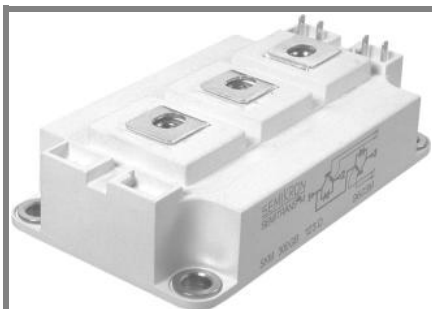




SEMITRANS® 3

Trench IGBT Module

SKM 600GB126D

SKM 600GAL126D

Preliminary Data

Features

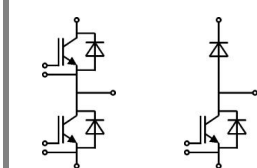
- Trench = Trenchgate technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_C$

Typical Applications

- AC inverter drives
- UPS
- Electronic welders

Remarks

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

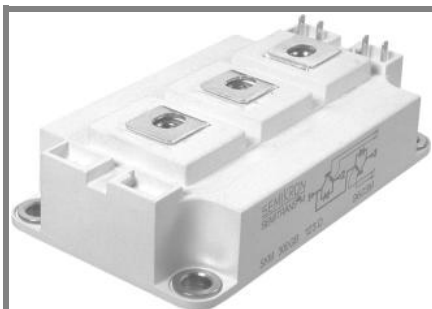


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Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		1200	V
I _C	T _j = 150 °C	T _c = 25 °C	660	A
		T _c = 80 °C	460	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		800	A
V _{GES}			± 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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Typical Applications

- AC inverter drives
- UPS
- Electronic welders

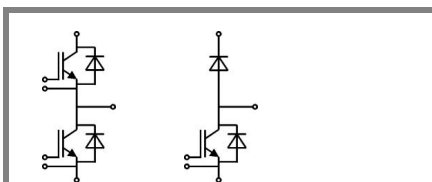
Remarks

- $I_{DC} \leq 500A$ 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				
	$T_{case} = 25\text{ }^{\circ}C$		0,35		mΩ
	$T_{case} = 125\text{ }^{\circ}C$		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

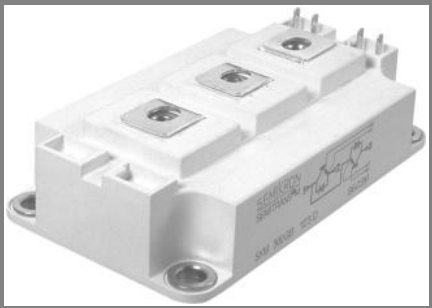
This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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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SEMITRANS® 3

Trench IGBT Module

SKM 600GB126D
SKM 600GAL126D

Preliminary Data

Features

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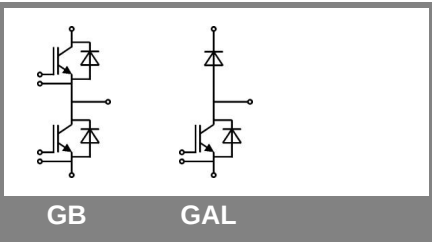
Typical Applications

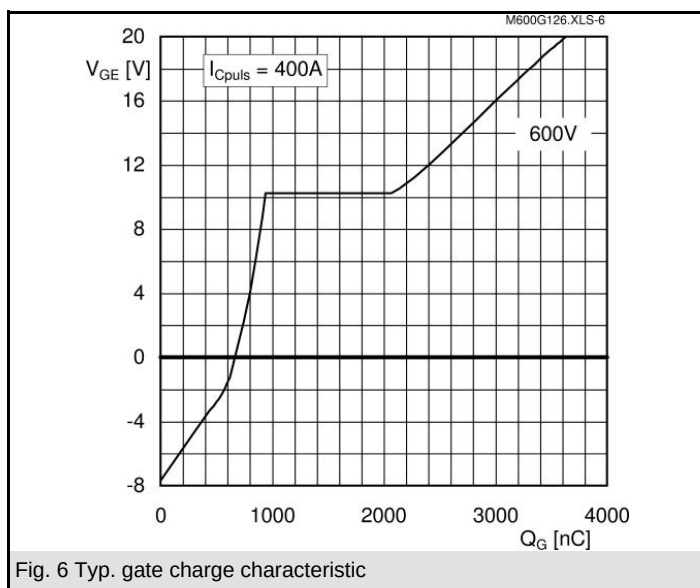
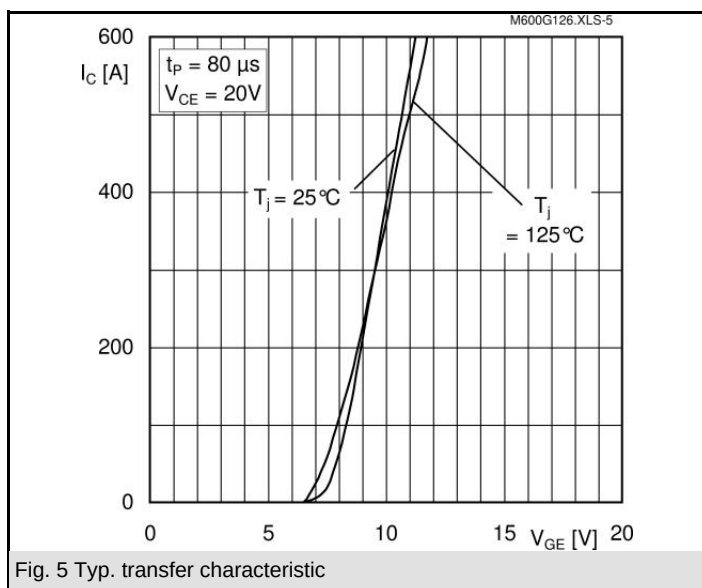
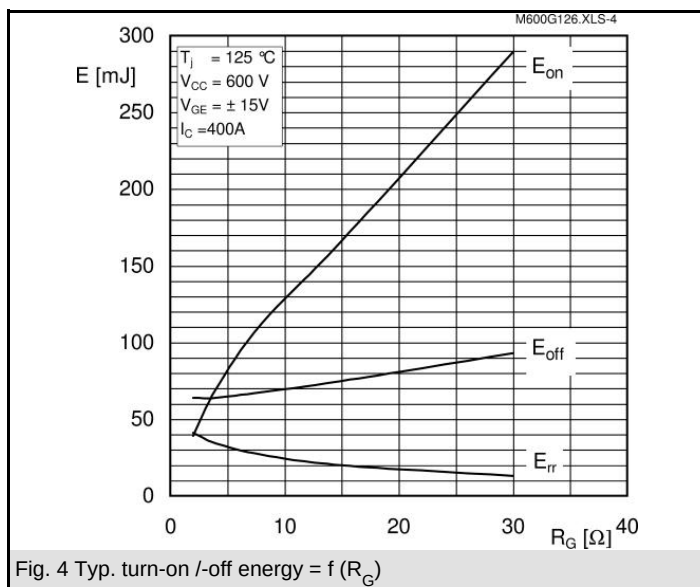
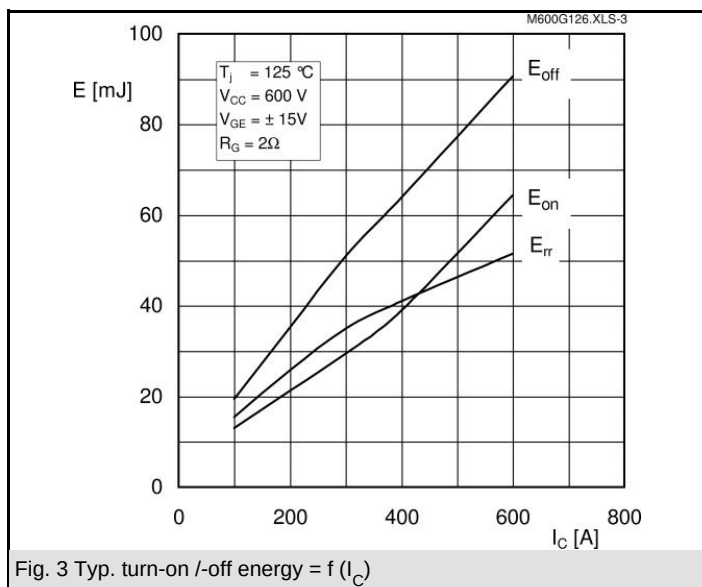
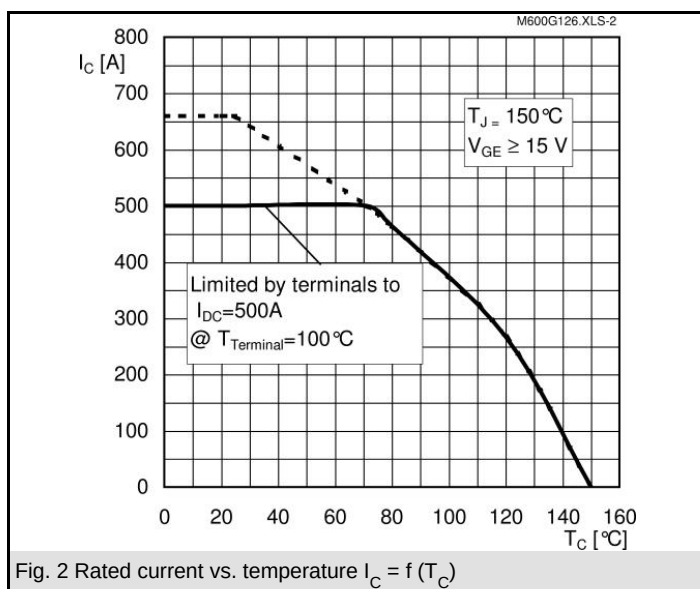
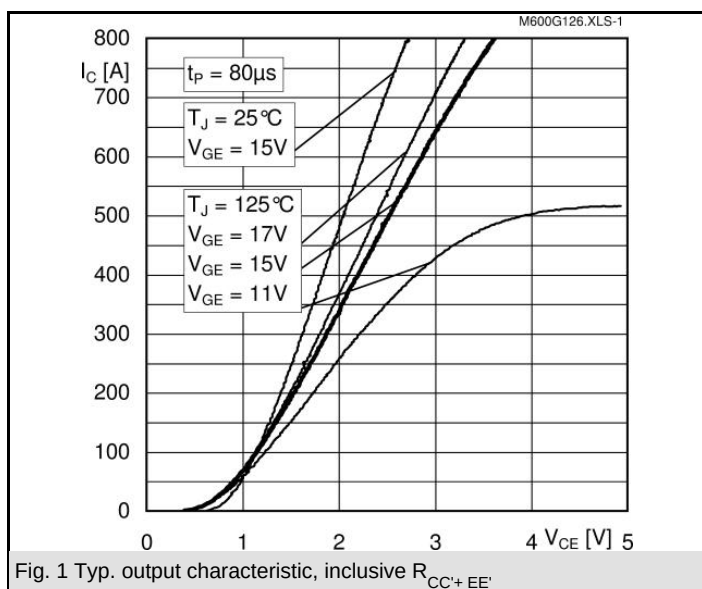
- AC inverter drives
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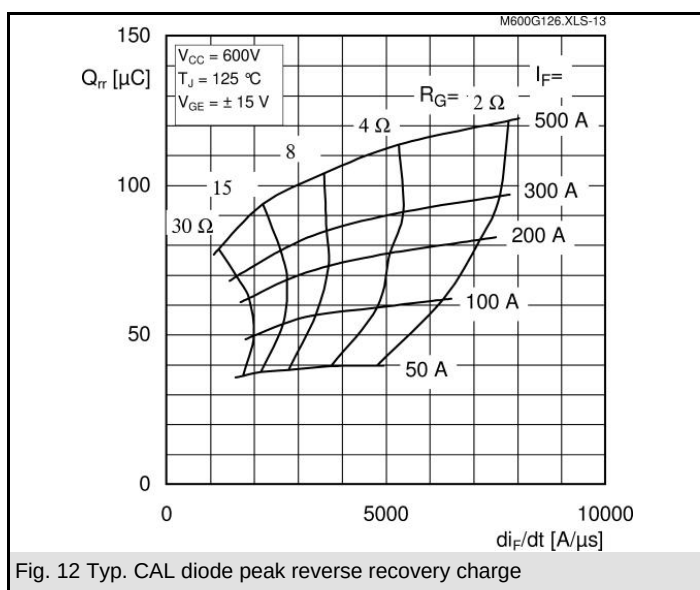
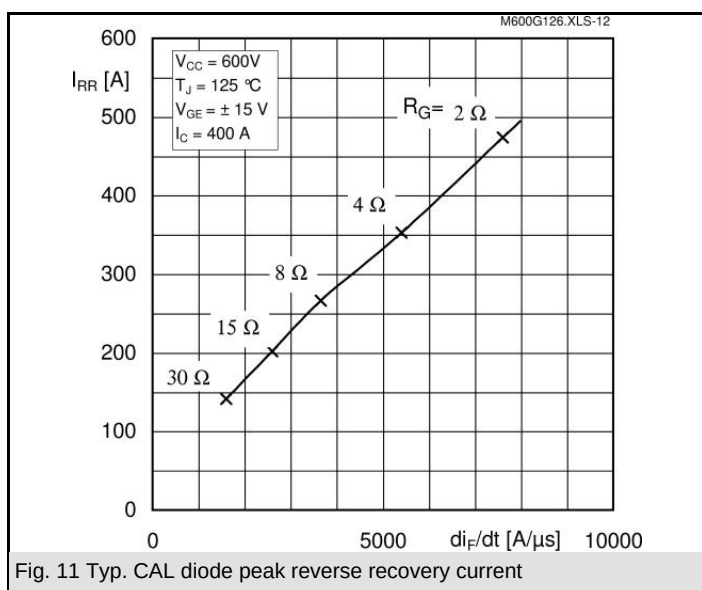
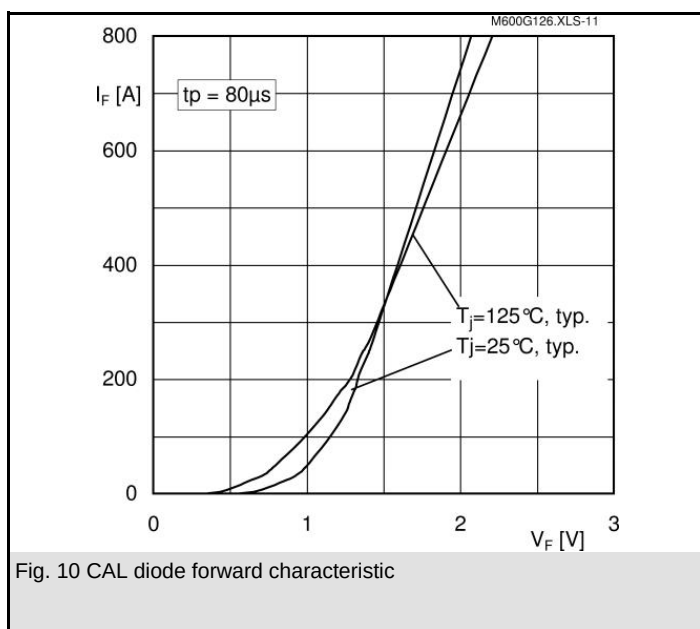
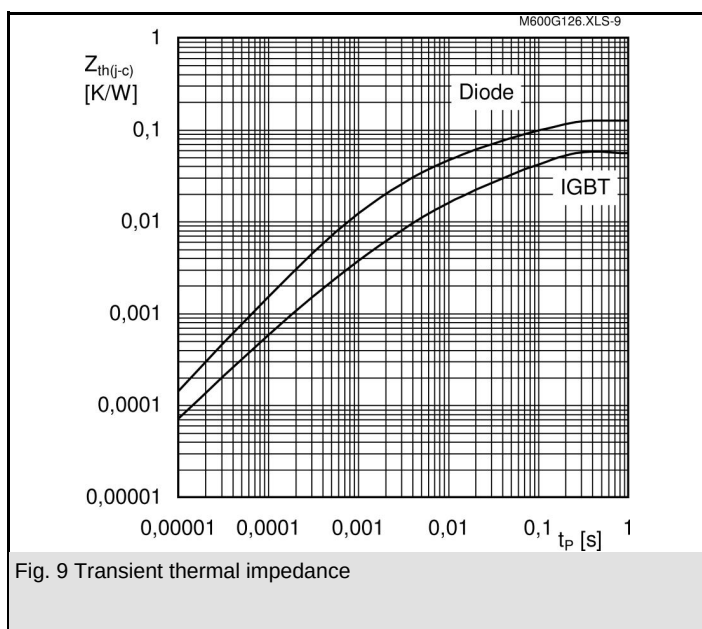
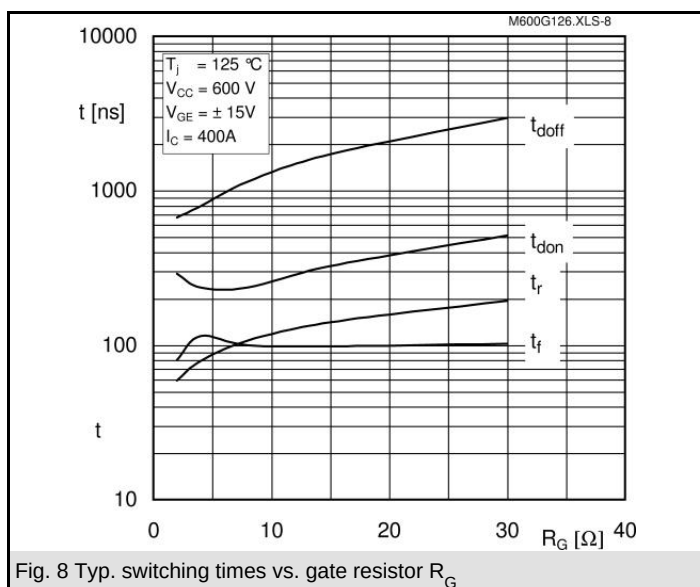
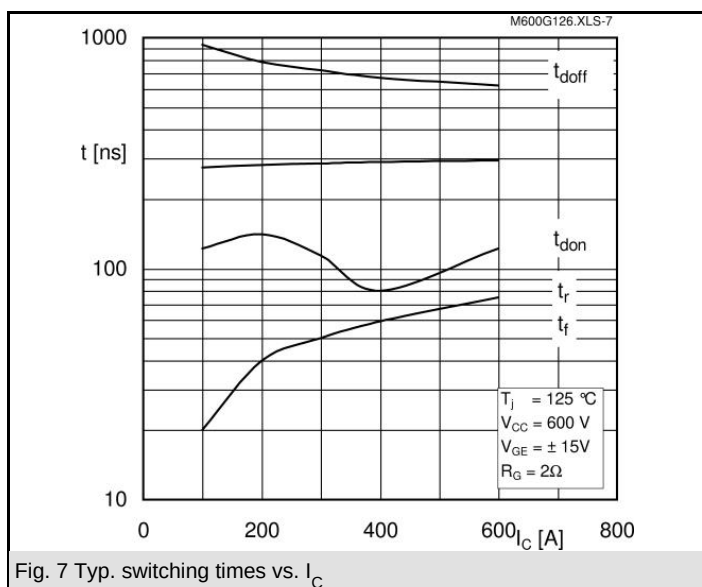
Remarks

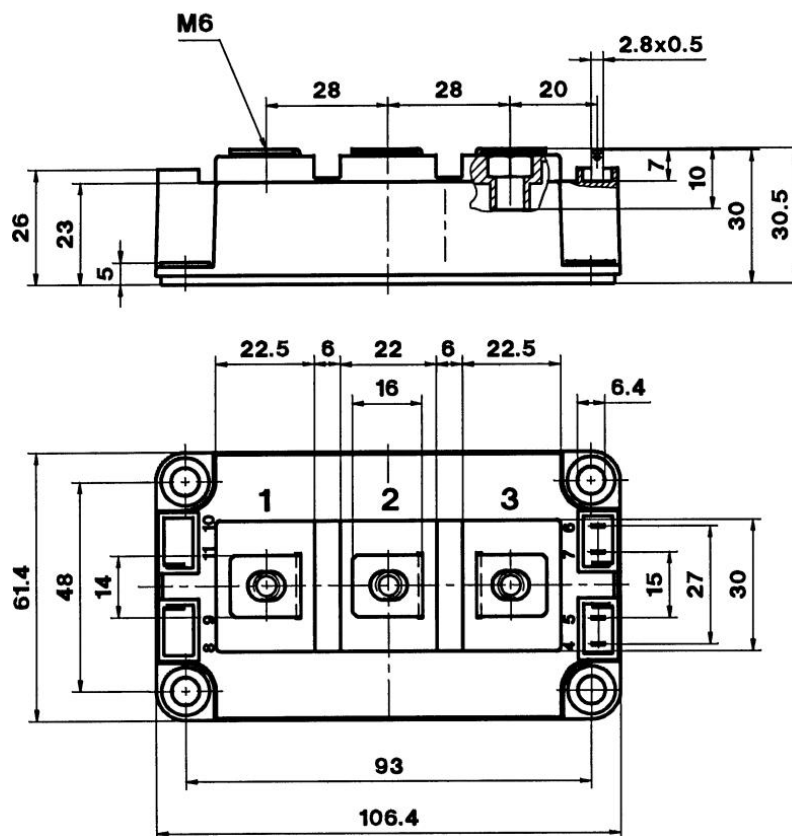
- $I_{DC} \leq 500A$ for $T_{Terminal} = 100\text{ }^{\circ}C$

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_{a_i}	$i = 1$	0,0836	s
τ_{a_i}	$i = 2$	0,009	s
τ_{a_i}	$i = 3$	0,0024	s
τ_{a_i}	$i = 4$	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_{a_i}	$i = 1$	0,0327	s
τ_{a_i}	$i = 2$	0,0101	s
τ_{a_i}	$i = 3$	0,002	s
τ_{a_i}	$i = 4$	0,0003	s

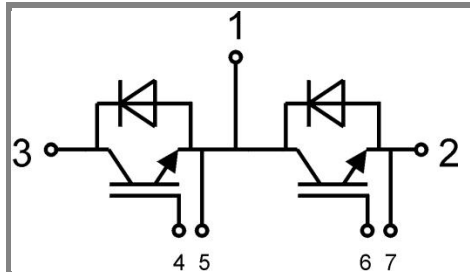






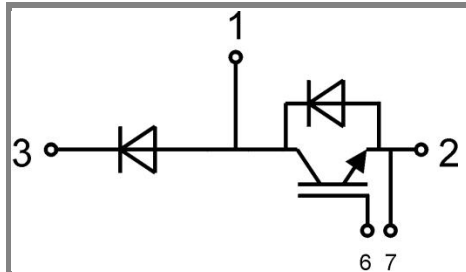


Case D 56



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Case D 56



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Case D 57