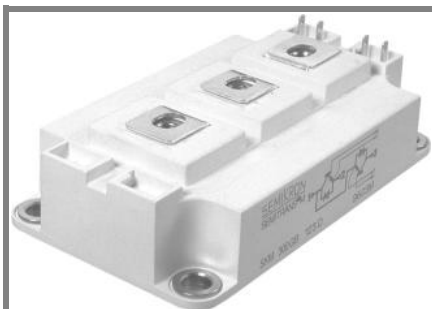


SKM 300GB123D



SEMITRANS® 3

IGBT Modules

SKM 300GB123D

SKM 300GAL123D

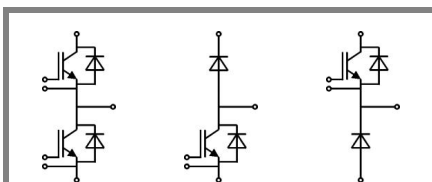
SKM 300GAR123D

Features

- MOS input (voltage controlled)
- N channel , Homogeneous Si
- Low inductance case
- Very low tail current with low temperature dependence
- High short circuit capability, self limiting to $6 \times I_{Cnom}$
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology
- Large clearance (12 mm) and creepage distance (20 mm)

Typical Applications

- AC inverter drives
- UPS



GB

GAL

GAR

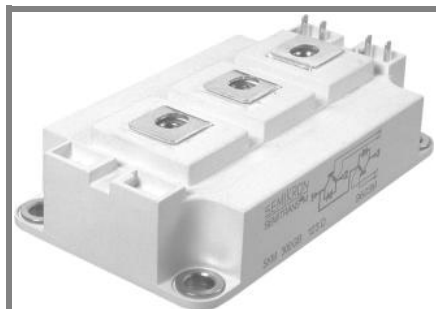
Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V _{CES}	T _j = 25 °C	1200	V	
I _C	T _j = 150 °C	T _{case} = 25 °C	300	A
		T _{case} = 80 °C	220	A
I _{CRM}	I _{CRM} =2xI _{Cnom}	400	A	
V _{GES}		± 20	V	
t _{psc}	V _{CC} = 600 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 1200 V	10	μs	

Inverse Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	260	A
		$T_{case} = 80^\circ\text{C}$	180	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$		400	A
I_{FSM}	$t_p = 10\text{ ms; sin.}$	$T_j = 150^\circ\text{C}$	2200	A

Freewheeling Diode				
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	350	A
		$T_{case} = 80^\circ\text{C}$	230	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$		600	A
I_{FSM}	$t_p = 10\text{ ms; sin}$	$T_j = 150^\circ\text{C}$	2900	A

Module				
$I_{t(RMS)}$			500	A
T_{vj}			- 40...+ 150	$^\circ\text{C}$
T_{stg}			- 40...+ 125	$^\circ\text{C}$
V_{isol}	AC, 1 min.		2500	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			0,1	0,3	mA
V _{CE0}	T _j = 25 °C T _j = 125 °C			1,4	1,6	V
				1,6	1,8	V
r _{CE}	V _{GE} = 15 V T _j = 25°C T _j = 125°C			5,5	7	mΩ
				7,5	9,5	mΩ
V _{CE(sat)}	I _{Cnom} = 200 A, V _{GE} = 15 V T _j = 25°C _{chiplev.} T _j = 125°C _{chiplev.}			2,5	3	V
				3,1	3,7	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz		18	24	nF	
C _{oes}			2,5	3,2	nF	
C _{res}			1	1,3	nF	
Q _G	-8V - +20V			2000		nC
R _{Gint}	T _j = °C			2,5		Ω
t _{d(on)}	R _{Gon} = 4,7 Ω	V _{CC} = 600V I _{Cnom} = 200A T _j = 125 °C		250	400	ns
t _r				90	160	ns
E _{on}				28		mJ
t _{d(off)}	R _{Goff} = 4,7 Ω			550	700	ns
t _f				70	100	ns
E _{off}				26		mJ
R _{th(j-c)}	per IGBT				0,075	K/W



SEMITRANS® 3

IGBT Modules

SKM 300GB123D

SKM 300GAL123D

SKM 300GAR123D

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- Very low tail current with low temperature dependence
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- Latch-up free
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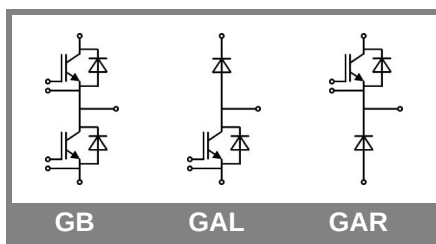
Typical Applications

- AC inverter drives
- UPS

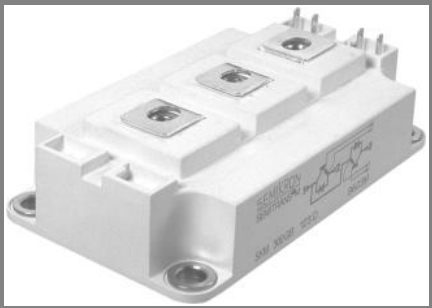
Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 200 \text{ A}; V_{GE} = 0 \text{ V}$ $T_j = 25^\circ\text{C}_{chiplev.}$		2	2,5	V
V_{F0}	$T_j = 25^\circ\text{C}$		1,1	1,2	V
	$T_j = 125^\circ\text{C}$				V
r_F	$T_j = 25^\circ\text{C}$		4,5	6,5	mΩ
	$T_j = 125^\circ\text{C}$				mΩ
I_{RRM}	$I_{Fnom} = 200 \text{ A}$ $T_j = 125^\circ\text{C}$		105		A
Q_{rr}	$di/dt = 4000 \text{ A}/\mu\text{s}$		10		μC
E_{rr}	$V_{GE} = 0 \text{ V}; V_{CC} = 600 \text{ V}$				mJ
$R_{th(j-c)D}$	per diode			0,18	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$ $T_j = 25^\circ\text{C}_{chiplev.}$		2	2,5	V
V_{F0}	$T_j = 25^\circ\text{C}$		1,1	1,2	V
	$T_j = 125^\circ\text{C}$				V
r_F	$T_j = 25^\circ\text{C}$		3	4,3	V
	$T_j = 125^\circ\text{C}$				V
I_{RRM}	$I_{Fnom} = 200 \text{ A}$ $T_j = 125^\circ\text{C}$		140		A
Q_{rr}	$di/dt = 3500 \text{ A}/\mu\text{s}$		34		μC
E_{rr}	$V_{GE} = 0 \text{ V}; V_{CC} = 600 \text{ V}$				mJ
$R_{th(j-c)FD}$	per diode			0,15	K/W
Module					
L_{CE}			15	20	nH
$R_{CC'+EE'}$	res., terminal-chip	$T_{case} = 25^\circ\text{C}$	0,35		mΩ
		$T_{case} = 125^\circ\text{C}$	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.



SKM 300GB123D



SEMITRANS® 3

IGBT Modules

SKM 300GB123D
SKM 300GAL123D
SKM 300GAR123D

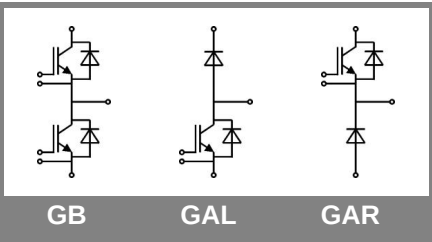
Features

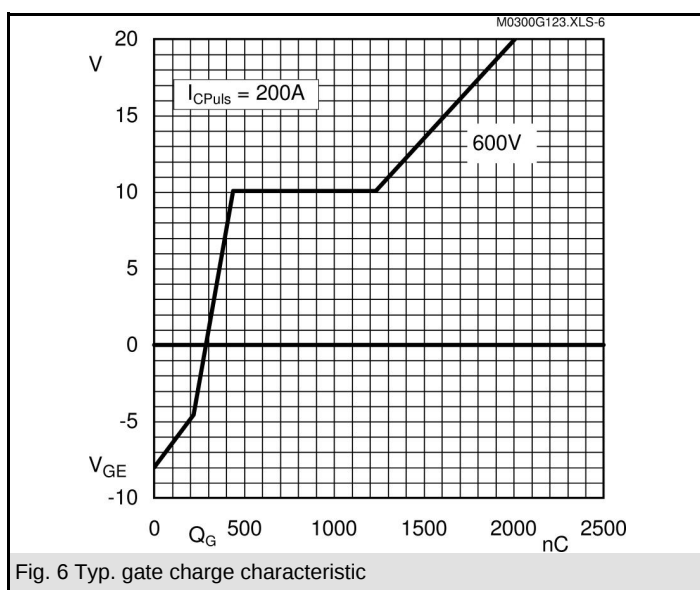
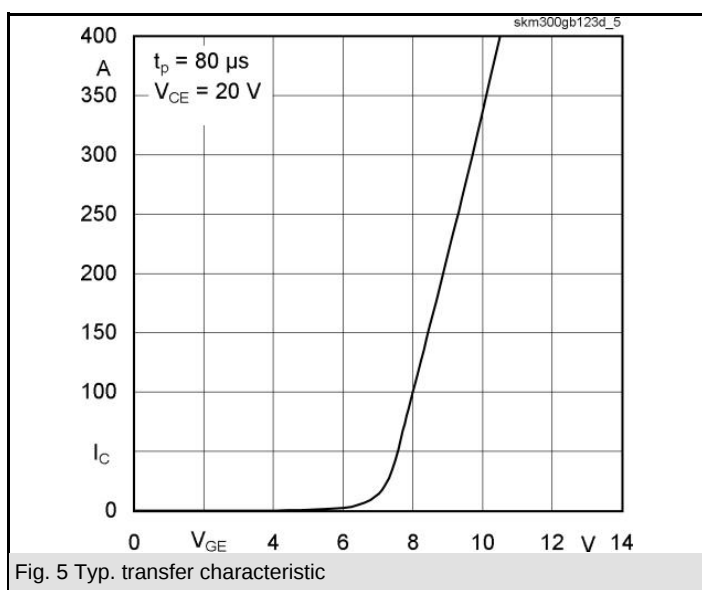
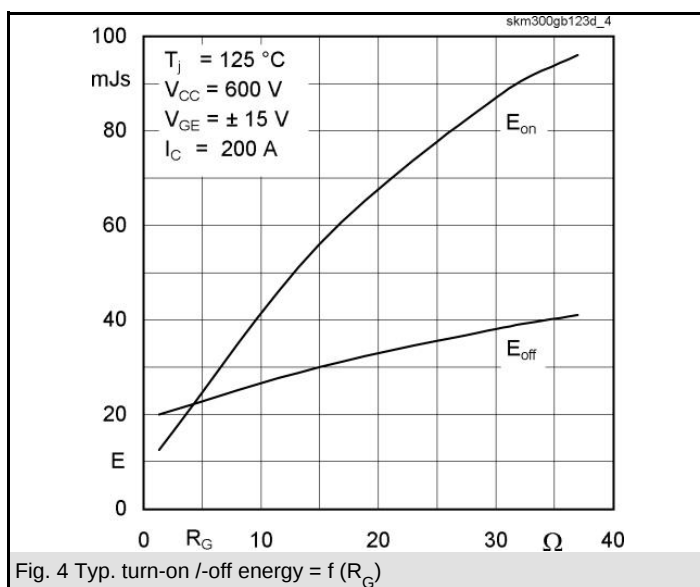
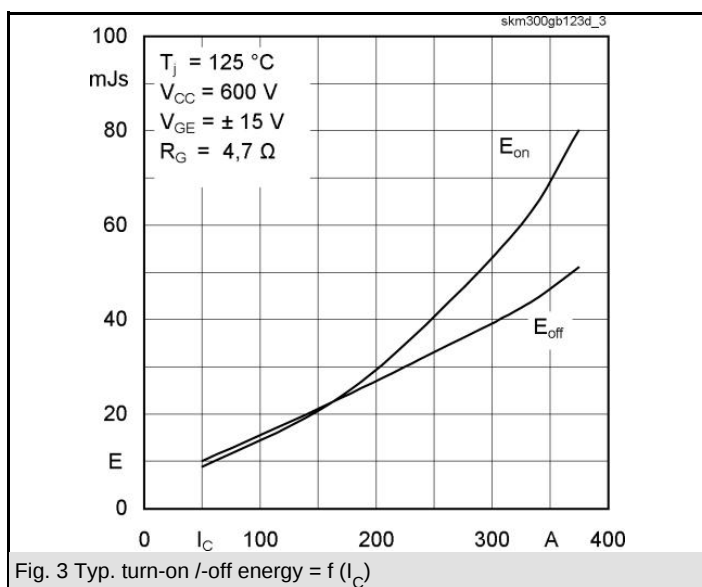
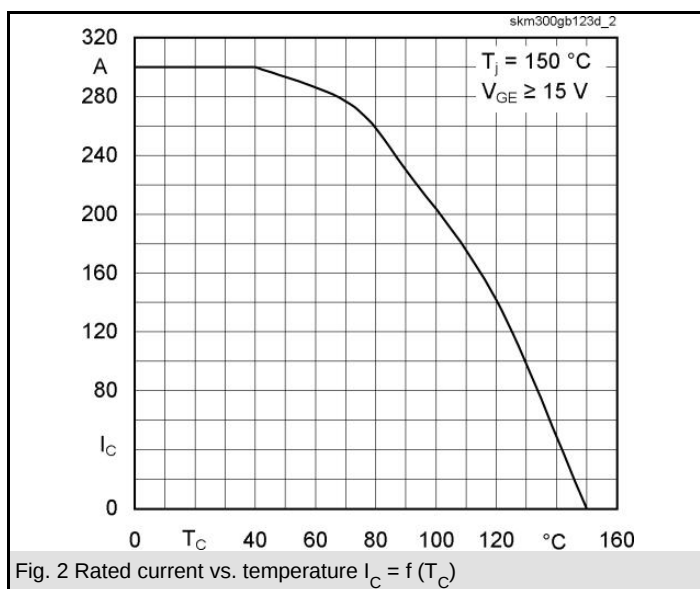
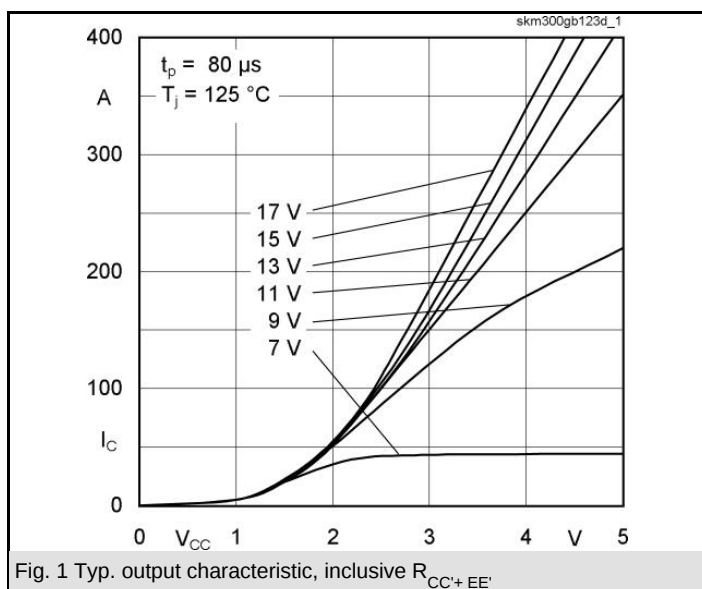
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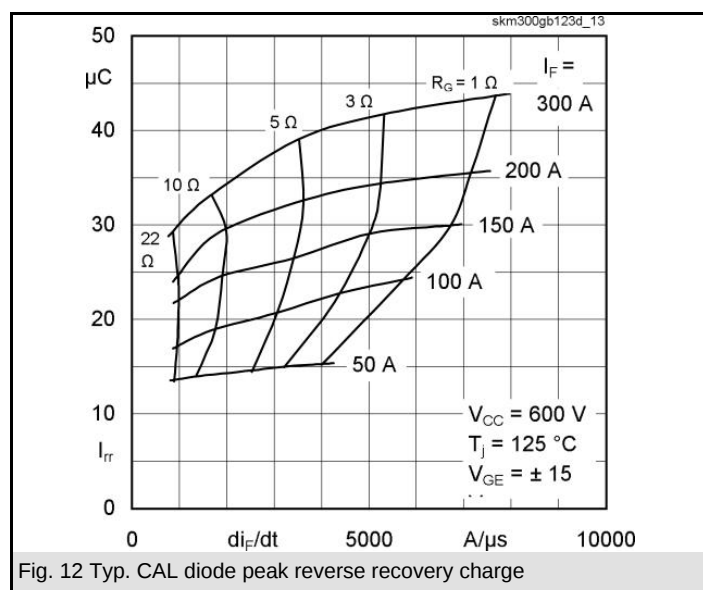
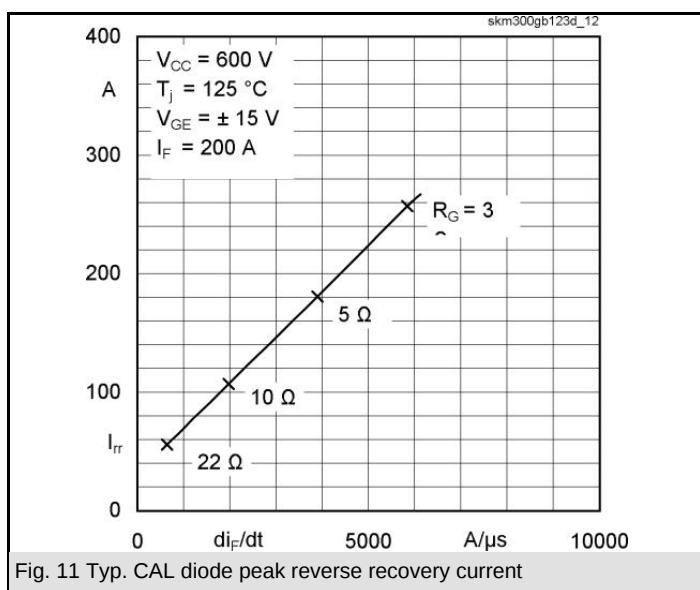
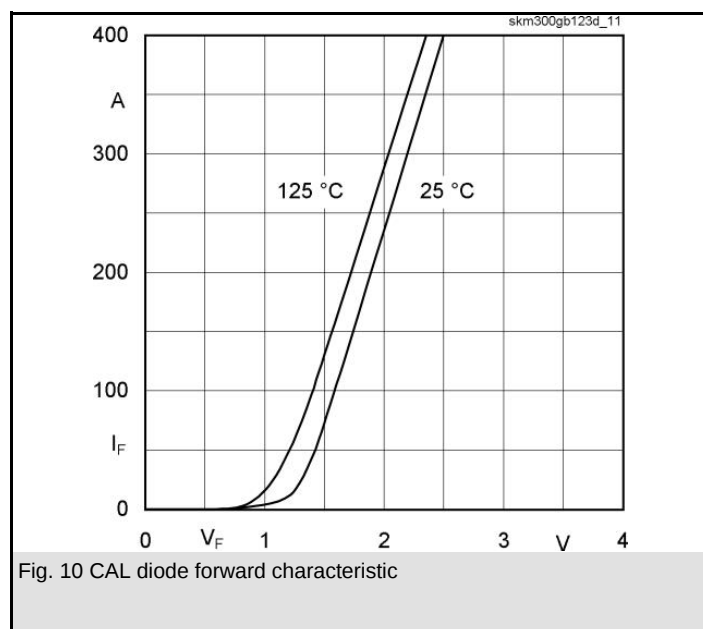
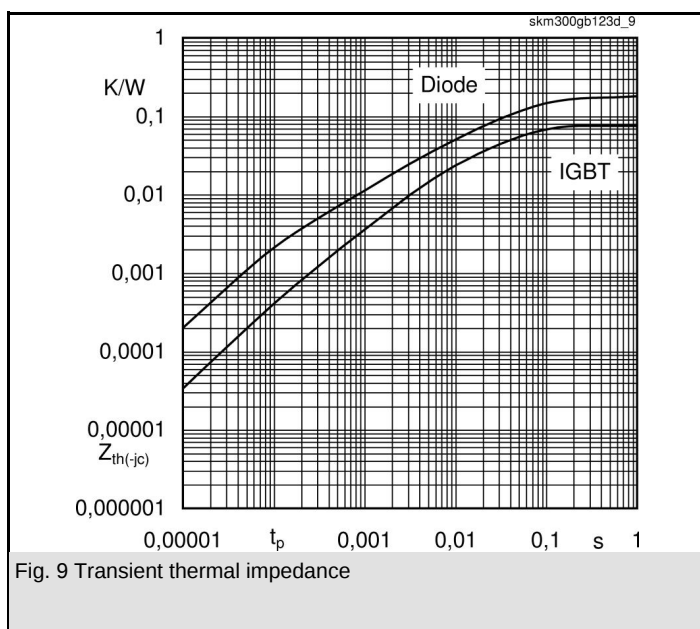
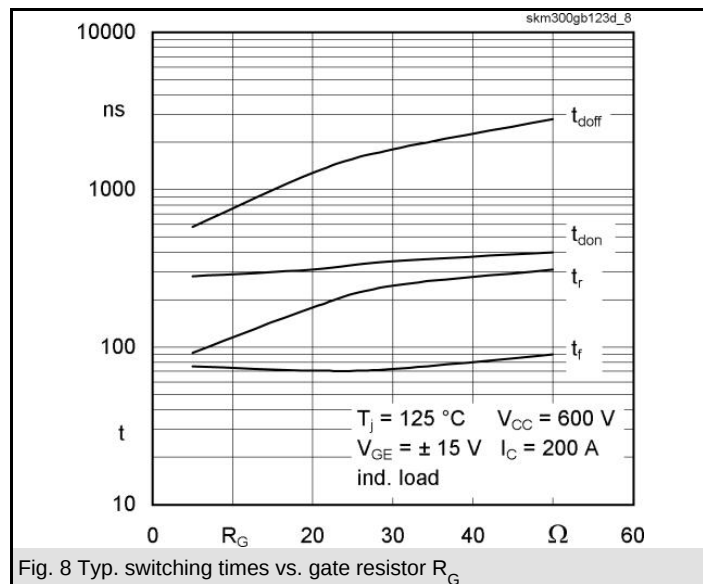
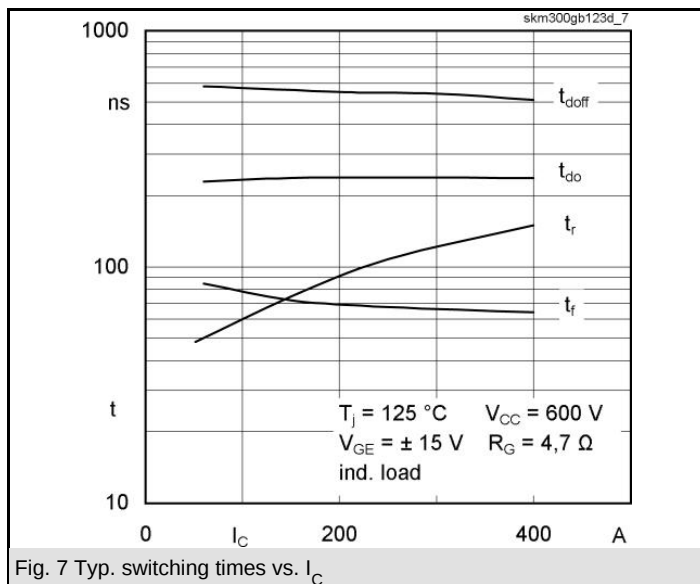
Typical Applications

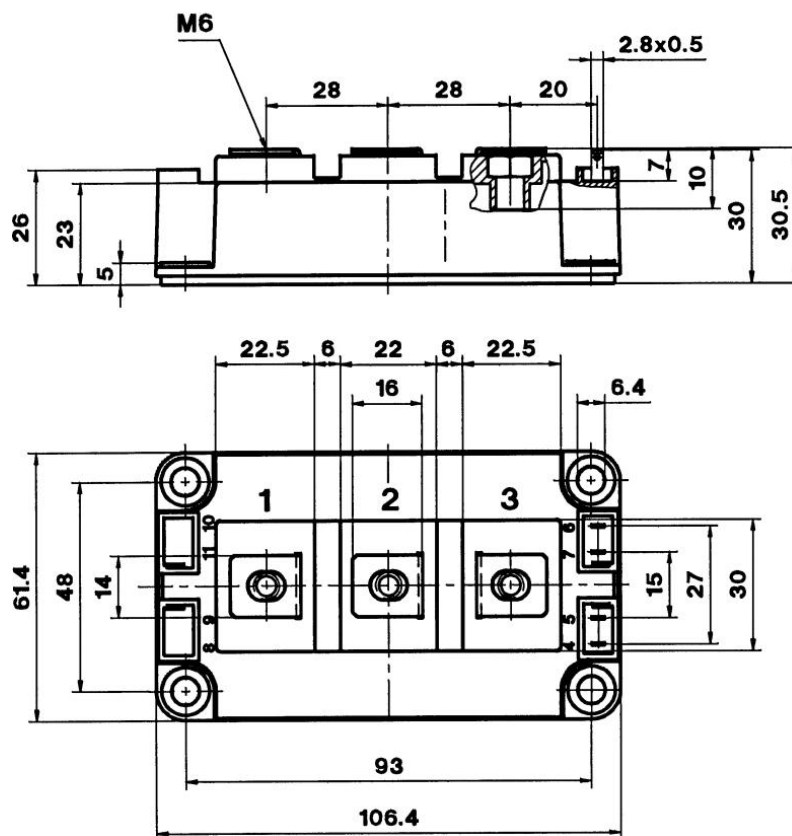
- AC inverter drives
- UPS

Z_{th} Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$			
R_i	$i = 1$	53	mk/W
R_i	$i = 2$	18,5	mk/W
R_i	$i = 3$	3,1	mk/W
R_i	$i = 4$	0,4	mk/W
τ_{a_i}	$i = 1$	0,04	s
τ_{a_i}	$i = 2$	0,0189	s
τ_{a_i}	$i = 3$	0,0017	s
τ_{a_i}	$i = 4$	0,003	s
$Z_{th(j-c)D}$			
R_i	$i = 1$	0,1151	mk/W
R_i	$i = 2$	0,0525	mk/W
R_i	$i = 3$	0,0111	mk/W
R_i	$i = 4$	0,0022	mk/W
τ_{a_i}	$i = 1$	0,0366	s
τ_{a_i}	$i = 2$	0,0113	s
τ_{a_i}	$i = 3$	0,003	s
τ_{a_i}	$i = 4$	0,0002	s

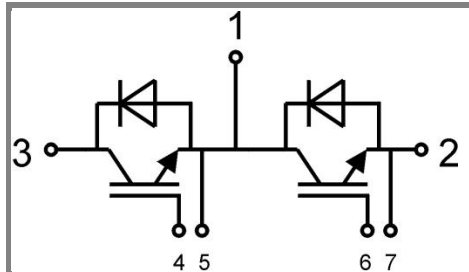






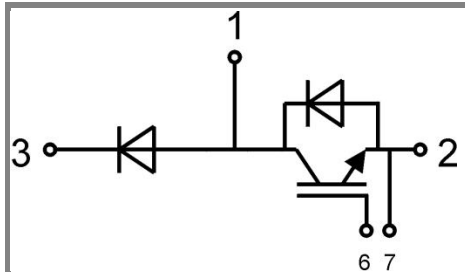


Case D 56



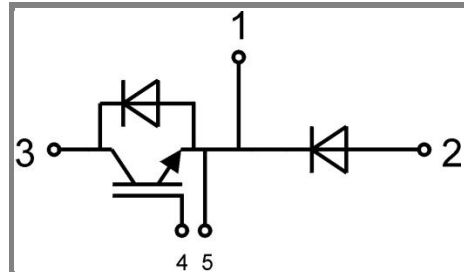
GB

Case D 56



GAL

Case D 57 (→ D 56)



GAR

Case D 58 (→ D 56)