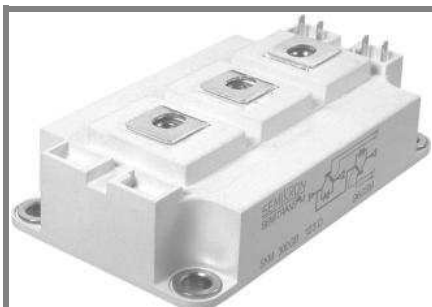




SEMITRANS® 3

Trench IGBT Modules

SKM 200GB126D

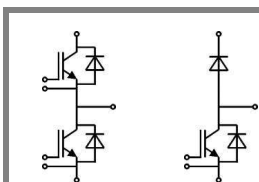
SKM 200GAL126D

Features

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

Typical Applications*

- Electronic welders
- AC inverter drives
- UPS

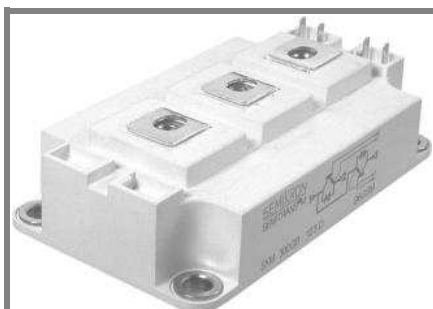


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Absolute Maximum Ratings				$T_{case} = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions			Values	Units
IGBT					
V_{CES}	$T_j = 25^\circ\text{C}$			1200	V
I_C	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$		260	A
		$T_c = 80^\circ\text{C}$		190	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$			300	A
V_{GES}				± 20	V
t_{psc}	$V_{CC} = 600\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 1200\text{ V}$			10	μs
Inverse Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$		200	A
		$T_c = 80^\circ\text{C}$		140	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			300	A
I_{FSM}	$t_p = 10\text{ ms; sin.}$	$T_j = 150^\circ\text{C}$		1100	A
Freewheeling Diode					
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$		200	A
		$T_c = 80^\circ\text{C}$		140	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$			300	A
I_{FSM}	$t_p = 10\text{ ms; sin.}$	$T_j = 150^\circ\text{C}$		1100	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.			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 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES}	T _J = 25 °C		0,1	0,3	mA
		T _J = 125 °C				mA
V _{CE0}		T _J = 25 °C		1	1,2	V
		T _J = 125 °C		0,9	1,1	V
r _{CE}	V _{GE} = 15 V	T _J = 25°C		4,7	6,3	mΩ
		T _J = 125°C		7,3	9	mΩ
V _{CE(sat)}	I _{Cnom} = 150 A, V _{GE} = 15 V	T _J = 25°C _{chiplev.}		1,7	2,15	V
		T _J = 125°C _{chiplev.}		2	2,45	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V	f = 1 MHz		10,8		nF
C _{oes}				0,9		nF
C _{res}				0,9		nF
Q _G	V _{GE} = -8V - +20V			1530		nC
R _{Gint}	T _J = 25 °C			5		Ω
t _{d(on)}	R _{Gon} = 1,5 Ω	V _{CC} = 600V I _C = 150A		260		ns
t _r				40		ns
E _{on}				18		mJ
t _{d(off)}	R _{Goff} = 1,5 Ω	T _J = 125 °C V _{GE} = ±15V		540		ns
t _f				110		ns
E _{off}						mJ
R _{th(j-c)}	per IGBT				0,13	K/W



SEMITRANS® 3

Trench IGBT Modules

SKM 200GB126D

SKM 200GAL126D

Features

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

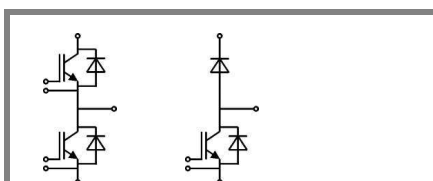
Typical Applications*

- Electronic welders
- AC inverter drives
- UPS

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 150 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		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					
	$T_j = 25 \text{ }^\circ\text{C}$		4	4,7	mΩ
	$T_j = 125 \text{ }^\circ\text{C}$		5,3	6	mΩ
I_{RRM}	$I_F = 150 \text{ A}$		240		A
Q_{rr}	$di/dt = 5000 \text{ A}/\mu\text{s}$		42		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
FWD					
$V_F = V_{EC}$	$I_{Fnom} = 150 \text{ A}; V_{GE} = 0 \text{ V}$				
	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$		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					
	$T_j = 25 \text{ }^\circ\text{C}$		4	4,7	V
	$T_j = 125 \text{ }^\circ\text{C}$		5,3	6	V
I_{RRM}	$I_F = 150 \text{ A}$		240		A
Q_{rr}	$di/dt = 5000 \text{ A}/\mu\text{s}$		42		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 600 \text{ V}$				mJ
$R_{th(j-c)FD}$	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 M5	2,5		5	Nm
w				325	g

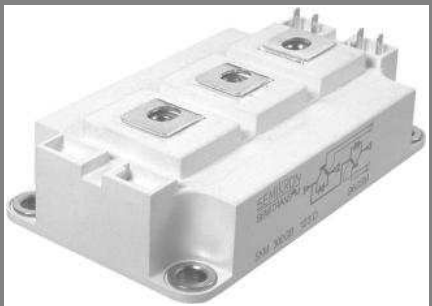
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* 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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SEMITRANS® 3

Trench IGBT Modules

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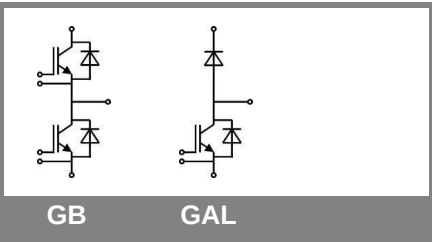
Features

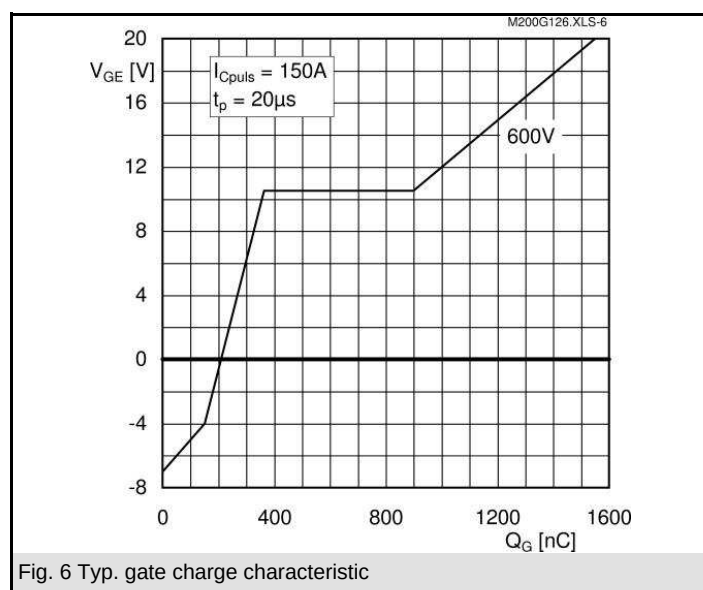
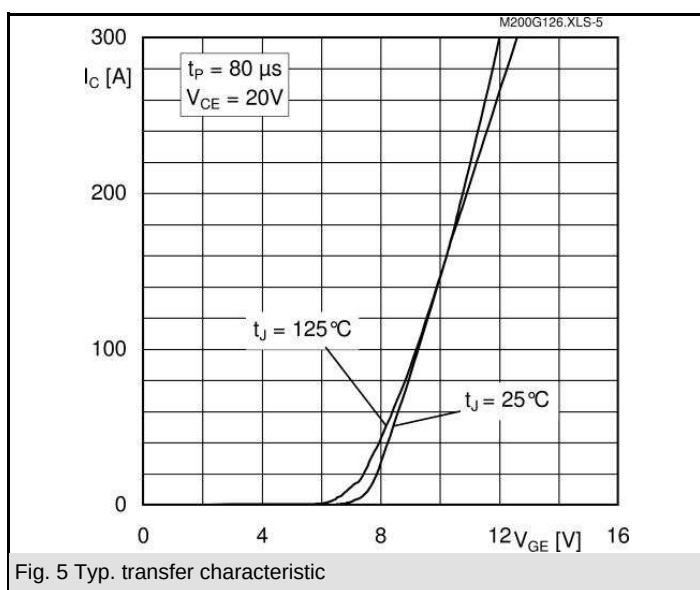
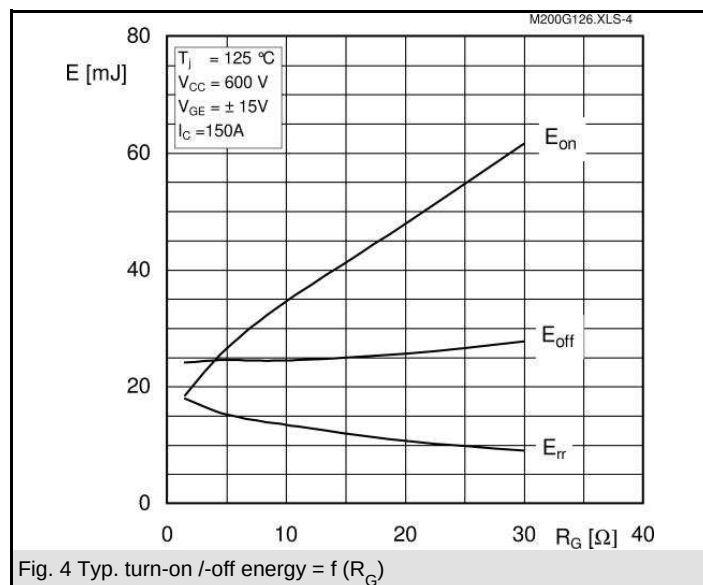
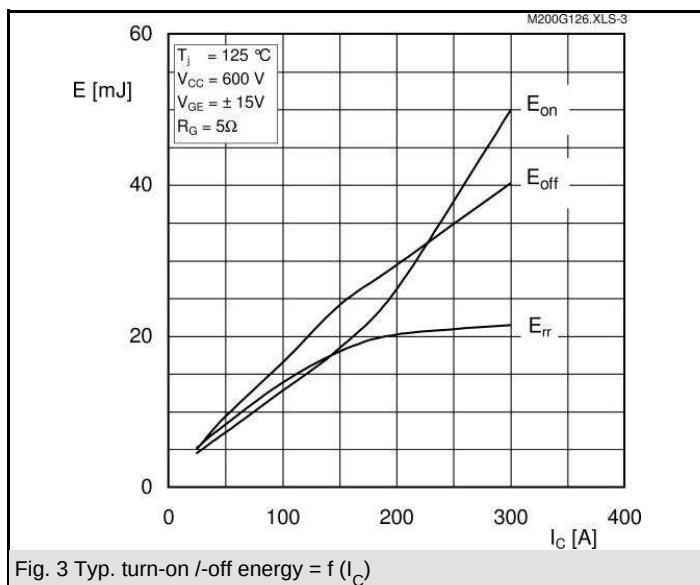
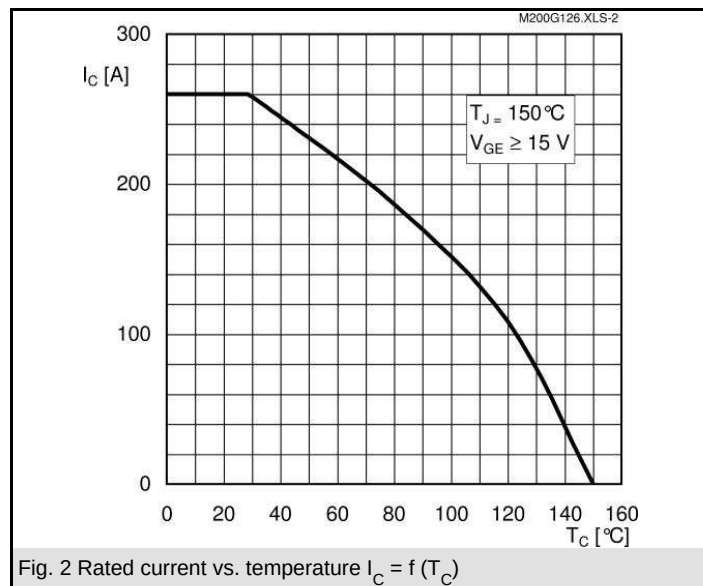
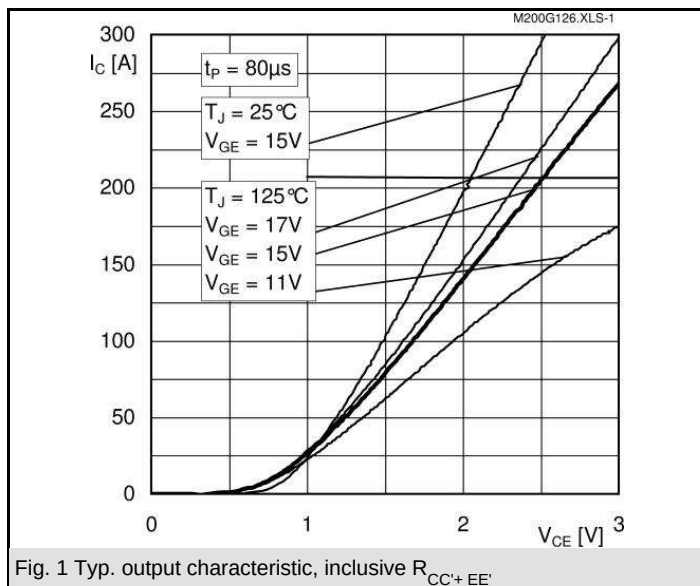
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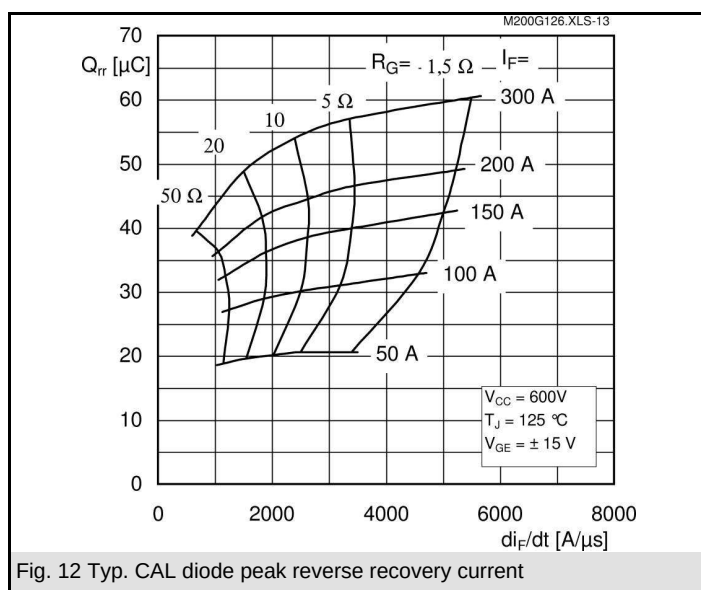
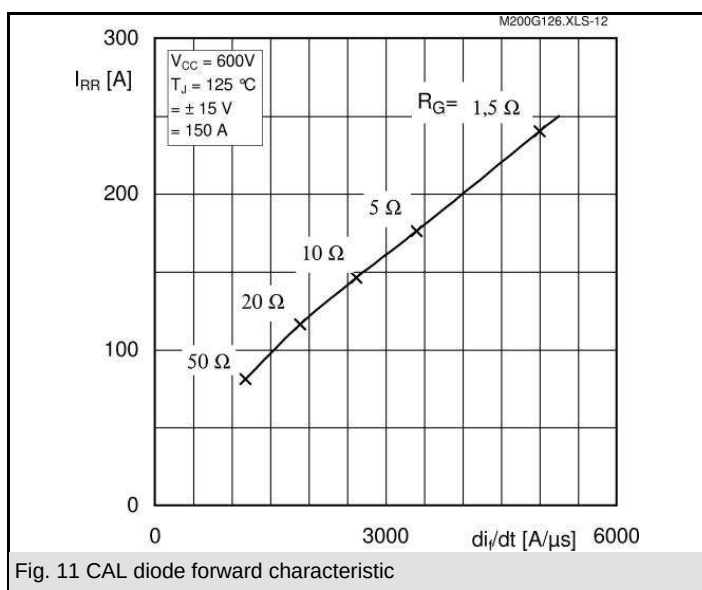
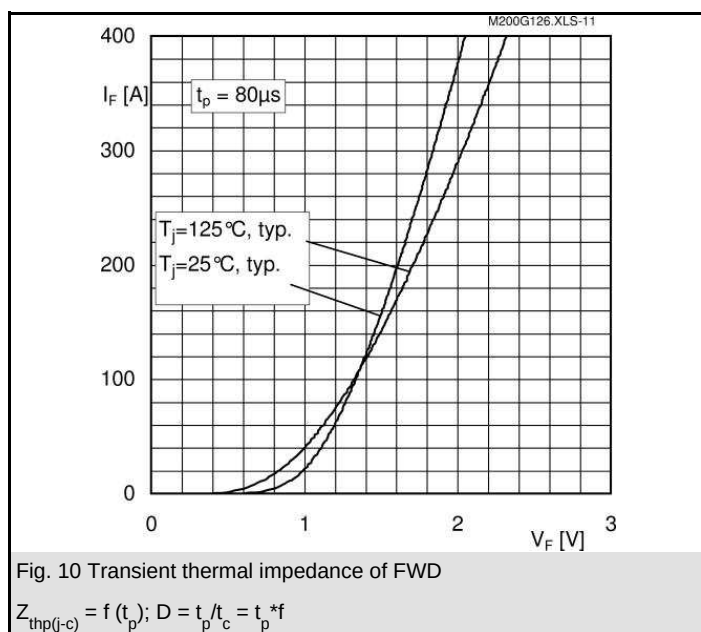
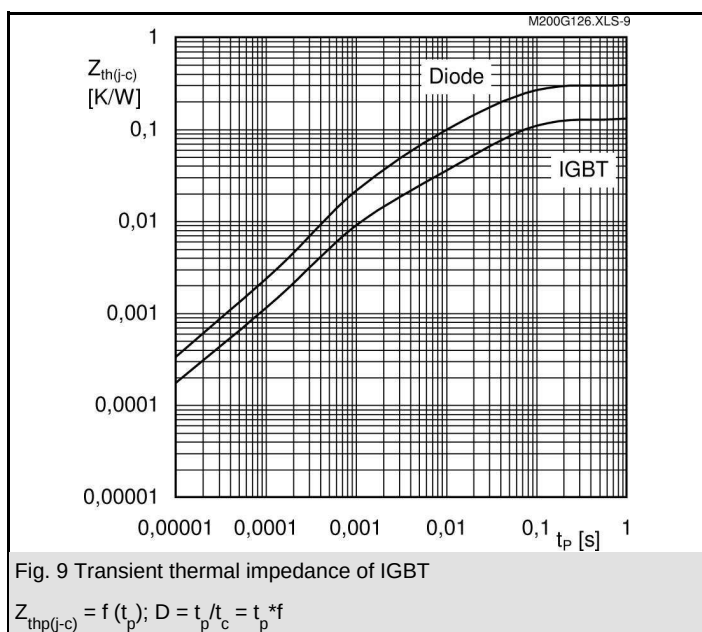
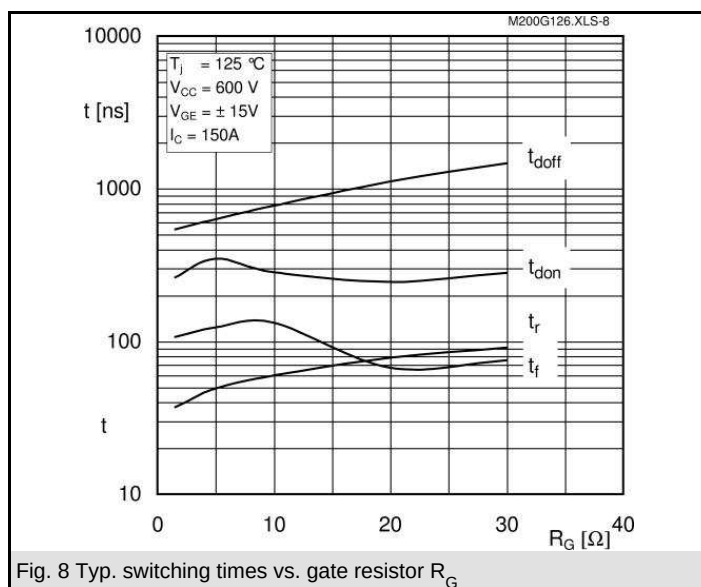
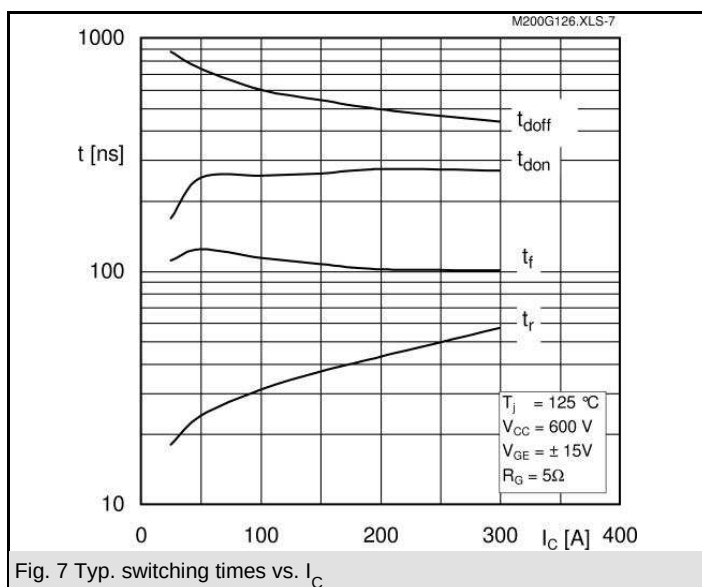
Typical Applications*

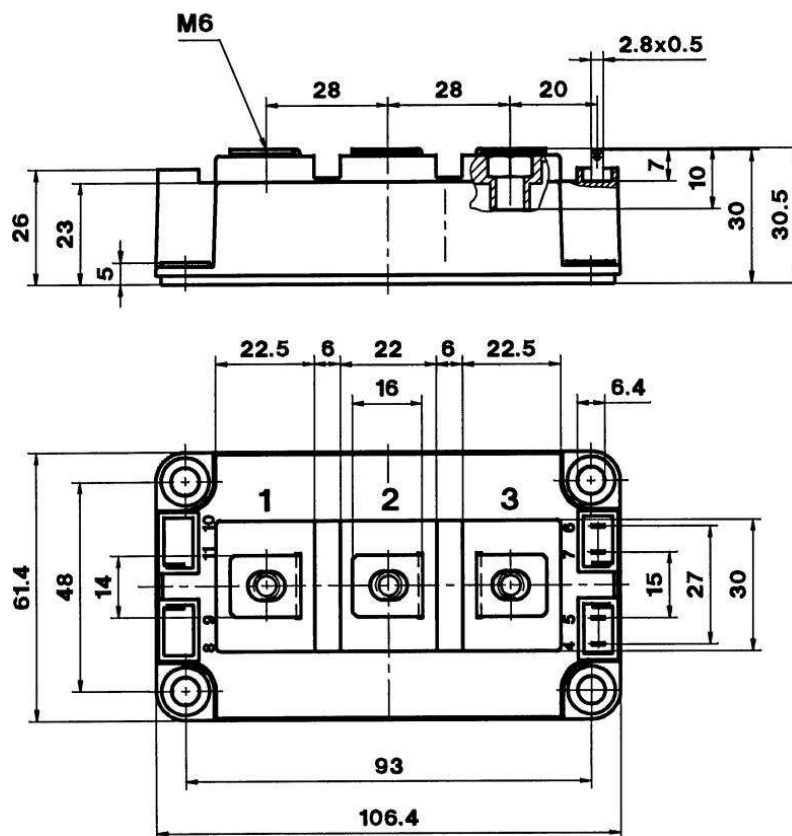
- Electronic welders
- AC inverter drives
- UPS

Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	95	mk/W
R_i	$i = 2$	27	mk/W
R_i	$i = 3$	6,7	mk/W
R_i	$i = 4$	1,3	mk/W
τ_{a_i}	$i = 1$	0,0744	s
τ_{a_i}	$i = 2$	0,0087	s
τ_{a_i}	$i = 3$	0,002	s
τ_{a_i}	$i = 4$	0,0001	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	200	mk/W
R_i	$i = 2$	80	mk/W
R_i	$i = 3$	17	mk/W
R_i	$i = 4$	3	mk/W
τ_{a_i}	$i = 1$	0,0536	s
τ_{a_i}	$i = 2$	0,0056	s
τ_{a_i}	$i = 3$	0,09	s
τ_{a_i}	$i = 4$	0,0002	s

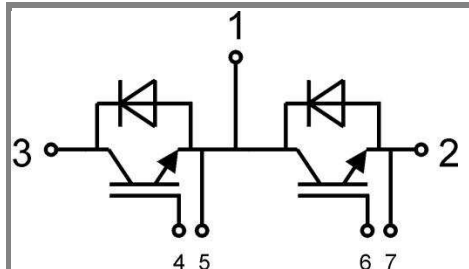






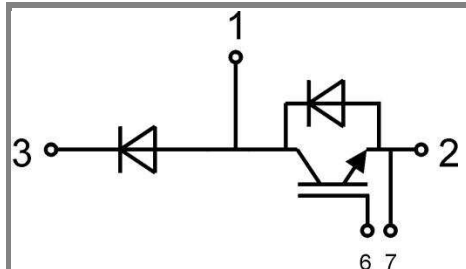


Case D 56



Case D56

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Case D57

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