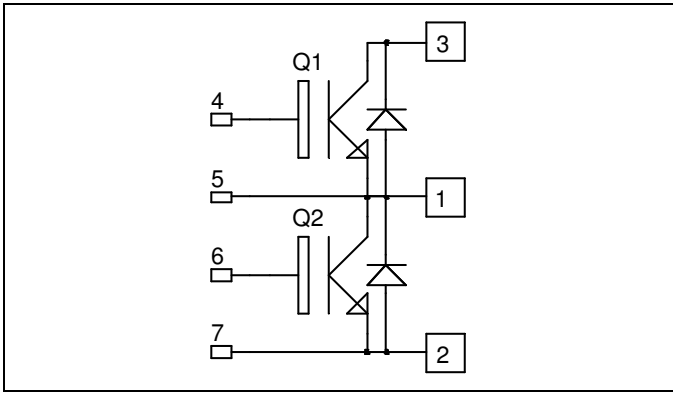


*Phase leg
Trench IGBT® Power Module*

**$V_{CES} = 1700V$
 $I_C = 75A @ T_c = 80^\circ C$**



Application

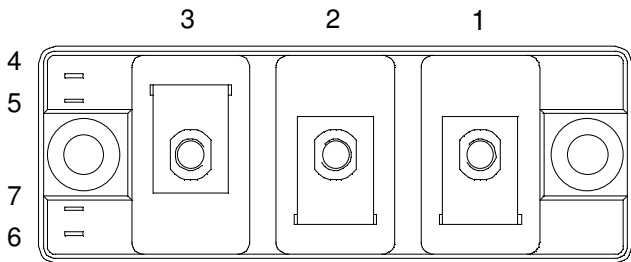
- Welding converters
- Switched Mode Power Supplies
- Uninterruptible Power Supplies
- Motor control

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	$T_C = 25^\circ C$	120
		$T_C = 80^\circ C$	75
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	150
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	520
RBSOA	Reverse Bias Safe Operation Area	$T_j = 125^\circ C$	150A@1700V

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	$V_{GE} = 0V, I_C = 3mA$	1700			V	
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V, V_{CE} = 1700V$			5	mA	
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15V$ $I_C = 75A$	$T_j = 25^\circ\text{C}$		2.0	2.4	V
			$T_j = 125^\circ\text{C}$		2.4		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 3mA$	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	$V_{GE} = 0V, V_{CE} = 25V$ $f = 1MHz$		6.5		nF
C_{res}	Reverse Transfer Capacitance			0.22		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = \pm 15V$ $V_{Bus} = 900V$ $I_C = 75A$ $R_G = 18\Omega$		200		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			750		
T_f	Fall Time			100		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = \pm 15V$ $V_{Bus} = 900V$ $I_C = 75A$ $R_G = 18\Omega$		230		ns
T_r	Rise Time			100		
$T_{d(off)}$	Turn-off Delay Time			900		
T_f	Fall Time			120		
E_{off}	Turn Off Energy			25		mJ

Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
V_F	Diode Forward Voltage	$I_F = 75A$ $V_{GE} = 0V$	$T_j = 25^\circ\text{C}$		1.8	2.2	V
			$T_j = 125^\circ\text{C}$		1.9		
E_r	Reverse Recovery Energy	$I_F = 75A$ $V_R = 900V$ $di/dt = 990A/\mu s$	$T_j = 25^\circ\text{C}$		10		mJ
			$T_j = 125^\circ\text{C}$		17.5		
Q_{rr}	Reverse Recovery Charge	$I_F = 75A$ $V_R = 900V$ $di/dt = 990A/\mu s$	$T_j = 25^\circ\text{C}$		20		μC
			$T_j = 125^\circ\text{C}$		32		

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thJC}	Junction to Case	IGBT			0.24	$^\circ\text{C/W}$
		Diode			0.42	
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	$^\circ\text{C}$	
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	

