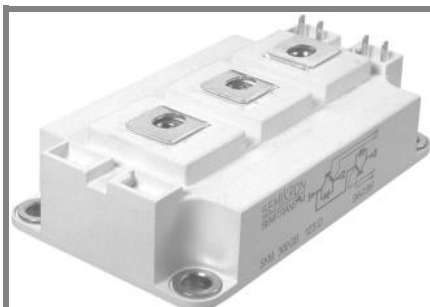




SEMITRANS® 3

Trench IGBT Modules

SKM 400GB066D

Features

- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

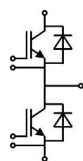
- AC inverter drives
- UPS
- Electronic welders

Remarks

- Case temperature limited to $T_c = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{CC} \leq 360\text{V}$, use of soft R_G necessary !
- Take care of over-voltage caused by stray inductances

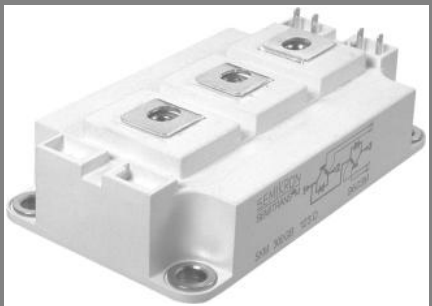
Absolute Maximum Ratings			T _{case} = 25°C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		600	V
I _C	T _j = 175 °C	T _c = 25 °C	500	A
		T _c = 80 °C	380	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		800	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 360 V; V _{GE} ≤ 15 V; T _j = 150 °C V _{CES} < 600 V		6	µs
Inverse Diode				
I _F	T _j = 175 °C	T _c = 25 °C	450	A
		T _c = 80 °C	320	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		800	A
Module				
I _{t(RMS)}			500	A
T _{vj}			- 40 ... +175	°C
T _{stg}			- 40 ... +125	°C
V _{isol}	AC, 1 min.		4000	V

Characteristics			T _{case} = 25°C, unless otherwise specified			
Symbol	Conditions		min.	typ.	max.	Units
IGBT						
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 6,4 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,25	0,75	mA
V _{CE0}	T _j = 25 °C			0,9	1	V
	T _j = 150 °C			0,85	0,9	V
r _{CE}	V _{GE} = 15 V T _j = 25°C			1,4	2,3	mΩ
	T _j = 150°C			2,1	3	mΩ
V _{CE(sat)}	I _{Cnom} = 400 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,45	1,9	V
	T _j = 150°C _{chiplev.}			1,7	2,1	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			24,7		nF
C _{oes}				1,54		nF
C _{res}				0,73		nF
Q _G	V _{GE} = -8V...+15V			3000		nC
R _{Gint}	T _j = °C			2		Ω
t _{d(on)}	R _{Gon} = 1,5 Ω	V _{CC} = 300V I _C = 400A		200		ns
t _r				60		ns
E _{on}				8		mJ
t _{d(off)}	R _{Goff} = 1,5 Ω	T _j = 150 °C V _{GE} = -8V/+15V		560		ns
t _f				53		ns
E _{off}				16		mJ
R _{th(j-c)}	per IGBT				0,12	K/W



GB

SKM 400GB066D



SEMITRANS® 3

Trench IGBT Modules

SKM 400GB066D

Features

- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

Remarks

- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{cc} \leq 360\text{V}$, use of soft R_G necessary !
- Take care of over-voltage caused by stray inductances



GB

Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 400 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.}		1,4	1,6	V
V _{F0}		T _j = 25 °C		0,95	1	V
r _F		T _j = 25 °C		1,1	1,5	mΩ
I _{RRM}	I _F = 400 A	T _j = 150 °C		410		A
Q _{rr}	di/dt = 7250 A/μs			62		μC
E _{rr}	V _{GE} = -8 V; V _{CC} = 300 V			14		mJ
R _{th(j-c)D}	per diode				0,2	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.

SKM 400GB066D



SEMITRANS® 3

Trench IGBT Modules

SKM 400GB066D

Features

- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

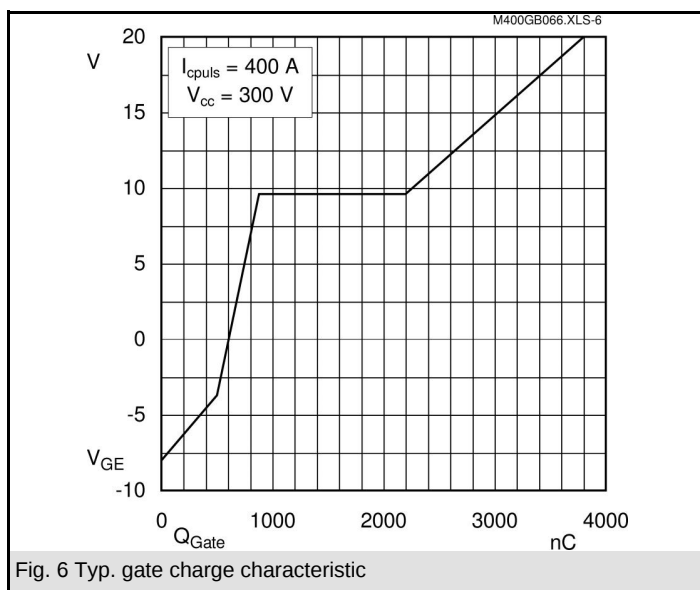
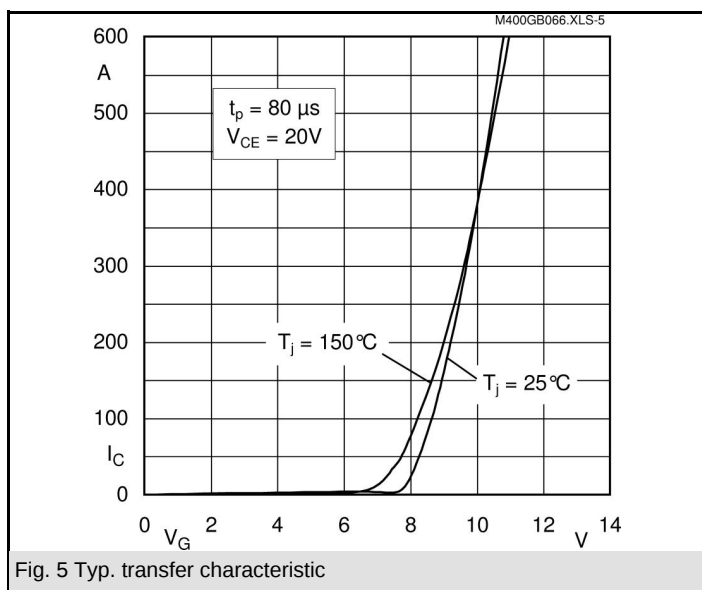
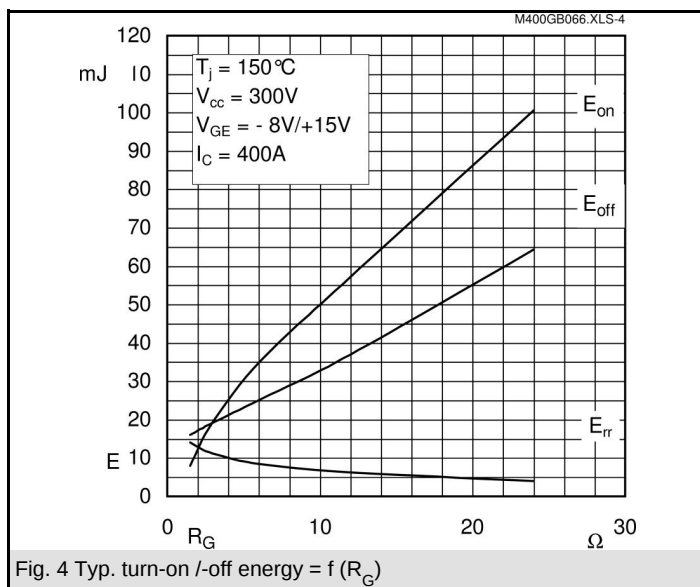
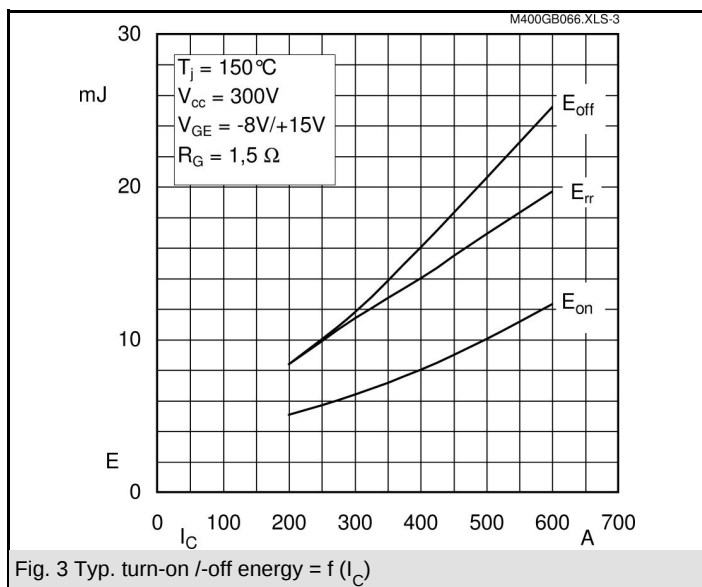
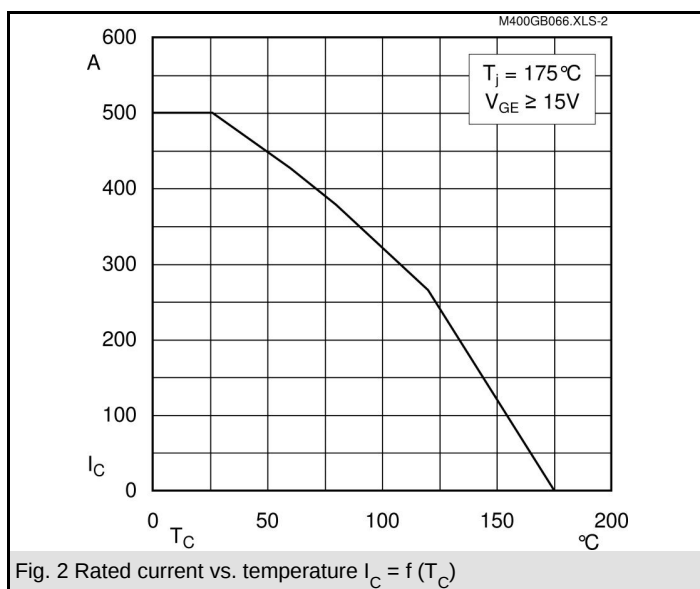
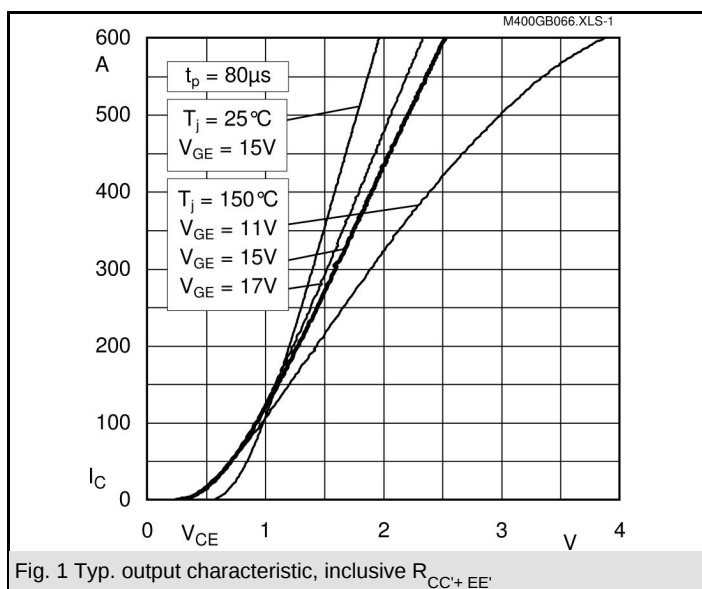
Remarks

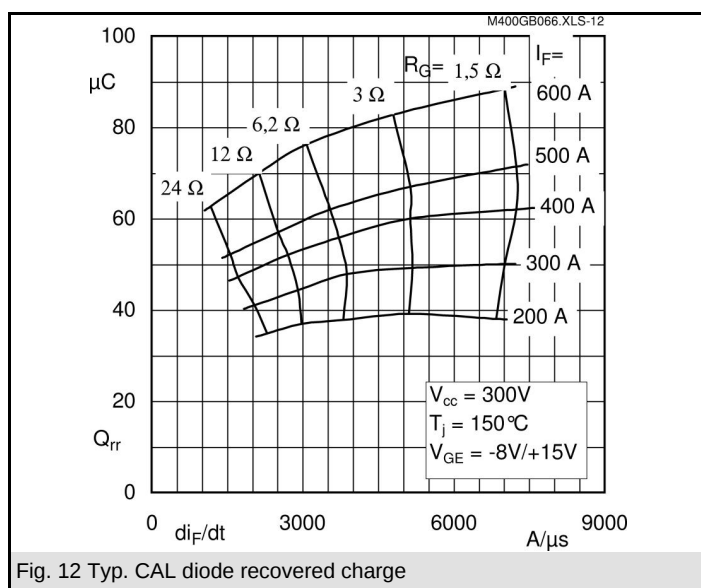
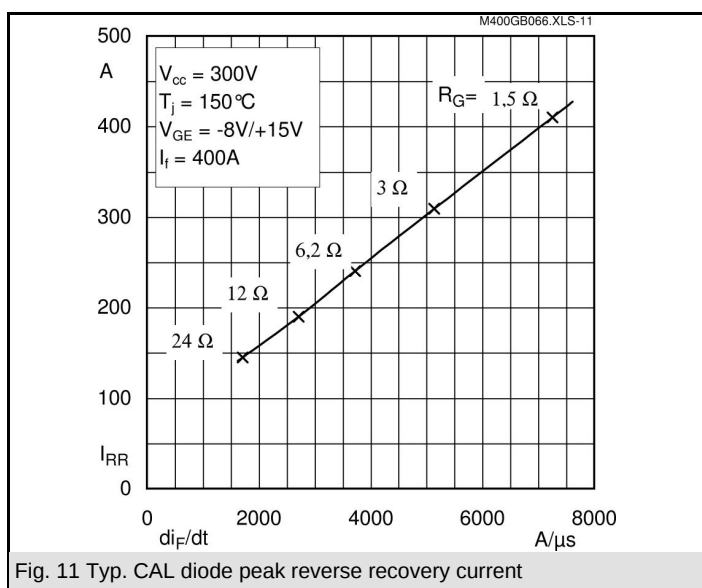
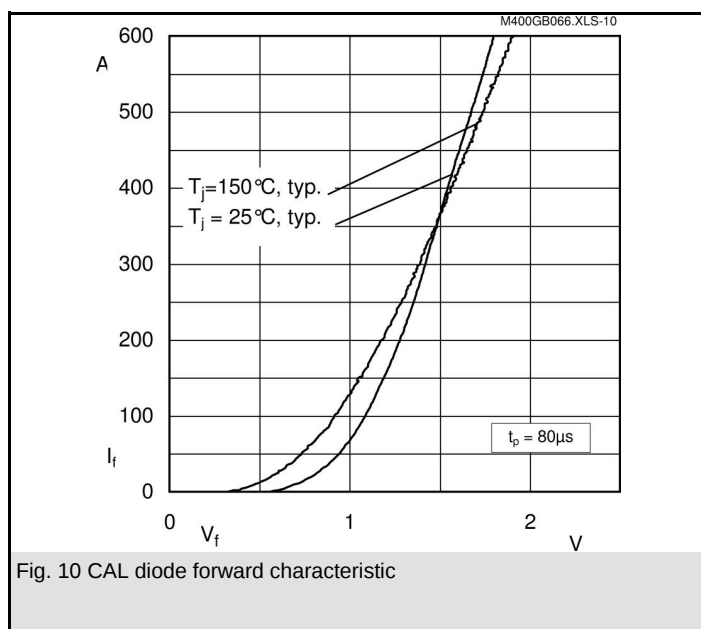
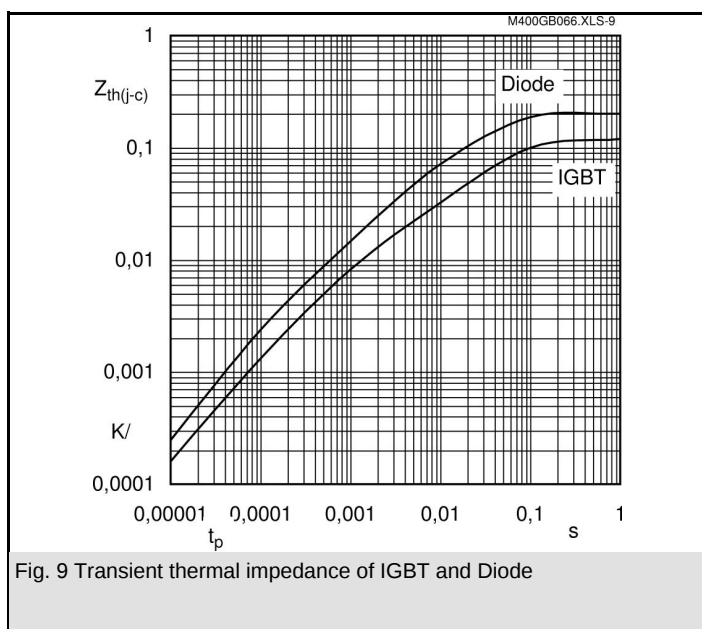
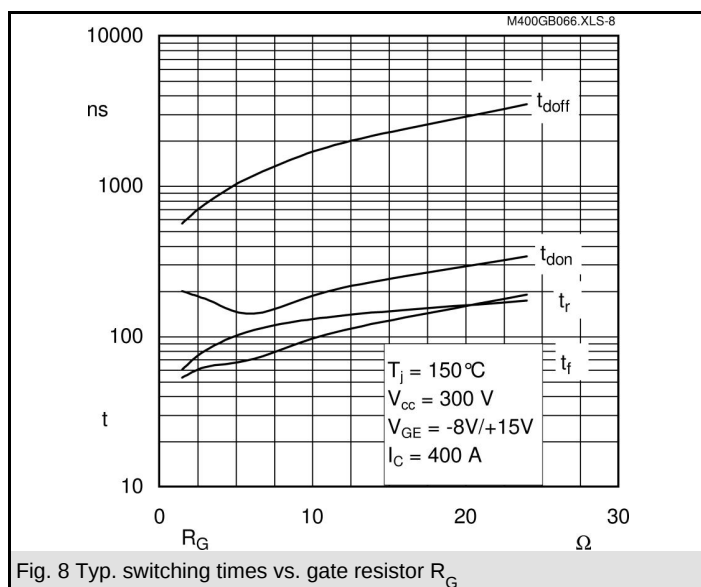
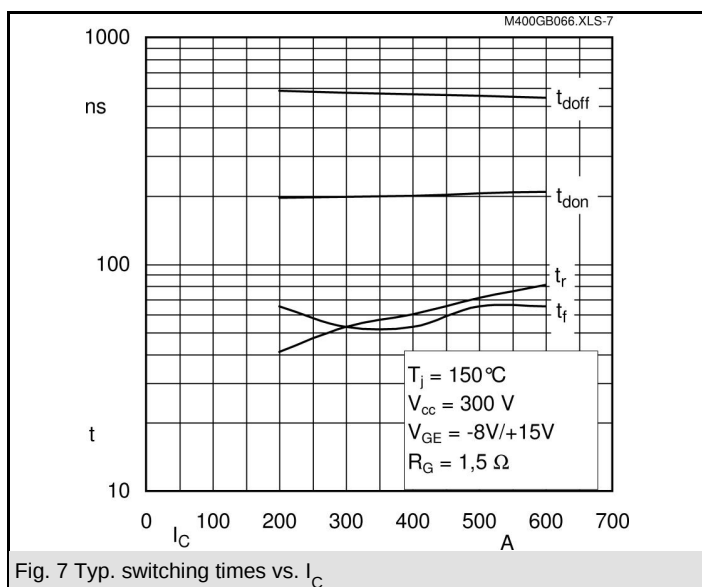
- Case temperature limited to $T_C = 125^\circ\text{C}$ max, recommended $T_{op} = -40 \dots +150^\circ\text{C}$
- Product reliability results are valid for $T_j \leq 150^\circ\text{C}$
- Short circuit data: $t_p \leq 6\mu\text{s}$; $V_{GE} \leq 15\text{V}$; $T_j = 150^\circ\text{C}$; $V_{cc} \leq 360\text{V}$, use of soft R_G necessary !
- Take care of over-voltage caused by stray inductances

Z_{th}	Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$				
R_i		$i = 1$	80	mk/W
R_i		$i = 2$	22,5	mk/W
R_i		$i = 3$	6,4	mk/W
R_i		$i = 4$	1,1	mk/W
τ_{u_i}		$i = 1$	0,0447	s
τ_{u_i}		$i = 2$	0,0223	s
τ_{u_i}		$i = 3$	0,0015	s
τ_{u_i}		$i = 4$	0,0002	s
$Z_{th(j-c)D}$				
R_i		$i = 1$	130	mk/W
R_i		$i = 2$	55	mk/W
R_i		$i = 3$	12,5	mk/W
R_i		$i = 4$	2,5	mk/W
τ_{u_i}		$i = 1$	0,054	s
τ_{u_i}		$i = 2$	0,01	s
τ_{u_i}		$i = 3$	0,0015	s
τ_{u_i}		$i = 4$	0,1	s



GB

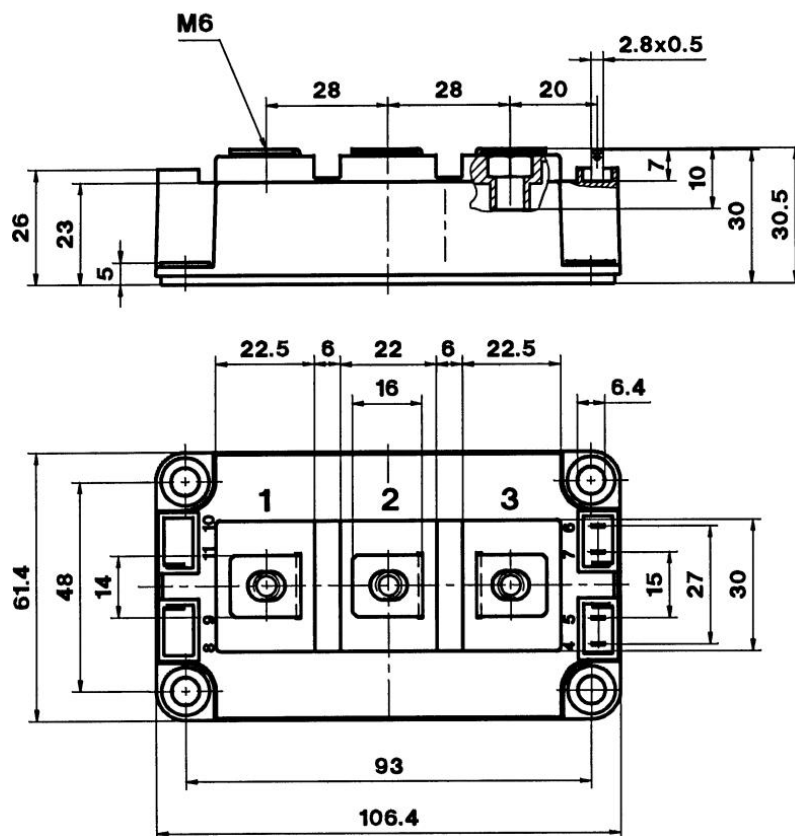




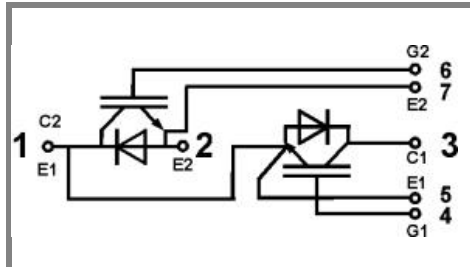
SKM 400GB066D

UL recognized, file no. E 63 532

CASED56



Case D 56



GB

Case D56