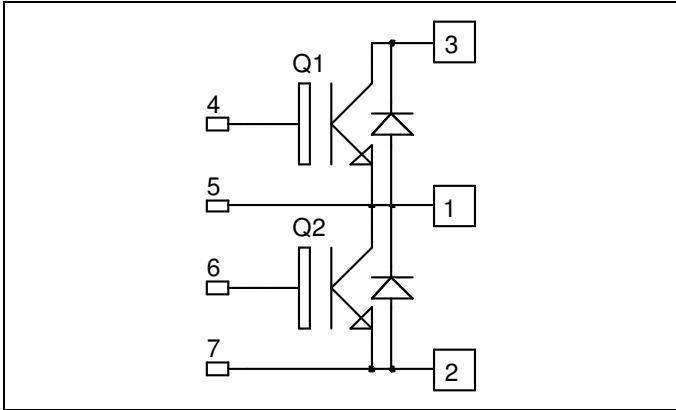


*Phase leg
Trench IGBT® Power Module*

**$V_{CES} = 1200V$
 $I_C = 25A @ T_c = 80^\circ C$**

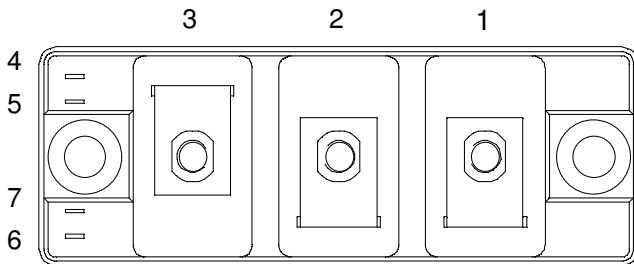


Application

- 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
 - M5 power connectors
- High level of integration



Benefits

- Outstanding performance at high frequency operation
- 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	1200	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	40
		$T_C = 80^\circ C$	25
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	65
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	140
RBSOA	Reverse Bias Safe Operation Area	$T_j = 125^\circ C$	50A@1200V

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	$V_{GE} = 0\text{V}, I_C = 4\text{mA}$	1200			V
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0\text{V}, V_{CE} = 1200\text{V}$			5	mA
$V_{CE(on)}$	Collector Emitter on Voltage	$V_{GE} = 15\text{V}$ $I_C = 25\text{A}$		$T_j = 25^\circ\text{C}$ 1.7 $T_j = 125^\circ\text{C}$ 2.0	2.1	V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 1\text{mA}$	5.0	5.8	6.5	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	$V_{GE} = 0\text{V}$		1.8		nF
C_{oes}	Output Capacitance	$V_{CE} = 25\text{V}$		0.1		
C_{res}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		0.08		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C)		150		ns
T_r	Rise Time	$V_{GE} = \pm 15\text{V}$		90		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 600\text{V}$ $I_C = 25\text{A}$		550		
T_f	Fall Time	$R_G = 36\Omega$		130		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C)		180		ns
T_r	Rise Time	$V_{GE} = \pm 15\text{V}$		100		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 600\text{V}$ $I_C = 25\text{A}$		650		
T_f	Fall Time	$R_G = 36\Omega$		180		

Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_F	Diode Forward Voltage	$I_F = 25\text{A}$ $V_{GE} = 0\text{V}$		$T_j = 25^\circ\text{C}$ 1.6 $T_j = 125^\circ\text{C}$ 1.6	2.1	V
E_{rec}	Reverse Recovery Energy	$I_F = 25\text{A}$ $V_R = 600\text{V}$ $di/dt = 990\text{A}/\mu\text{s}$		$T_j = 125^\circ\text{C}$ 2		mJ
Q_{rr}	Reverse Recovery Charge	$I_F = 25\text{A}$ $V_R = 600\text{V}$ $di/dt = 990\text{A}/\mu\text{s}$		$T_j = 25^\circ\text{C}$ 2.7 $T_j = 125^\circ\text{C}$ 5		μC

Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit	
R_{thJC}	Junction to Case	IGBT		0.9	$^\circ\text{C}/\text{W}$	
		Diode		1.5		
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t = 1\text{ min}$, $I_{isol} < 1\text{mA}$, 50/60Hz	2500			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	

