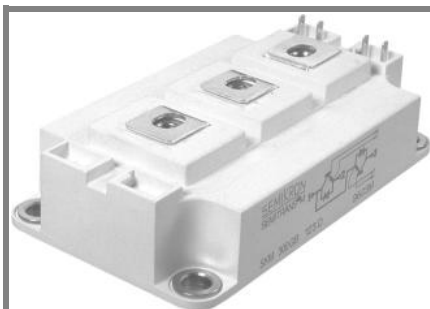


SKM 200GB125D



SEMITRANS® 3

Ultra Fast IGBT Modules

SKM 200GB125D

SKM 200GAL125D

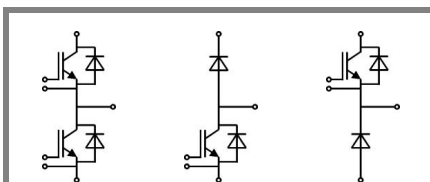
SKM 200GAR125D

Features

- N channel , homogeneous Si
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (13 mm) and creepage distance (20 mm)

Typical Applications

- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at $f_{sw} > 20$ kHz



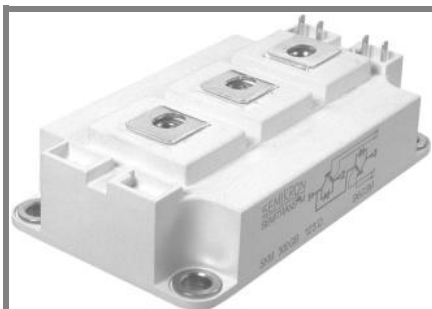
GB

GAL

GAR

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 _{case} = 25 °C	200	A
		T _{case} = 80 °C	160	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		300	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	200	A
		T _{case} = 80 °C	130	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		300	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	1440	A
Freewheeling Diode				
I _F	T _j = °C	T _c = 25 °C	200	A
		T _c = 80 °C	130	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		300	A
I _{FSM}	t _p = 10 ms;	T _j = 150 °C	1440	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 = 6 mA		4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0 V, V _{CE} = V _{CES} T _j = 25 °C			0,15	0,45	mA
V _{CE0}	T _j = 25 °C			1,5	1,75	V
	T _j = 125 °C					V
r _{CE}	V _{GE} = 15 V T _j = 25°C			12	14	mΩ
	T _j = 125°C					mΩ
V _{CE(sat)}	I _{Cnom} = 150 A, V _{GE} = 15 V T _j = °C _{chiplev.}			3,3	3,85	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			10	13	nF
C _{oes}				1,5	2	nF
C _{res}				0,8	1,2	nF
Q _G	V _{GE} = 0V - +20V			1300		nC
R _{Gint}	T _j = °C			2,5		Ω
t _{d(on)}	R _{Gon} = 4 Ω		V _{CC} = 600V I _C = 150A	75		ns
t _r				36		ns
E _{on}				14		mJ
t _{d(off)}	R _{Goff} = 4 Ω		T _j = 125 °C V _{GE} = ±15V	420		ns
t _f				25		ns
E _{off}						mJ
R _{th(j-c)}	per IGBT				0,09	K/W



SEMITRANS® 3

Ultra Fast IGBT Modules

SKM 200GB125D

SKM 200GAL125D

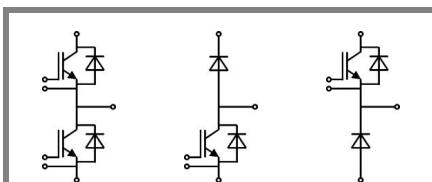
SKM 200GAR125D

Features

- N channel , homogeneous Si
- Low inductance case
- Short tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{cnom}$
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (13 mm) and creepage distance (20 mm)

Typical Applications

- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at $f_{sw} > 20$ kHz



GB

GAL

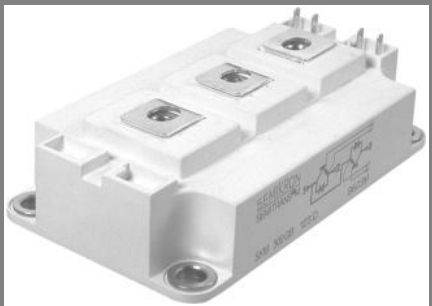
GAR

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 150$ 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 $T_j = 125$ °C		1,1	1,2	V V
r_F	$T_j = 25$ °C $T_j = 125$ °C		6	8,7	mΩ mΩ
I_{RRM} Q_{rr} E_{rr}	$I_F = 150$ A $di/dt = 5500$ A/μs $V_{GE} = 0$ V; $V_{CC} = 600$ V		230 24		A μC mJ
$R_{th(j-c)D}$	per diode			0,25	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 150$ 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 $T_j = 125$ °C		1,1	1,2	V V
r_F	$T_j = 25$ °C $T_j = 125$ °C		6	8,7	V V
I_{RRM} Q_{rr} E_{rr}	$I_F = 150$ A $di/dt = 5500$ A/μs $V_{GE} = 0$ V; $V_{CC} = 600$ V		230 24		A μC mJ
$R_{th(j-c)FD}$	per diode			0,25	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.

SKM 200GB125D



SEMITRANS® 3

Ultra Fast IGBT Modules

SKM 200GB125D
SKM 200GAL125D
SKM 200GAR125D

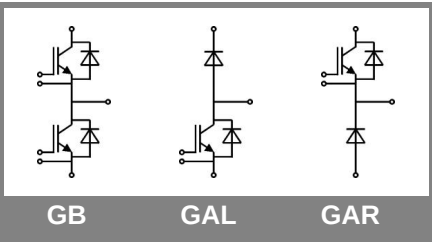
Features

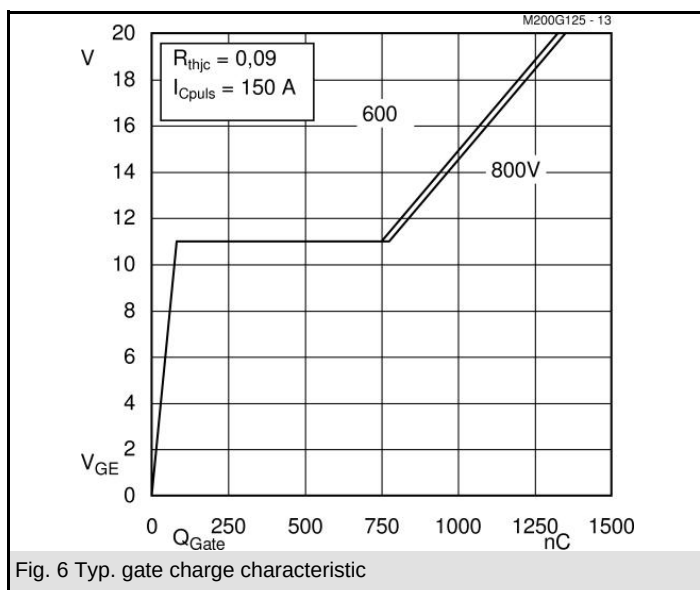
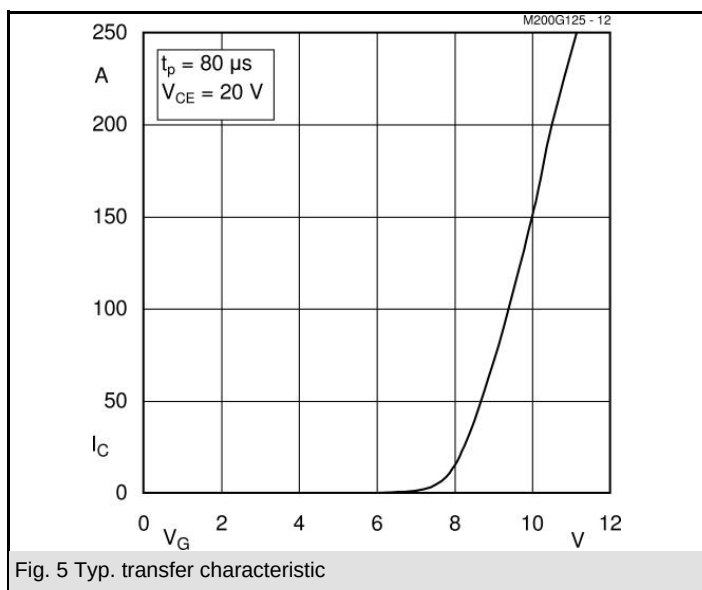
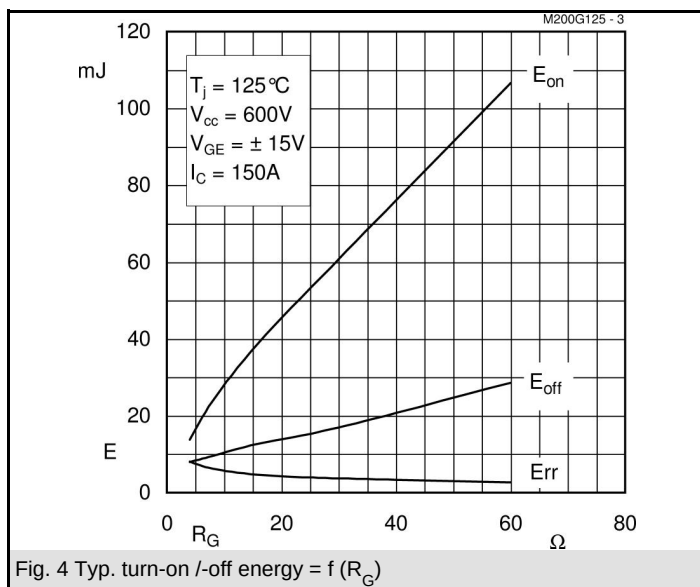
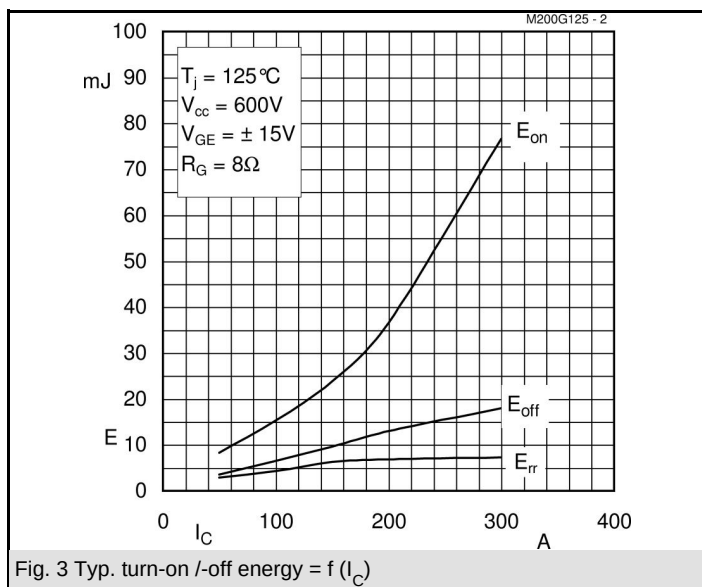
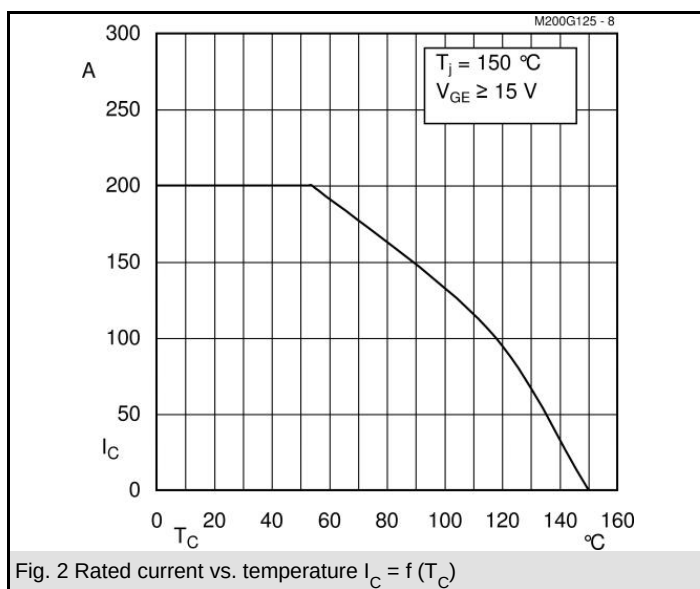
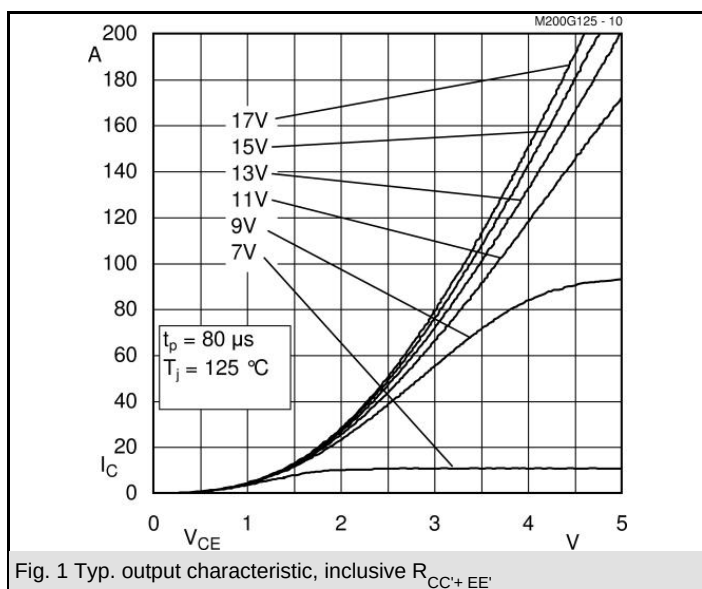
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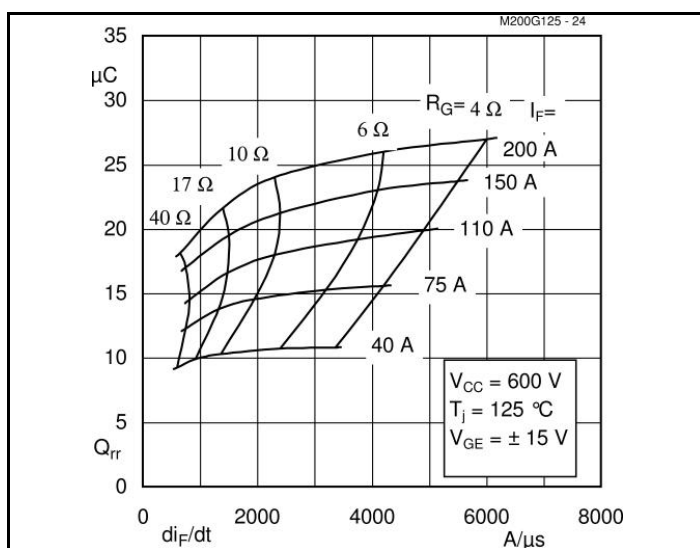
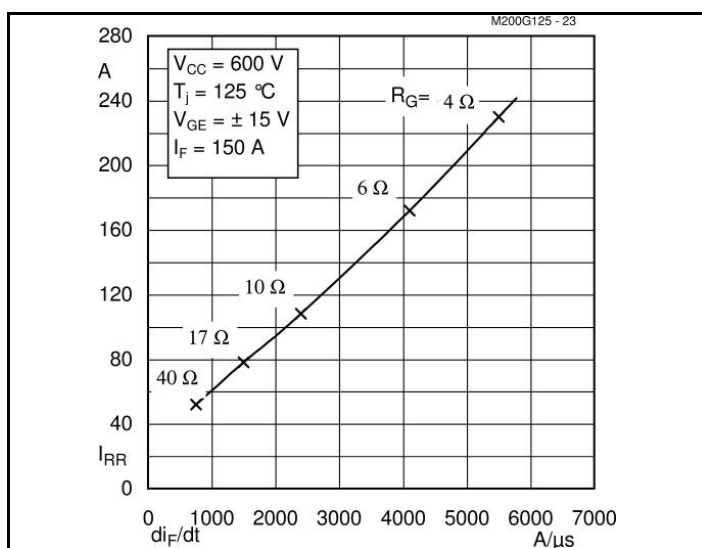
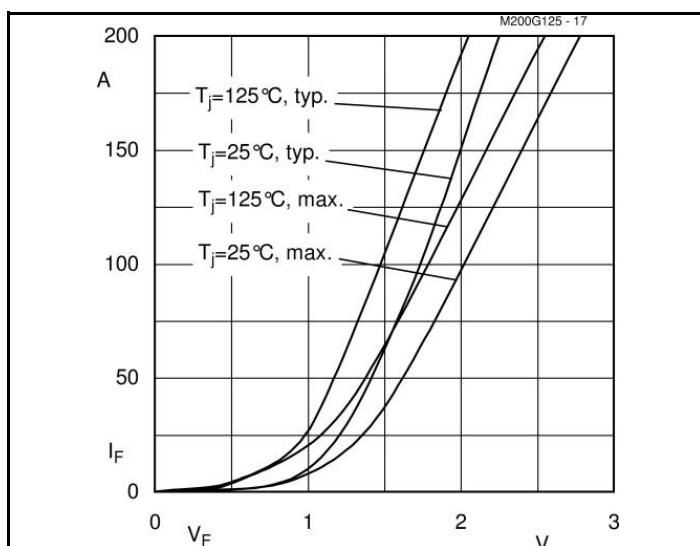
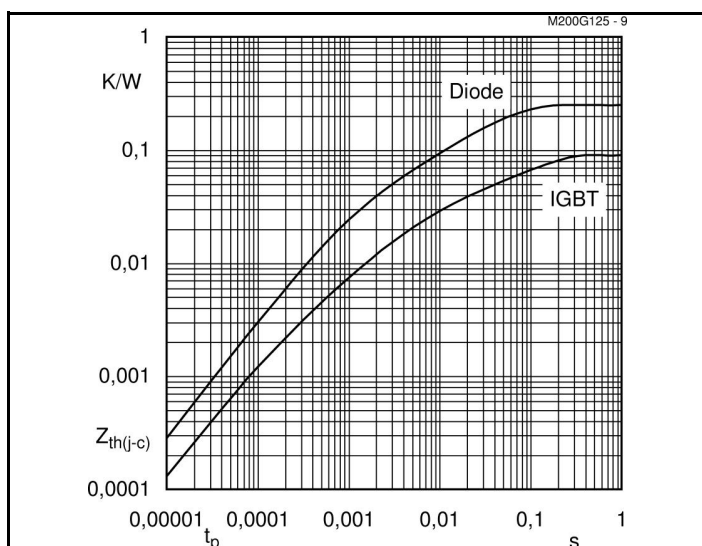
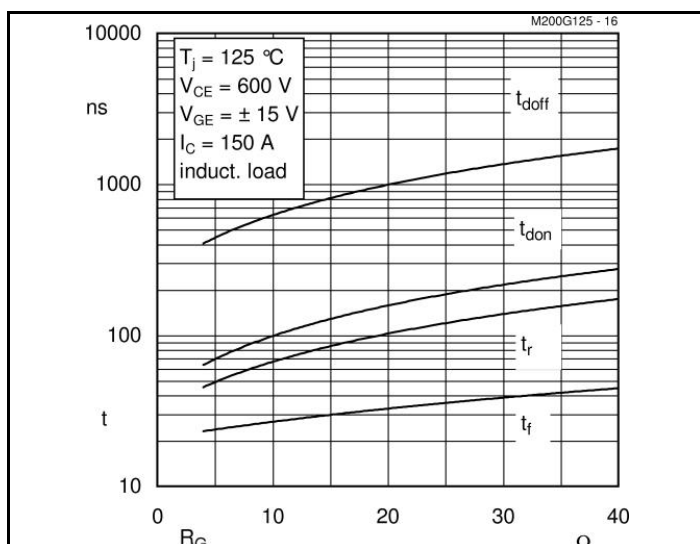
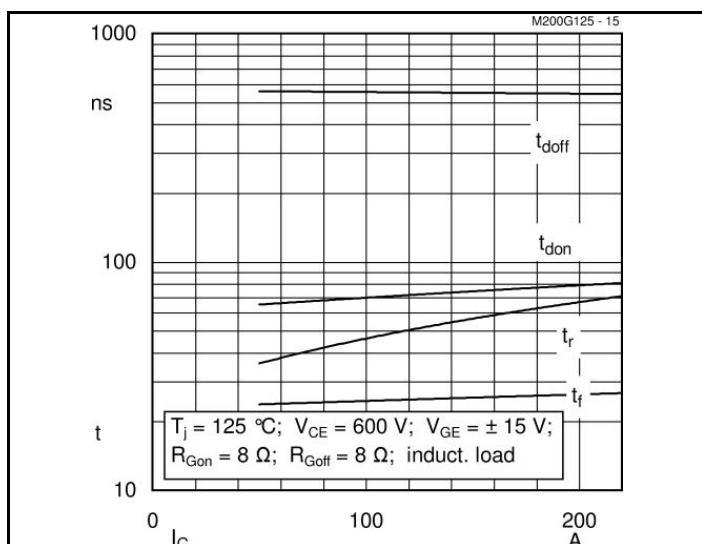
Typical Applications

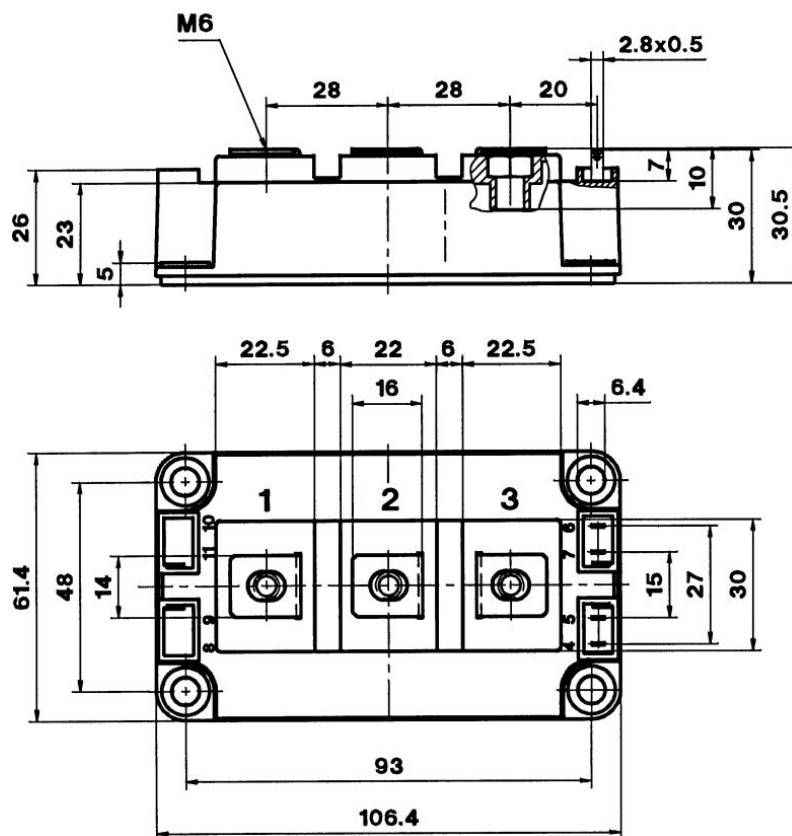
- Switched mode power supplies at $f_{sw} > 20$ kHz
- Resonant inverters up to 100 kHz
- Inductive heating
- Electronic welders at $f_{sw} > 20$ kHz

Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	60	mk/W
R_i	$i = 2$	23	mk/W
R_i	$i = 3$	5,9	mk/W
R_i	$i = 4$	1,1	mk/W
τ_{ui}	$i = 1$	0,0744	s
τ_{ui}	$i = 2$	0,0087	s
τ_{ui}	$i = 3$	0,002	s
τ_{ui}	$i = 4$	0,0015	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	160	mk/W
R_i	$i = 2$	67	mk/W
R_i	$i = 3$	20	mk/W
R_i	$i = 4$	3	mk/W
τ_{ui}	$i = 1$	0,0536	s
τ_{ui}	$i = 2$	0,0034	s
τ_{ui}	$i = 3$	0,077	s
τ_{ui}	$i = 4$	0,0003	s

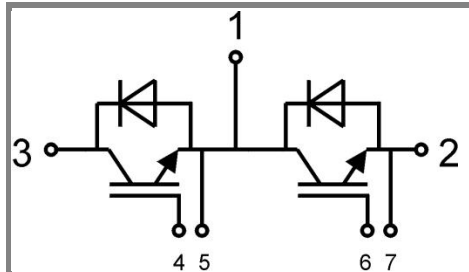






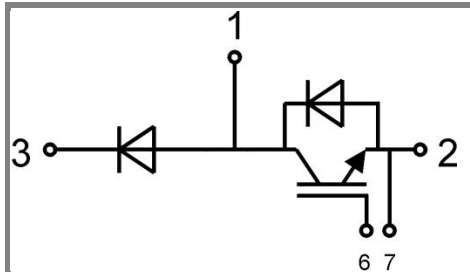


Case D 56



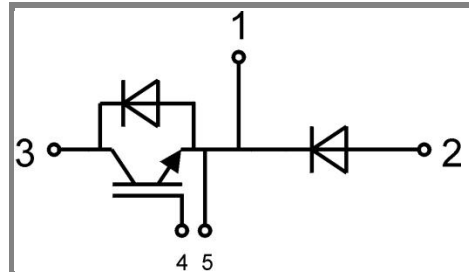
GB

Case D 56



GAL

Case D 57 (→ D 56)



GAR

Case D 58 (→ D 56)