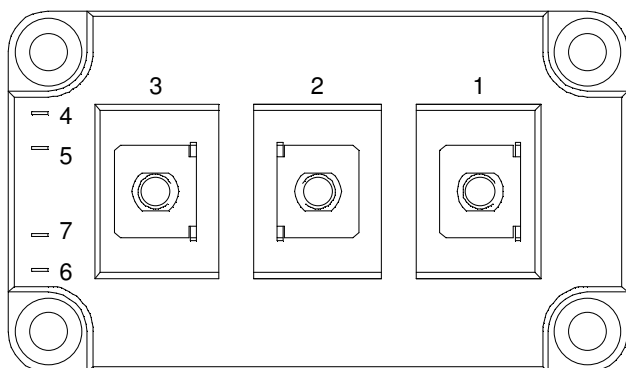
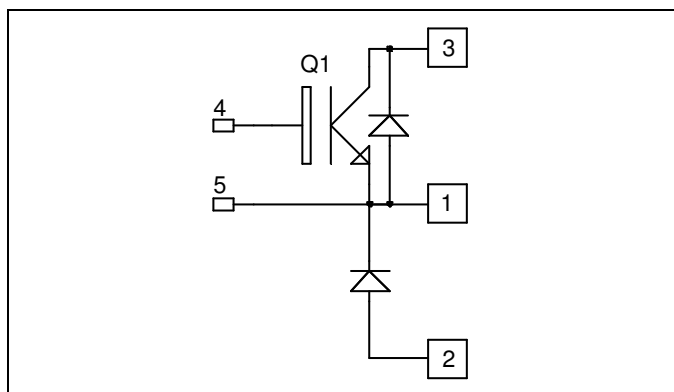


Buck chopper Trench IGBT® Power Module

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**$V_{CES} = 1700V$
 $I_C = 300A$ @ $T_c = 80^\circ C$**



Application

- AC and DC motor control
- Switched Mode Power Supplies

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
 - M6 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 V_{CEsat}

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1700	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$ 530 $T_C = 80^\circ C$ 300	A
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$ 600	A
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$ 1470	W
RBSOA	Reverse Bias Safe Operation Area	$T_j = 125^\circ C$ 600A@1600V	

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

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

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
BV_{CES}	Collector - Emitter Breakdown Voltage	$V_{GE} = 0V, I_C = 8mA$	1700			V
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V, V_{CE} = 1700V$			8	mA
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15V$ $I_C = 300A$		$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	2.0 2.4	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 12mA$	5.2	5.8	6.4	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	$V_{GE} = 0V, V_{CE} = 25V$		26		nF
C_{res}	Reverse Transfer Capacitance	$f = 1MHz$		0.9		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C)		280		ns
T_r	Rise Time	$V_{GE} = \pm 15V$		100		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 900V$		850		
T_f	Fall Time	$I_C = 300A$ $R_G = 4.7\Omega$		120		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C)		330		ns
T_r	Rise Time	$V_{GE} = \pm 15V$		100		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 900V$		1000		
T_f	Fall Time	$I_C = 300A$ $R_G = 4.7\Omega$		200		
E_{off}	Turn Off Energy			95		mJ

Reverse diode ratings and characteristics

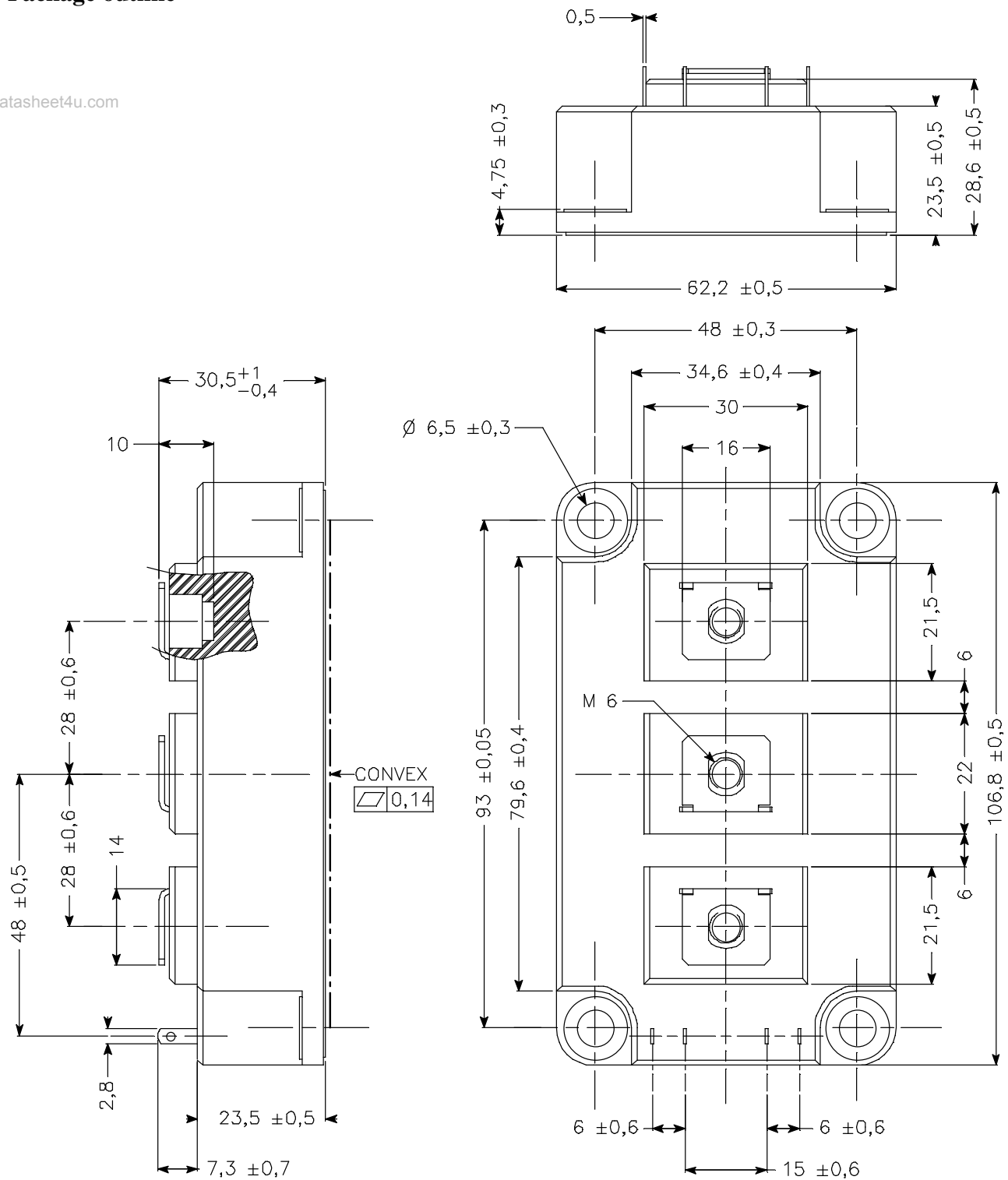
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 300A$ $V_{GE} = 0V$		$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	1.8 1.9	V
E_r	Reverse Recovery Energy	$I_F = 300A$ $V_R = 900V$ $di/dt = 900A/\mu s$		$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	35 70	mJ
Q_{rr}	Reverse Recovery Charge	$I_F = 300A$ $V_R = 900V$ $di/dt = 900A/\mu s$		$T_j = 25^\circ\text{C}$ $T_j = 125^\circ\text{C}$	75 125	μC

Thermal and package characteristics

Symbol	Characteristic			Min	Typ	Max	Unit
R _{thJC}	Junction to Case		IGBT			0.085	°C/W
			Diode			0.13	
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	M6	3		5	N.m
		To Heatsink	M6	3		5	
Wt	Package Weight					380	g

Package outline

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