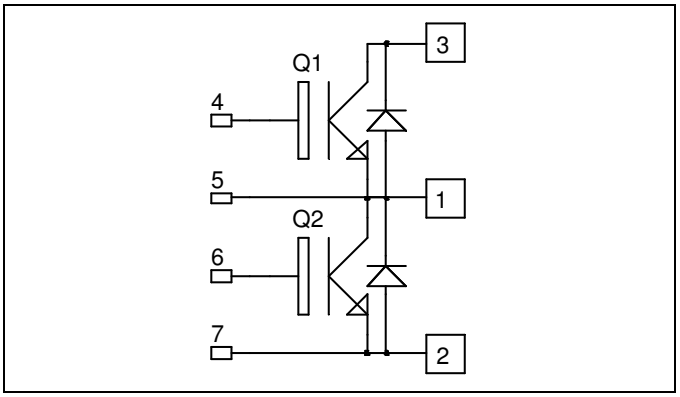
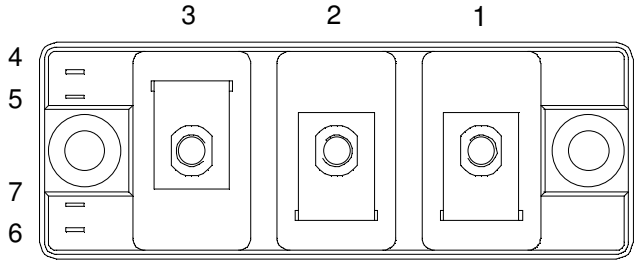
APTGT30A170D1

Phase leg
Trench IGBT® Power Module

V_{CES} = 1700V
I_C = 30A @ Tc = 80°C





Application

- Welding converters
- Switched Mode Power Supplies
- Uninterruptible Power Supplies
- 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
- Low stray inductance
- High level of integration
- Kelvin emitter for easy drive
- Low stray inductance
  - M5 power connectors

Benefits

- Stable temperature behavior
- Very rugged
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive TC of VCEsat

Absolute maximum ratings

Symbol	*Parameter*		*Max ratings*	*Unit*
V_{CES}	Collector - Emitter Breakdown Voltage		1700	V
I_C	Continuous Collector Current	T_C = 25°C	45	A
		T_C = 80°C	30	
I_{CM}	Pulsed Collector Current	T_C = 25°C	70	
V_{GE}	Gate – Emitter Voltage		±20	V
P_D	Maximum Power Dissipation	T_C = 25°C	210	W
RBSOA	Reverse Bias Safe Operation Area	T_j = 125°C	70A@1700V	

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

All ratings @ T_j = 25°C unless otherwise specified

Electrical Characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
BV_{CES}	Collector - Emitter Breakdown Voltage	V_{GE} = 0V, I_C = 1.5mA		1700			V
I_{CES}	Zero Gate Voltage Collector Current	V_{GE} = 0V, V_{CE} = 1700V				3	mA
$V_{CE(on)}$	Collector Emitter on Voltage	V_{GE} = 15V, I_C = 30A	T_j = 25°C		2.0	2.4	V
			T_j = 125°C		2.4		
$V_{GE(th)}$	Gate Threshold Voltage	V_{GE} = V_{CE}, I_C = 1.5mA		5.2	5.8	6.4	V
I_{GES}	Gate – Emitter Leakage Current	V_{GE} = 20V, V_{CE} = 0V				600	nA

Dynamic Characteristics

Symbol	*Characteristic*	*Test Conditions*	*Min*	*Typ*	*Max*	*Unit*
C_{ies}	Input Capacitance	V_{GE} = 0V, V_{CE} = 25V f = 1MHz		2500		pF
C_{res}	Reverse Transfer Capacitance			90		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) V_{GE} = ±15V V_{Bus} = 900V I_C = 30A R_G = 18Ω		200		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			750		
T_f	Fall Time			90		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) V_{GE} = ±15V V_{Bus} = 900V I_C = 30A R_G = 18Ω		230		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			850		
T_f	Fall Time			115		
E_{off}	Turn Off Energy			22		mJ

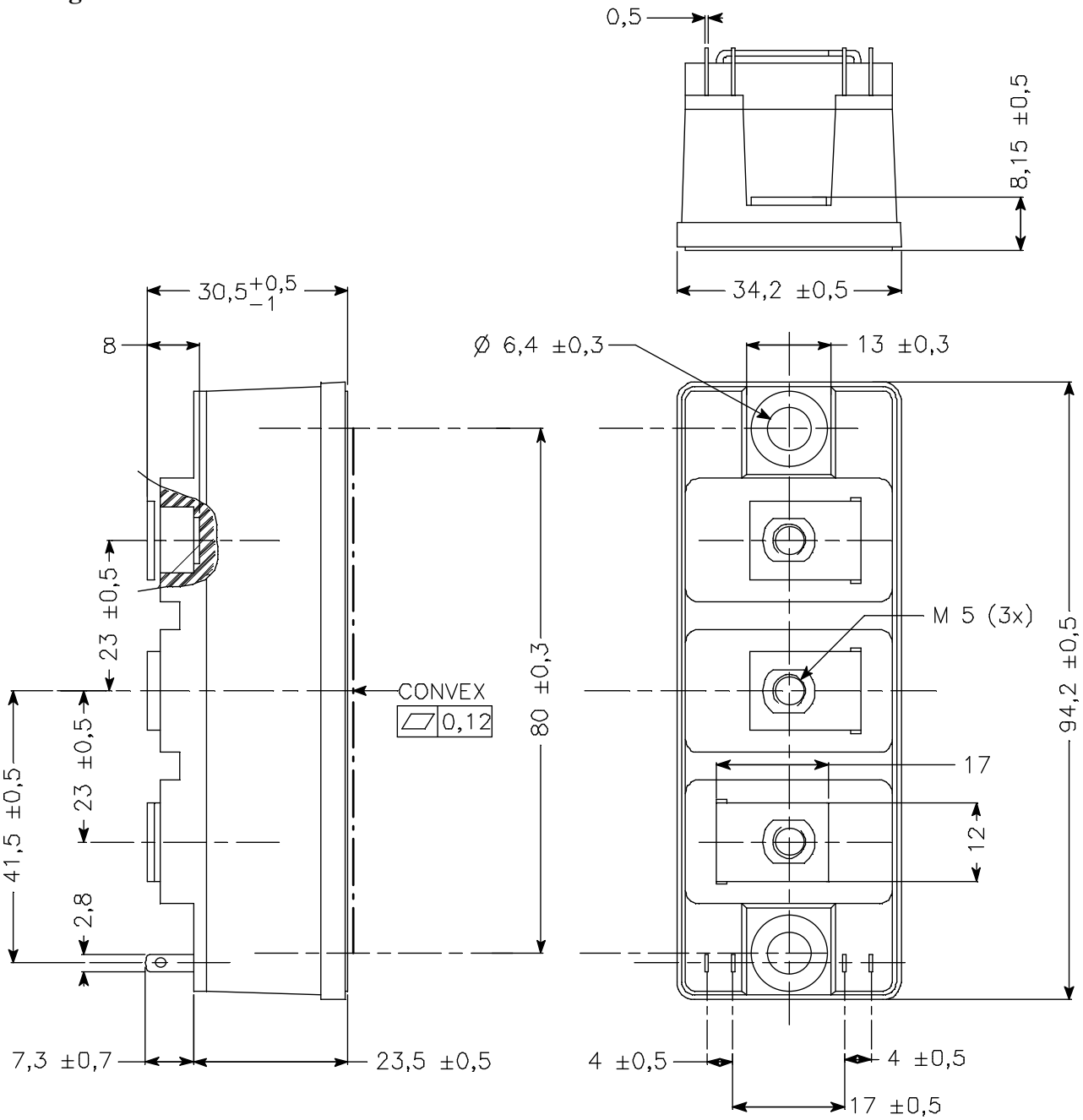
Reverse diode ratings and characteristics

Symbol	*Characteristic*	*Test Conditions*		*Min*	*Typ*	*Max*	*Unit*
V_F	Diode Forward Voltage	I_F = 50A V_{GE} = 0V	T_j = 25°C		1.8	2.2	V
			T_j = 125°C		1.9		
E_r	Reverse Recovery Energy	I_F = 50A V_R = 900V di/dt =990A/µs	T_j = 25°C		8		mJ
			T_j = 125°C		15		
Q_{rr}	Reverse Recovery Charge	I_F = 50A V_R = 900V di/dt =990A/µs	T_j = 25°C		18		µC
			T_j = 125°C		29		

Thermal and package characteristics

Symbol	*Characteristic*			*Min*	*Typ*	*Max*	*Unit*
R_{thJC}	Junction to Case		IGBT			0.6	°C/W
			Diode			0.9	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz			3500			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	For terminals	M5	2		3.5	N.m
		To Heatsink	M6	3		5	
Wt	Package Weight					180	g

Package outline



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

APT's products are covered by one or more of U.S patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 and foreign patents. U.S and Foreign patents pending. All Rights Reserved.