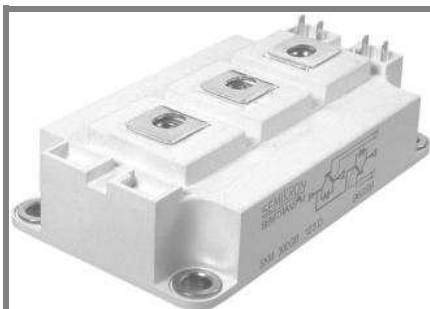




SEMITRANS® 3

Trench IGBT Module

SKM 600GB126D

SKM 600GAL126D

Features

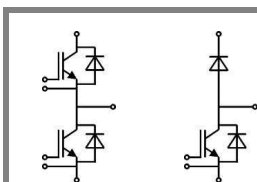
- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

Remarks

- $I_{DC} \leq 500A$ for $T_{Terminal} = 100\text{ °C}$

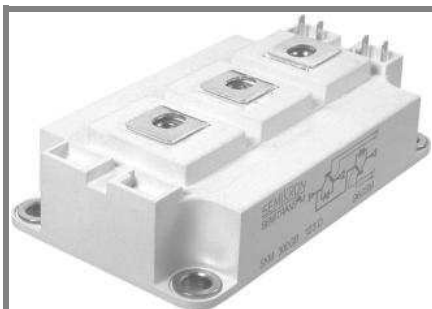


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Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	660	A
		T _c = 80 °C	460	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		800	A
V _{GES}			± 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 _c = 25 °C	490	A
		T _c = 80 °C	340	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		800	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	2880	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _c = 25 °C	490	A
		T _c = 80 °C	340	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		800	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	2880	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 = 16 mA		5	5,8	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _J = 25 °C T _J = 125 °C			0,2	0,6	mA mA
V _{CE0}	T _J = 25 °C T _J = 125 °C			1 0,9	1,2 1,1	V V
r _{CE}	V _{GE} = 15 V T _J = 25°C T _J = 125°C			1,8 2,8	2,4 3,4	mΩ mΩ
V _{CE(sat)}	I _{Cnom} = 400 A, V _{GE} = 15 V T _J = 25°C _{chiplev.} T _J = 125°C _{chiplev.}			1,7 2	2,15 2,45	V V
C _{ies} C _{oes} C _{res}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			32 11 2,2		nF nF nF
Q _G	V _{GE} = -8V - +20V			3600		nC
R _{Gint}	T _J = °C			1,88		Ω
t _{d(on)} t _r E _{on}	R _{Gon} = 2 Ω	V _{CC} = 600V I _C = 400A		290 60 39		ns ns mJ
t _{d(off)} t _f E _{off}	R _{Goff} = 2 Ω	T _J = 125 °C V _{GE} = ± 15V		670 80 64		ns ns mJ
R _{th(j-c)}	per IGBT				0,055	K/W



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SKM 600GAL126D

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Typical Applications*

- AC inverter drives
- UPS
- Electronic welders

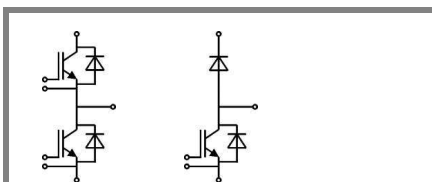
Remarks

- $I_{DC} \leq 500A$ for $T_{Terminal} = 100\text{ }^{\circ}C$

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 400\text{ A}$; $V_{GE} = 0\text{ V}$				
	$T_j = 25\text{ }^{\circ}C_{chiplev.}$		1,6	1,8	V
	$T_j = 125\text{ }^{\circ}C_{chiplev.}$		1,6	1,8	V
V_{F0}	$T_j = 25\text{ }^{\circ}C$		1	1,1	V
	$T_j = 125\text{ }^{\circ}C$		0,8	0,9	V
r_F	$T_j = 25\text{ }^{\circ}C$		1,5	1,8	mΩ
	$T_j = 125\text{ }^{\circ}C$		2	2,3	mΩ
I_{RRM}	$I_F = 400\text{ A}$		475		A
Q_{rr}	$di/dt = 7600\text{ A}/\mu s$		96		μC
E_{rr}	$V_{GE} = -15\text{ V}$; $V_{CC} = 600\text{ V}$		41		mJ
$R_{th(j-c)D}$	per diode			0,125	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400\text{ A}$; $V_{GE} = 0\text{ V}$				
	$T_j = 25\text{ }^{\circ}C_{chiplev.}$		1,6	1,8	V
	$T_j = 125\text{ }^{\circ}C_{chiplev.}$		1,6	1,8	V
V_{F0}	$T_j = 25\text{ }^{\circ}C$		1	1,1	V
	$T_j = 125\text{ }^{\circ}C$		0,8	0,9	V
r_F	$T_j = 25\text{ }^{\circ}C$		1,5	1,8	V
	$T_j = 125\text{ }^{\circ}C$		2	2,3	V
I_{RRM}	$I_F = 400\text{ A}$		475		A
Q_{rr}	$di/dt = 7600\text{ A}/\mu s$		96		μC
E_{rr}	$V_{GE} = -15\text{ V}$; $V_{CC} = 600\text{ V}$		41		mJ
$R_{th(j-c)FD}$	per diode			0,125	K/W
Module					
L_{CE}			15	20	nH
$R_{CC'+EE'}$	res., terminal-chip		0,35		mΩ
	$T_{case} = 25\text{ }^{\circ}C$				
	$T_{case} = 125\text{ }^{\circ}C$		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

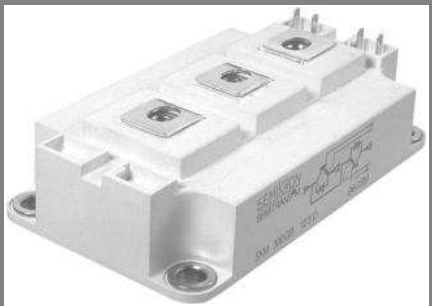
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

* 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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SEMITRANS® 3

Trench IGBT Module

SKM 600GB126D
SKM 600GAL126D

Features

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

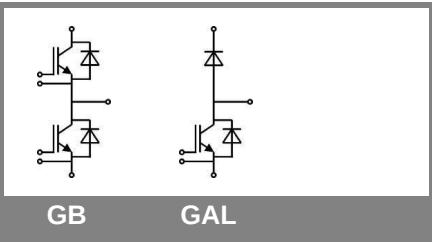
Typical Applications*

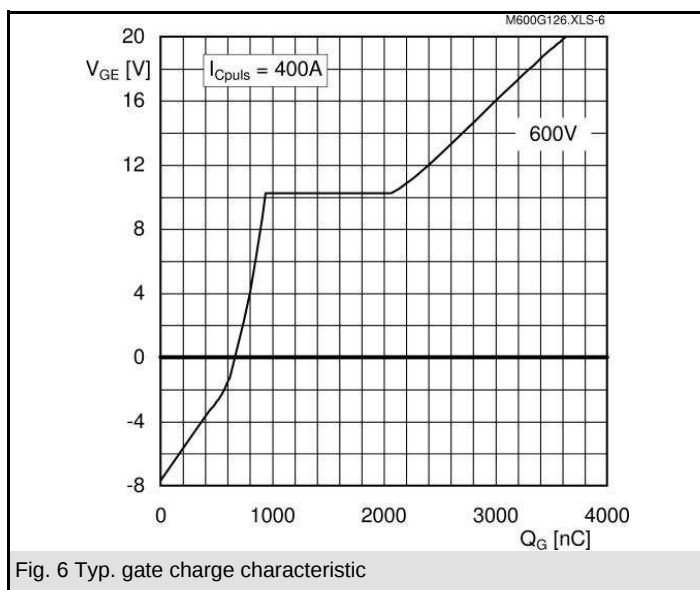
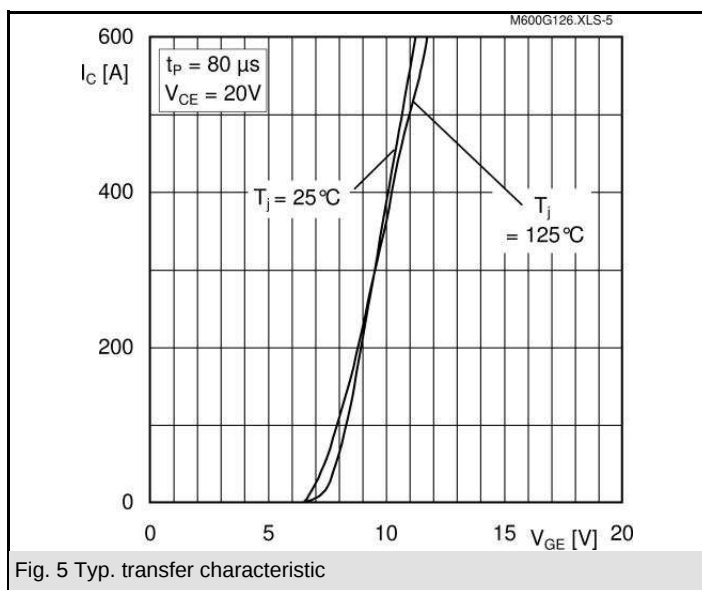
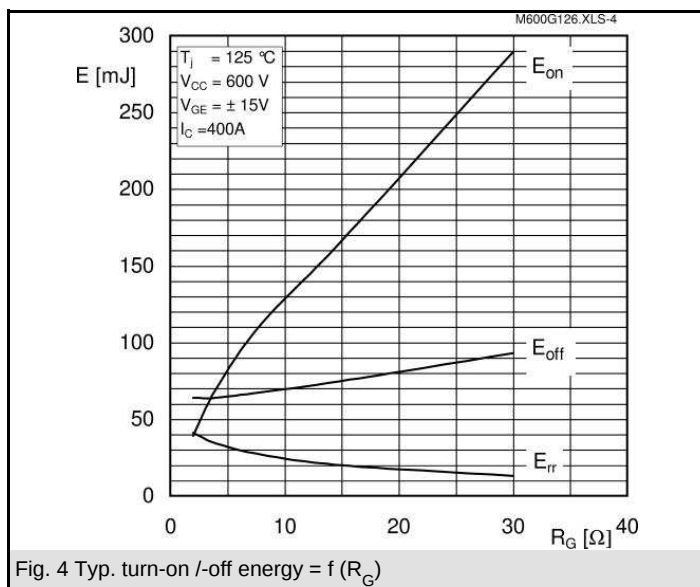
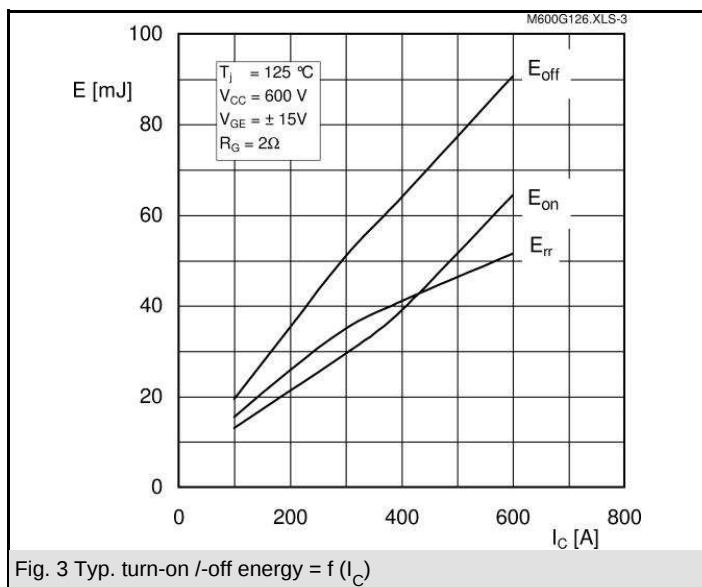
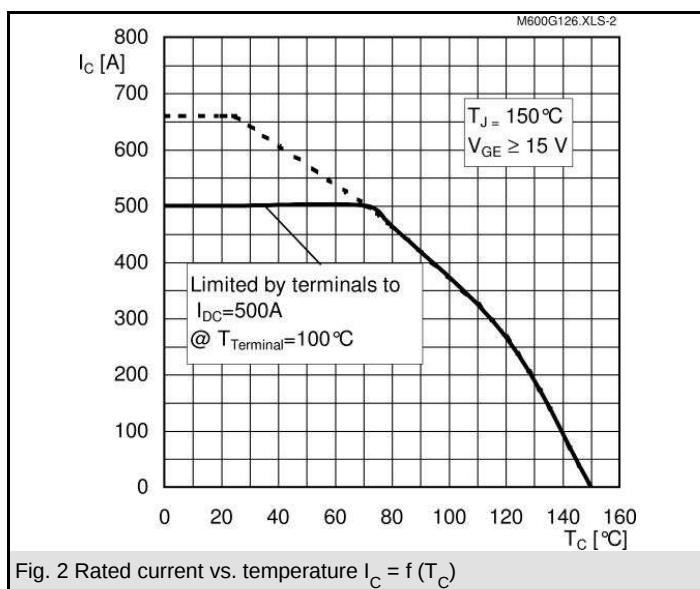
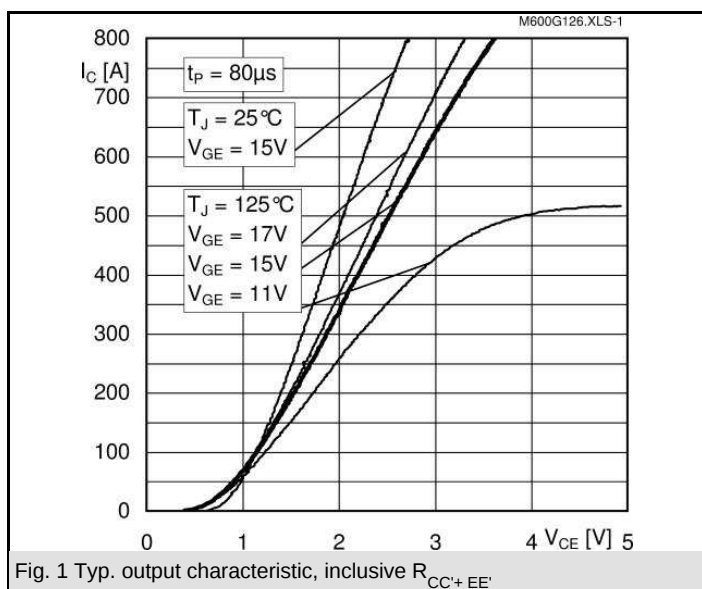
- AC inverter drives
- UPS
- Electronic welders

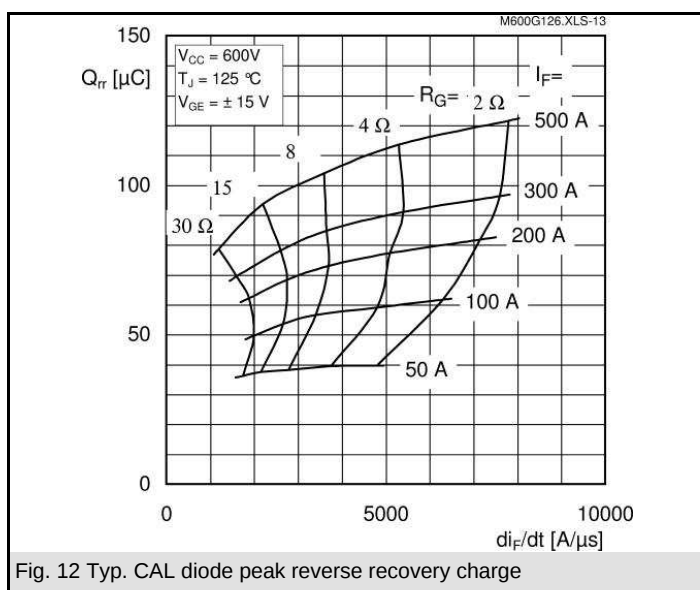
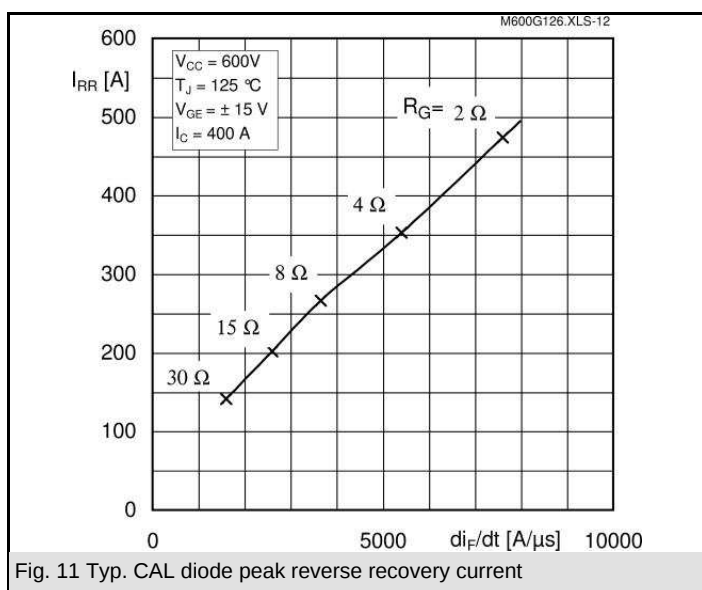
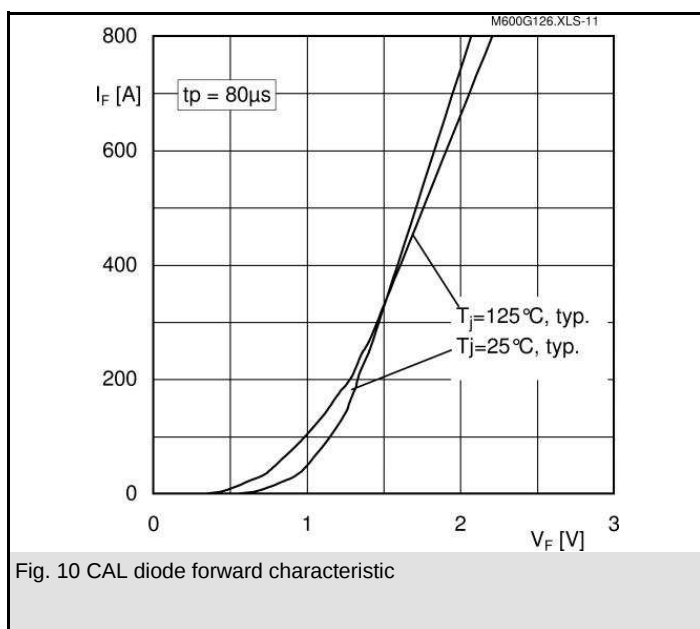
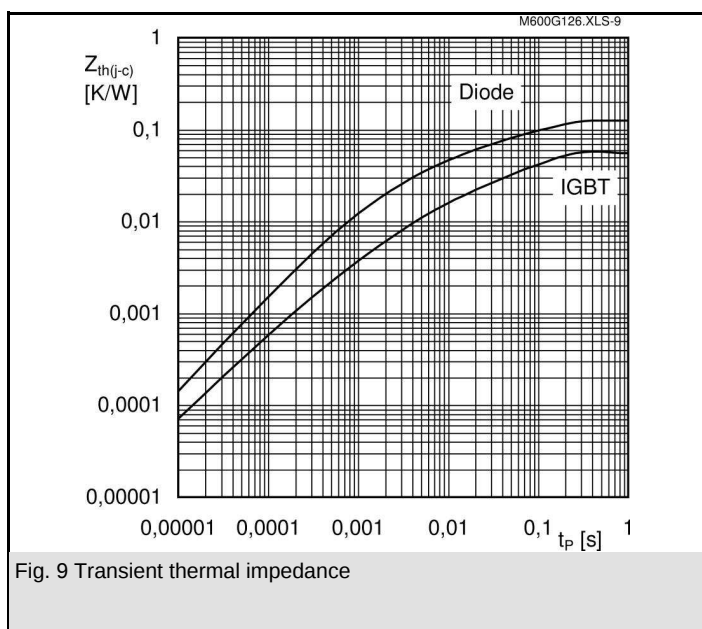
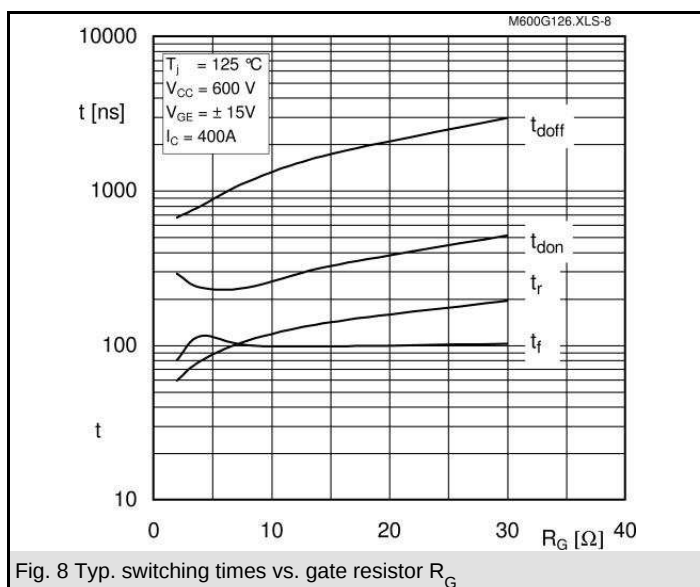
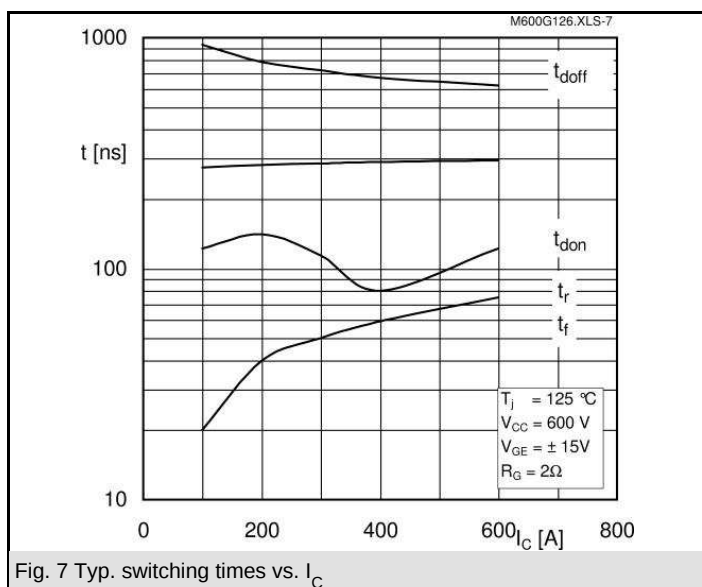
Remarks

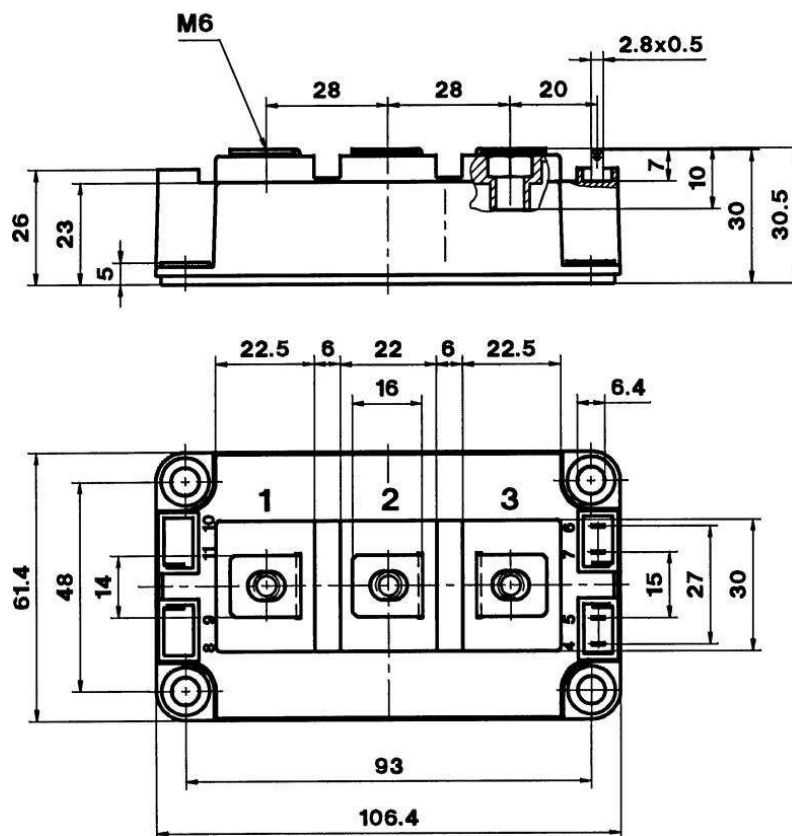
- $I_{DC} \leq 500A$ for $T_{Terminal} = 100\text{ }^{\circ}C$

Z_{th}			
Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	38	mk/W
R_i	$i = 2$	13	mk/W
R_i	$i = 3$	3,4	mk/W
R_i	$i = 4$	0,6	mk/W
τ_{ui}	$i = 1$	0,0836	s
τ_{ui}	$i = 2$	0,009	s
τ_{ui}	$i = 3$	0,0024	s
τ_{ui}	$i = 4$	0,0002	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	75	mk/W
R_i	$i = 2$	39	mk/W
R_i	$i = 3$	9,5	mk/W
R_i	$i = 4$	1,5	mk/W
τ_{ui}	$i = 1$	0,0327	s
τ_{ui}	$i = 2$	0,0101	s
τ_{ui}	$i = 3$	0,002	s
τ_{ui}	$i = 4$	0,0003	s

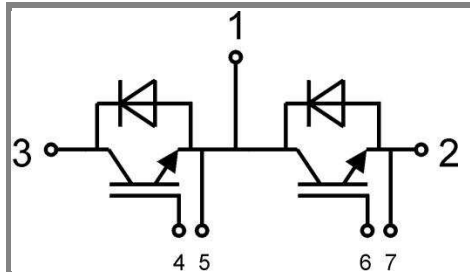






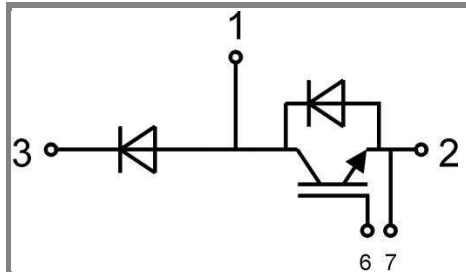


Case D 56



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Case D 56



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Case D 57