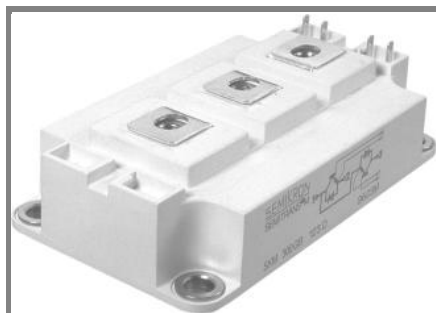




SEMITRANS® 3

SPT IGBT Module

SKM 300GB128D

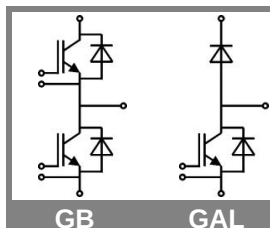
SKM 300GAL128D

Features

- Homogeneous Si
- SPT = Soft-Punch-Through 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 at f_{sw} up to 20 kHz

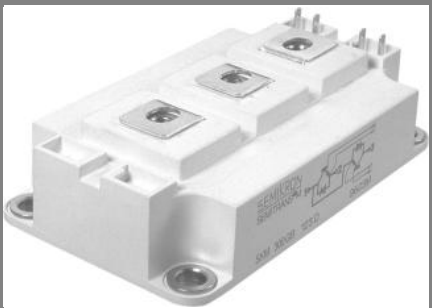


GB

GAL

Absolute Maximum Ratings			$T_c = 25\text{ }^{\circ}\text{C}$, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V_{CES}	$T_j = 25\text{ }^{\circ}\text{C}$		1200	V
I_C	$T_j = 150\text{ }^{\circ}\text{C}$	$T_c = 25\text{ }^{\circ}\text{C}$	370	A
		$T_c = 80\text{ }^{\circ}\text{C}$	265	A
I_{CRM}	$I_{CRM}=2xI_{Cnom}$, $t_p = 1\text{ ms}$		400	A
V_{GES}			± 20	V
t_{psc}	$V_{CC} = 600\text{ V}$; $V_{GE} \leq 20\text{ V}$; $T_j = 125\text{ }^{\circ}\text{C}$ $V_{CES} < 1200\text{ V}$		10	μs
Inverse Diode				
I_F	$T_j = 150\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	260	A
		$T_{case} = 80\text{ }^{\circ}\text{C}$	180	A
I_{FRM}	$I_{FRM} = 2xI_{Fnom}$, $t_p = 1\text{ ms}$		400	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.	$T_j = 150\text{ }^{\circ}\text{C}$	1800	A
Freewheeling Diode				
I_F	$T_j = 150\text{ }^{\circ}\text{C}$	$T_{case} = 25\text{ }^{\circ}\text{C}$	260	A
		$T_{case} = 80\text{ }^{\circ}\text{C}$	180	A
I_{FRM}	$I_{FRM} = 2xI_{Fnom}$, $t_p = 1\text{ ms}$		400	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.	$T_j = 150\text{ }^{\circ}\text{C}$	1800	A
Module				
$I_{t(RMS)}$			500	A
T_{vj}			- 40...+ 150	$^{\circ}\text{C}$
T_{stg}	$T_{OPERATION} \leq T_{stg}$		- 40...+ 125	$^{\circ}\text{C}$
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 = 8 mA		4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,2	0,6	mA
V _{CE0}	T _j = 25 °C			1	1,15	V
	T _j = 125 °C			0,9	1,05	V
r _{CE}	V _{GE} = 15 V T _j = 25°C			4,5	6	mΩ
	T _j = 125°C			6	7,5	mΩ
V _{CE(sat)}	I _{Cnom} = 200 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			1,9	2,35	V
	T _j = 125°C _{chiplev.}			2,1	2,55	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			17		nF
C _{oes}				2		nF
C _{res}				1,9		nF
Q _G	V _{GE} = -8V - +20V			2400		nC
R _{Gint}	T _j = 25 °C			2		Ω
t _{d(on)}	R _{Gon} = 5 Ω V _{CC} = 600V I _{Cnom} = 200A			170		ns
t _r				55		ns
E _{on}	R _{Goff} = 5 Ω T _j = 125 °C V _{GE} = ±15V L _s = 20 nH			22		mJ
t _{d(off)}				660		ns
t _f				60		ns
E _{off}				22		mJ
R _{th(j-c)}	per IGBT				0,085	K/W



SEMITRANS® 3

SPT IGBT Module

SKM 300GB128D
SKM 300GAL128D

Features

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

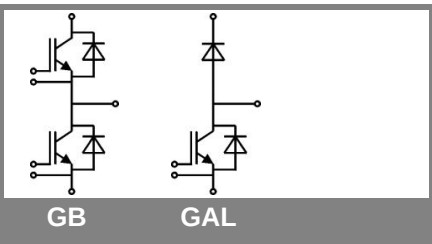
Typical Applications

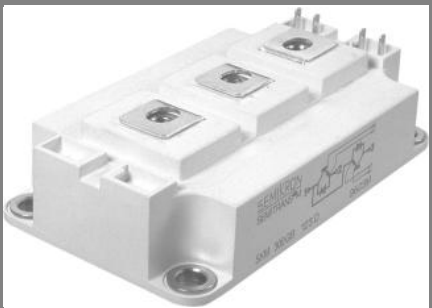
- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

Characteristics		min.	typ.	max.	Units
Symbol	Conditions				
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 200\text{ A}; V_{GE} = 0\text{ V}$ $T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$ $T_j = 125\text{ }^{\circ}\text{C}_{chiplev.}$		2 1,8	2,5	V V
V_{F0}	$T_j = 25\text{ }^{\circ}\text{C}$		1,1	1,2	V
r_F	$T_j = 25\text{ }^{\circ}\text{C}$		4,5	6,5	mΩ
I_{RRM}	$I_{Fnom} = 200\text{ A}$ $di/dt = 6300\text{ A}/\mu\text{s}$ $T_j = 125\text{ }^{\circ}\text{C}$ $L_S = 20\text{ nH}$		280		A
Q_{rr}			33		μC
E_{off}	$V_{GE} = -15\text{ V}; V_{CC} = 600\text{ V}$		11		mJ
$R_{th(j-c)D}$	per diode			0,18	K/W
FWD					
$V_F = V_{EC}$	$I_{Fnom} = 200\text{ A}; V_{GE} = 0\text{ V}$ $T_j = 25\text{ }^{\circ}\text{C}_{chiplev.}$ $T_j = 125\text{ }^{\circ}\text{C}_{chiplev.}$		2 1,8	2,5	V V
V_{F0}	$T_j = 25\text{ }^{\circ}\text{C}$		1,1	1,2	V
r_F	$T_j = 25\text{ }^{\circ}\text{C}$		4,5	6,5	V
I_{RRM}	$I_{Fnom} = 200\text{ A}$ $di/dt = 6300\text{ A}/\mu\text{s}$ $T_j = 25\text{ }^{\circ}\text{C}$ $L_S = 20\text{ nH}$		280		A
Q_{rr}			33		μC
E_{off}	$V_{GE} = -15\text{ V}; V_{CC} = 600\text{ V}$		11		mJ
$R_{th(j-c)FD}$	per diode			0,18	K/W
Module					
L_{CE}			15	20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_{case} = 25\text{ }^{\circ}\text{C}$ $T_{case} = 125\text{ }^{\circ}\text{C}$		0,35 0,5		mΩ 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.





SEMITRANS® 3

SPT IGBT Module

SKM 300GB128D
SKM 300GAL128D

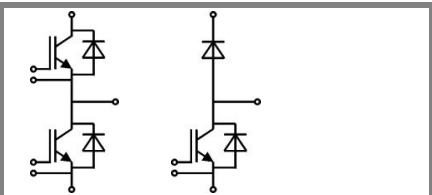
Features

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Typical Applications

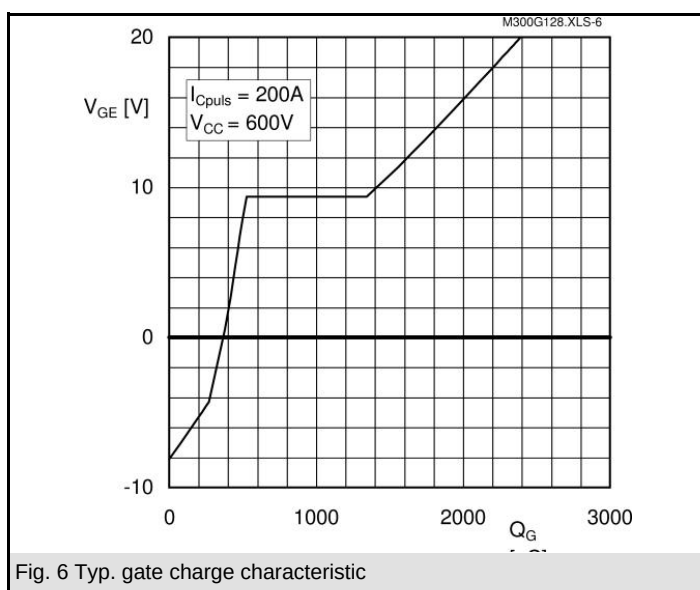
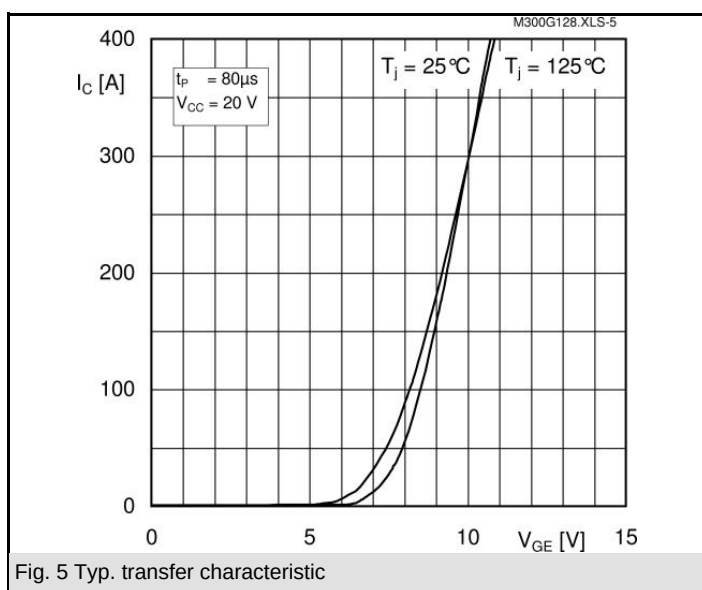
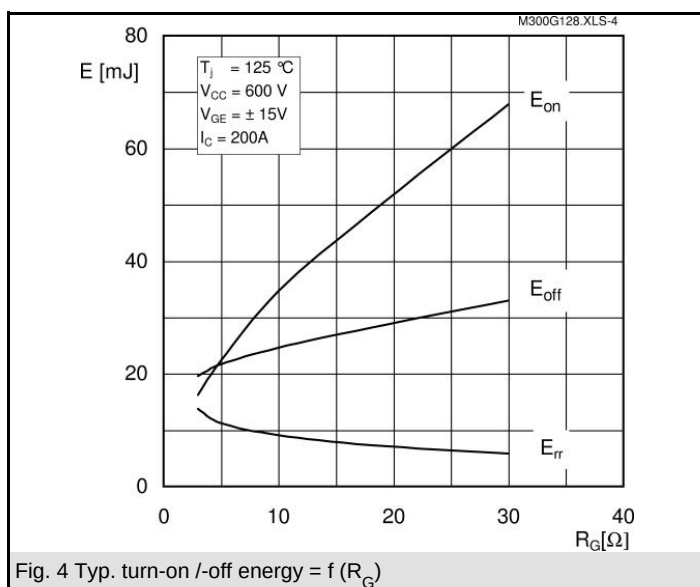
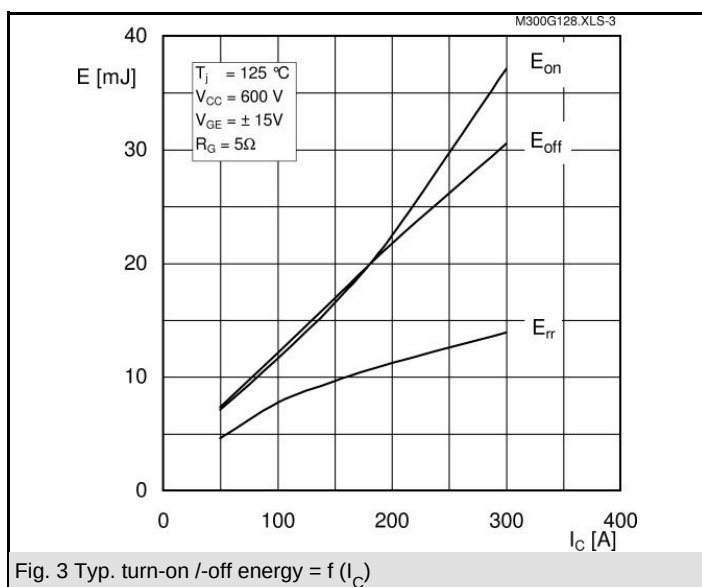
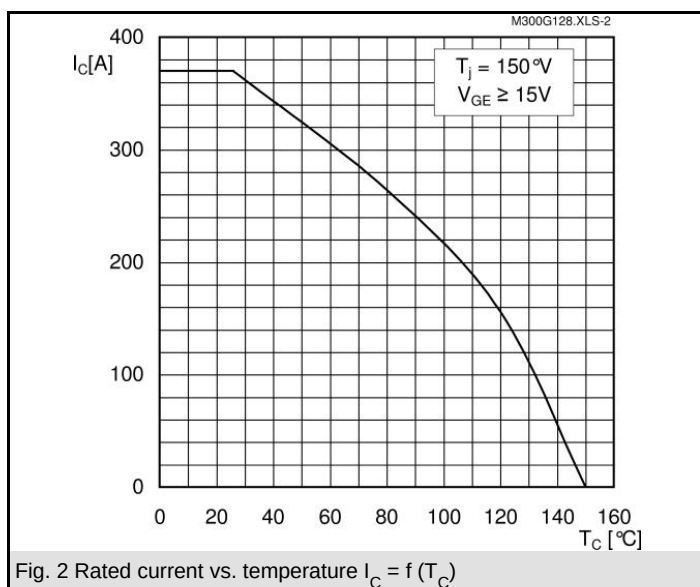
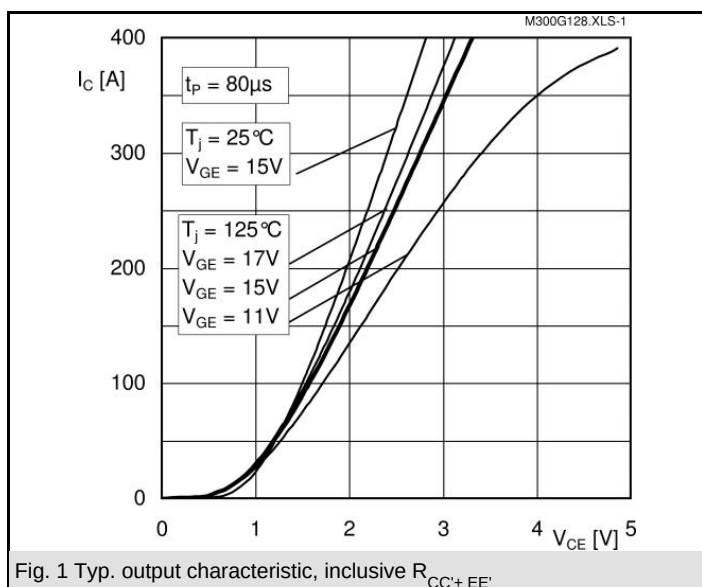
- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

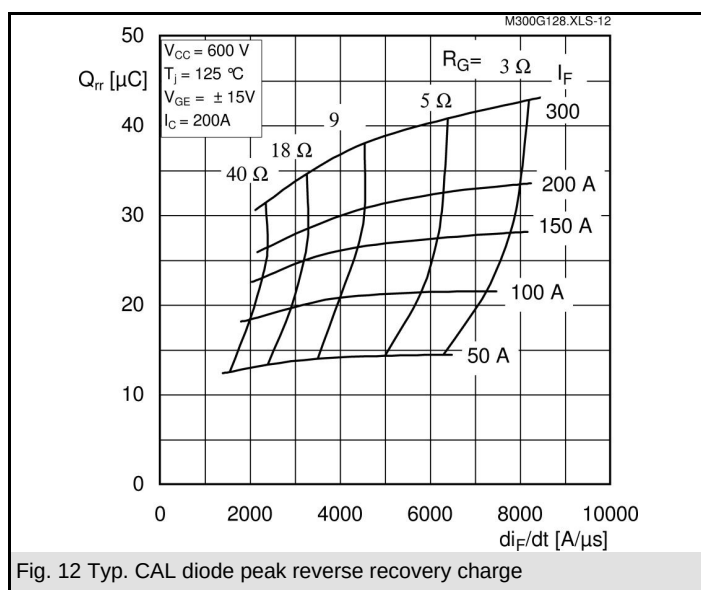
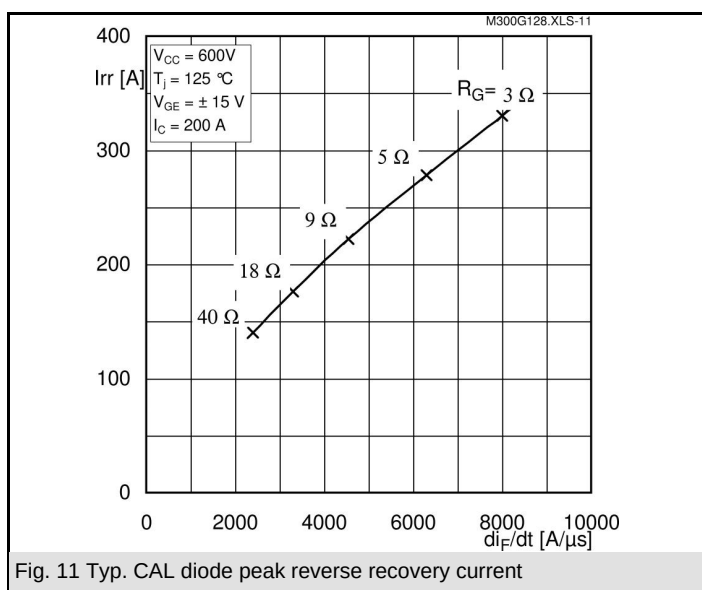
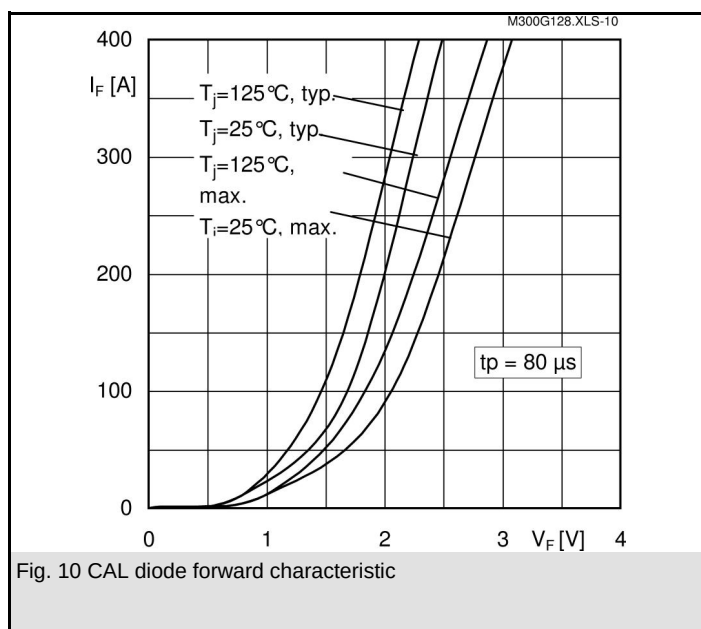
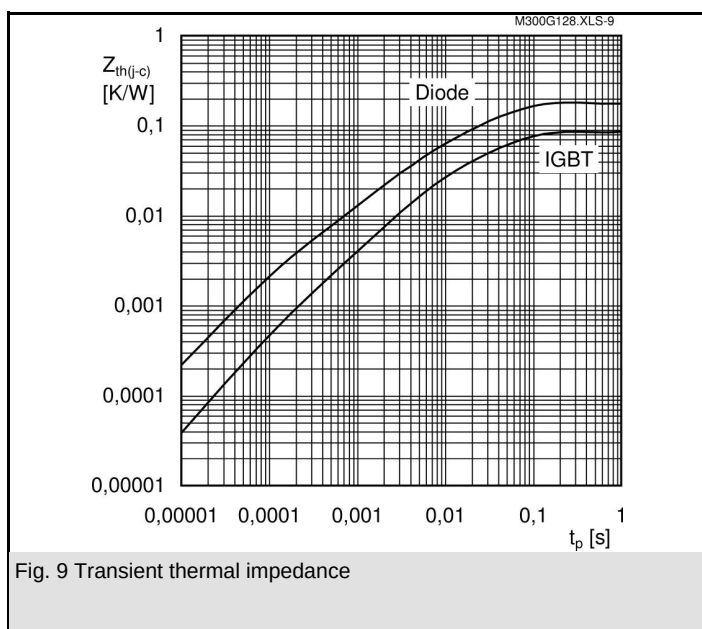
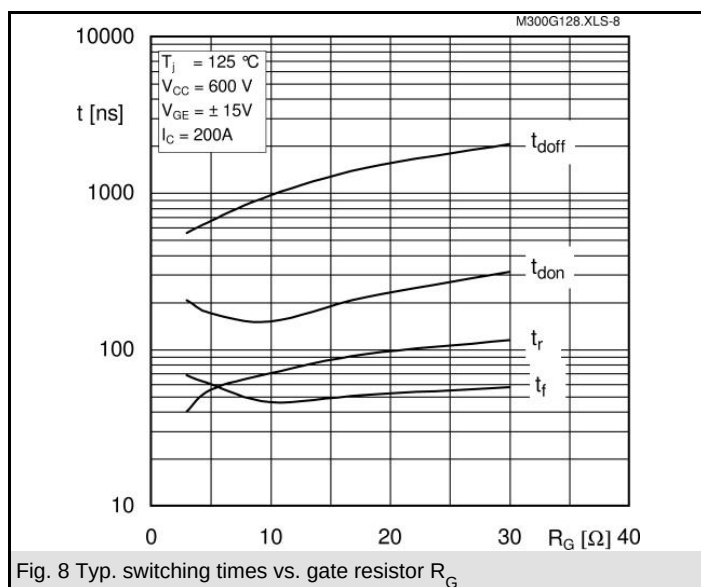
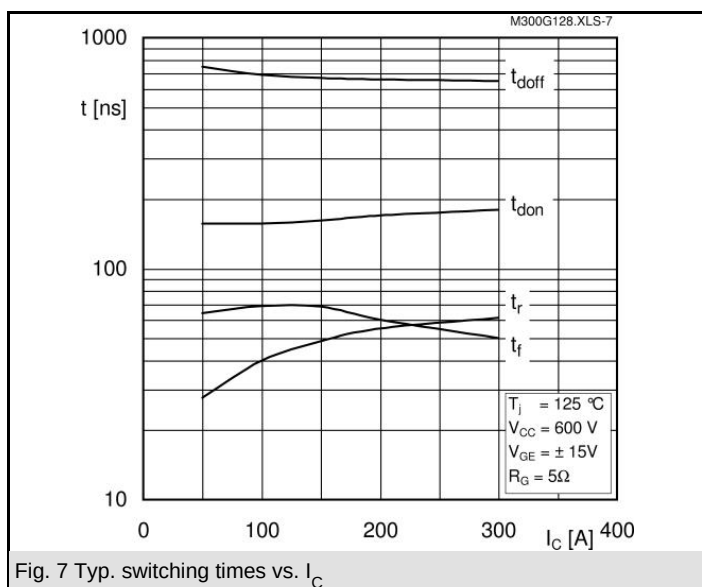
Z_{th}			
Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	55	mk/W
R_i	$i = 2$	26	mk/W
R_i	$i = 3$	3,5	mk/W
R_i	$i = 4$	0,5	mk/W
τ_{a_i}	$i = 1$	0,04	s
τ_{a_i}	$i = 2$	0,189	s
τ_{a_i}	$i = 3$	0,0017	s
τ_{a_i}	$i = 4$	0,003	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	120	mk/W
R_i	$i = 2$	48	mk/W
R_i	$i = 3$	10	mk/W
R_i	$i = 4$	2	mk/W
τ_{a_i}	$i = 1$	0,0727	s
τ_{a_i}	$i = 2$	0,006	s
τ_{a_i}	$i = 3$	0,0078	s
τ_{a_i}	$i = 4$	0,0002	s



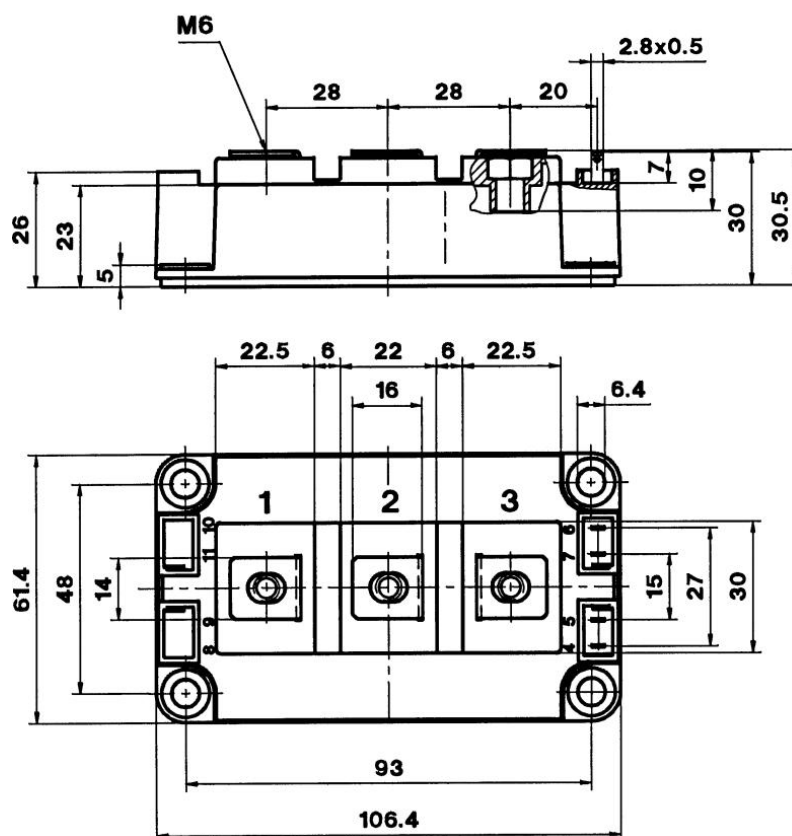
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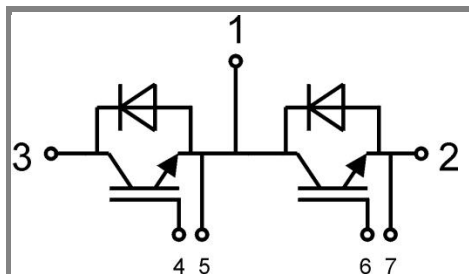




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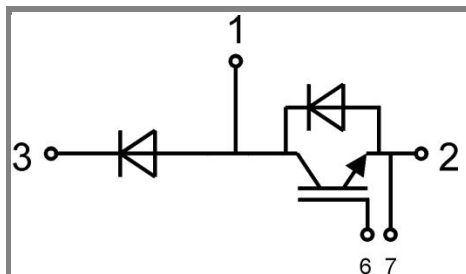


Case D 56



Case D56

GB



Case D57

GAL