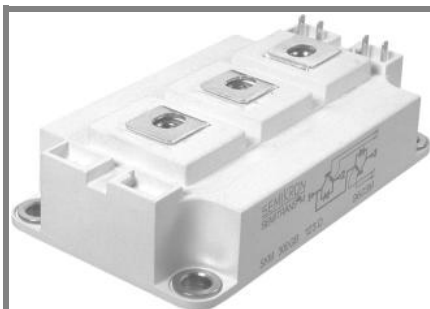




SEMITRANS® 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

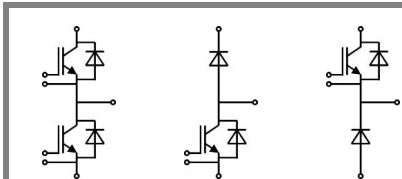
SKM 300GAL063D

Features

- NPT- Non punch-through IGBT
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- 50 % less turn off losses
- 30 % less short circuit current
- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
- Fast & soft inverse CAL diodes
- Isolated copper baseplate using DCB Direct Copper Bonding Technology without hard mould
- Large clearance (13 mm) and creepage distances (20 mm)

Typical Applications

- Switching (not for linear use)
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters



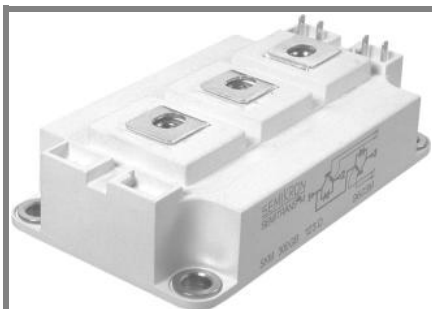
GB

GAL

GAR

Absolute Maximum Ratings			T _c = 25 °C, unless otherwise specified	
Symbol	Conditions		Values	Units
IGBT				
V _{CES}	T _j = 25 °C		600	V
I _C	T _j = 150 °C	T _{case} = 25 °C	400	A
		T _{case} = 70 °C	300	A
I _{CRM}	I _{CRM} =2xI _{Cnom}		600	A
V _{GES}			± 20	V
t _{psc}	V _{CC} = 300 V; V _{GE} ≤ 20 V; T _j = 125 °C V _{CES} < 600 V		10	μs
Inverse Diode				
I _F	T _j = 150 °C	T _{case} = 25 °C	250	A
		T _{case} = 80 °C	170	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		600	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	1600	A
Freewheeling Diode				
I _F	T _j = 150 °C	T _c = 25 °C	400	A
		T _c = 80 °C	270	A
I _{FRM}	I _{FRM} =2xI _{Fnom}		800	A
I _{FSM}	t _p = 10 ms; sin.	T _j = 150 °C	2800	A
Module				
I _{t(RMS)}			500	A
T _{vj}			- 40 ... + 150	°C
T _{stg}			- 40 ... + 125	°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 = 6 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			1,05		V
	T _j = 125 °C			1		V
r _{CE}	V _{GE} = 15 V T _j = 25°C			3,2		mΩ
	T _j = 125°C			4,7		mΩ
V _{CE(sat)}	I _{Cnom} = 300 A, V _{GE} = 15 V T _j = 25°C _{chiplev.}			2,1	2,5	V
	T _j = 125°C _{chiplev.}			2,4	2,8	V
C _{ies}	V _{CE} = 25, V _{GE} = 0 V f = 1 MHz			17		nF
C _{oes}				2		nF
C _{res}				1,2		nF
Q _G	V _{GE} = 0V...+15V			720		nC
R _{Gint}	T _j = °C			0		Ω
t _{d(on)}	R _{Gon} = 6 Ω V _{CC} = 300V I _C = 300A			160		ns
t _r				80		ns
E _{on}				14		mJ
t _{d(off)}				550		ns
t _f	R _{Goff} = 6 Ω T _j = 125 °C V _{GE} = ± 15V			50		ns
E _{off}				13		mJ
R _{th(j-c)}	per IGBT				0,09	K/W



SEMITRANS® 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

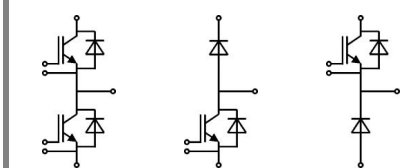
SKM 300GAL063D

Features

- NPT- Non punch-through IGBT
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- 50 % less turn off losses
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- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
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Typical Applications

- Switching (not for linear use)
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters



GB

GAL

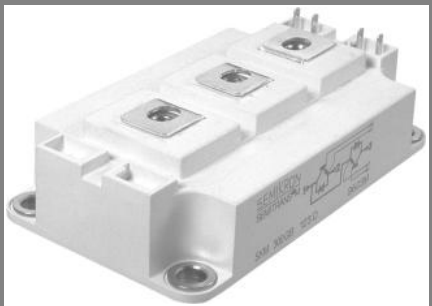
GAR

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}$; $V_{GE} = 0 \text{ V}$ $T_j = 25^\circ\text{C}_{chiplev.}$		1,65	2	V
	$T_j = 125^\circ\text{C}_{chiplev.}$		1,65	2	V
V_{F0}	$T_j = 125^\circ\text{C}$			0,9	V
r_F	$T_j = 125^\circ\text{C}$		3	3,7	mΩ
I_{RRM}	$I_F = 300 \text{ A}$ $T_j = 125^\circ\text{C}$		120		A
Q_{rr}	$V_{GE} = -15 \text{ V}$; $V_{CC} = 300 \text{ V}$		18		μC
E_{rr}					mJ
$R_{th(j-c)D}$	per diode			0,25	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}$; $V_{GE} = 0 \text{ V}$ $T_j = 25^\circ\text{C}_{chiplev.}$		1,65	2	V
	$T_j = 125^\circ\text{C}_{chiplev.}$		1,65	2	V
V_{F0}	$T_j = 125^\circ\text{C}$			0,9	V
r_F	$T_j = 125^\circ\text{C}$			3	V
I_{RRM}	$I_F = 300 \text{ A}$ $T_j = 125^\circ\text{C}$		130		A
Q_{rr}	$V_{GE} = -15 \text{ V}$; $V_{CC} = 300 \text{ V}$		23		μC
E_{rr}					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 300GB063D



SEMITRANS® 3

Superfast IGBT Modules

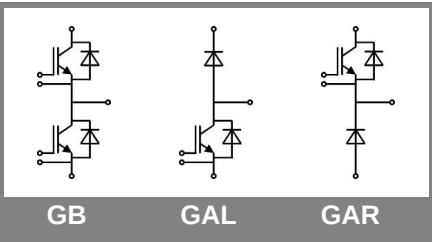
SKM 300GB063D
SKM 300GAR063D
SKM 300GAL063D

Features

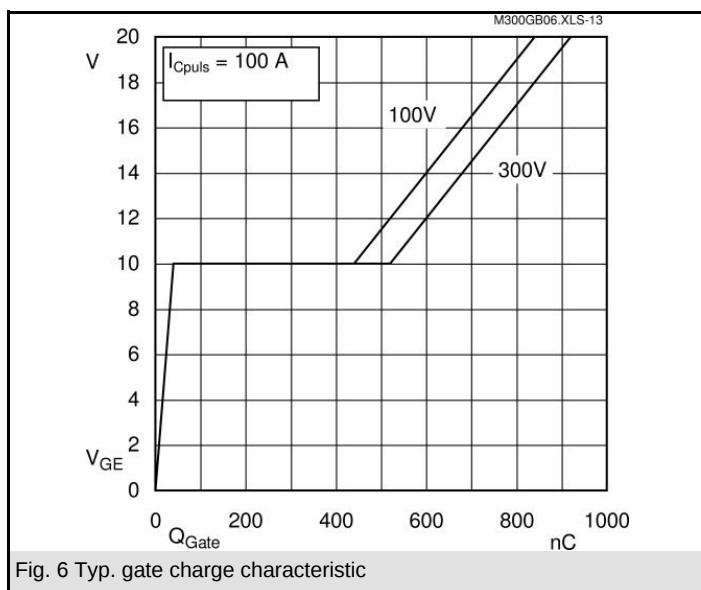
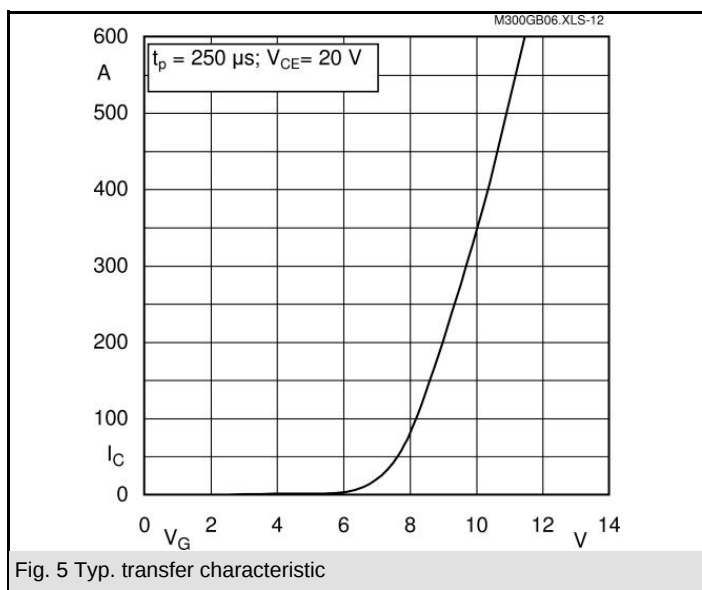
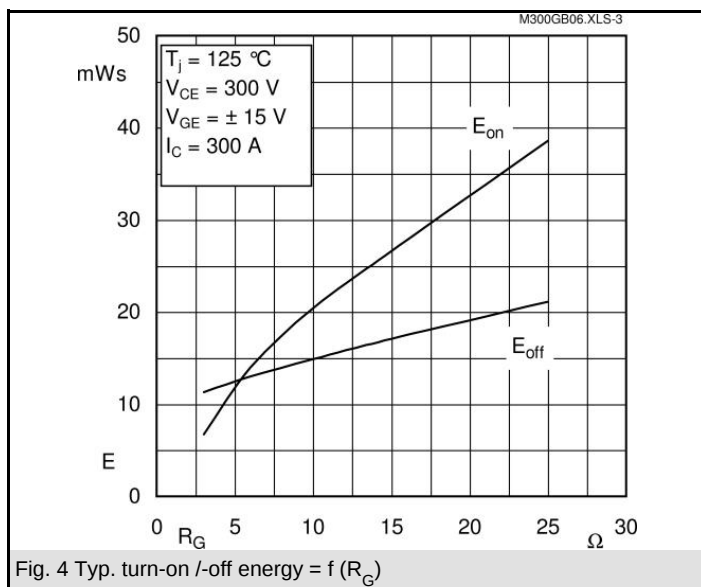
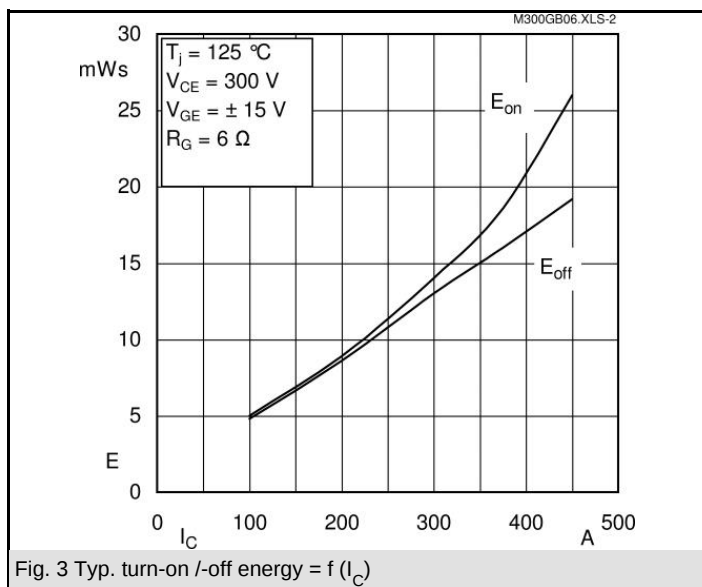
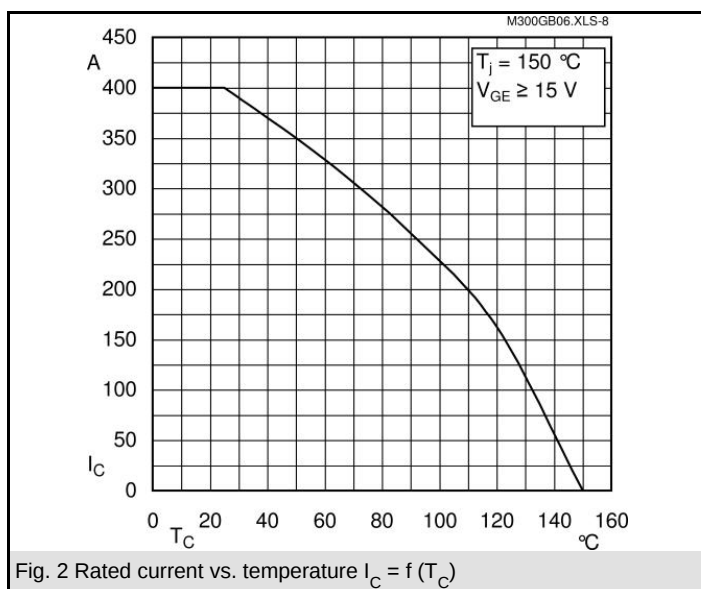
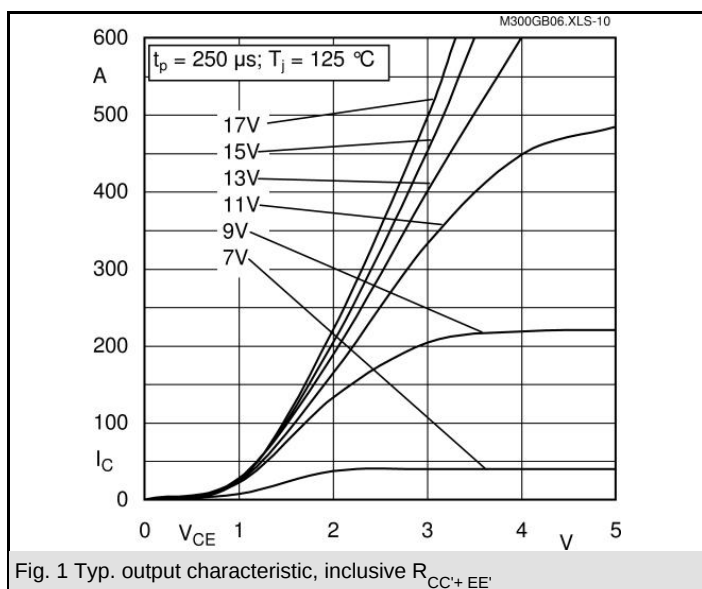
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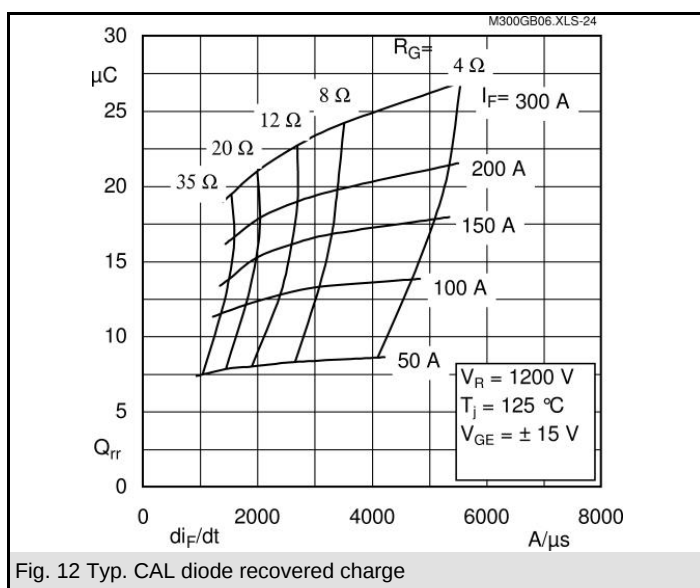
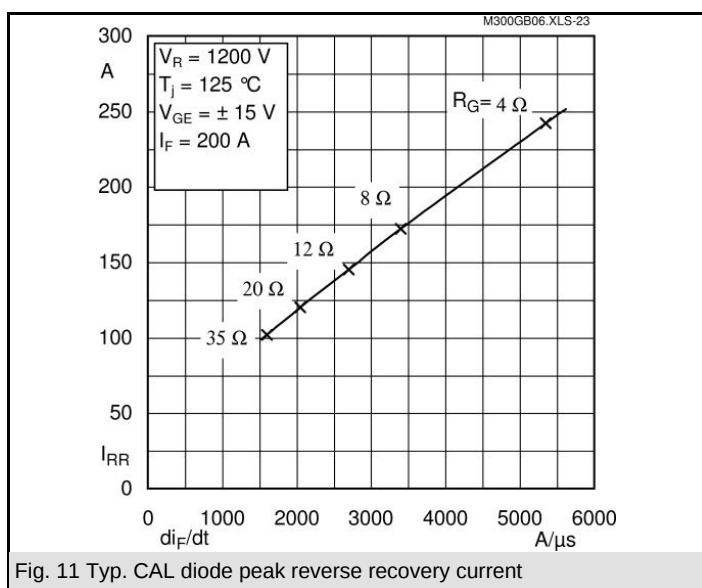
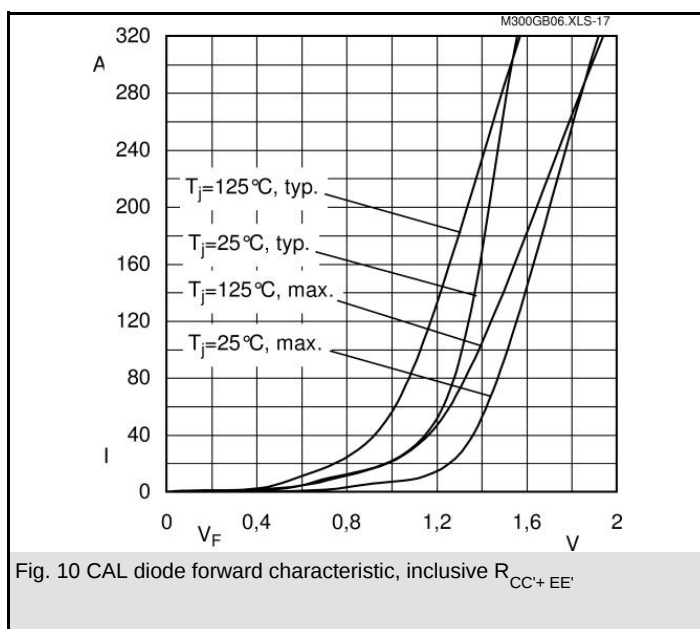
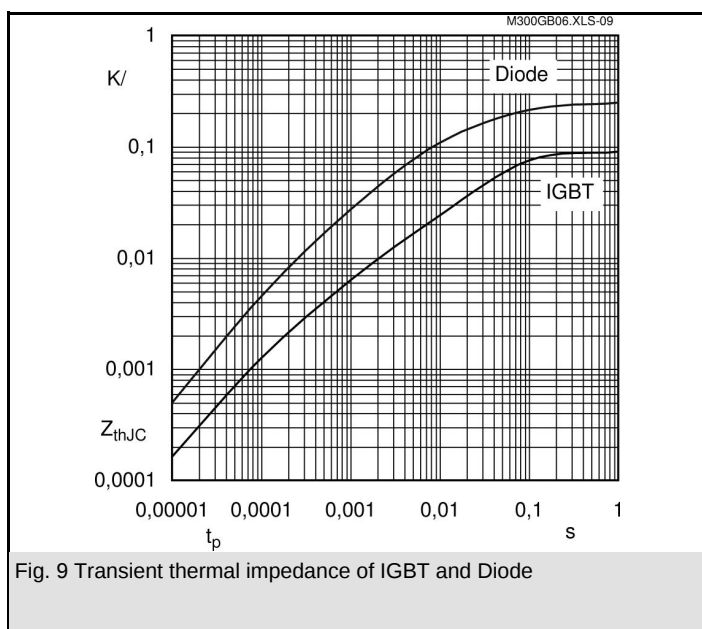
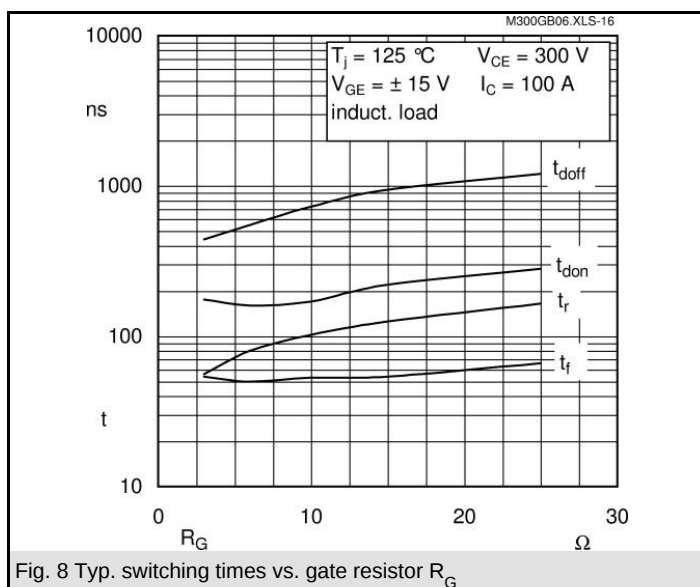
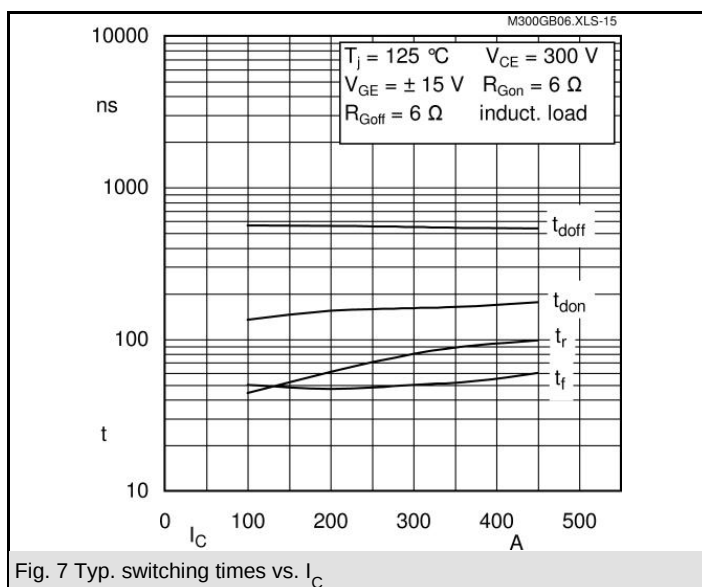
Typical Applications

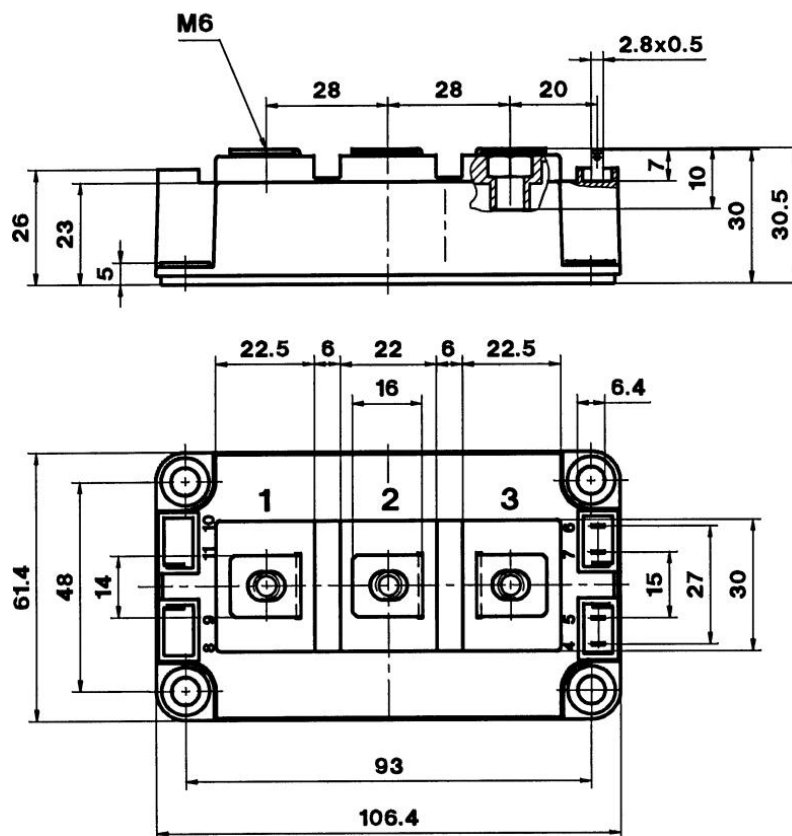
- Switching (not for linear use)
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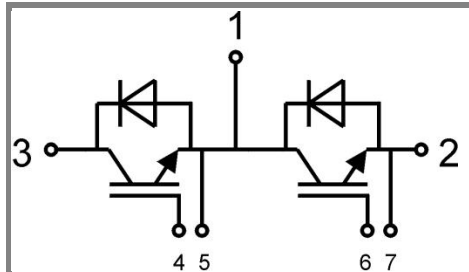
Z_{th}	Symbol	Conditions	Values	Units
$Z_{th(j-c)I}$				
R_i		$i = 1$	65	mk/W
R_i		$i = 2$	19	mk/W
R_i		$i = 3$	4,7	mk/W
R_i		$i = 4$	1,3	mk/W
τ_{ui}		$i = 1$	0,0518	s
τ_{ui}		$i = 2$	0,0241	s
τ_{ui}		$i = 3$	0,0021	s
τ_{ui}		$i = 4$	0,0001	s
$Z_{th(j-c)D}$				
R_i		$i = 1$	140	mk/W
R_i		$i = 2$	85	mk/W
R_i		$i = 3$	20,55	mk/W
R_i		$i = 4$	4,45	mk/W
τ_{ui}		$i = 1$	0,0613	s
τ_{ui}		$i = 2$	0,0041	s
τ_{ui}		$i = 3$	0,0045	s
τ_{ui}		$i = 4$	0,0003	s



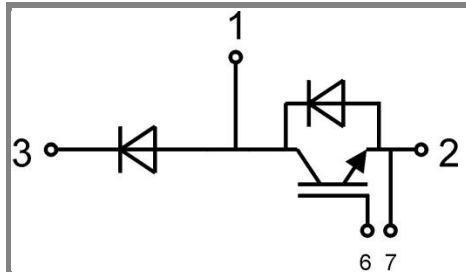




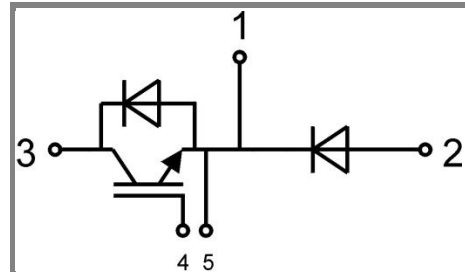
Case D 56



GB Case D 56



GAL Case D 57 (→ D 56)



GAR Case D 58 (→ D 56)