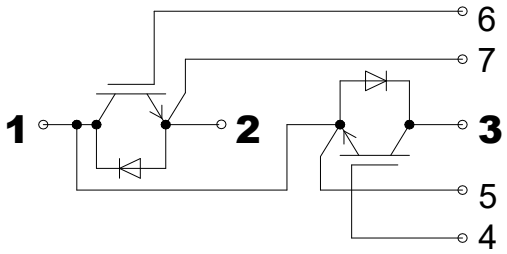
SGG400N125UC2

Ultra Fast IGBT Modules

SGG400N125UC2



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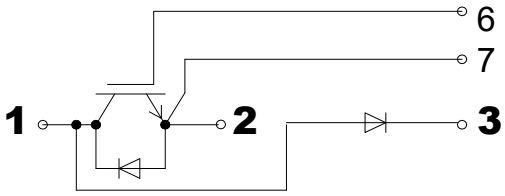

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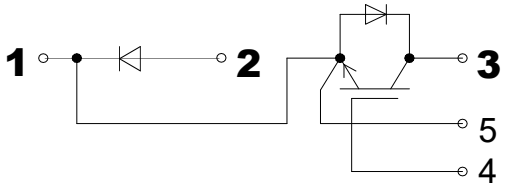

Symbol	Test Condition	Value	Unit
IGBT			
V_{CES}		1200	V
I_C	T_C = 25(100)°C per chip	400(300)	A
V_{GES}		±20	V
T_{vj} (T_{stg})		-40 ~ +150(125)	°C
P_{tot}		2350	W
INVERSE DIODE			
I_F	T_C=25(100)°C per chip	400(300)	A
I_{FM}	T_C=25(100)°C per chip	800(600)	A
V_{RRM}		1200	V
I_{FSM}	T_j=150°C, t_p=10ms	2950	A

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Symbol	Test Conditions	Min	Typ	Max	Unit
IGBT			**Tc = 25°C unless otherwise specified**		
$V_{GE(th)}$	V_{GE}=V_{CE}, I_C=12mA	4.5	5.5	6.5	V
I_{CES}	V_{GE}=0;V_{CE}=V_{CES};T_j=25(125)°C		0.55(3.50)	0.65(4.00)	mA
$V_{CE(TO)}$	T_j=25(125)°C		1.4(1.7)		V
r_{CE}	V_{GE}=15V		10.0(8.0)	11.0(9.5)	mΩ
$V_{CE(sat)}$	I_C=300A; V_{GE}=15V; chip level		2.50	3.25	V
C_{ies}	V_{GE}=0V, V_{CE}=25V, f=1MHz		22.0	30.0	nF
C_{oes}			3.30	3.90	
C_{res}			1.20	1.60	
LCE				20	nH
RCC'+EE'	Terminal to Case， Tc=25(125)°C		0.35(0.50)		mΩ
$t_{d(on)}$	Vcc = 600V, I_C = 300A R_{GON} = R_{GOFF} = 3Ω T_j=125°C V_{GE}=±15V		70		ns
t_r			49		ns
$t_{d(off)}$			499		ns
t_f			32		ns
E_{on}/E_{off}			17.0/18.0		mJ
INVERSE DIODE			**Tc = 25°C unless otherwise specified**		
v_F	I_F =300A; V_{GE}=0V; T_j = 25°C		2.2	2.5	V
Q_{rr}	I_F=300A; V_R=300V; T_j=25°C di/dt = 600A/us, V_{GE}=-15V		12.5		μC
I_{RRM}			85		A
E_{rec}			17.0		mJ
THERMAL CHARACTERISTICS					
$R_{th(j-c)}$	per IGBT			0.055	K/W
$R_{th(j-c)D}$	per FRD			0.125	K/W
Mechanical Data					
Ms		2.5		5	Nm
Weight			320		g

Features

- NPT Technology IGBT
- Fast Recovery Free Wheeling Diode
- Low Switching Losses
- Vce(sat) with positive temperature coefficient
- Fast Switching and short tail current
- Switched mode power supplies at f_{sw}>25KHz
- Resonant inverters up to 100KHz
- Electronic Welders at f_{sw}>20KHz

Application

- Welding inverters
- Inductive Heating

Advantages

- Space and weight savings
- Reduced protection circuits

- This type IGBT can be equivalent for SEMIKRON SKM400GB125D or Infineon FF300R12KS4

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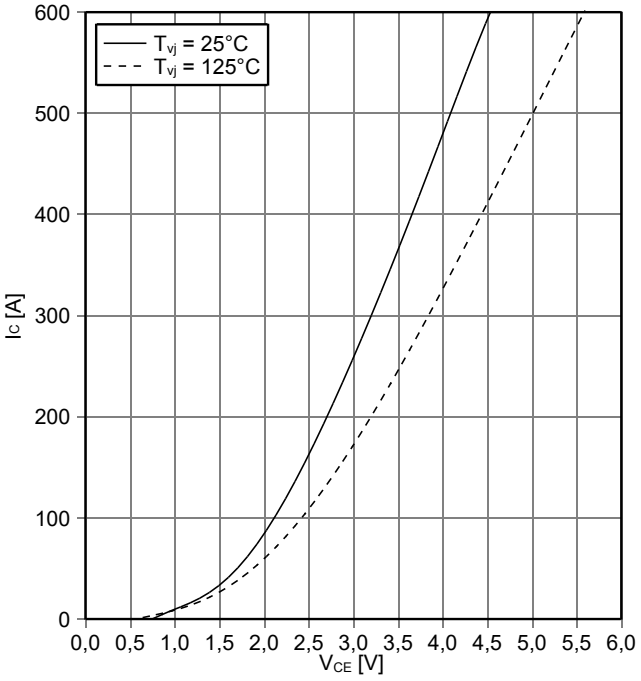
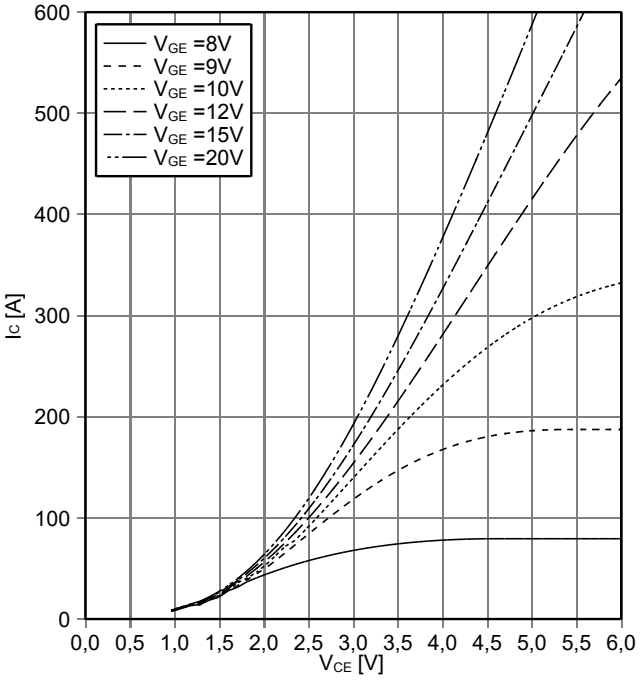
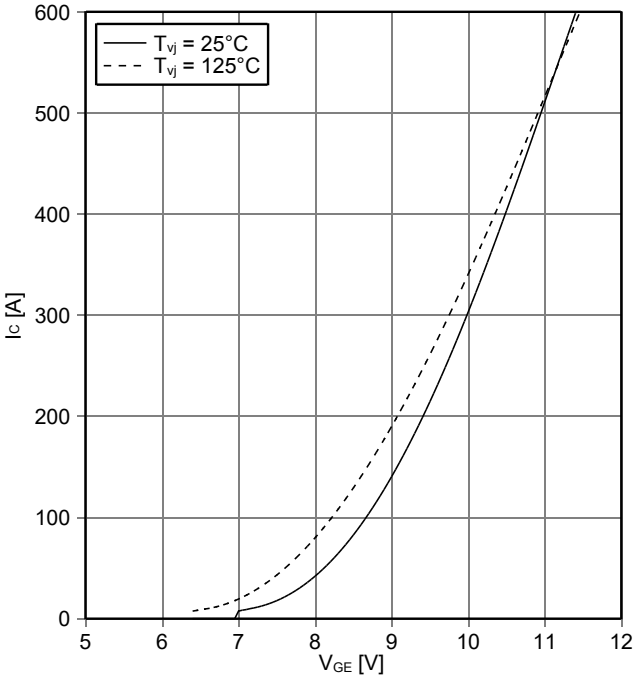


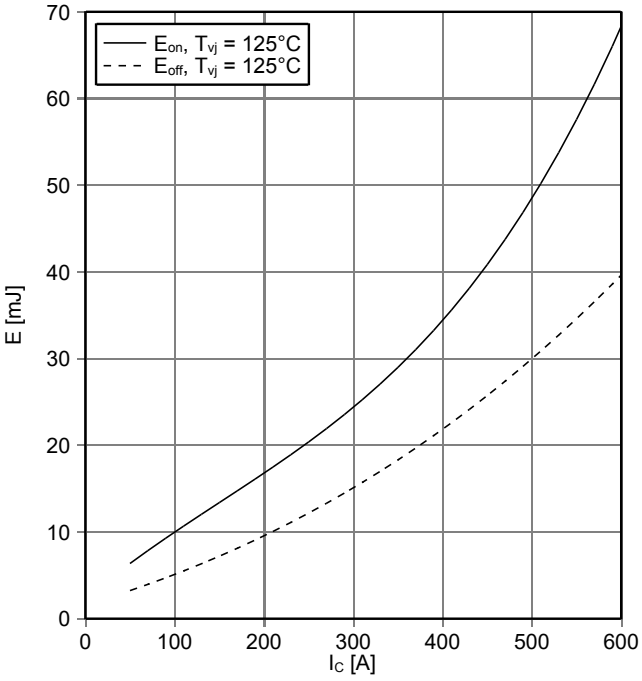
Output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE}), V_{GE} = 15\ V$



Output characteristic IGBT,Inverter (typical)
$I_C = f(V_{CE}), T_{vj} = 125°C$



Transfer characteristic IGBT,Inverter(typical)
$I_C = f(V_{GE})$
$V_{CE} = 20\ V$



Switching losses IGBT,Inverter (typical)
$E_{on} = f(I_C), E_{off} = f(I_C)$
$V_{GE} = \pm 15\ V, R_{Gon} = 3\ \Omega, R_{Goff} = 3\ \Omega, V_{CE} = 600\ V$

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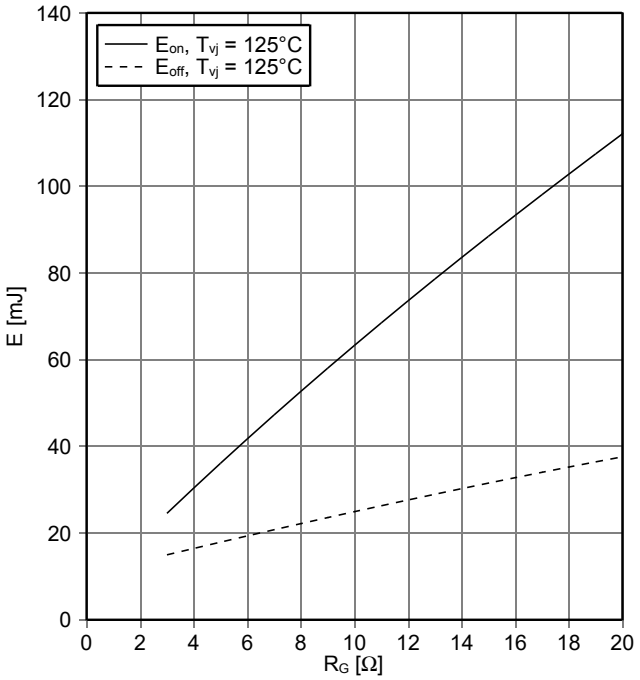
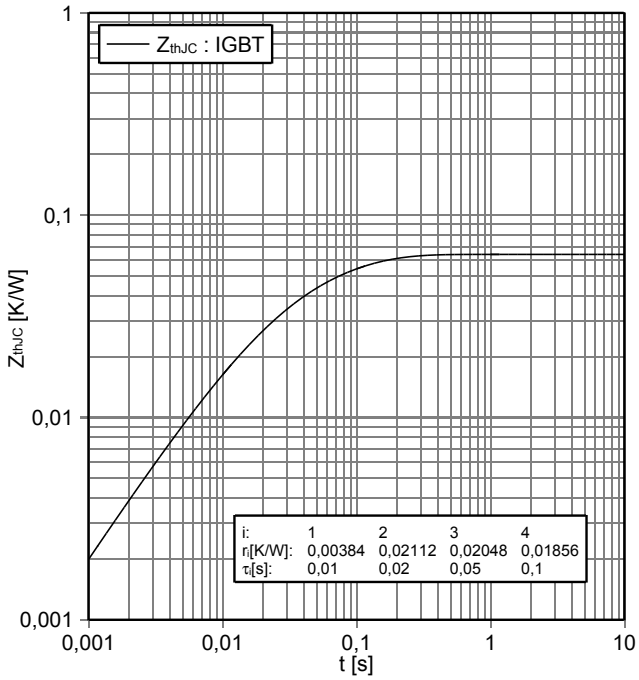
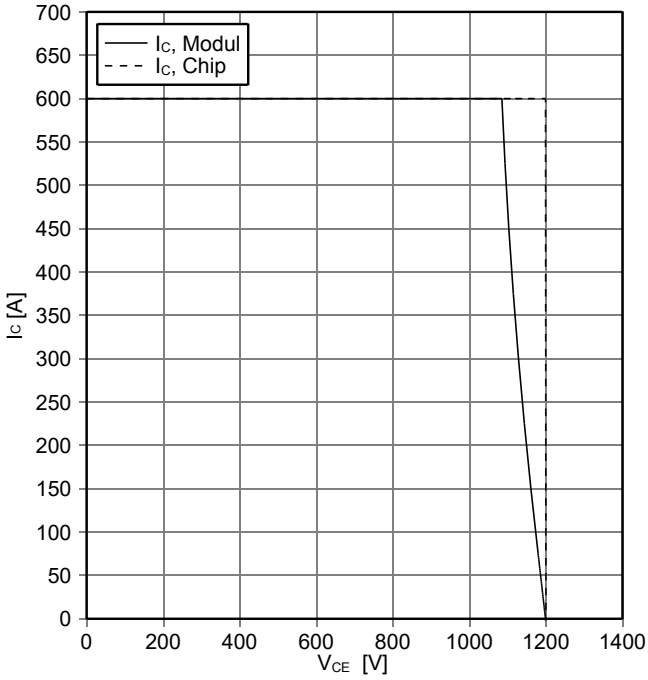


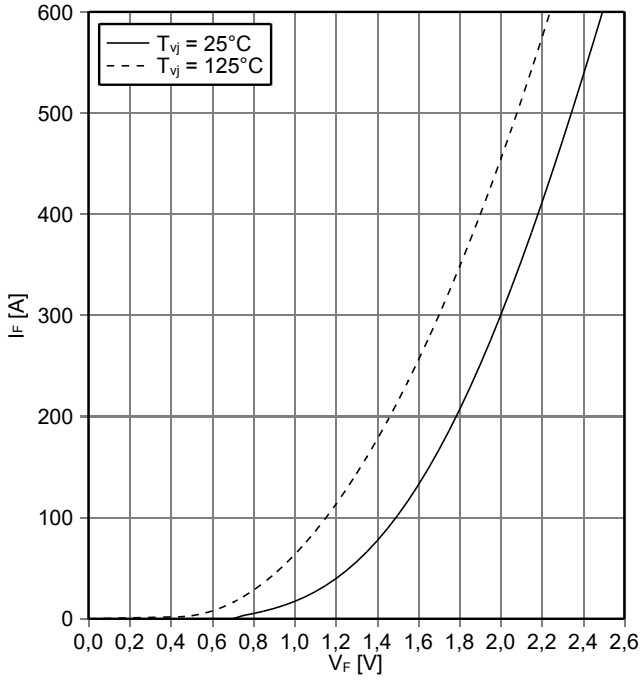
Switching losses IGBT,Inverter (typical)
$E_{on} = f(R_G)$, $E_{off} = f(R_G)$
V_{GE} = ±15 V, I_C = 300 A, V_{CE} = 600 V



Transient thermal impedance IGBT,Inverter
$Z_{thJC} = f(t)$



Reverse bias safe operating area IGBT,Inverter (RBSOA) $I_C = f(V_{CE})$
V_{GE} = ±15 V, R_{Goff} = 3 Ω, T_{vj} = 125°C



Forward characteristic of Diode, Inverter (typical)
$I_F = f(V_F)$

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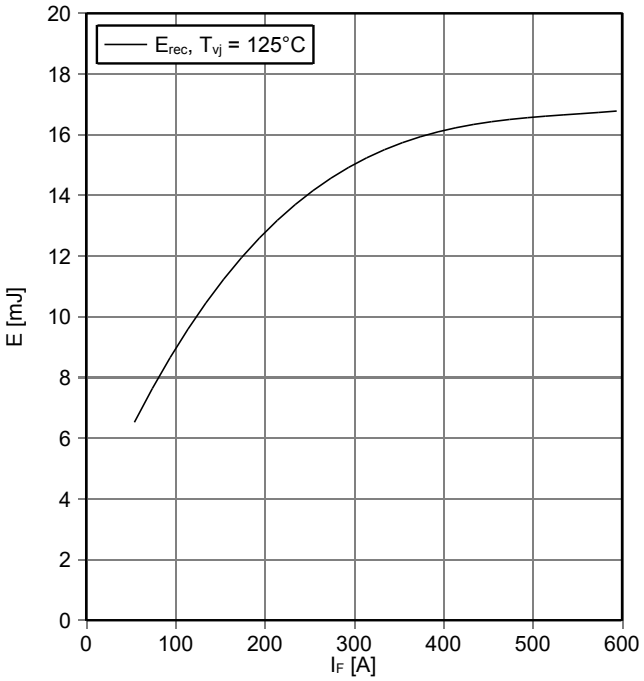
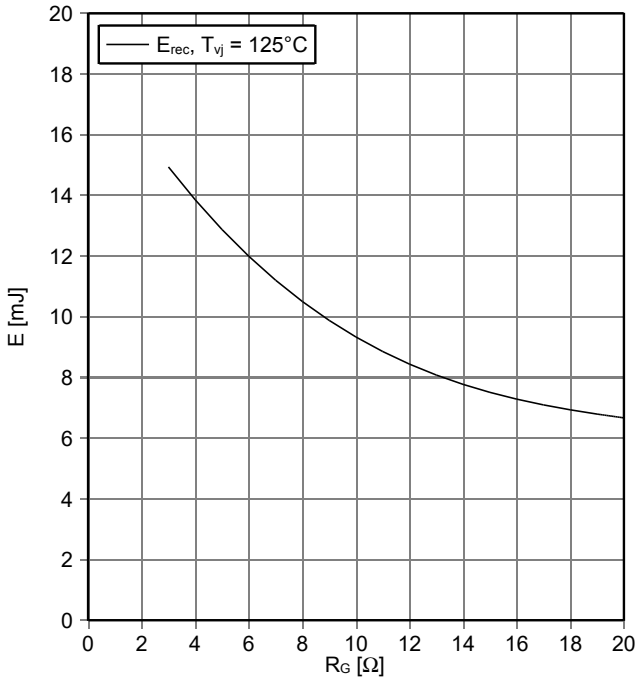
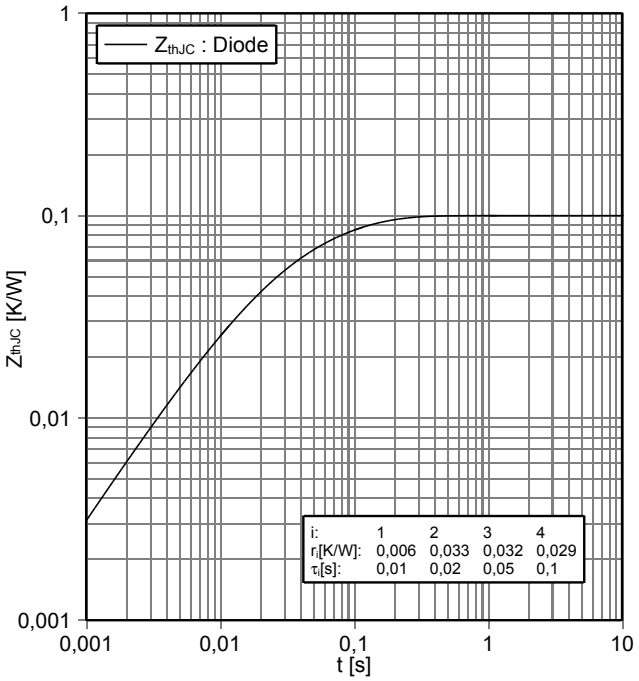


Switching losses Diode, Inverter (typical)
$E_{rec} = f(I_F)$
$R_{Gon} = 3\ \Omega$, $V_{CE} = 600\ V$



Switching losses Diode, Inverter (typical)
$E_{rec} = f(R_G)$
$I_F = 300\ A$, $V_{CE} = 600\ V$



Transient thermal impedance Diode, Inverter
$Z_{thJC} = f(t)$

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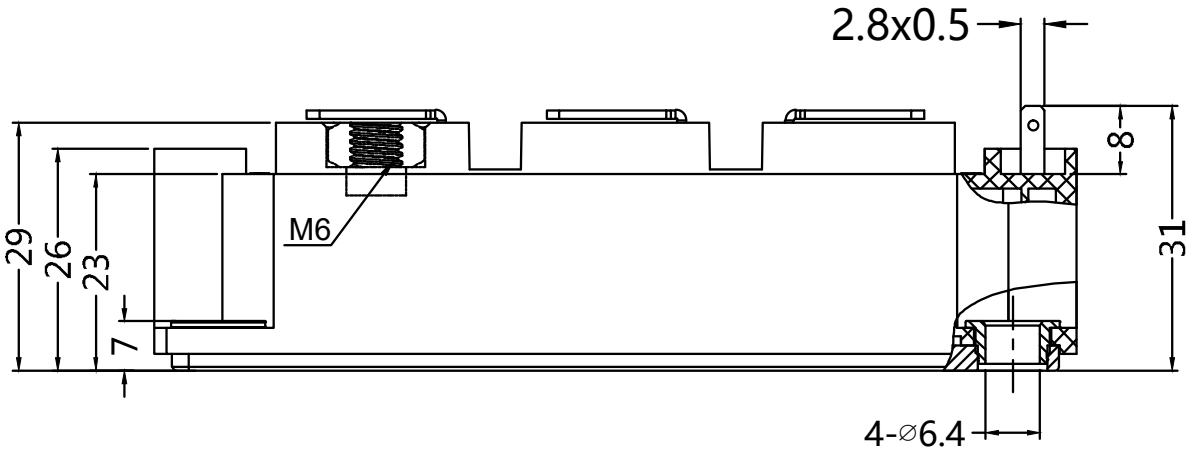

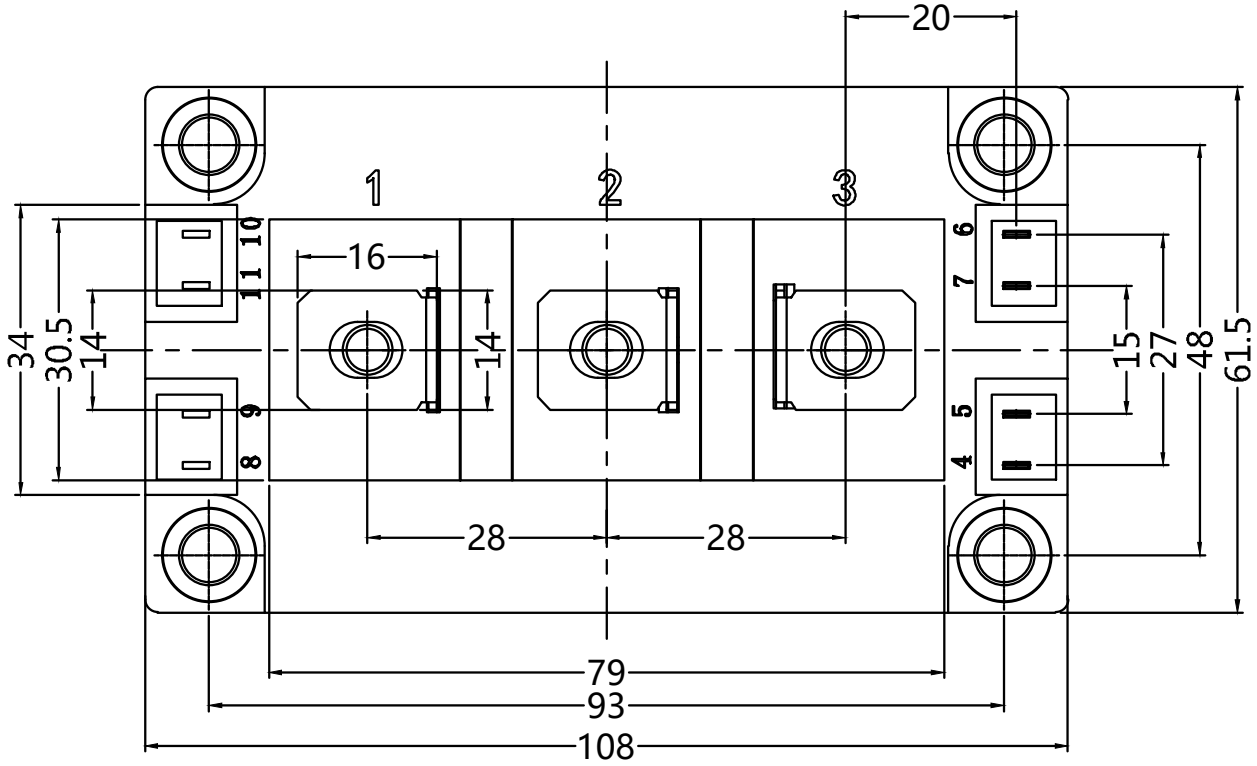

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