

## FEATURES

- High short circuit capability, self limiting short circuit current
- IGBT CHIP(Trench+ Field Stop technology)
- $V_{CE(sat)}$  with positive temperature coefficient
- Fast switching, Low switching losses
- Free wheeling diodes with fast and soft reverse recovery

## APPLICATIONS

- High frequency switching application
- Medical applications
- Motion/servo control
- UPS systems

## ABSOLUTE MAXIMUM RATINGS

*T<sub>c</sub>=25°C unless otherwise specified*

Symbol	Parameter	Test Conditions	Values	Unit
<b>IGBT</b>				
V <sub>CEs</sub>	Collector - Emitter Voltage	T <sub>vj</sub> =25°C	1200	V
V <sub>GES</sub>	Gate - Emitter Voltage		±20	V
I <sub>c</sub>	DC Collector Current	T <sub>c</sub> =25°C	675	A
		T <sub>c</sub> =80°C	450	A
I <sub>CM</sub>	Repetitive Peak Collector Current	t <sub>p</sub> =1ms	900	A
P <sub>tot</sub>	Power Dissipation Per IGBT		2016	W
<b>Diode</b>				
V <sub>RRM</sub>	Repetitive Reverse Voltage	T <sub>vj</sub> =25°C	1200	V
I <sub>F(AV)</sub>	Average Forward Current	T <sub>c</sub> =25°C	675	A
		T <sub>c</sub> =80°C	450	A
I <sub>FRM</sub>	Repetitive Peak Forward Current	t <sub>p</sub> =1ms	900	A

## ELECTRICAL AND THERMAL CHARACTERISTICS TC=25°C unless otherwise specified

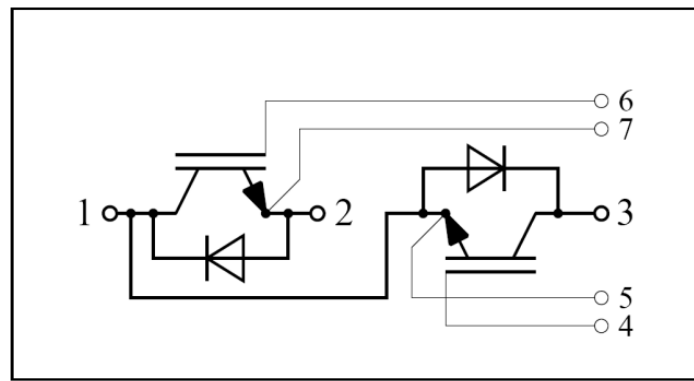
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
<b>IGBT</b>						
$V_{GE(th)}$	Gate - Emitter Threshold Voltage	$V_{CE}=V_{GE}, I_c=2.0mA$	5.0		6.8	V
$V_{CE(sat)}$	Collector - Emitter Saturation Voltage	$I_c=450A, V_{GE}=15V, T_{vj}=25^{\circ}C$		2.25		V
		$I_c=450A, V_{GE}=15V, T_{vj}=125^{\circ}C$		2.75		V
$I_{CES}$	Collector Leakage Current	$V_{CE}=1200V, V_{GE}=0V, T_{vj}=25^{\circ}C$			1	mA
		$V_{CE}=1200V, V_{GE}=0V, T_{vj}=125^{\circ}C$			5	mA
$I_{GES}$	Gate Leakage Current	$V_{CE}=0V, V_{GE}\pm 15V, T_{vj}=125^{\circ}C$	-500		500	nA
$R_{gint}$	Integrated Gate Resistor	Per switch		2.6		$\Omega$
$C_{ies}$	Input Capacitance	$V_{CE}=25V, V_{GE}=0V, f=1MHz$				nF
$C_{res}$	Reverse Transfer Capacitance					nF
$t_{d(on)}$	Turn - on Delay Time	$V_{cc}=600V, I_c=450A, R_g=6\Omega, T_{vj}=25^{\circ}C$		319		ns
		$T_{vj}=125^{\circ}C$		343		ns
$t_r$	Rise Time	$V_{GE}=\pm 15V, T_{vj}=25^{\circ}C$		221		ns
		Inductive Load $T_{vj}=125^{\circ}C$		223		ns
$t_{d(off)}$	Turn - off Delay Time	$V_{cc}=600V, I_c=450A, R_g=6\Omega, T_{vj}=25^{\circ}C$		718		ns
		$T_{vj}=125^{\circ}C$		778		ns
$t_f$	Fall Time	$V_{GE}=\pm 15V, T_{vj}=25^{\circ}C$		164		ns
		Inductive Load $T_{vj}=125^{\circ}C$		190		ns
$E_{on}$	Turn - on Energy	$V_{cc}=600V, I_c=450A, R_g=6\Omega, T_{vj}=25^{\circ}C$		35.42		mJ
		$T_{vj}=125^{\circ}C$		51.01		mJ
$E_{off}$	Turn - off Energy	$V_{GE}=\pm 15V, T_{vj}=25^{\circ}C$		54.57		mJ
		Inductive Load $T_{vj}=125^{\circ}C$		62.37		mJ
$I_{sc}$	Short Circuit Current	$t_{psc}\leq 10\mu s, V_{GE}=15V, T_{vj}=125^{\circ}C, V_{cc}=900V$		2000		A
$R_{thJC}$	Junction-to-Case Thermal Resistance (Per IGBT)				0.062	K/W
<b>Diode</b>						
$V_F$	Forward Voltage	$I_F=450A, V_{GE}=0V, T_{vj}=25^{\circ}C$		2.4		V
		$I_F=450A, V_{GE}=0V, T_{vj}=125^{\circ}C$		2.6		V
$Q_{rr}$	Recovery Charge	$I_F=500A, V_R=600V$				$\mu C$
$I_{RRM}$	Max. Reverse Recovery Current	$di/dt=-2840A/\mu s$				A
$E_{rec}$	Reverse Recovery Energy	$T_{vj}=125^{\circ}C$				mJ
$R_{thJCD}$	Junction-to-Case Thermal Resistance (Per Diode)				0.055	K/W

### MODULE CHARACTERISTICS

*T<sub>c</sub>=25°C unless otherwise specified*

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
T <sub>Vj max</sub>	Max. Junction Temperature				175	°C
T <sub>Vj op</sub>	Operating Temperature		-40		150	°C
T <sub>stg</sub>	Storage Temperature		-40		125	°C
V <sub>isol</sub>	Insulation Test Voltage	AC, t=1min	3000			V
Torque	To-Sink	Recommended (M6)	3		5	N·m
Torque	To-Terminal	Recommended (M6)	2.5		5	N·m
Weight				340		g

### CIRCUIT DIAGRAM



### PACKAGE OUTLINE

