



SEMITRANS® 3

Superfast NPT-IGBT Modules

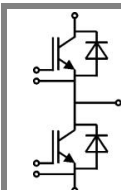
SKM 200GB063D

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

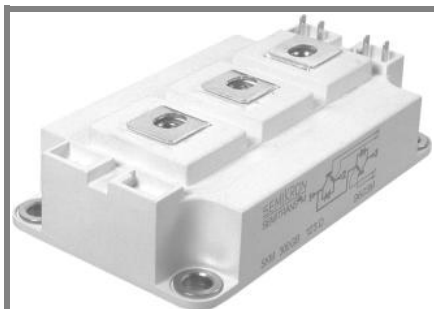
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptible power supplies
- Welding inverters



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

Characteristics		$T_c = 25\text{ °C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, $I_C = 4\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0\text{ V}$, $V_{CE} = V_{CES}$		0,1	0,3	mA
V_{CE0}		$T_j = 25\text{ °C}$	1,05		V
		$T_j = 125\text{ °C}$	1		V
r_{CE}	$V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}$	5,3		mΩ
		$T_j = 125\text{ °C}$	7		mΩ
$V_{CE(sat)}$	$I_{Cnom} = 200\text{ A}$, $V_{GE} = 15\text{ V}$	$T_j = 25\text{ °C}_{chiplev.}$	2,1	2,5	V
		$T_j = 125\text{ °C}_{chiplev.}$	2,4	2,8	V
C_{res}	$V_{CE} = 25$, $V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$	11,2		nF
C_{oes}			1,25		nF
C_{res}			0,75		nF
Q_G	$V_{GE} = 0\text{ V} - +15\text{ V}$		480		nC
R_{Gint}	$T_j = \text{°C}$		0		Ω
$t_{d(on)}$	$R_{Gon} = 8\text{ Ω}$	$V_{CC} = 300\text{ V}$ $I_{Cnom} = 200\text{ A}$	140		ns
t_r			70		ns
E_{on}	$R_{Goff} = 8\text{ Ω}$	$T_j = 125\text{ °C}$ $V_{GE} = \pm 15\text{ V}$	11		mJ
$t_{d(off)}$			442		ns
t_f			45		ns
E_{ff}			7,5		mJ
$R_{th(j-c)}$	per IGBT		0,14		K/W



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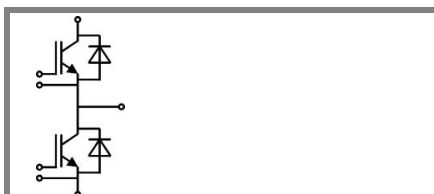
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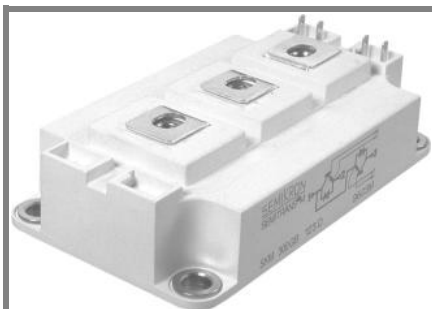
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Characteristics

Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}; V_{GE} = 0 \text{ V}$		1,55	1,9	V
					$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$
			1,55		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$
V_{F0}				0,9	V
					$T_j = 125 \text{ }^\circ\text{C}$
r_F			4	5,5	mΩ
					$T_j = 125 \text{ }^\circ\text{C}$
I_{RRM}	$I_{Fnom} = 200 \text{ A}$		75		A
Q_{rr}			12,7		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$				mJ
$R_{th(j-c)D}$	per diode			0,3	K/W
Module					
L_{CE}			15	20	nH
R_{CC+EE}	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$	0,35		mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$	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.

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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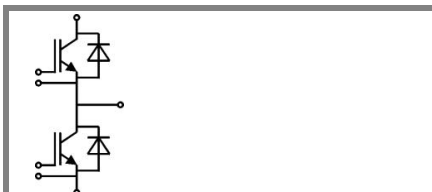
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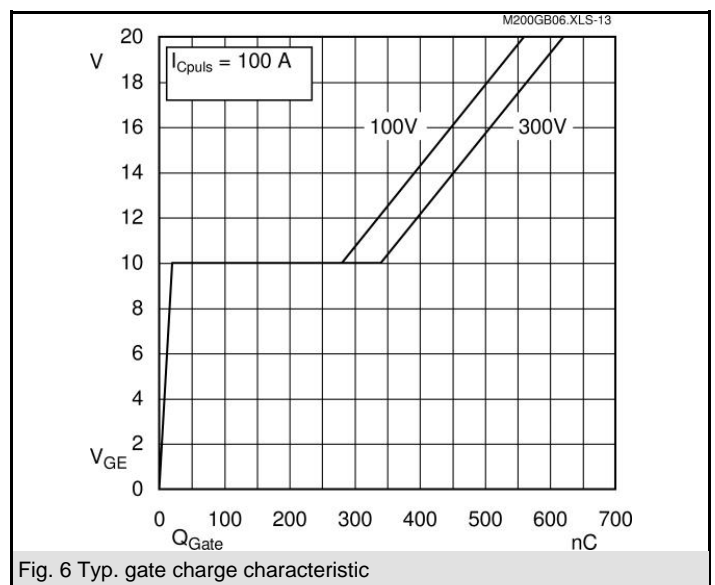
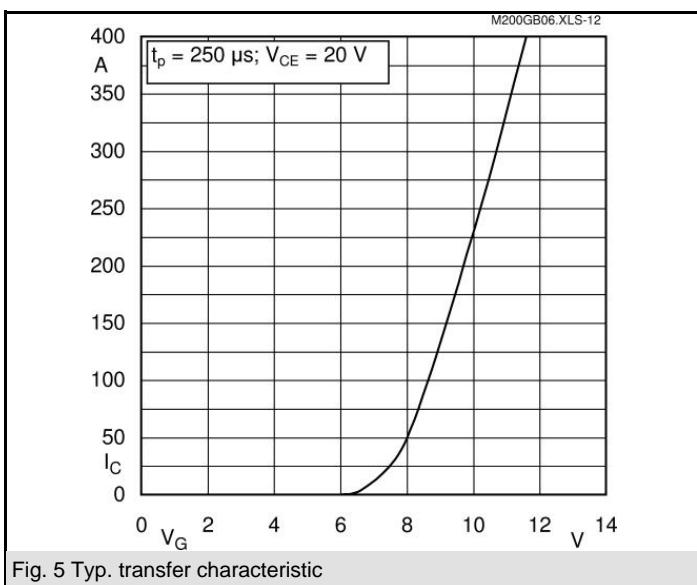
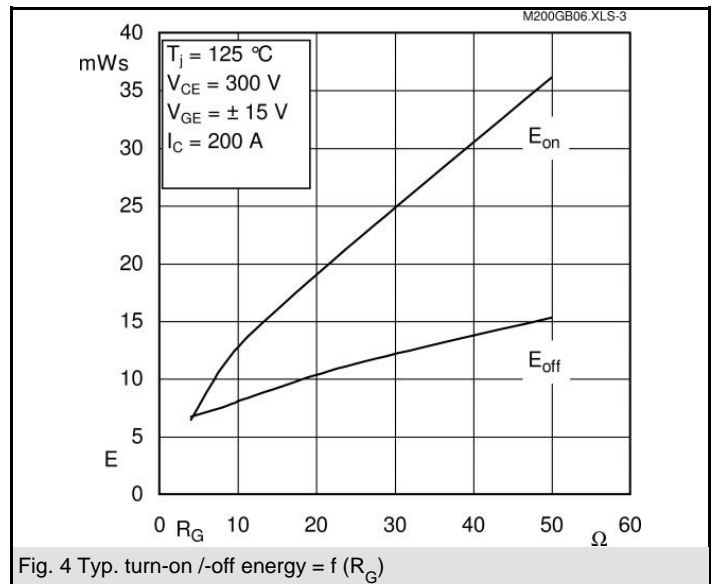
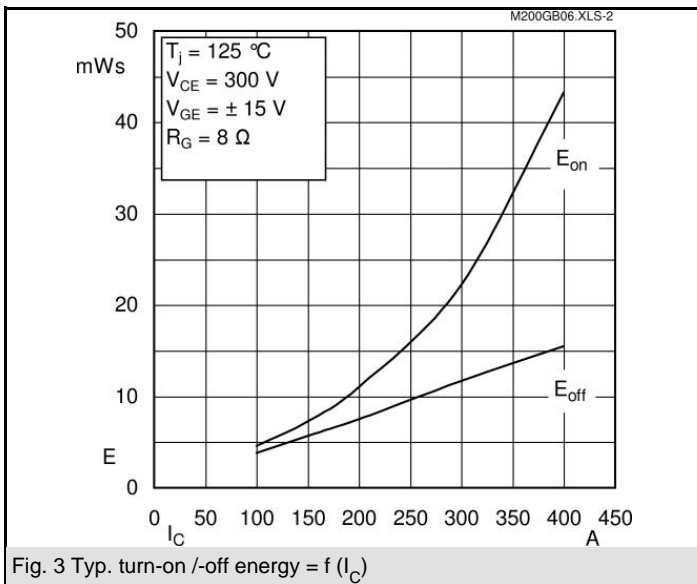
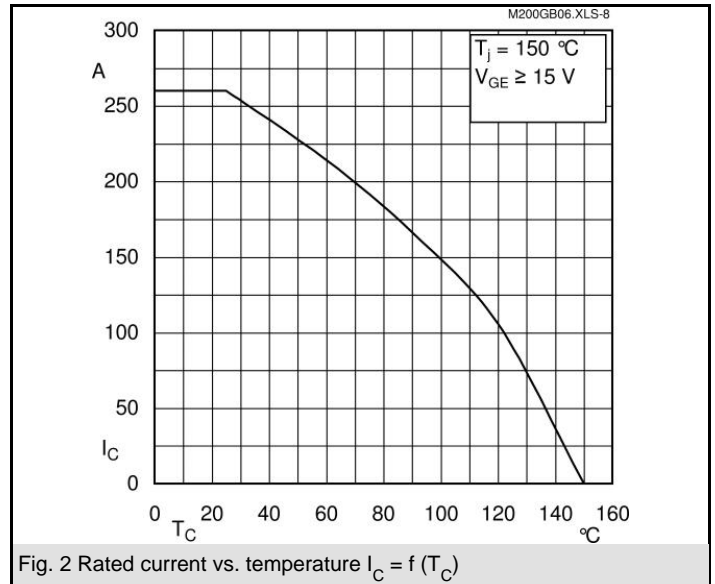
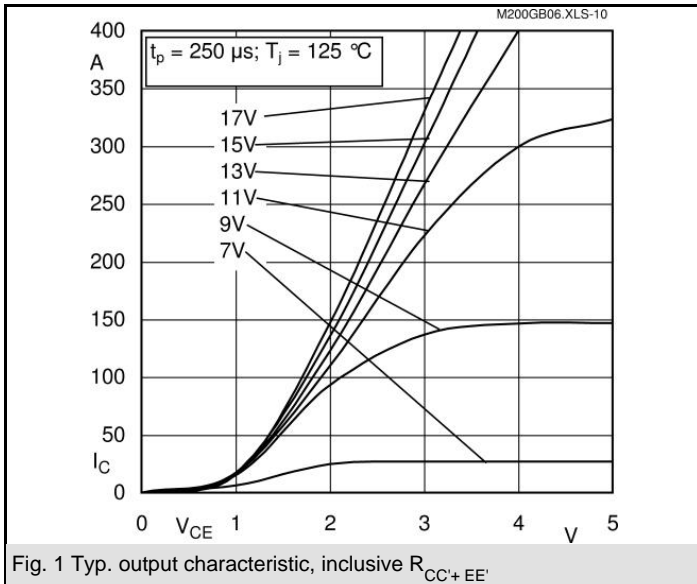
Typical Applications

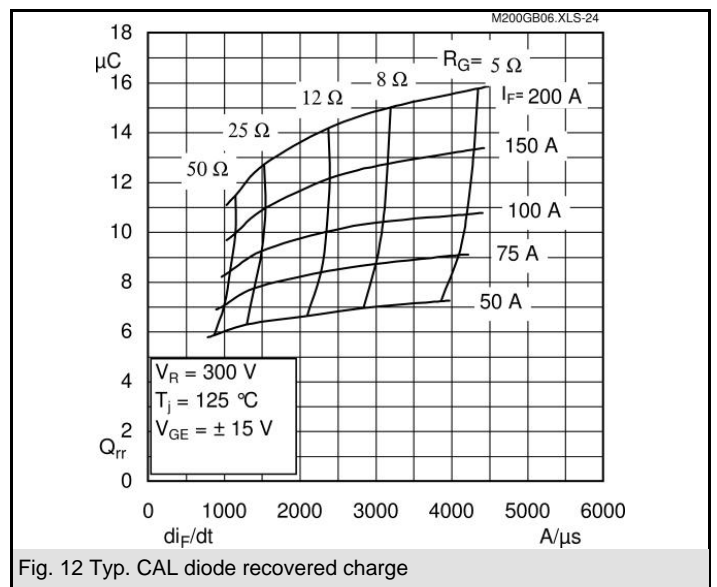
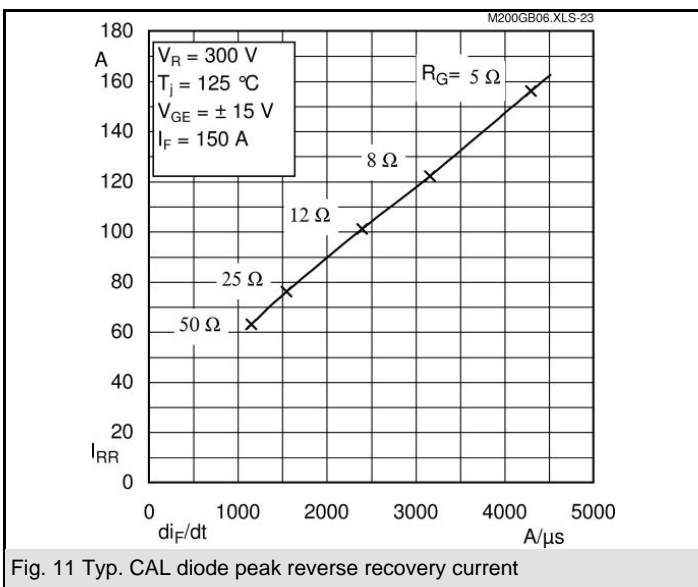
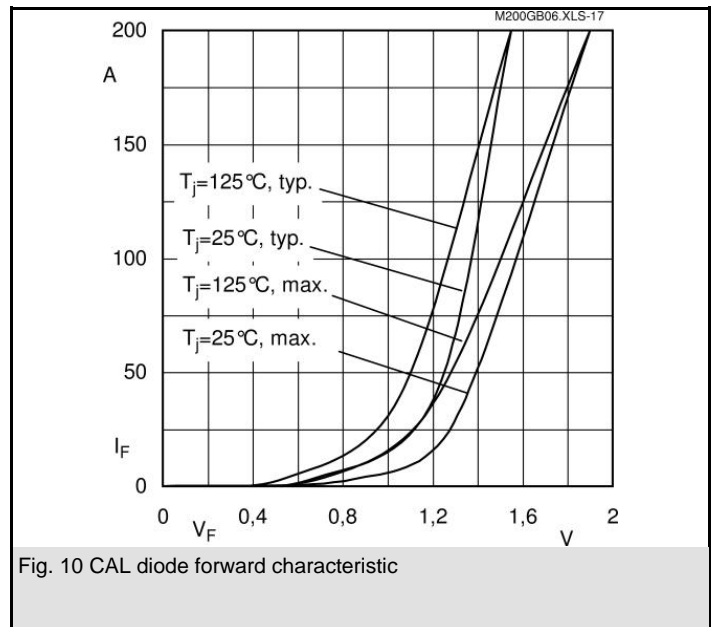
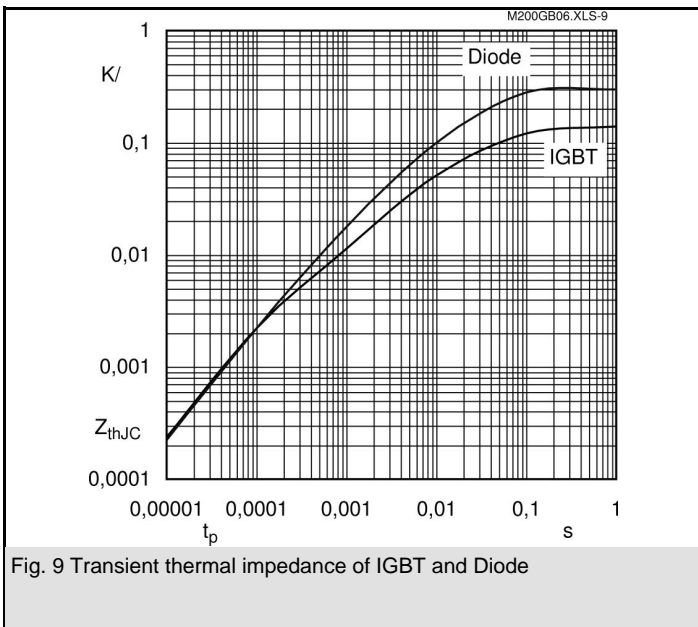
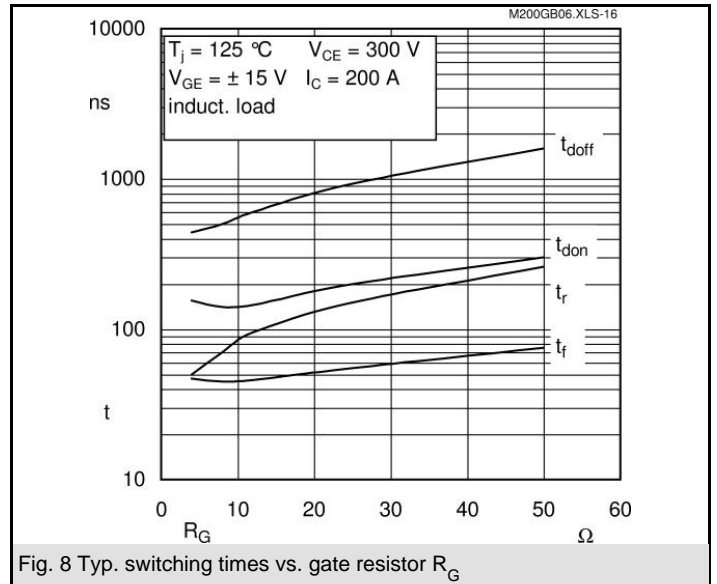
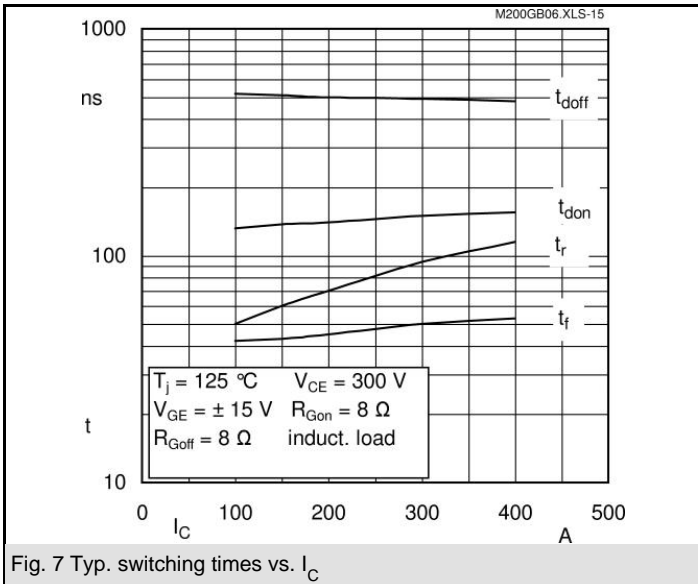
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Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
$R_{\theta j-c}$	i = 1	90	mk/W
$R_{\theta j-c}$	i = 2	39	mk/W
$R_{\theta j-c}$	i = 3	9	mk/W
$R_{\theta j-c}$	i = 4	2	mk/W
$\tau_{th(j-c)}$	i = 1	0,0416	s
$\tau_{th(j-c)}$	i = 2	0,0139	s
$\tau_{th(j-c)}$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



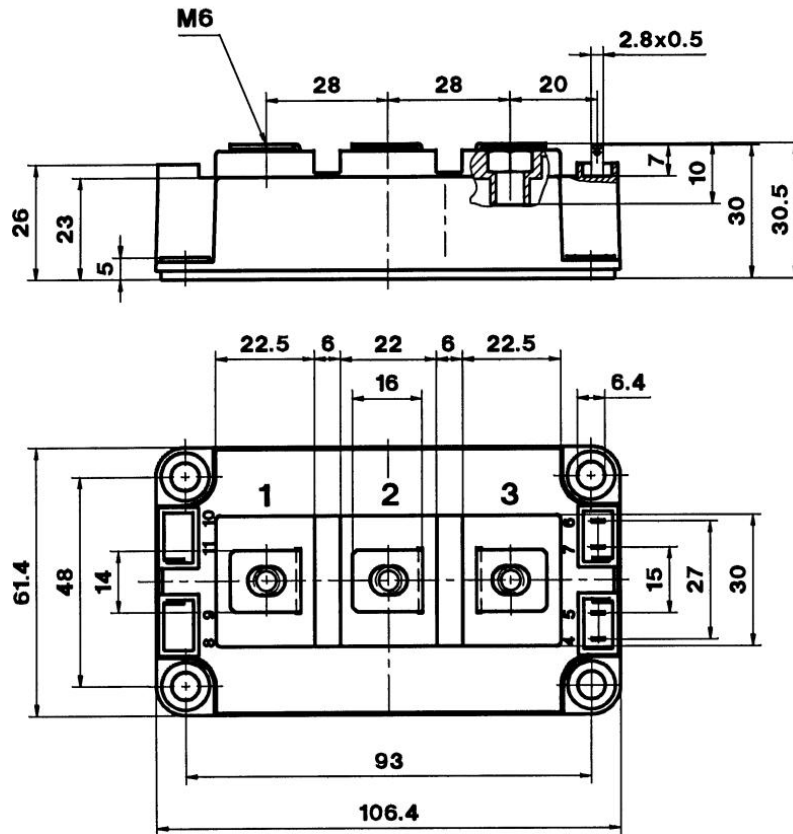


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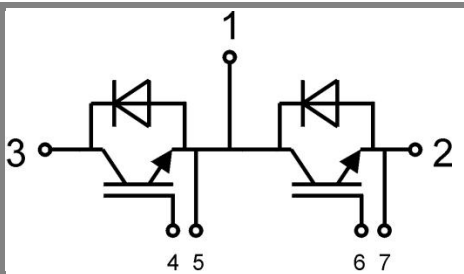
UL Recognized
File no. E 63 532

Dimensions in mm

CASED56



Case D 56



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Case D 56