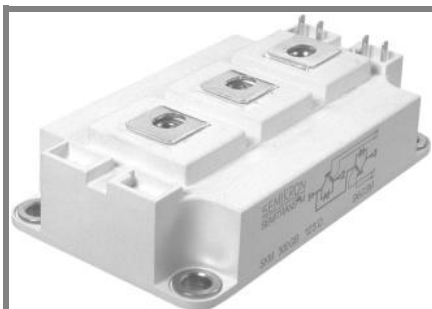




SEMITRANS® 3

Trench IGBT Module

SKM 400GB126D

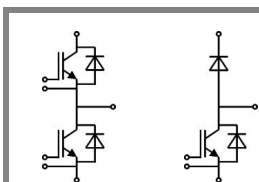
SKM 400GAL126D

Features

- Homogeneous Si
- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

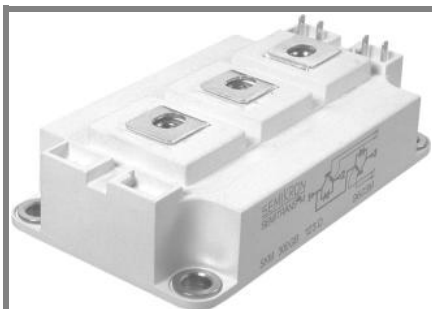


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Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _{case} = 25 °C	470	A
		T _{case} = 80 °C	330	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		600	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	400	A
		T _{case} = 80 °C	270	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		600	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	2200	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	400	A
		T _{case} = 80 °C	270	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		600	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	2200	A
Module				
I _{t(RMS)}			500	A
T _{vj}			- 40 ...+ 150	°C
T _{stg}			- 40 ...+ 125	°C
V _{isol}	AC, 1 min.		4000	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 = 12 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _j = 25 °C		0,15	0,45	mA
V _{CE0}		T _j = 25 °C		1	1,2	V
		T _j = 125 °C		0,9		V
r _{CE}	V _{GE} = 15 V	T _j = 25°C		2,3	3,2	mΩ
		T _j = 125°C		3,7		mΩ
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V	T _j = 25°C _{chiplev.}		1,7	2,15	V
		T _j = 125°C _{chiplev.}		2		V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		23,1		nF
C _{oes}				1,9		nF
C _{res}				1,2		nF
Q _G	V _{GE} = -8V ... +20V			2800		nC
R _{Gint}	T _j = °C			2,5		Ω
t _{d(on)}	R _{Gon} = 2 Ω	V _{CC} = 600V I _C = 300A		330		ns
t _r				50		ns
E _{on}				29		mJ
t _{d(off)}	R _{Goff} = 2 Ω	T _j = 125 °C V _{GE} = ±15V		650		ns
t _f				110		ns
E _{off}				48		mJ
R _{th(j-c)}	per IGBT				0,08	K/W



SEMITRANS® 3

Trench IGBT Module

SKM 400GB126D

SKM 400GAL126D

Features

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- High short circuit capability, self limiting to $6 \times I_c$

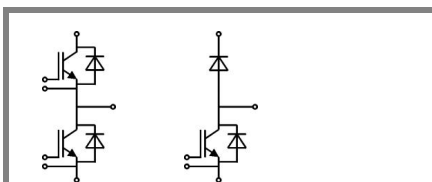
Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8	V
	$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8	V
V_{F0}					
	$T_j = 25 \text{ }^\circ\text{C}$		1	1,1	V
	$T_j = 125 \text{ }^\circ\text{C}$		0,8	0,9	V
r_F					
	$T_j = 25 \text{ }^\circ\text{C}$		2	2,3	mΩ
	$T_j = 125 \text{ }^\circ\text{C}$		2,7	3	mΩ
I_{RRM}	$I_F = 300 \text{ A}$		390		A
Q_{rr}	$di/dt = 6300 \text{ A}/\mu\text{s}$		77		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		27		mJ
$R_{th(j-c)D}$	per diode			0,18	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8	V
	$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$		1,6	1,8	V
V_{F0}					
	$T_j = 25 \text{ }^\circ\text{C}$		1	1,1	V
	$T_j = 125 \text{ }^\circ\text{C}$		0,8	0,9	V
r_F					
	$T_j = 25 \text{ }^\circ\text{C}$		2	2,3	V
	$T_j = 125 \text{ }^\circ\text{C}$		2,7	3	V
I_{RRM}	$I_F = 300 \text{ A}$		390		A
Q_{rr}	$di/dt = 6300 \text{ A}/\mu\text{s}$		77		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$		27		mJ
$R_{th(j-c)D}$	per diode			0,18	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.

* 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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Trench IGBT Module

SKM 400GB126D
SKM 400GAL126D

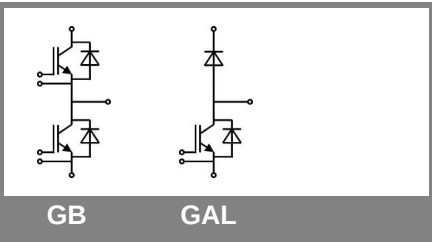
Features

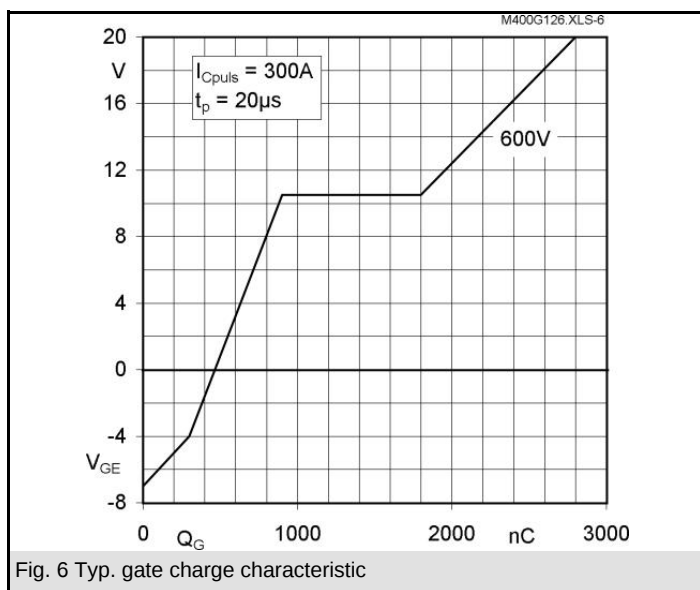
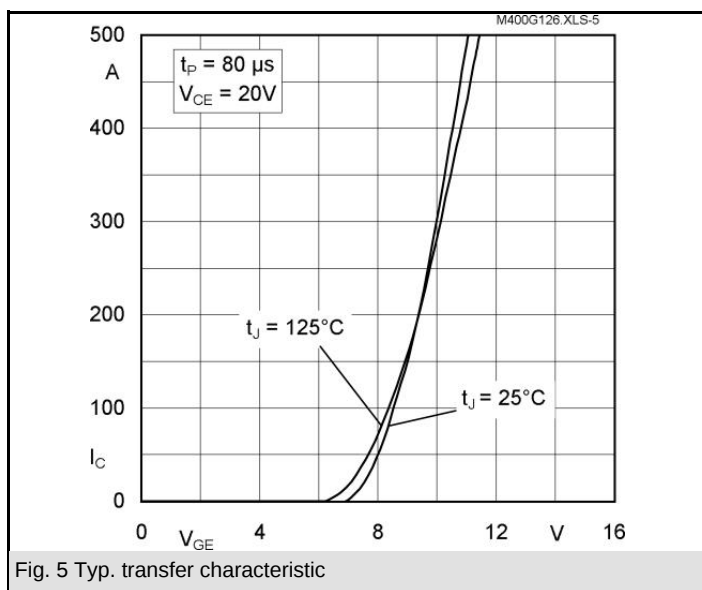
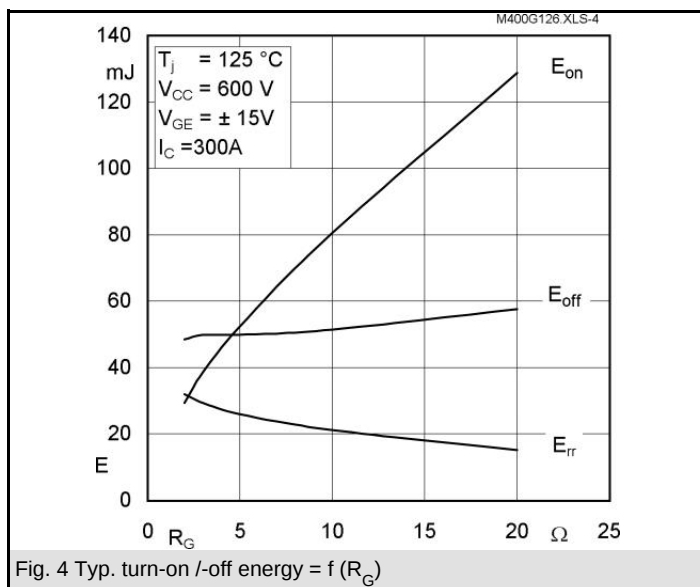
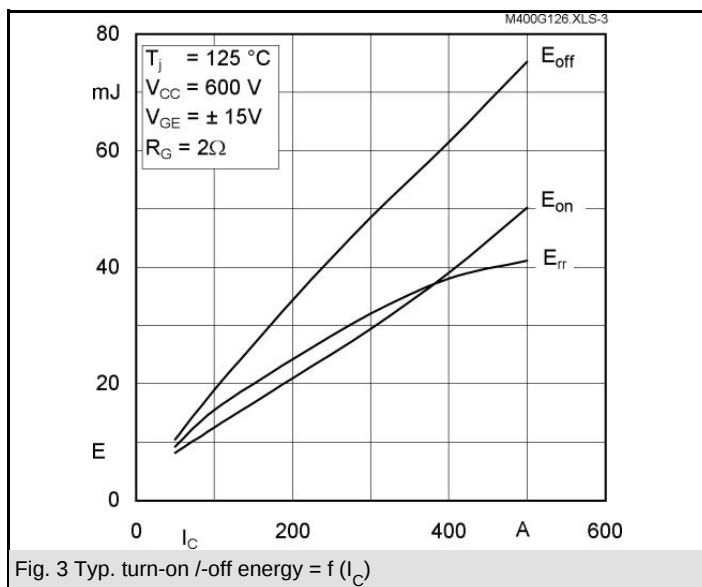
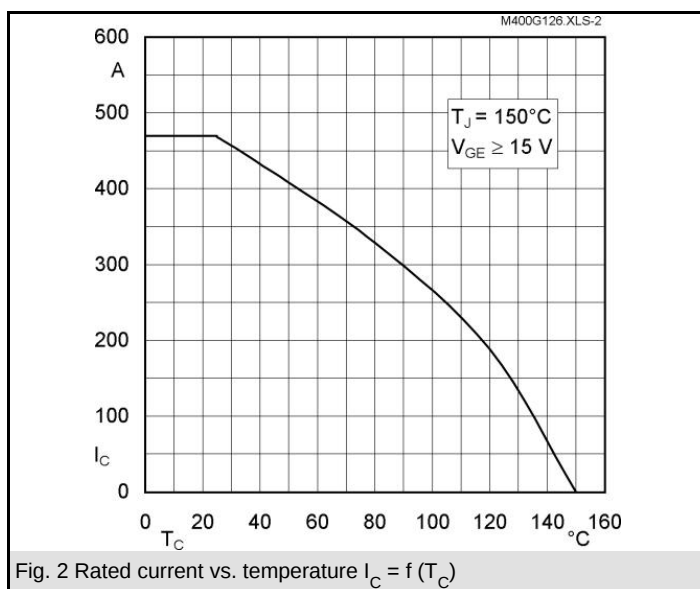
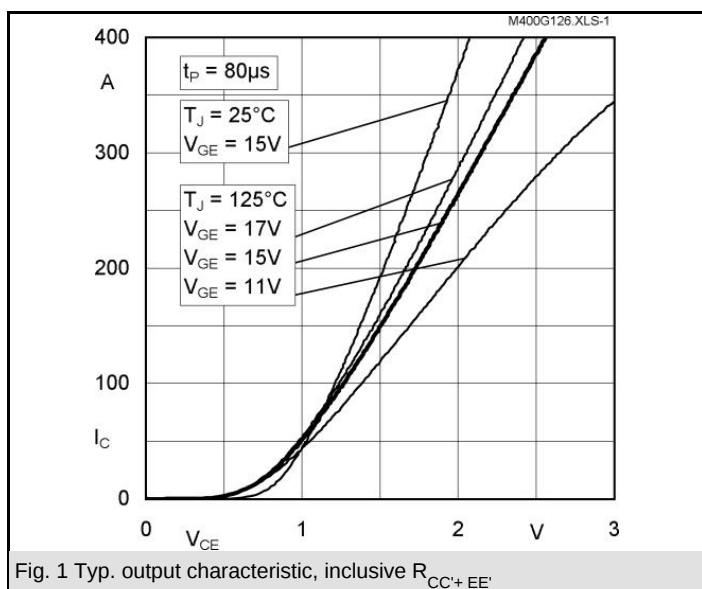
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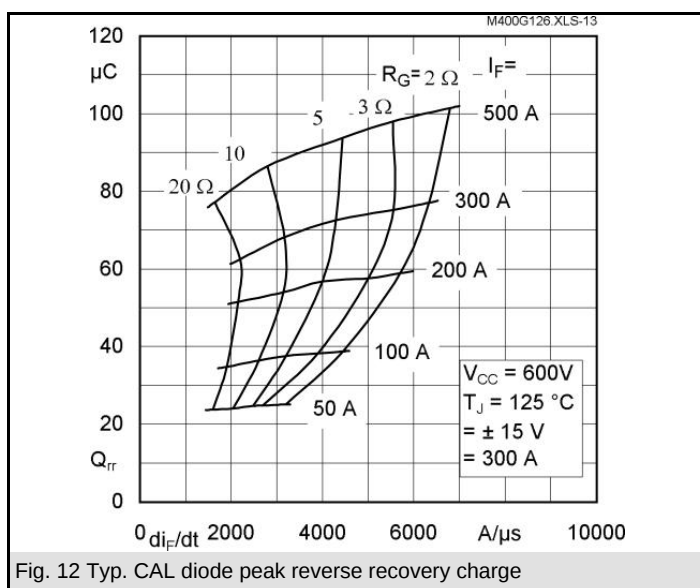
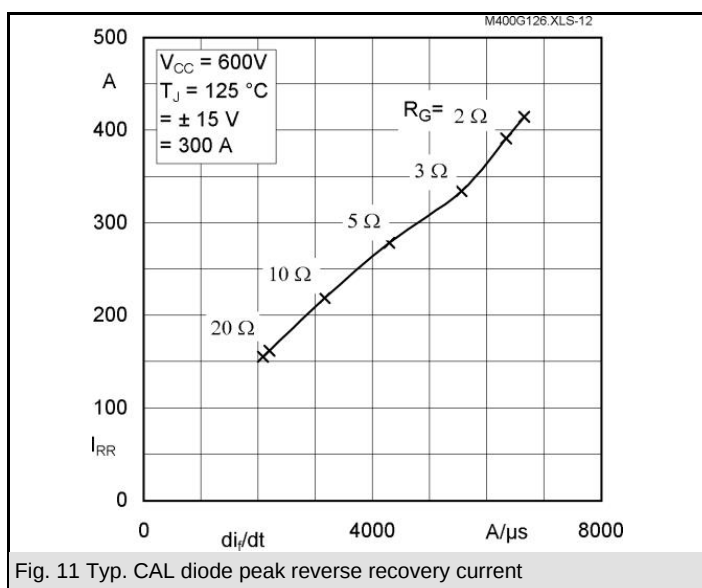
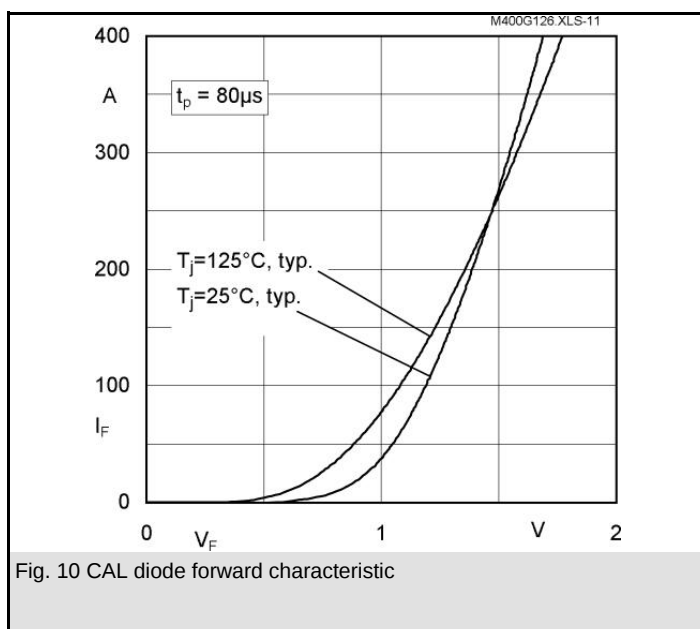
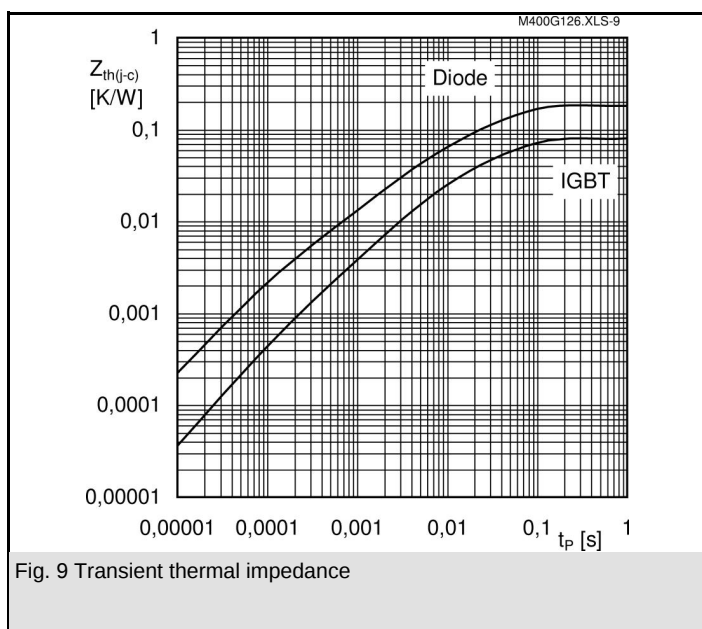
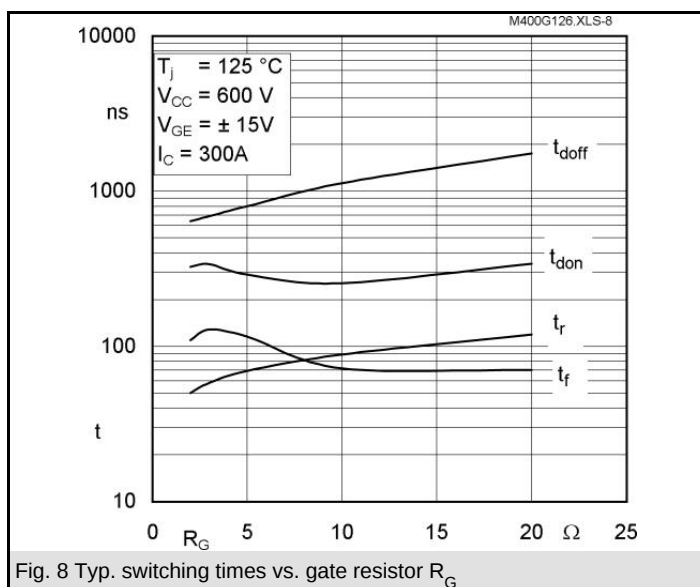
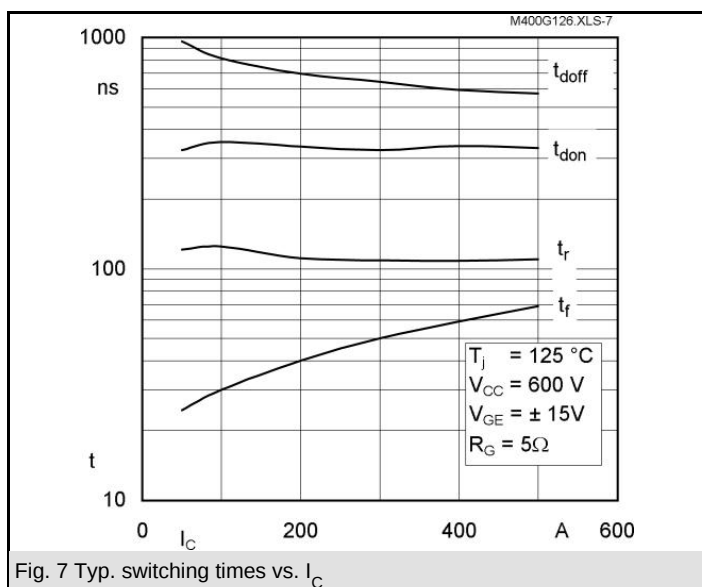
Typical Applications*

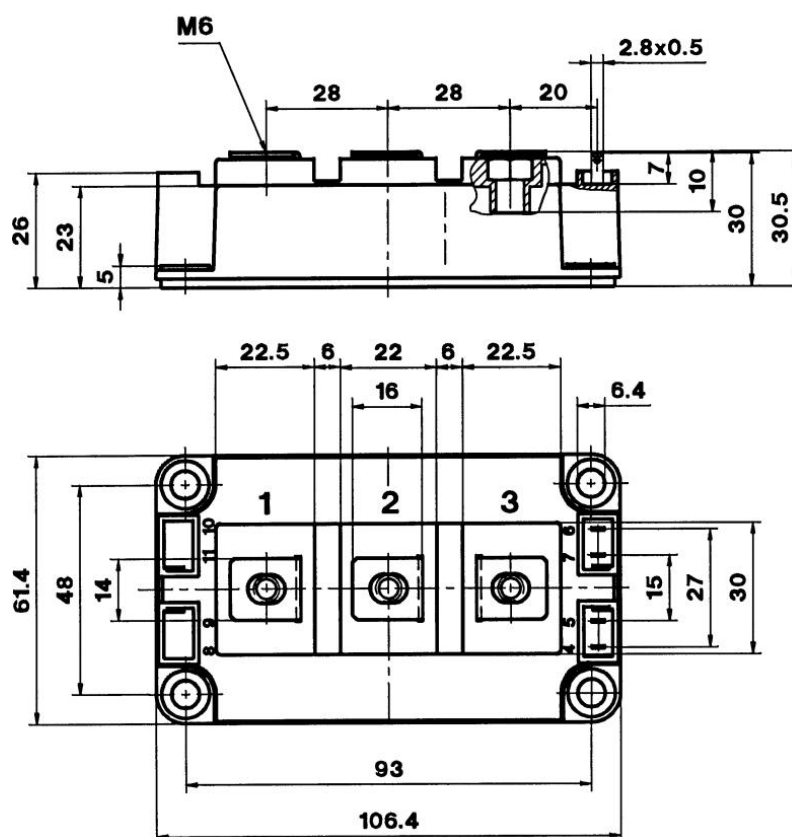
- AC inverter drives
- UPS
- Electronic welders

Z_{th}			
Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	55	mk/W
R_i	$i = 2$	21	mk/W
R_i	$i = 3$	3,6	mk/W
R_i	$i = 4$	0,4	mk/W
τ_{a_i}	$i = 1$	0,0393	s
τ_{a_i}	$i = 2$	0,0171	s
τ_{a_i}	$i = 3$	0,002	s
τ_{a_i}	$i = 4$	0,0002	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	120	mk/W
R_i	$i = 2$	48	mk/W
R_i	$i = 3$	10	mk/W
R_i	$i = 4$	2	mk/W
τ_{a_i}	$i = 1$	0,0262	s
τ_{a_i}	$i = 2$	0,0417	s
τ_{a_i}	$i = 3$	0,0012	s
τ_{a_i}	$i = 4$	0,001	s

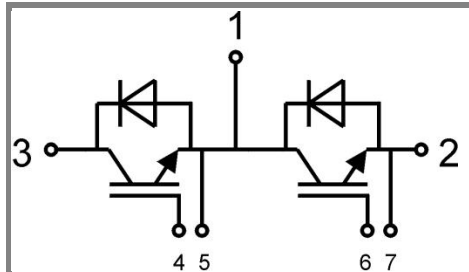






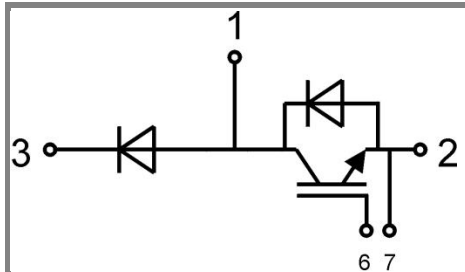


Case D 56



GB

Case D 56



GAL

Case D 57 (→ D 56)