



SEMITRANS® 3

SPT IGBT Module

SKM 300GB128D

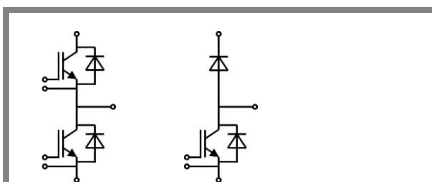
SKM 300GAL128D

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

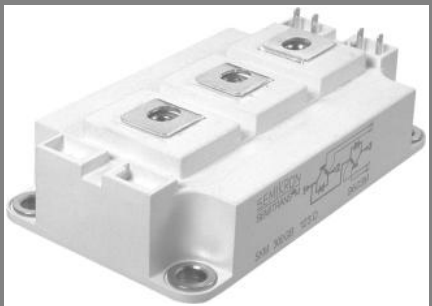


GB

GAL

Absolute Maximum Ratings			T _c = 25 °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}				1	1,15	V
				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 T _j = 125 °C V _{GE} = ±15V L _s = 20 nH		170		ns
t _r				55		ns
E _{on}				22		mJ
t _{d(off)}	R _{Goff} = 5 Ω			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

- Homogeneous Si
- SPT = Soft-Punch-Through technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_c$

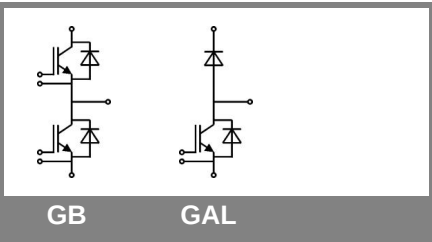
Typical Applications

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

Characteristics						
Symbol	Conditions		min.	typ.	max.	Units
Inverse Diode						
V _F = V _{EC}	I _{Fnom} = 200 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.} T _j = 125 °C _{chiplev.}		2 1,8	2,5	V V
V _{F0}		T _j = 25 °C		1,1	1,2	V
r _F		T _j = 25 °C		4,5	6,5	mΩ
I _{RRM} Q _{rr}	I _{Fnom} = 200 A di/dt = 6300 A/μs	T _j = 125 °C L _S = 20 nH		280 33		A μC
E _{rr}	V _{GE} = -15 V; V _{CC} = 600 V			11		mJ
R _{th(j-c)D}	per diode				0,18	K/W
FWD						
V _F = V _{EC}	I _{Fnom} = 200 A; V _{GE} = 0 V	T _j = 25 °C _{chiplev.} T _j = 125 °C _{chiplev.}		2 1,8	2,5	V V
V _{F0}		T _j = 25 °C		1,1	1,2	V
r _F		T _j = 25 °C		4,5	6,5	V
I _{RRM} Q _{rr}	I _{Fnom} = 200 A di/dt = 6300 A/μs	T _j = 25 °C L _S = 20 nH		280 33		A μC
E _{rr}	V _{GE} = -15 V; V _{CC} = 600 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 °C T _{case} = 125 °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

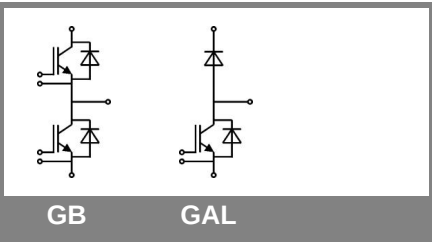
Features

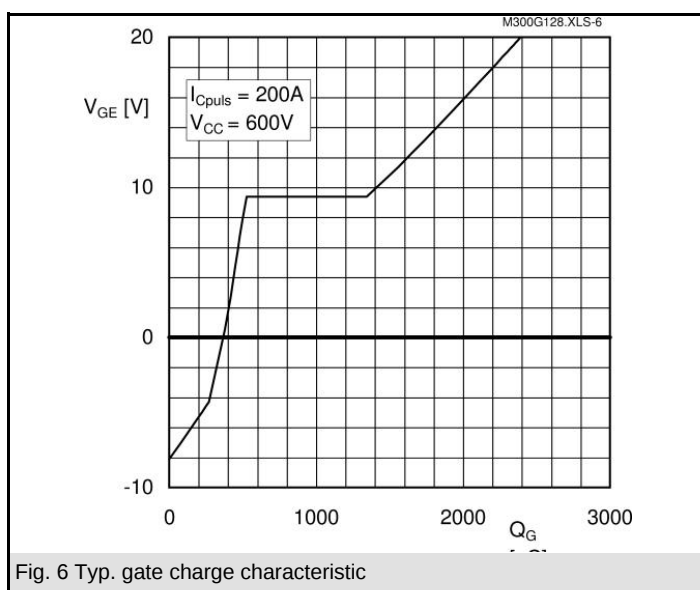
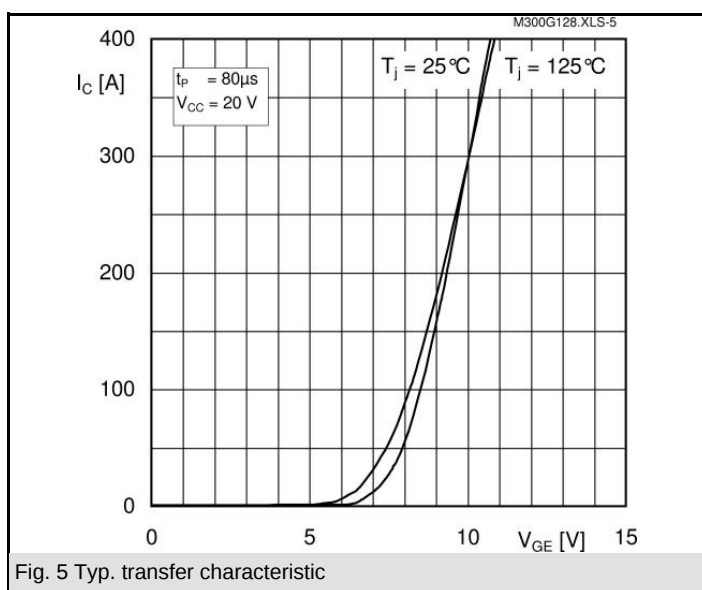
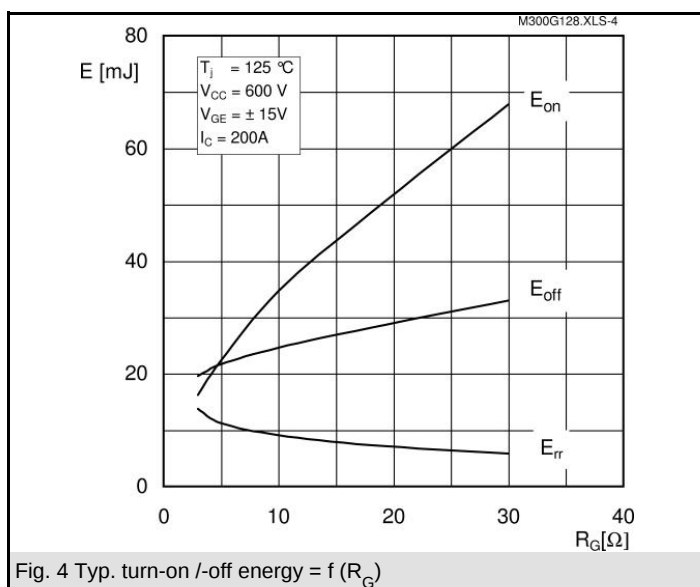
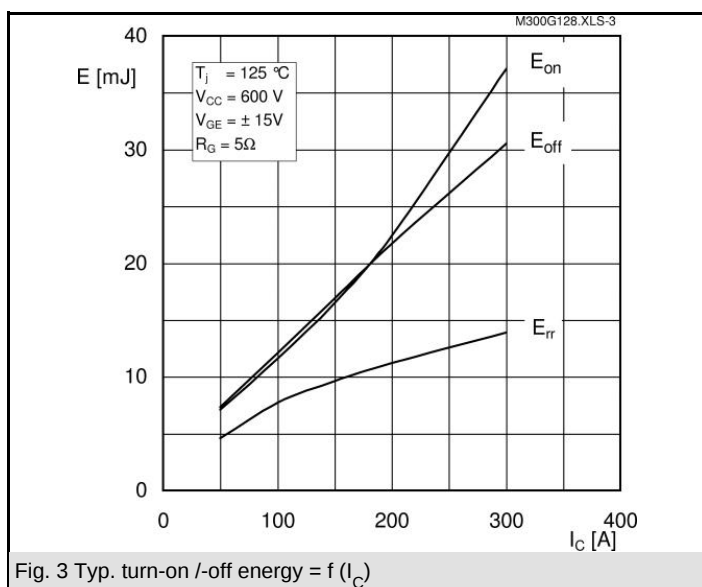
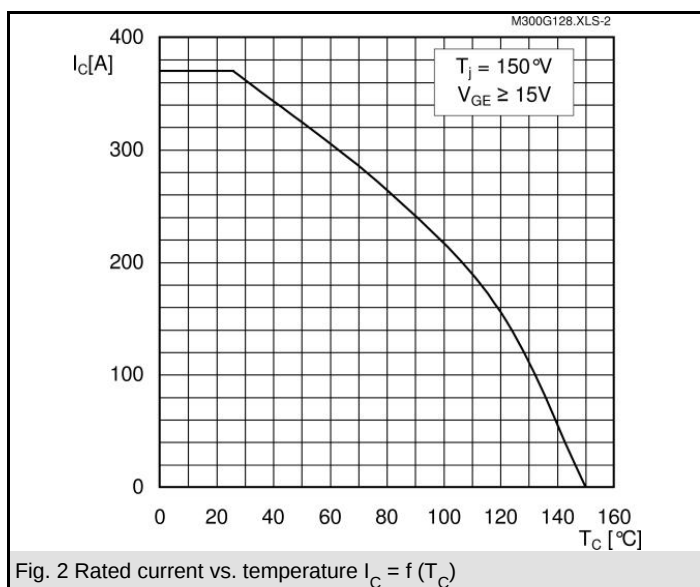
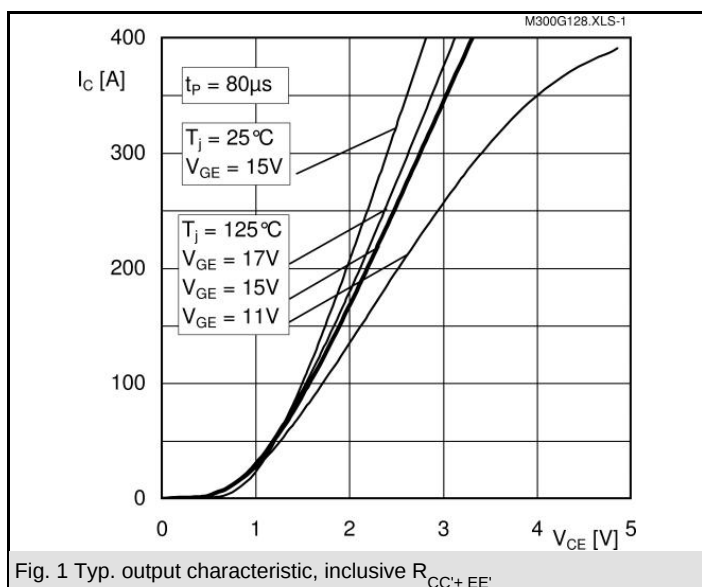
- Homogeneous Si
- SPT = Soft-Punch-Through technology
- V_{CEsat} with positive temperature coefficient
- High short circuit capability, self limiting to $6 \times I_c$

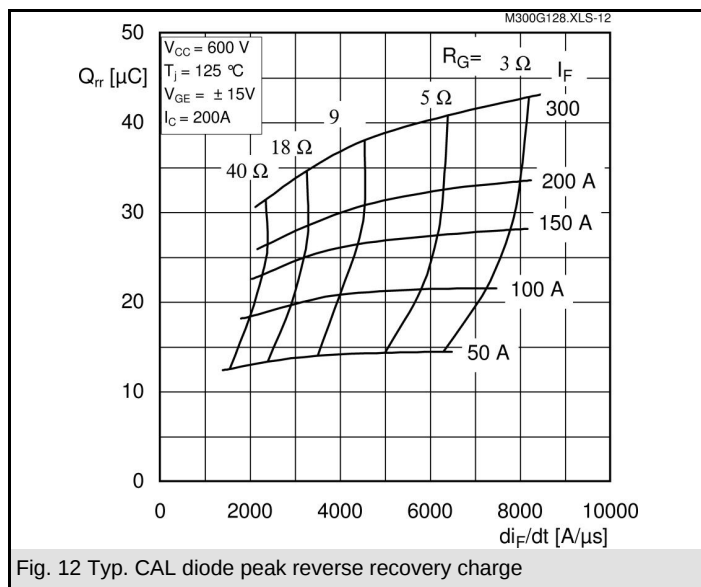
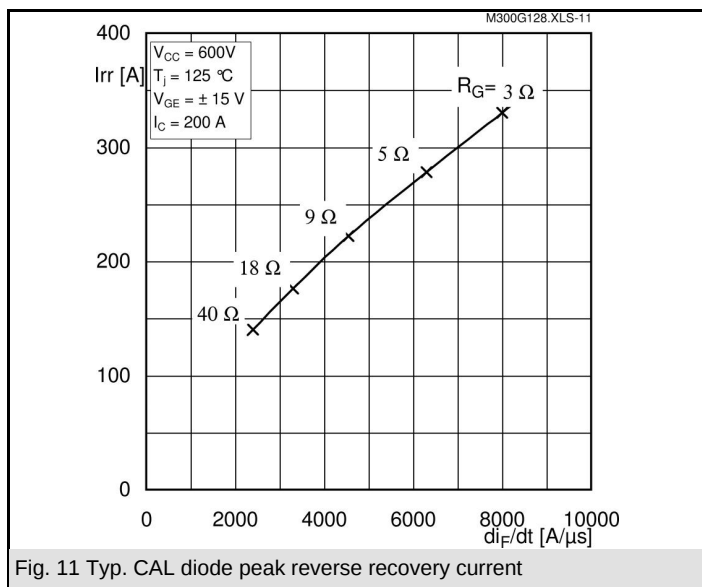
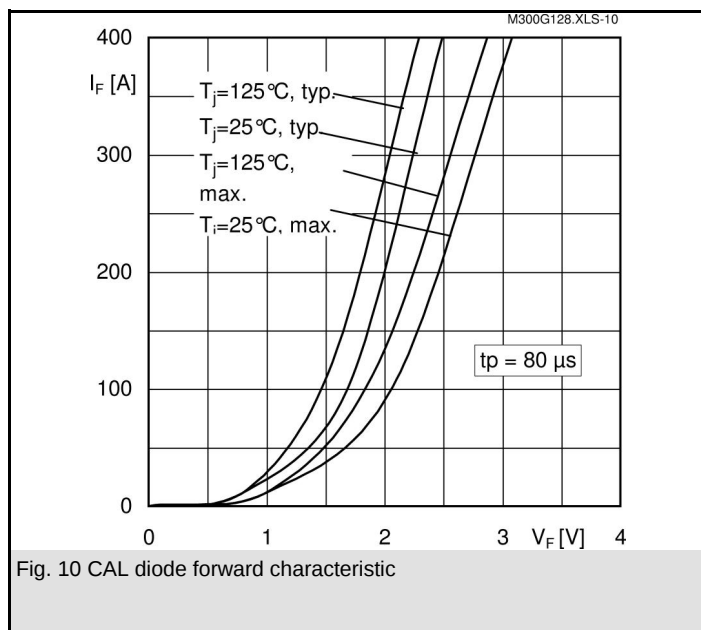
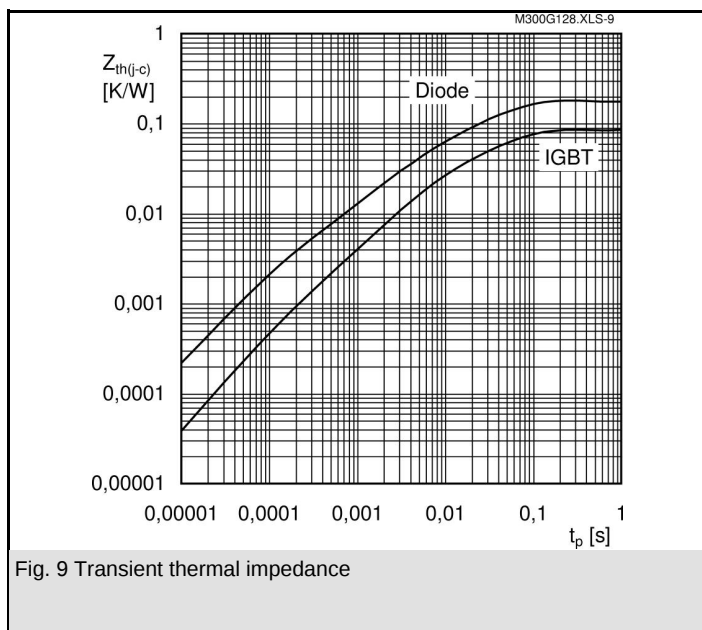
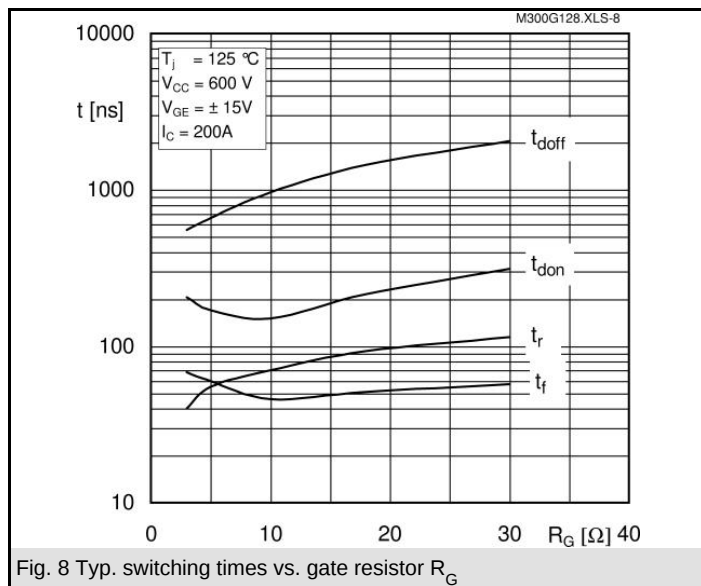
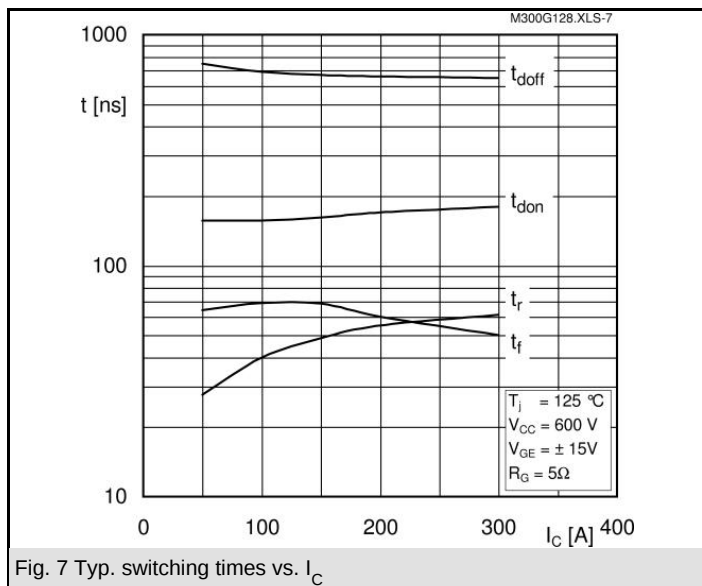
Typical Applications

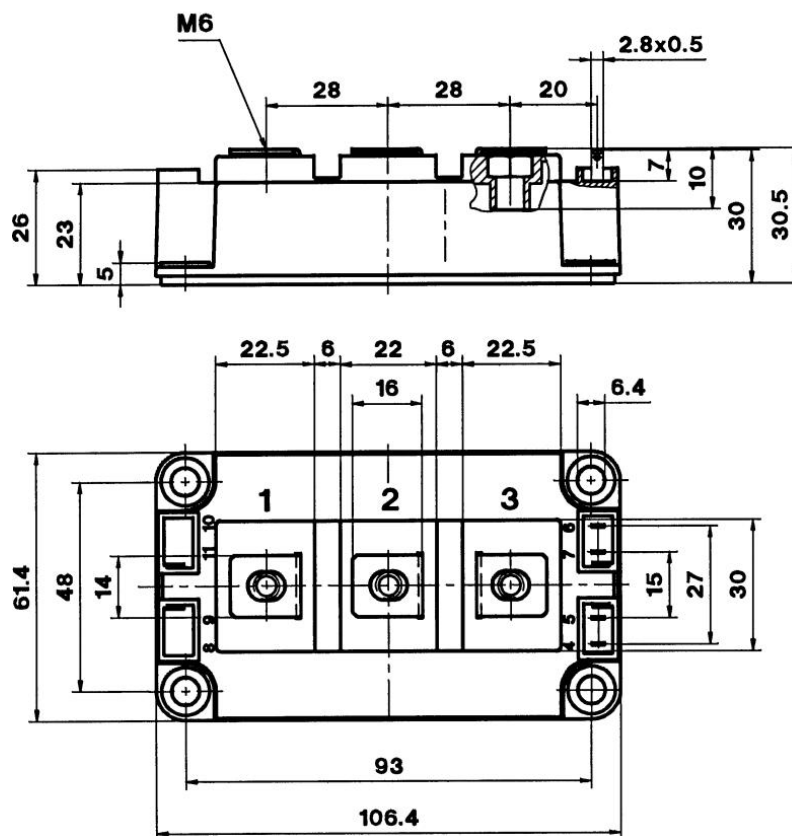
- AC inverter drives
- UPS
- Electronic welders at f_{sw} up to 20 kHz

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

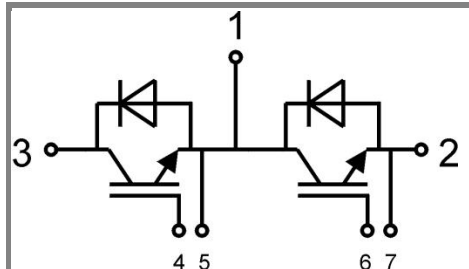






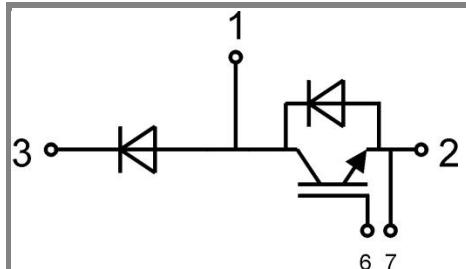


Case D 56



Case D56

GB



Case D57

GAL