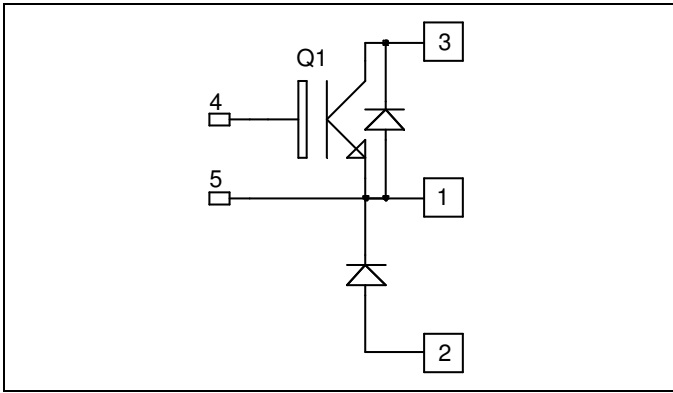


***Buck chopper
Trench IGBT® Power Module***

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



Application

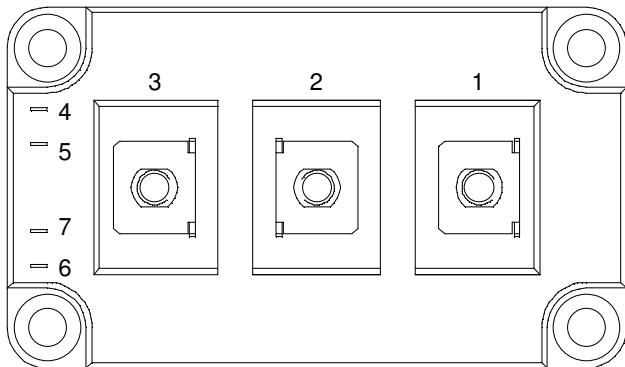
- AC and DC motor control
- Switched Mode Power Supplies

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 VCEsat



Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1700	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	530
		$T_C = 80^\circ C$	300
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	600
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	1470
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	$V_{GE} = 0\text{V}, I_C = 8\text{mA}$	1700			V	
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0\text{V}, V_{CE} = 1700\text{V}$			8	mA	
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15\text{V}$ $I_C = 300\text{A}$	$T_j = 25^\circ\text{C}$		2.0	2.4	V
			$T_j = 125^\circ\text{C}$		2.4		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 12\text{mA}$	5.2	5.8	6.4	V	
I_{GES}	Gate - Emitter Leakage Current	$V_{GE} = 20\text{V}, V_{CE} = 0\text{V}$			400	nA	

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}, V_{CE} = 25\text{V}$ $f = 1\text{MHz}$		26		nF
C_{res}	Reverse Transfer Capacitance			0.9		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = \pm 15\text{V}$ $V_{Bus} = 900\text{V}$ $I_C = 300\text{A}$ $R_G = 4.7\Omega$		280		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			850		
T_f	Fall Time			120		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = \pm 15\text{V}$ $V_{Bus} = 900\text{V}$ $I_C = 300\text{A}$ $R_G = 4.7\Omega$		330		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			1000		
T_f	Fall Time			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	$I_F = 300\text{A}$ $V_{GE} = 0\text{V}$	$T_j = 25^\circ\text{C}$		1.8	2.2	V
			$T_j = 125^\circ\text{C}$		1.9		
E_r	Reverse Recovery Energy	$I_F = 300\text{A}$ $V_R = 900\text{V}$ $di/dt = 900\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		35		mJ
			$T_j = 125^\circ\text{C}$		70		
Q_{rr}	Reverse Recovery Charge	$I_F = 300\text{A}$ $V_R = 900\text{V}$ $di/dt = 900\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		75		μC
			$T_j = 125^\circ\text{C}$		125		

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thIC}	Junction to Case	IGBT			0.085	$^\circ\text{C}/\text{W}$
		Diode			0.13	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1\text{min}$, $I_{isol} < 1\text{mA}$, 50/60Hz	3500			V	
T_j	Operating junction temperature range	-40		150	$^\circ\text{C}$	
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	

