

### Features

- Trench+ Field Stop Technology
- VCEsat with positive Temperature Coefficient
- Low VCEsat

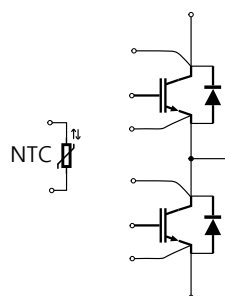


Product Summary		
V <sub>CES</sub> (V)	V <sub>CESAT</sub> (V)Typ	I <sub>C</sub> (A)
1200	1.71 @ 15V,300A	300

### Block Diagram

### Application

- Inverter for motor drive
- AC and DC servo drive amplifier
- Uninterruptible power supply



## IGBT, Inverter

Table1 Absolute Maximum Ratings (T<sub>c</sub>=25°C, unless otherwise specified)

Parameters	Symbol	Value	Unit
Collector-Emmitter Voltage	V <sub>CES</sub>	1200	V
Gate-Emmitter Voltage	V <sub>GES</sub>	±20	V
Collector DC Current-continuous T <sub>C</sub> =100°C, T <sub>J</sub> max=175°C	I <sub>C</sub>	300	A
Repetitive peak collector current tp=1ms	I <sub>CRM</sub>	600	A
Total power dissipation	P <sub>D</sub>	1500	W

Table 2. Electrical Chatacteristics (T<sub>J</sub>=25°C, unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Emmitter saturation Voltage	V <sub>CESAT</sub>	V <sub>GE</sub> =15V, I <sub>C</sub> =300A, T <sub>J</sub> =25°C		1.71	2.2	V
		V <sub>GE</sub> =15V, I <sub>C</sub> =300A, T <sub>J</sub> =125°C		1.98		
		V <sub>GE</sub> =15V, I <sub>C</sub> =300A, T <sub>J</sub> =150°C		2.01		
Gate Threshold Voltage	V <sub>GE(TH)</sub>	V <sub>CE</sub> =V <sub>GE</sub> , I <sub>C</sub> =7.5mA		6.0	7.0	V
Internal gate resistor	R <sub>gint</sub>	T <sub>J</sub> =25°C		2.6		Ω
Gate charge	Q <sub>G</sub>	V <sub>GE</sub> = -15V~ +15V, V <sub>CE</sub> =600V		2.5		μC
Zero Gate Voltage Collector Current	I <sub>CES</sub>	V <sub>CE</sub> =1200V, V <sub>GE</sub> =0V			1	mA
Gate-body Leakage Current	I <sub>GES</sub>	V <sub>CE</sub> =0V, V <sub>GE</sub> =20V			100	nA

Input Capacitance	C <sub>ies</sub>	V <sub>CE</sub> =25V, V <sub>GE</sub> =0V, f=1MHz		30.2		nF
Reverse Transfer Capacitance	C <sub>res</sub>			0.91		nF
Turn-On Delay Time	td(on)	V <sub>CE</sub> =600V, I <sub>C</sub> =300A, V <sub>GE</sub> =±15V, R <sub>G</sub> =2.0Ω, (inductive load), T <sub>J</sub> =25°C		300		ns
Turn-On Rise Time	tr			61		ns
Turn-Off Delay Time	td(off)			450		ns
Turn-Off Fall Time	tf			210		ns
Turn-On energy	E <sub>on</sub>			10.2		mJ
Turn-Off energy	E <sub>off</sub>			29.1		mJ
Turn-On Delay Time	td(on)	V <sub>CE</sub> =600V, I <sub>C</sub> =300A, V <sub>GE</sub> =±15V, R <sub>G</sub> =2.0Ω, (inductive load), T <sub>J</sub> =125°C		325		ns
Turn-On Rise Time	tr			66		ns
Turn-Off Delay Time	td(off)			530		ns
Turn-Off Fall Time	tf			285		ns
Turn-On energy	E <sub>on</sub>			19.5		mJ
Turn-Off energy	E <sub>off</sub>			35.2		mJ
Turn-On Delay Time	td(on)	V <sub>CE</sub> =600V, I <sub>C</sub> =300A, V <sub>GE</sub> =±15V, R <sub>G</sub> =2.0Ω, (inductive load), T <sub>J</sub> =150°C		330		ns
Turn-On Rise Time	tr			69		ns
Turn-Off Delay Time	td(off)			550		ns
Turn-Off Fall Time	tf			302		ns
Turn-On energy	E <sub>on</sub>			26.8		mJ
Turn-Off energy	E <sub>off</sub>			38.5		mJ
Temperature under switching conditions	T <sub>vjop</sub>		-40		175	°C
SC data	I <sub>sc</sub>	tp≤10us, V <sub>GE</sub> =15V, V <sub>CC</sub> =800V, V <sub>CEM</sub> ≤1200V, T <sub>J</sub> =25°C		1650		A
		tp≤10us, V <sub>GE</sub> =15V, V <sub>CC</sub> =800V, V <sub>CEM</sub> ≤1200V, T <sub>J</sub> =150°C		1250		A

## Diode, Inverter

Table1 Absolute Maximum Ratings (T<sub>c</sub>=25°C, unless otherwise specified)

Parameters	Symbol	Value	Unit
Repetitive peak reverse voltage	V <sub>RRM</sub>	1200	V
Continuous DC forward current	I <sub>F</sub>	300	A
Repetitive peak forward current tp=1ms	I <sub>FRM</sub>	600	A
Implemented forward current	I <sub>FN</sub>	300	A

Table 2. Electrical Chatacteristics (T<sub>j</sub>=25°C, unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Diode Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =300A, T <sub>j</sub> =25°C		1.95	2.50	V
		I <sub>F</sub> =300A, T <sub>j</sub> =125°C		1.95		
		I <sub>F</sub> =300A, T <sub>j</sub> =150°C		1.95		
Diode Peak Reverse Recovery Current	I <sub>rrm</sub>	I <sub>F</sub> =300A V <sub>R</sub> =600V -diF/dt =6000A/μs T <sub>j</sub> =25°C		220		A
Reverse Recovery Charge	Q <sub>rr</sub>			12.2		μC
Reverse recovery energy	E <sub>rec</sub>			9.2		mJ
Diode Peak Reverse Recovery Current	I <sub>rrm</sub>	I <sub>F</sub> =300A V <sub>R</sub> =600V -diF/dt =6000A/μs T <sub>j</sub> =125°C		250		A
Reverse Recovery Charge	Q <sub>rr</sub>			28.2		μC
Reverse recovery energy	E <sub>rec</sub>			11.2		mJ
Diode Peak Reverse Recovery Current	I <sub>rrm</sub>	I <sub>F</sub> =300A V <sub>R</sub> =600V -diF/dt =6000A/μs T <sub>j</sub> =150°C		276		A
Reverse Recovery Charge	Q <sub>rr</sub>			33.1		μC
Reverse recovery energy	E <sub>rec</sub>			13.6		mJ
Temperature under switching conditions	T <sub>vjop</sub>		-40		175	°C

## NTC-Thermistor

Table 1. Electrical Chatacteristics

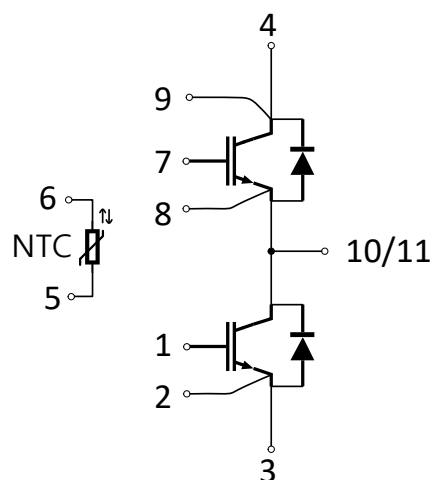
Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Rated resistances	R <sub>25</sub>			5		KΩ
B-value	R <sub>25/50</sub>	$R_2 = R_{25\text{exp}}[B_{25/50}(1/T_2 - 1/(298.15K))]$		3380		K
Deviation of R100	ΔR/R	T <sub>c</sub> =100°C, R <sub>100</sub> =493.3Ω	-5		5	%
Power dissipation	P <sub>25</sub>			20		mW

## Module

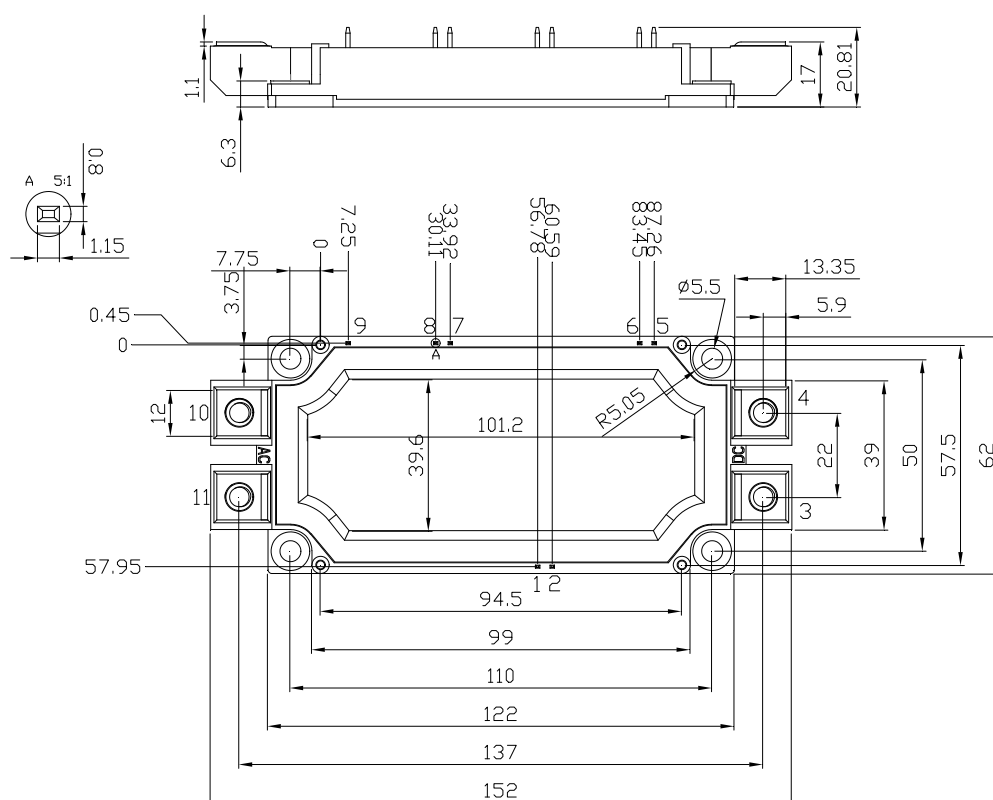
Table 1. Electrical Chatacteristics (T<sub>j</sub>=25°C, unless otherwise specified)

Parameters	Symbol	Test Conditions	Min	Typ	Max	Unit
Isolation test voltage	V <sub>ISOL</sub>	RMS, f=50Hz, t=60s	2500			V
Maximum junction temperature	T <sub>jmax</sub>				175	°C
Storage temperature	T <sub>stg</sub>		-40		125	°C
Operating junction temperature	T <sub>j op</sub>		-40		175	°C
Stray inductance	L <sub>CE</sub>			20		nH
Module lead resistance, terminals-chip	R <sub>CC'+EE'</sub>			1.10		mΩ
Mounting torque for modul mounting	M		3.0		6.0	Nm
Weight	W			350		g

## Circuit diagram



## Package outlines



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