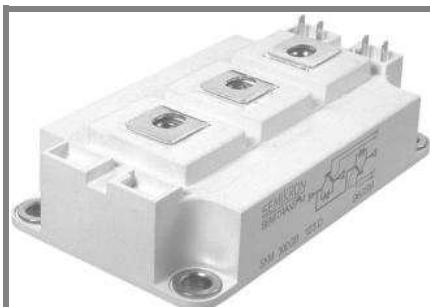




SEMITRANS® 3

Superfast NPT-IGBT Modules

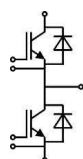
SKM 200GB063D

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
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- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
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Typical Applications*

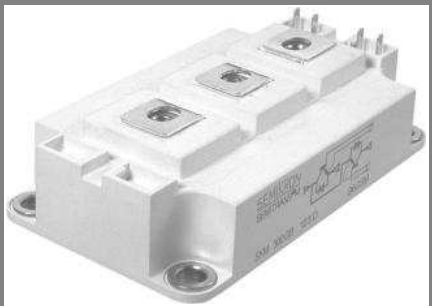
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters



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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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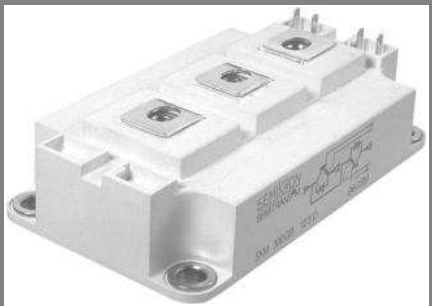
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Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 200 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		1,55	1,9	V
		T _j = 125 °C _{chiplev.}		1,55		V
V _{F0}		T _j = 125 °C			0,9	V
r _F		T _j = 125 °C		4	5,5	mΩ
I _{R_{RM}}	I _F = 200 A	T _j = 125 °C		75		A
Q _{rr}				12,7		μC
E _{rr}	V _{GE} = -15 V; V _{CC} = 600 V					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		0,35		mΩ
		T _{case} = 125 °C		0,5		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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

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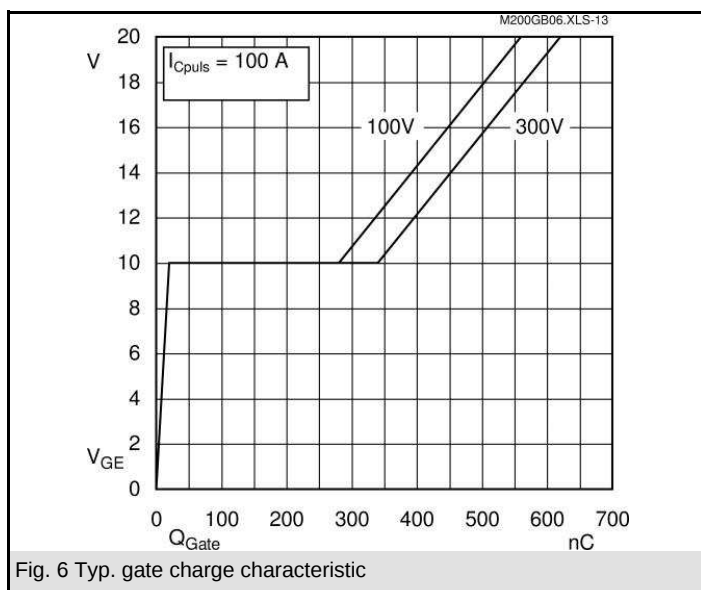
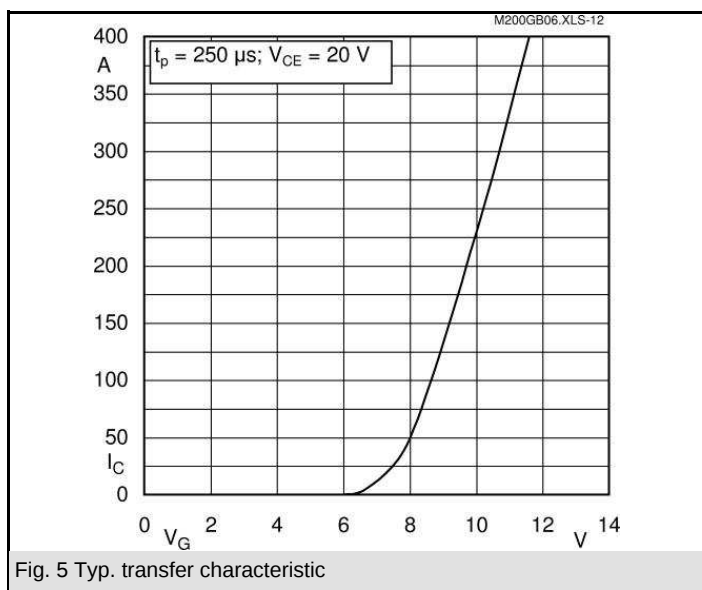
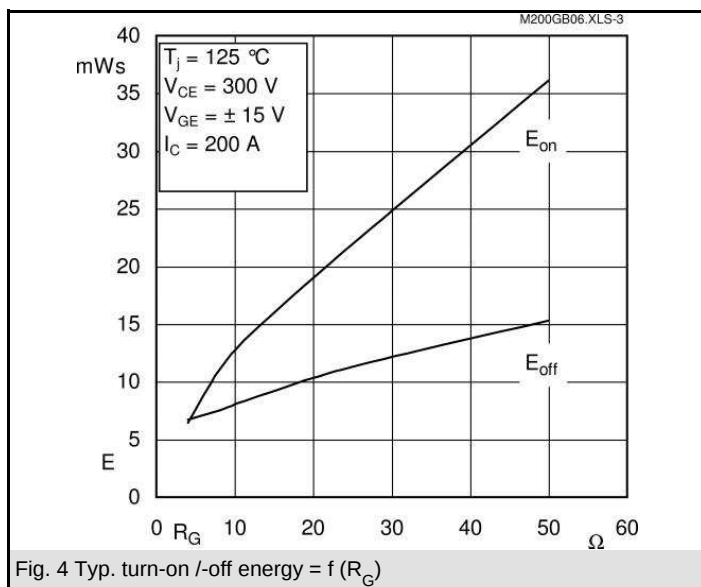
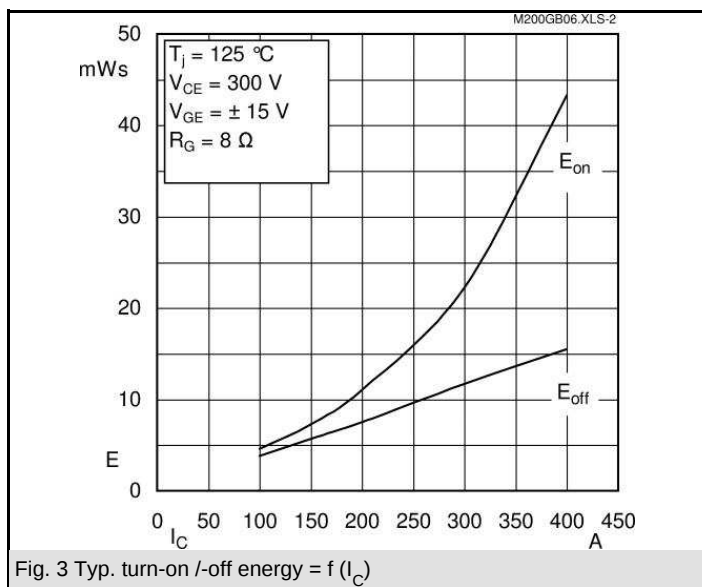
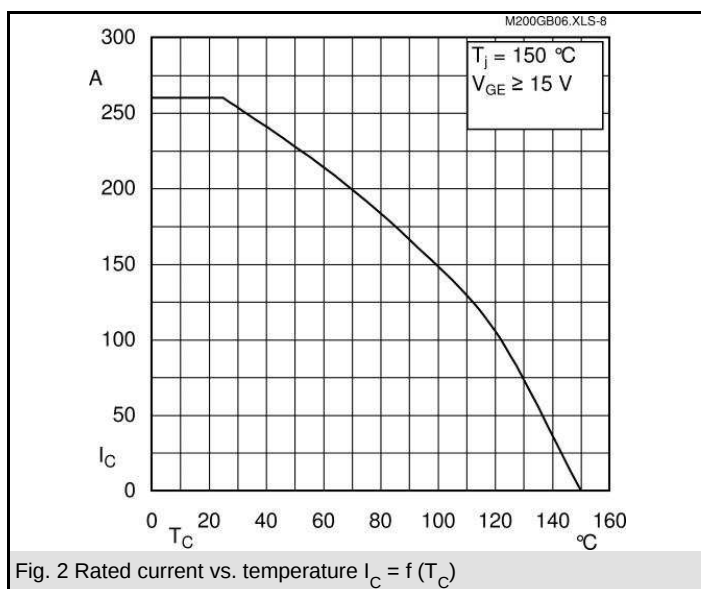
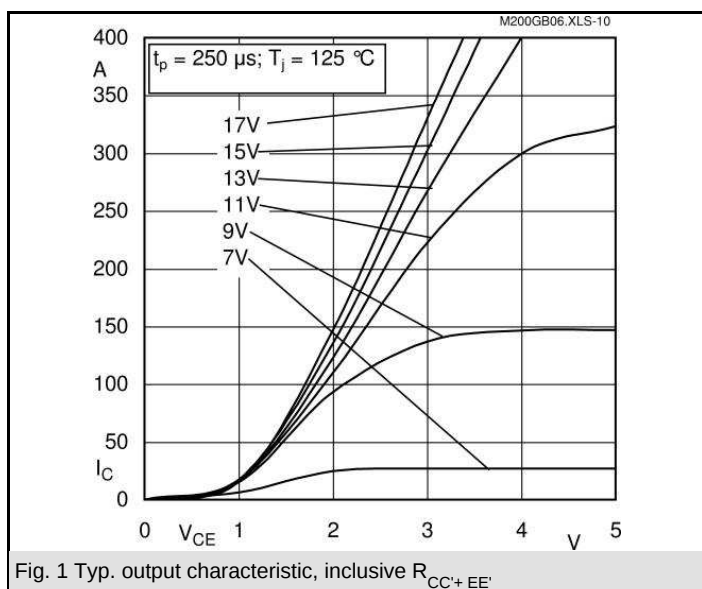
Typical Applications*

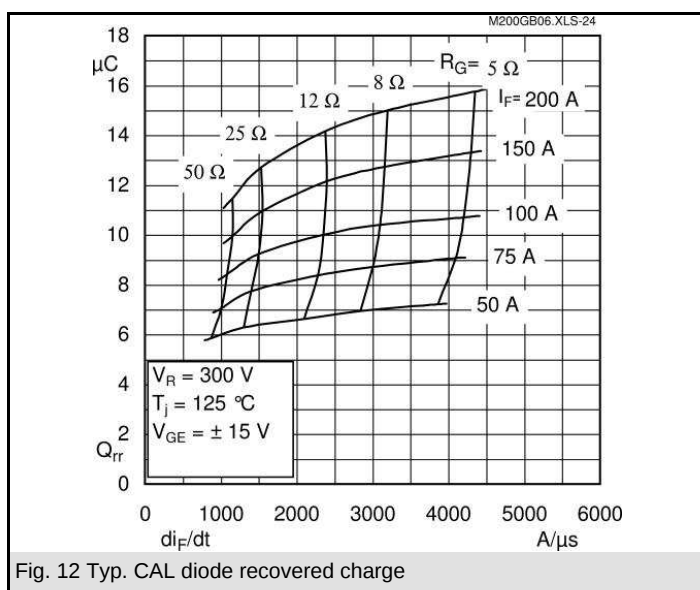
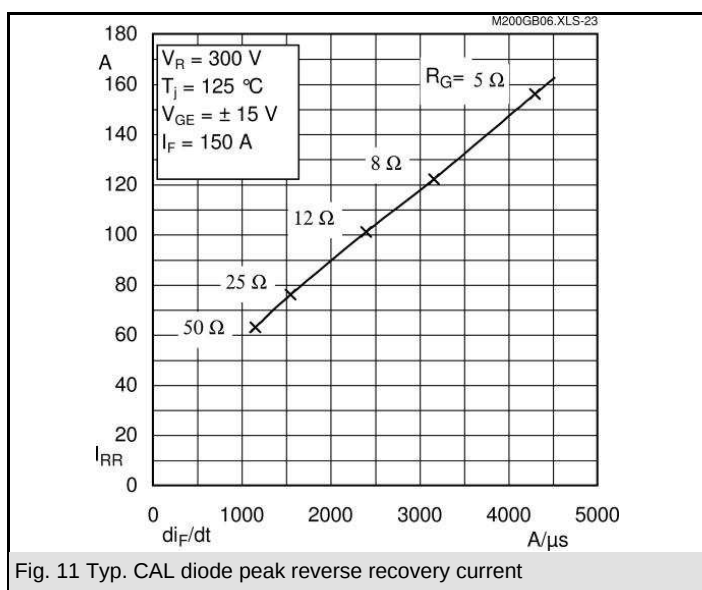
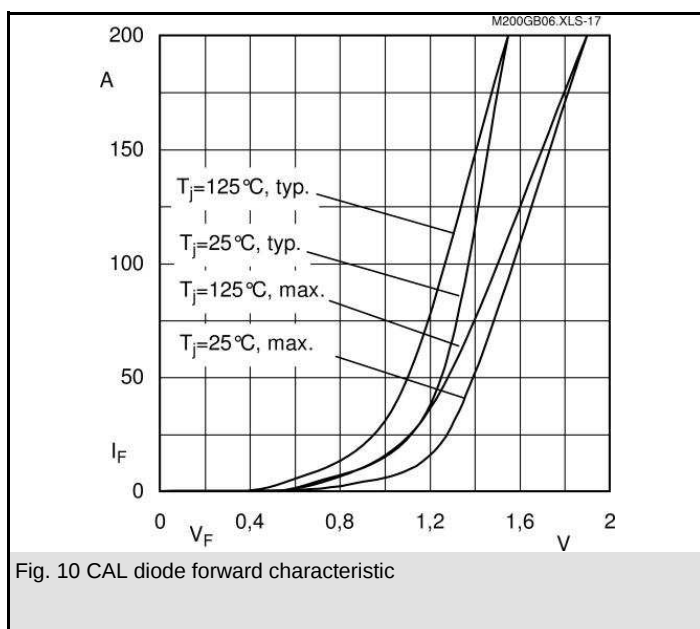
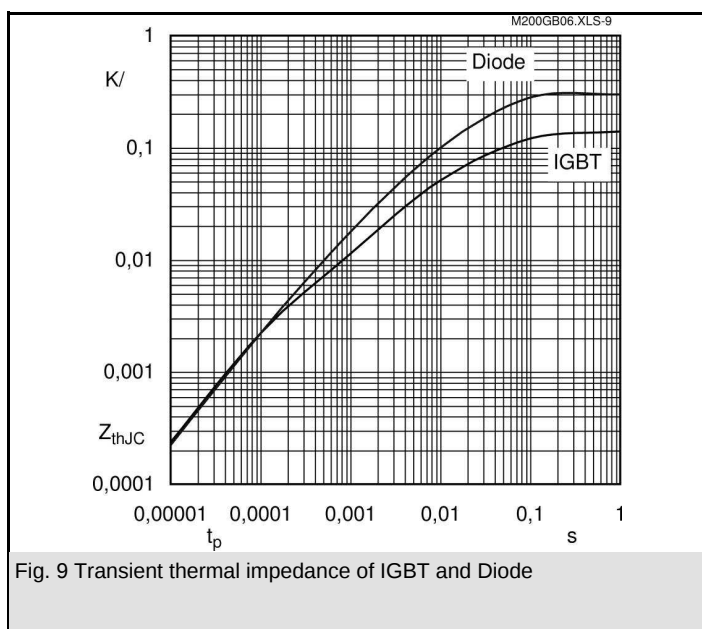
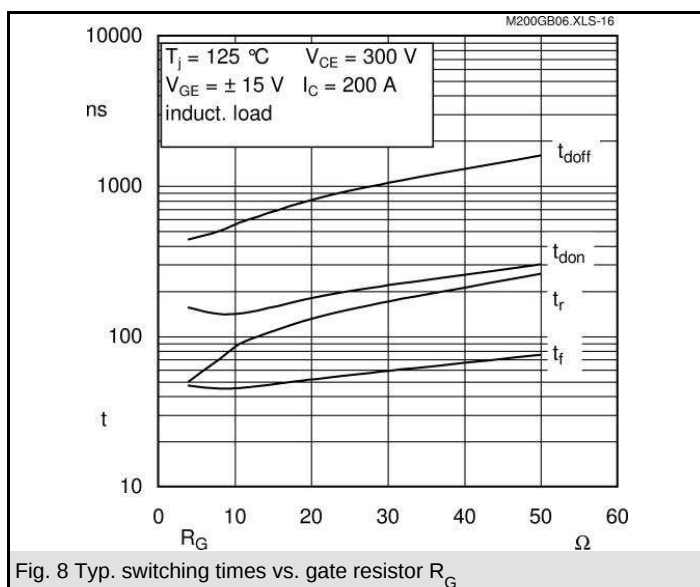
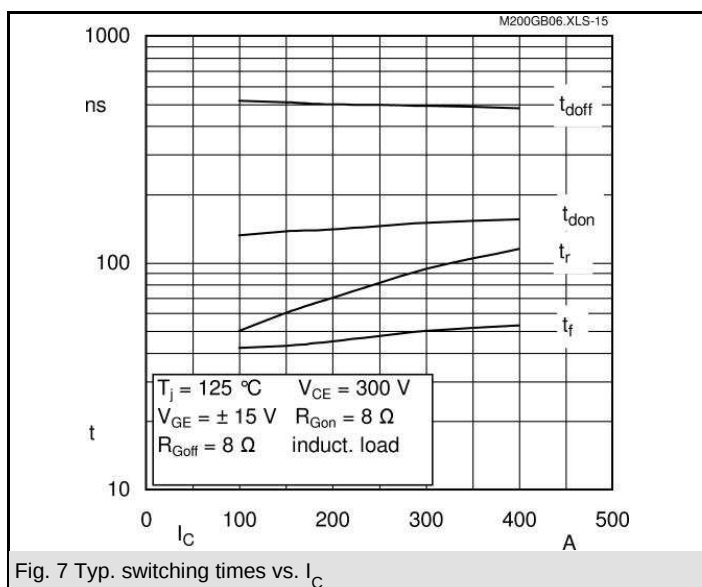
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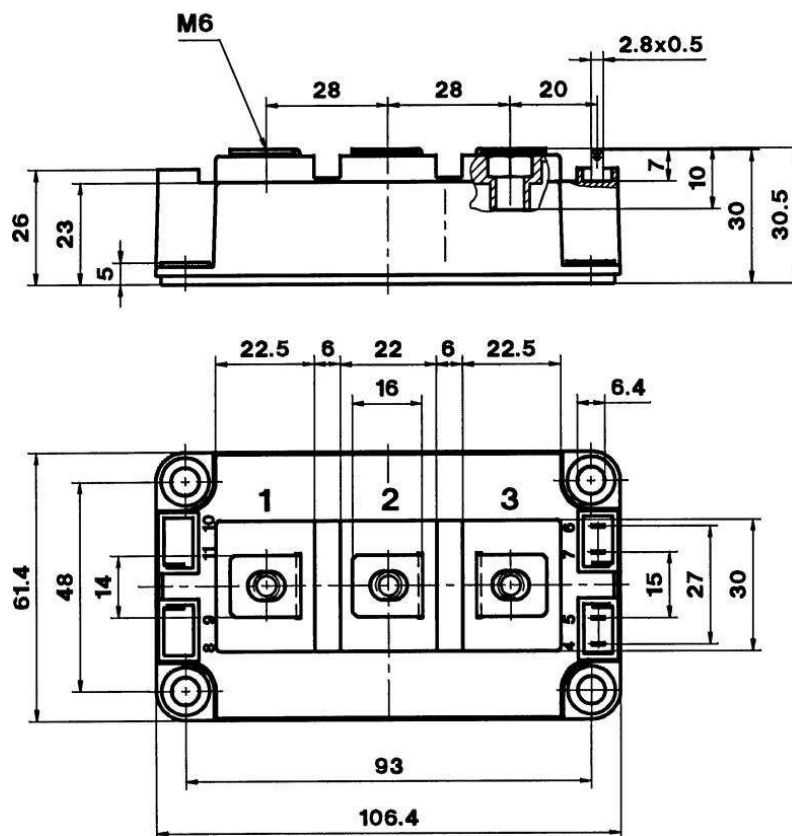


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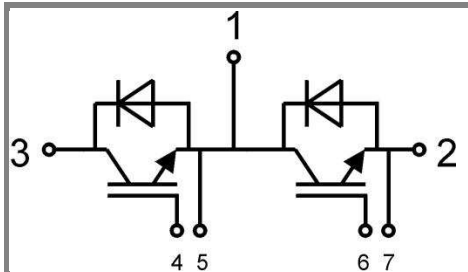
Z_{th}	Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$				
R_i		$i = 1$	90	mk/W
R_i		$i = 2$	39	mk/W
R_i		$i = 3$	9	mk/W
R_i		$i = 4$	2	mk/W
τ_{ui}		$i = 1$	0,0416	s
τ_{ui}		$i = 2$	0,0139	s
τ_{ui}		$i = 3$	0,0021	s
τ_{ui}		$i = 4$	0,0001	s
$Z_{th(j-c)D}$				
R_i		$i = 1$	200	mk/W
R_i		$i = 2$	84	mk/W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







Case D 56



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Case D 56