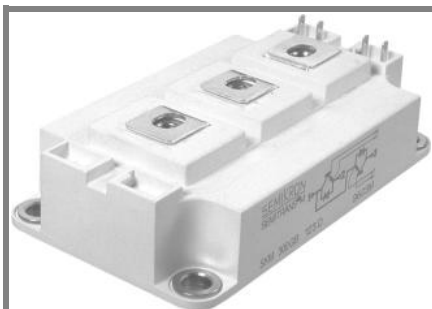




SEMITRANS® 3

Superfast NPT-IGBT Modules

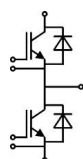
SKM 200GB063D

Features

- N channel, homogeneous Silicon structure (NPT - Non punch-through IGBT)
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- 50 % less turn off losses
- 30 % less short circuit current
- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (13 mm) and creepage distances (20 mm)

Typical Applications

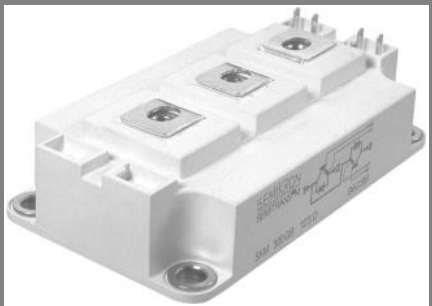
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters



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Absolute Maximum Ratings			$T_c = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$		600	V
I_C	$T_j = 150\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	260	A
		$T_{case} = 70\text{ }^{\circ}\text{C}$	200	A
I_{CRM}	$I_{CRM}=2 \times I_{Cnom}$		400	A
V_{GES}			± 20	V
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125\text{ }^{\circ}\text{C}$ $V_{CES} < 600\text{ V}$		10	μs
Inverse Diode				
I_F	$T_j = 150\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	200	A
		$T_{case} = 80\text{ }^{\circ}\text{C}$	135	A
I_{FRM}	$I_{FRM}=2 \times I_{Fnom}$		400	A
I_{FSM}	$t_p = 10\text{ ms}; \sin.$	$T_j = 150\text{ }^{\circ}\text{C}$	1400	A
Module				
$I_{t(RMS)}$			500	A
T_{vj}			- 40 ... + 150	$^{\circ}\text{C}$
T_{stg}			- 40 ... + 125	$^{\circ}\text{C}$
V_{isol}	AC, 1 min.		2500	V

Characteristics			T _c = 25 °C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 4 mA		4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,1	0,3	mA
V _{CE0}	T _j = 25 °C			1,05		V
	T _j = 125 °C			1		V
r _{CE}	V _{GE} = 15 V T _j = 25°C			5,3		mΩ
	T _j = 125°C			7		mΩ
V _{CE(sat)}	I _{Cnom} = 200 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			2,1	2,5	V
	T _j = 125°C _{chiplev.}			2,4	2,8	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			11,2		nF
C _{oes}				1,25		nF
C _{res}				0,75		nF
Q _G	V _{GE} = 0V - +15V			480		nC
R _{Gint}	T _j = °C			0		Ω
t _{d(on)}	R _{Gon} = 8 Ω	V _{CC} = 300V I _C = 200A		140		ns
t _r				70		ns
E _{on}				11		mJ
t _{d(off)}	R _{Goff} = 8 Ω	T _j = 125 °C V _{GE} = ±15V		442		ns
t _f				45		ns
E _{off}				7,5		mJ
R _{th(j-c)}	per IGBT				0,14	K/W



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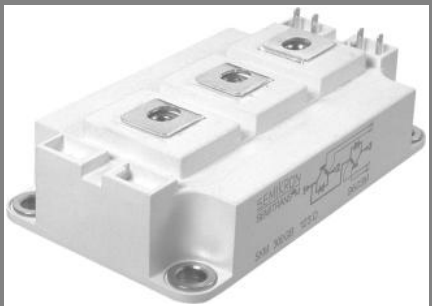
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Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 200 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.} T _j = 125 °C _{chiplev.}		1,55 1,55	1,9	V V
V _{F0}		T _j = 125 °C			0,9	V
r _F		T _j = 125 °C		4	5,5	mΩ
I _{RRM} Q _{rr} E _{rr}	I _F = 200 A V _{GE} = -15 V; V _{CC} = 600 V	T _j = 125 °C		75 12,7		A μC mJ
R _{th(j-c)D}	per diode				0,3	K/W
Module						
L _{CE}				15	20	nH
R _{CC'+EE'}	res., terminal-chip	T _{case} = 25 °C T _{case} = 125 °C		0,35 0,5		mΩ mΩ
R _{th(c-s)}	per module				0,038	K/W
M _s	to heat sink M6		3		5	Nm
M _t	to terminals M6		2,5		5	Nm
w					325	g

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

This technical information specifies semiconductor devices but promises no characteristics. No warranty or guarantee expressed or implied is made regarding delivery, performance or suitability.

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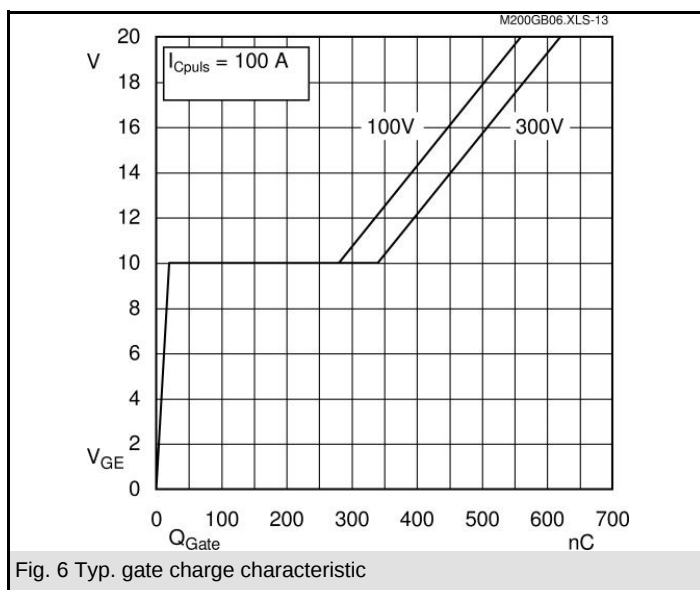
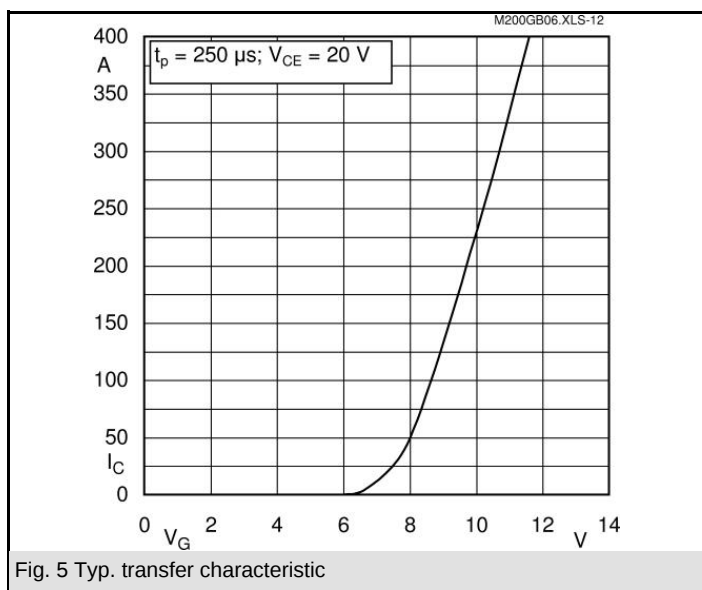
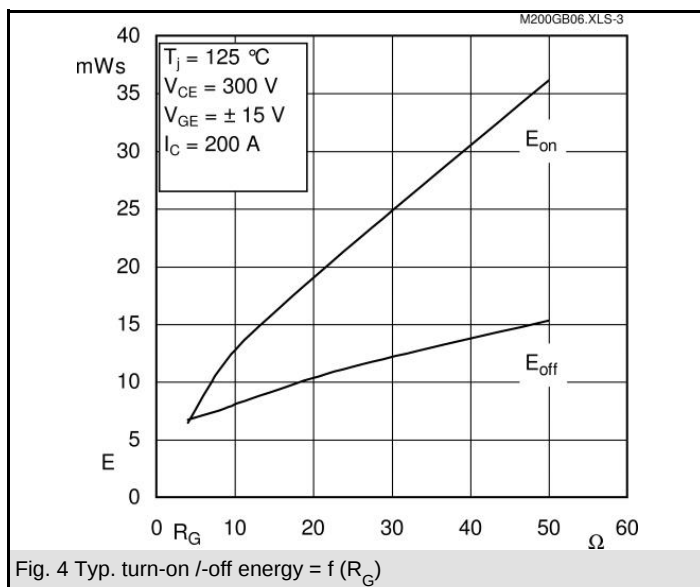
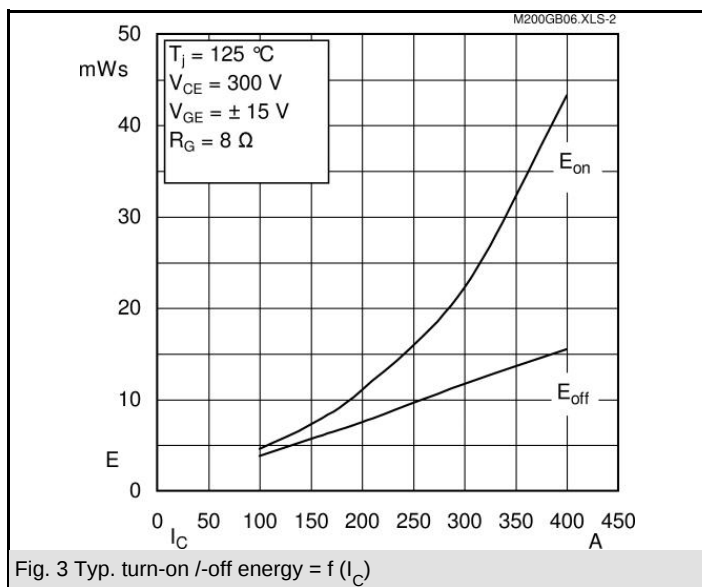
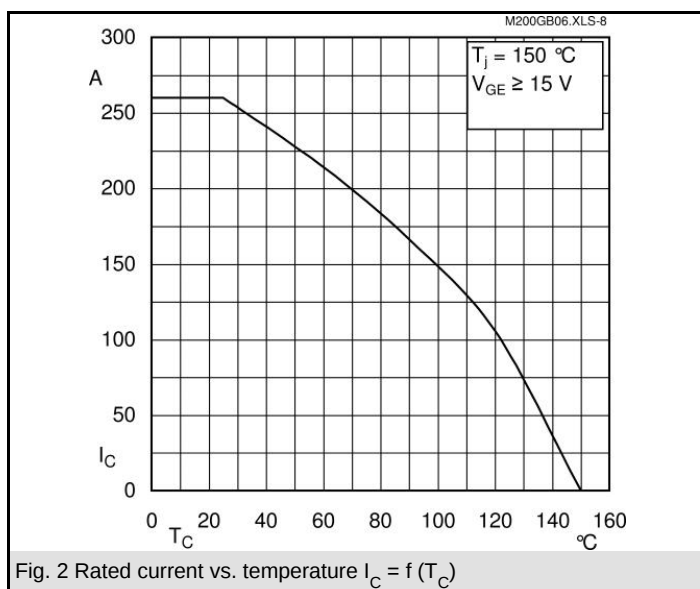
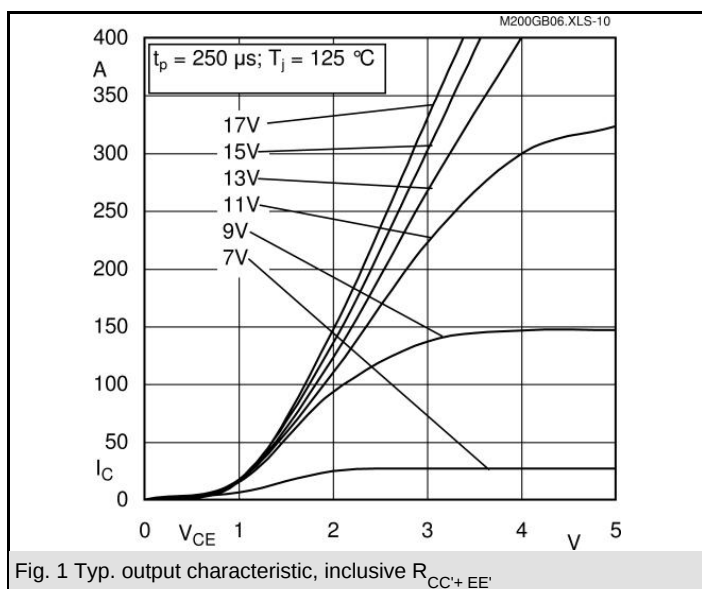
Typical Applications

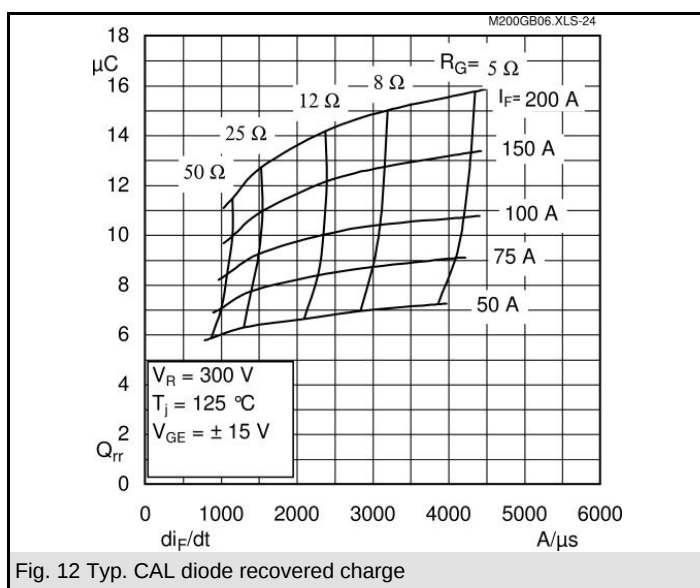
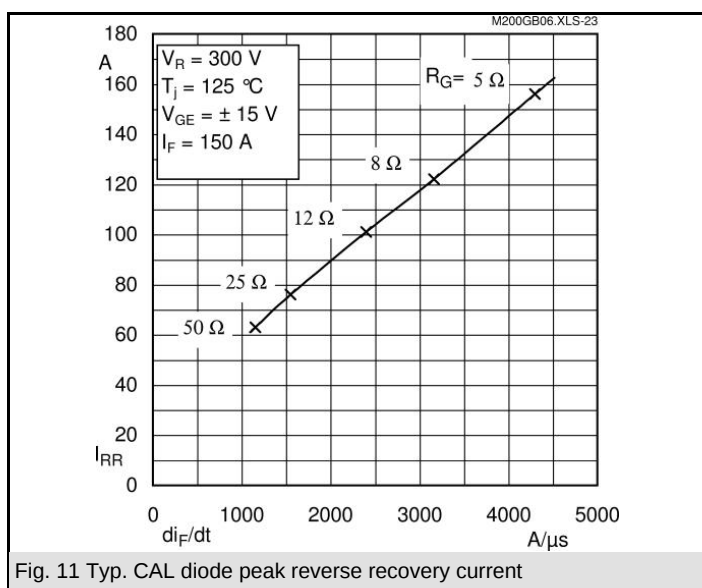
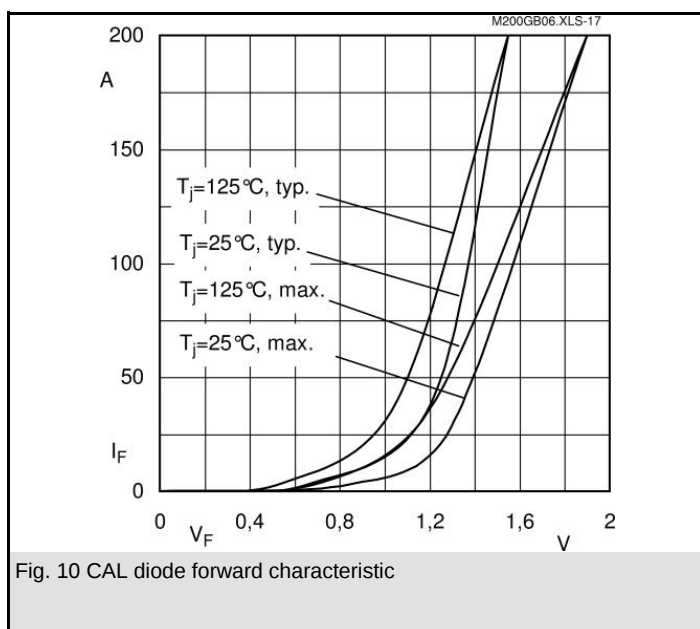
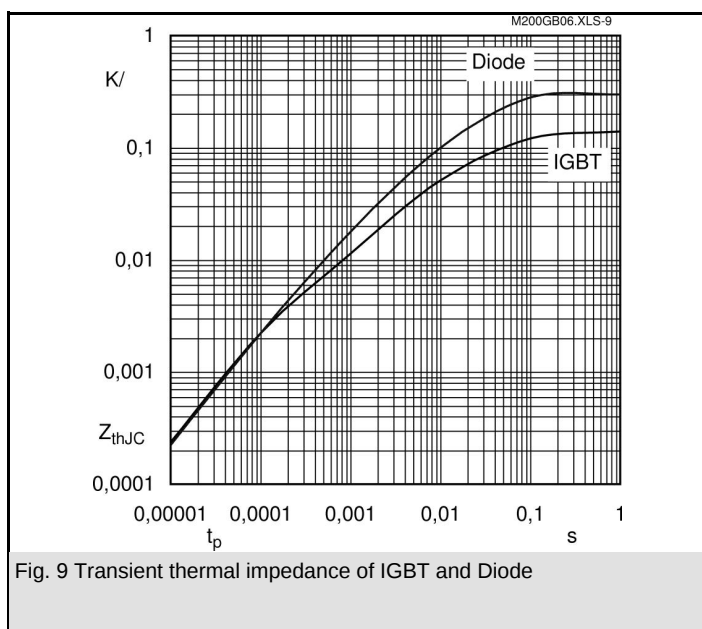
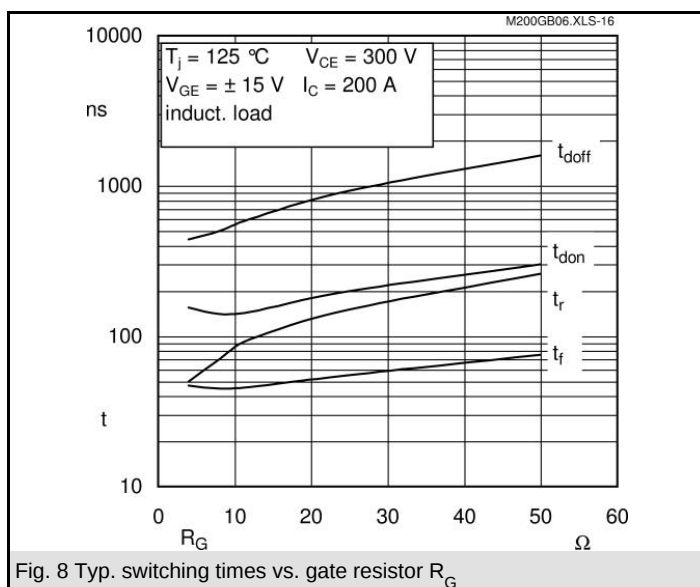
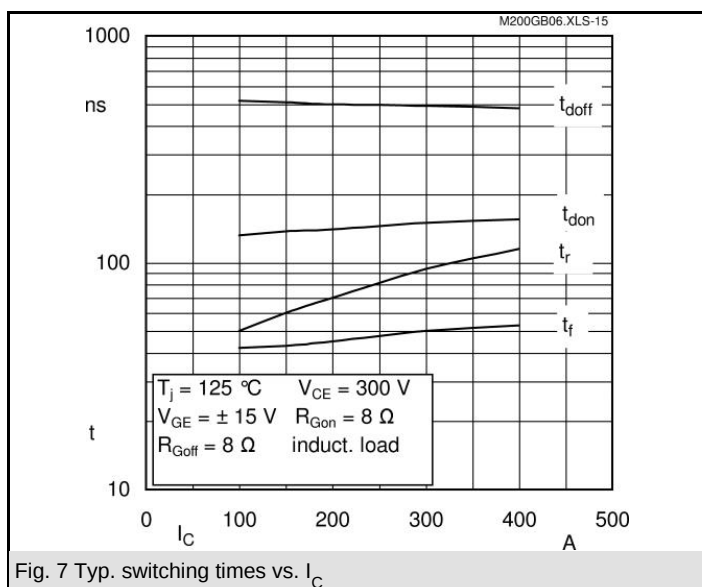
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Z_{th}	Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$				
R_i		$i = 1$	90	mk/W
R_i		$i = 2$	39	mk/W
R_i		$i = 3$	9	mk/W
R_i		$i = 4$	2	mk/W
τ_{ui}		$i = 1$	0,0416	s
τ_{ui}		$i = 2$	0,0139	s
τ_{ui}		$i = 3$	0,0021	s
τ_{ui}		$i = 4$	0,0001	s
$Z_{th(j-c)D}$				
R_i		$i = 1$	200	mk/W
R_i		$i = 2$	84	mk/W
R_i		$i = 3$	14	mk/W
R_i		$i = 4$	2	mk/W
τ_{ui}		$i = 1$	0,0275	s
τ_{ui}		$i = 2$	0,0413	s
τ_{ui}		$i = 3$	0,0019	s
τ_{ui}		$i = 4$	0,004	s



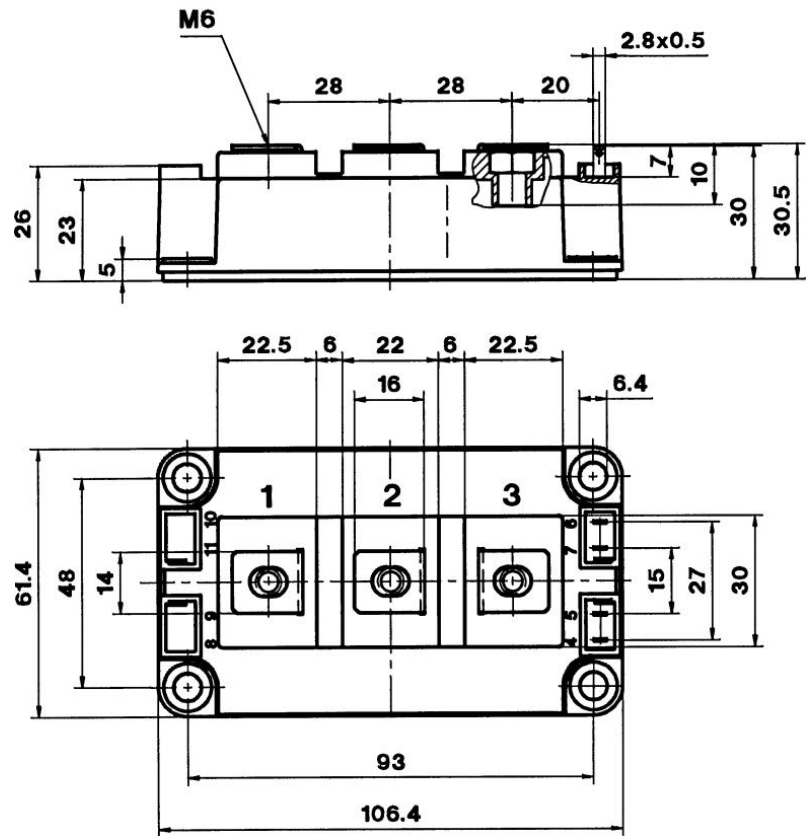


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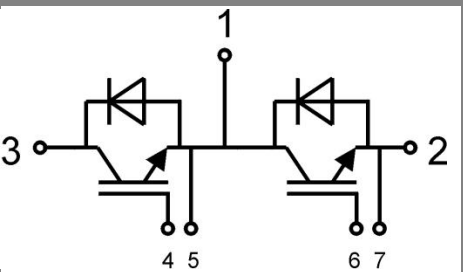
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