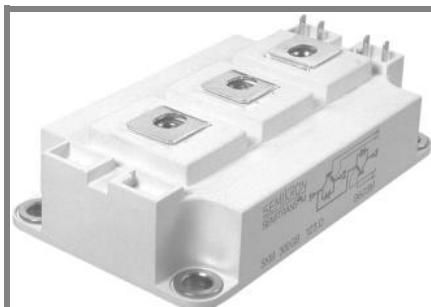




SEMITRANS® 3

SPT IGBT Module

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SKM 300GB128D

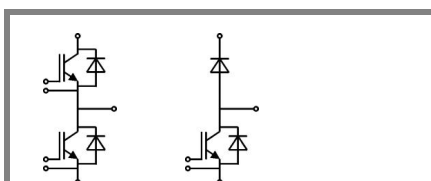
SKM 300GAL128D

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

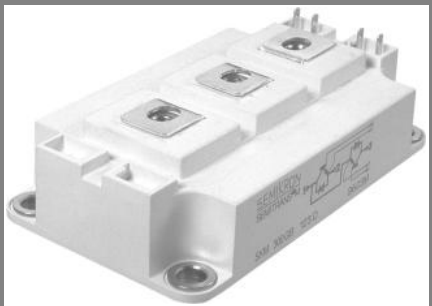


GB

GAL

Absolute Maximum Ratings			T _c = 25 °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	370	A
		T _c = 80 °C	265	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		400	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	260	A
		T _{case} = 80 °C	180	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		400	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	1800	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	260	A
		T _{case} = 80 °C	180	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		400	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	1800	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 = 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
				T _j = 125 °C	0,9	1,05
r _{CE}	V _{GE} = 15 V			T _j = 25°C	4,5	6
				T _j = 125°C	6	7,5
V _{CE(sat)}	I _{Cnom} = 200 A, V _{GE} = 15 V			T _j = 25°C _{chiplev.}	1,9	2,35
				T _j = 125°C _{chiplev.}	2,1	2,55
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}					22	mJ
t _{d(off)}	R _{Goff} = 5 Ω		T _j = 125 °C V _{GE} = ±15V L _s = 20 nH		660	ns
t _f					60	ns
E _{off}					22	mJ
R _{th(j-c)}	per IGBT				0,085	K/W



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SPT IGBT Module

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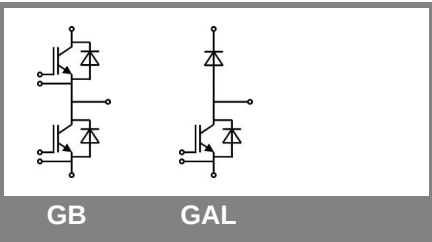
Typical Applications

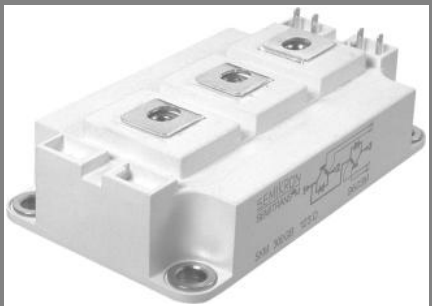
- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

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}	$I_{Fnom} = 200\text{ A}$ $T_j = 125\text{ }^{\circ}\text{C}$		280		A
Q_{rr}	$di/dt = 6300\text{ A}/\mu\text{s}$ $L_S = 20\text{ nH}$		33		μC
E_{rr}	$V_{GE} = -15\text{ V}; V_{CC} = 600\text{ V}$		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}	$I_{Fnom} = 200\text{ A}$ $T_j = 25\text{ }^{\circ}\text{C}$		280		A
Q_{rr}	$di/dt = 6300\text{ A}/\mu\text{s}$ $L_S = 20\text{ nH}$		33		μC
E_{rr}	$V_{GE} = -15\text{ V}; V_{CC} = 600\text{ V}$		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

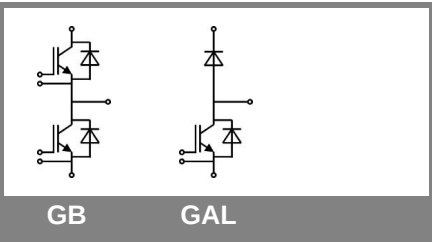
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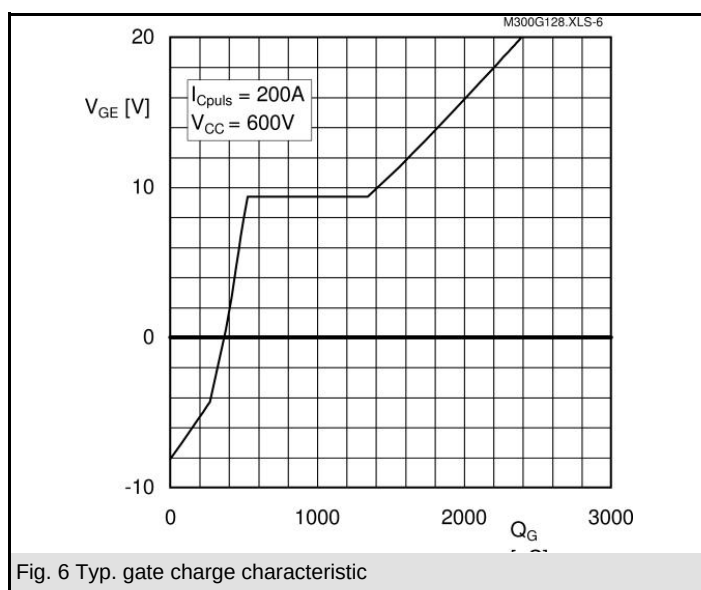
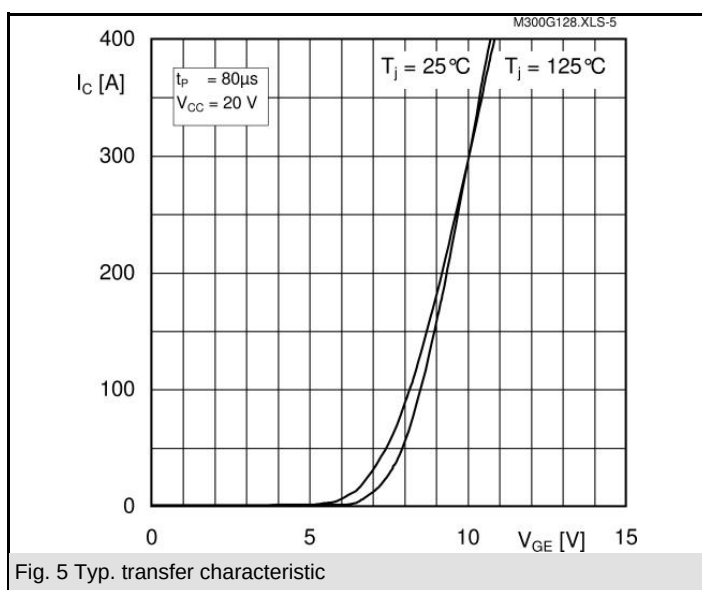
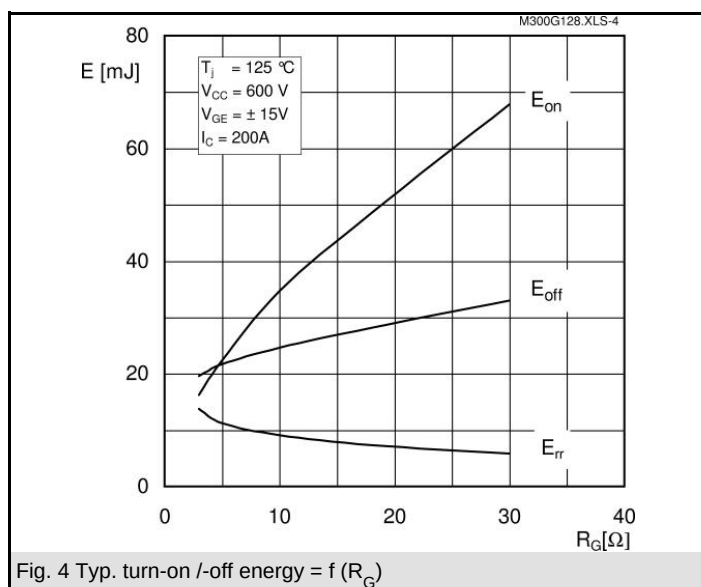
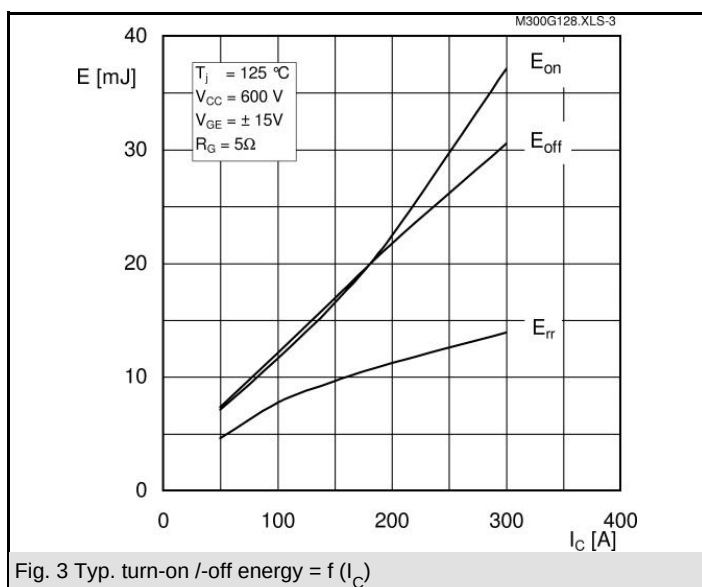
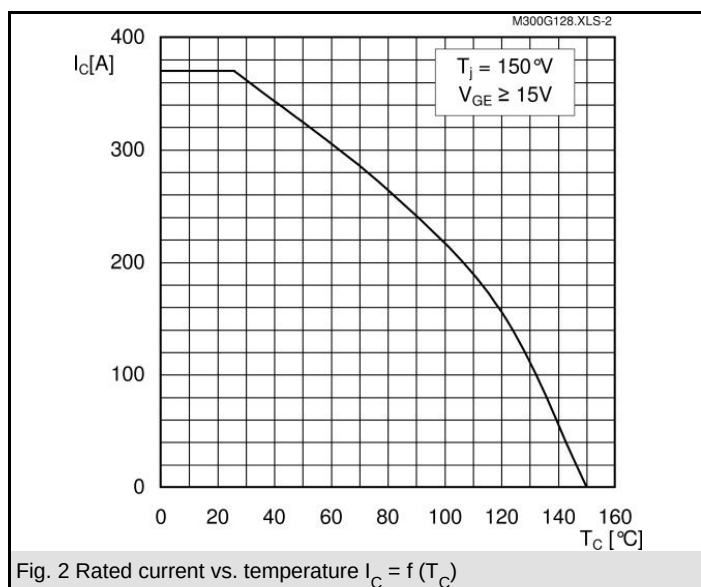
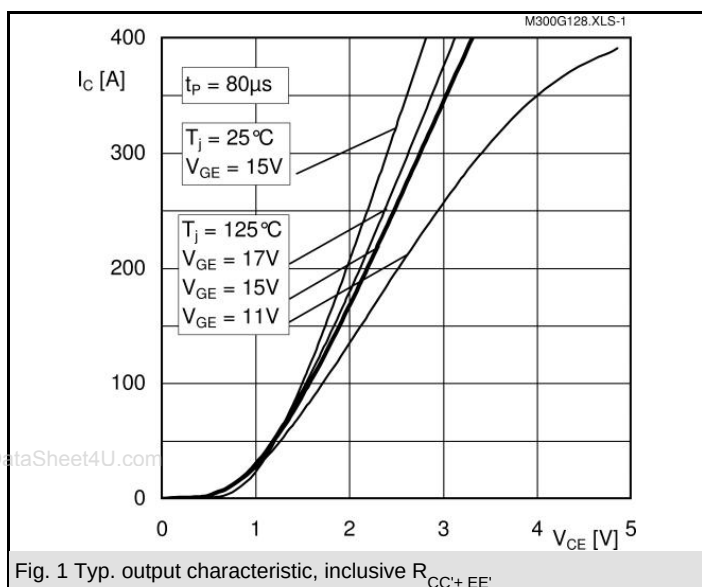
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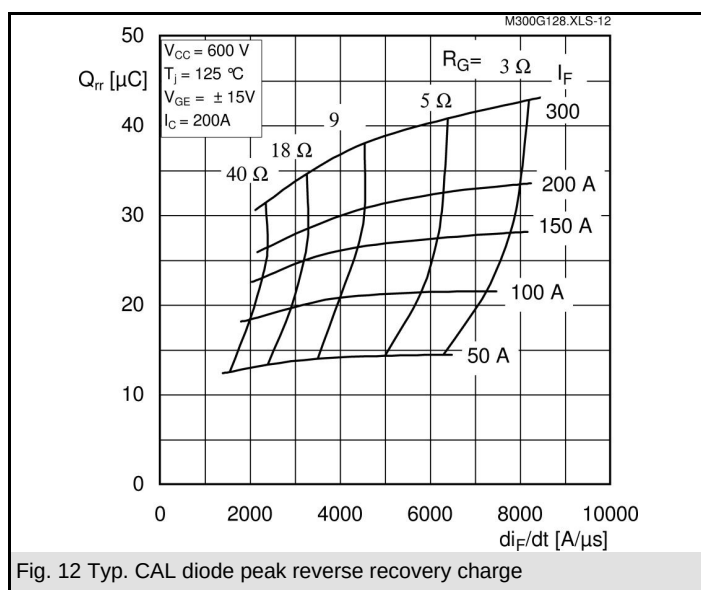
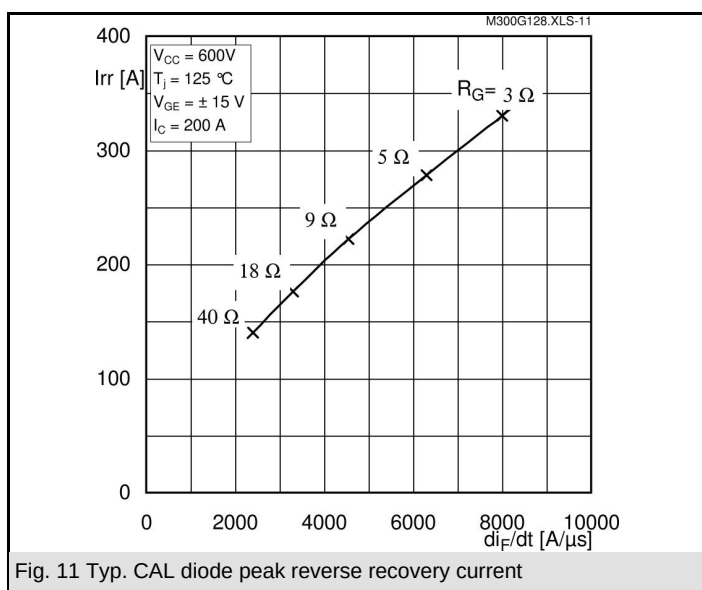
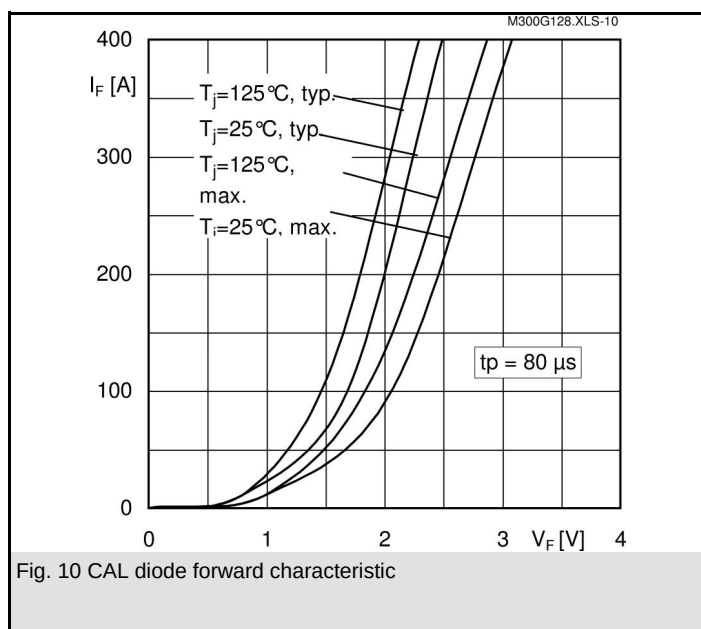
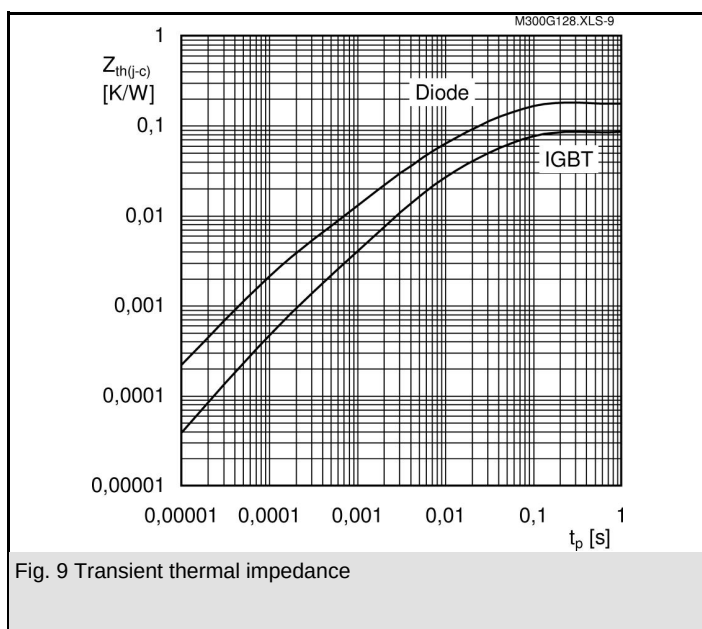
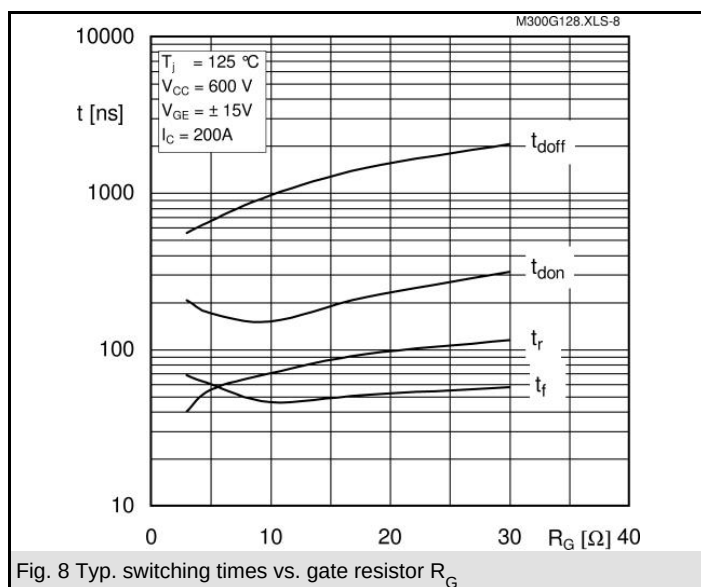
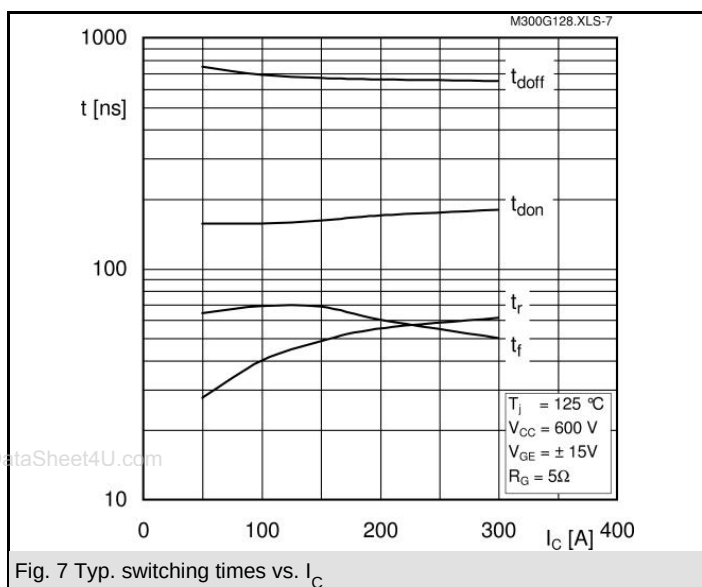
Typical Applications

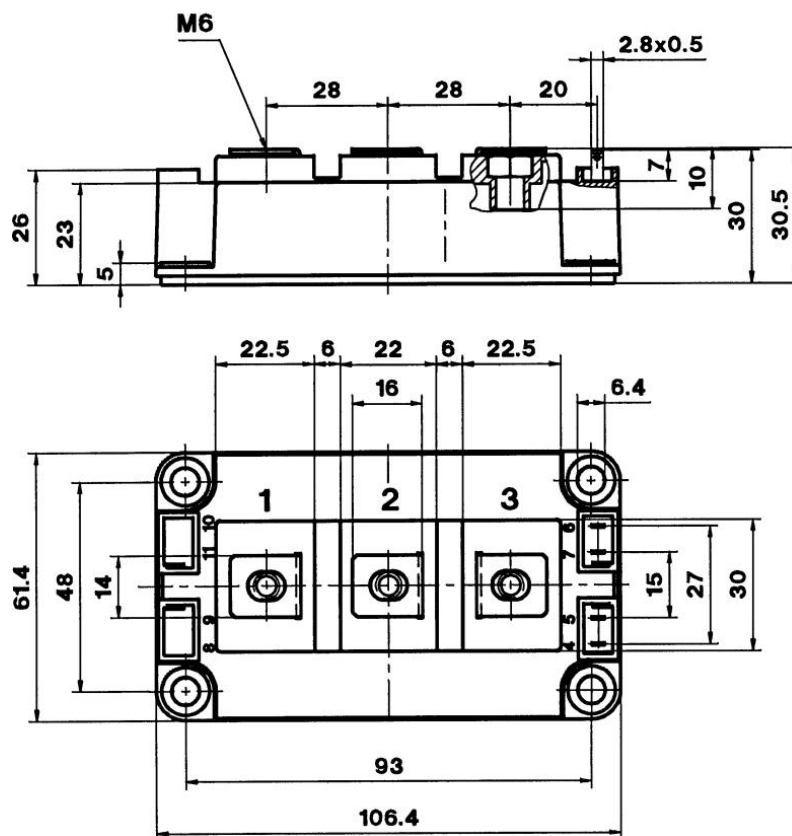
- AC inverter drives
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- Electronic welders at f_{sw} up to 20 kHz

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_{ui}	$i = 1$	0,04	s
τ_{ui}	$i = 2$	0,189	s
τ_{ui}	$i = 3$	0,0017	s
τ_{ui}	$i = 4$	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_{ui}	$i = 1$	0,0727	s
τ_{ui}	$i = 2$	0,006	s
τ_{ui}	$i = 3$	0,0078	s
τ_{ui}	$i = 4$	0,0002	s

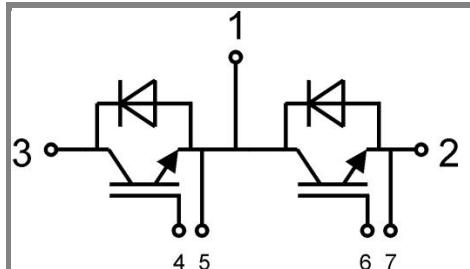






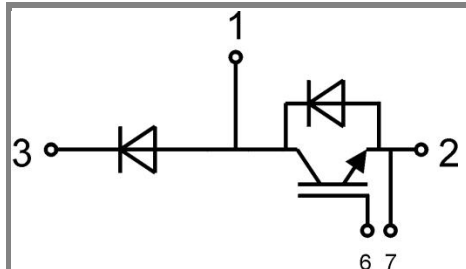


Case D 56



Case D56

GB



Case D57

GAL