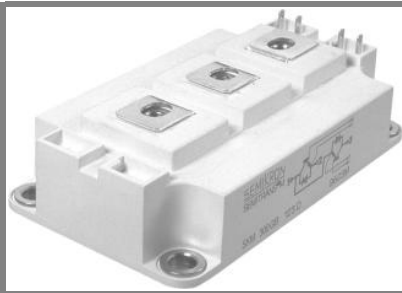


SKM 300GB063D



SEMITRANS® 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

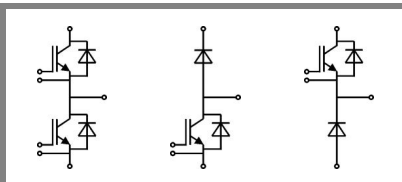
SKM 300GAL063D

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		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT				
V_{CES}	$T_j = 25^\circ\text{C}$	600	V	
I_C	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	400	A
		$T_{case} = 70^\circ\text{C}$	300	A
I_{CRM}	$I_{CRM} = 2 \times I_{Cnom}$	600	A	
V_{GES}		± 20	V	
t_{psc}	$V_{CC} = 300\text{ V}; V_{GE} \leq 20\text{ V}; T_j = 125^\circ\text{C}$ $V_{CES} < 600\text{ V}$	10	μs	

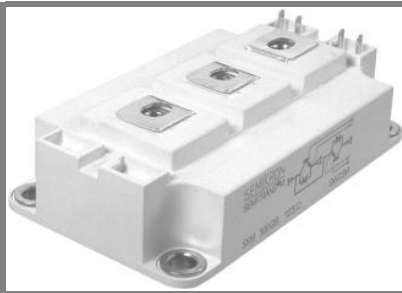
Inverse Diode		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
I_F	$T_j = 150^\circ\text{C}$	$T_{case} = 25^\circ\text{C}$	250	A
		$T_{case} = 80^\circ\text{C}$	170	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	600	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	1600	A

Freewheeling Diode		$T_c = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
I_F	$T_j = 150^\circ\text{C}$	$T_c = 25^\circ\text{C}$	400	A
		$T_c = 80^\circ\text{C}$	270	A
I_{FRM}	$I_{FRM} = 2 \times I_{Fnom}$	800	A	
I_{FSM}	$t_p = 10\text{ ms}; \text{sin.}$	$T_j = 150^\circ\text{C}$	2800	A

Module		$T_c = 25^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
$I_{t(RMS)}$		500	A
T_{vj}		- 40 ... + 150	$^\circ\text{C}$
T_{stg}		- 40 ... + 125	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V

Characteristics		$T_c = 25^\circ\text{C}$, unless otherwise specified				
Symbol	Conditions	min.	typ.	max.	Units	
IGBT						
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 6\text{ mA}$	4,5	5,5	6,5	V	
I_{CES}	$V_{GE} = 0\text{ V}, V_{CE} = V_{CES}$		0,2	0,6	mA	
V_{CE0}			$T_j = 25^\circ\text{C}$	1,05	V	
			$T_j = 125^\circ\text{C}$	1	V	
r_{CE}	$V_{GE} = 15\text{ V}$		$T_j = 25^\circ\text{C}$	3,2	m Ω	
			$T_j = 125^\circ\text{C}$	4,7	m Ω	
$V_{CE(sat)}$	$I_{Cnom} = 300\text{ A}, V_{GE} = 15\text{ V}$		$T_j = 25^\circ\text{C}_{chiplev.}$	2,1	2,5	V
			$T_j = 125^\circ\text{C}_{chiplev.}$	2,4	2,8	V
C_{ies}	$V_{CE} = 25, V_{GE} = 0\text{ V}$	$f = 1\text{ MHz}$		17	nF	
C_{oes}				2	nF	
C_{res}				1,2	nF	
Q_G	$V_{GE} = 0\text{ V} \dots +15\text{ V}$		720		nC	
R_{Gint}	$T_j = ^\circ\text{C}$		0		Ω	
$t_{d(on)}$	$R_{Gon} = 6\ \Omega$	$V_{CC} = 300\text{ V}$ $I_C = 300\text{ A}$		160	ns	
t_r				80	ns	
E_{on}	$R_{Goff} = 6\ \Omega$	$T_j = 125^\circ\text{C}$ $V_{GE} = \pm 15\text{ V}$		14	mJ	
$t_{d(off)}$				550	ns	
t_f				50	ns	
E_{off}				13	mJ	
$R_{th(j-c)}$	per IGBT			0,09	K/W	

SKM 300GB063D



SEMITRANS[®] 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

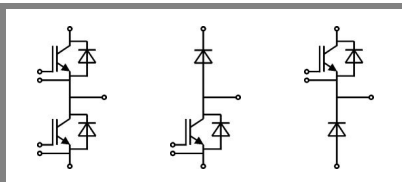
SKM 300GAL063D

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

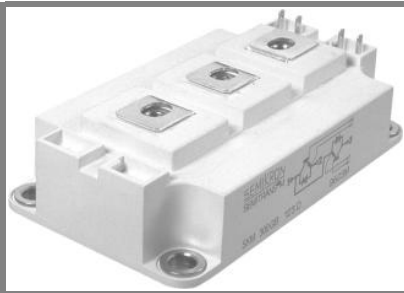
GAR

Characteristics					
Symbol	Conditions	min.	typ.	max.	Units
Inverse Diode					
$V_F = V_{EC}$	$I_{Fnom} = 300 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,65	2	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,65	2	V
V_{F0}				0,9	V
r_F			3	3,7	mΩ
I_{RRM}	$I_F = 300 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	120		A
Q_{rr}			18		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 300 \text{ V}$				mJ
$R_{th(j-c)D}$	per diode			0,25	K/W
Freewheeling Diode					
$V_F = V_{EC}$	$I_{Fnom} = 400 \text{ A}; V_{GE} = 0 \text{ V}$	$T_j = 25 \text{ }^\circ\text{C}_{chiplev.}$	1,65	2	V
		$T_j = 125 \text{ }^\circ\text{C}_{chiplev.}$	1,65	2	V
V_{F0}		$T_j = 125 \text{ }^\circ\text{C}$		0,9	V
r_F		$T_j = 125 \text{ }^\circ\text{C}$		3	V
I_{RRM}	$I_F = 300 \text{ A}$	$T_j = 125 \text{ }^\circ\text{C}$	130		A
Q_{rr}			23		μC
E_{rr}	$V_{GE} = -15 \text{ V}; V_{CC} = 300 \text{ V}$				mJ
$R_{th(j-c)FD}$	per diode			0,15	K/W
Module					
L_{CE}			15	20	nH
$R_{CC+EE'}$	res., terminal-chip	$T_{case} = 25 \text{ }^\circ\text{C}$	0,35		mΩ
		$T_{case} = 125 \text{ }^\circ\text{C}$	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.

* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our personal.

SKM 300GB063D



SEMITRANS[®] 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

SKM 300GAL063D

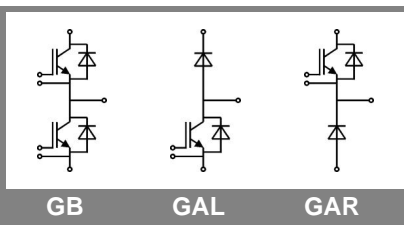
Features

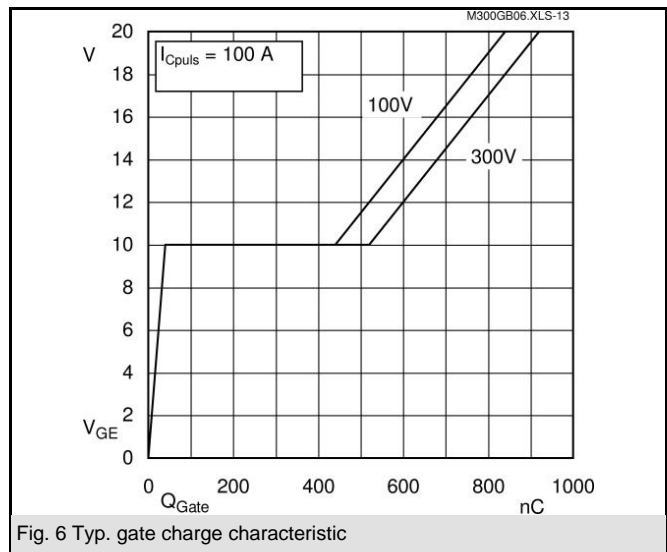
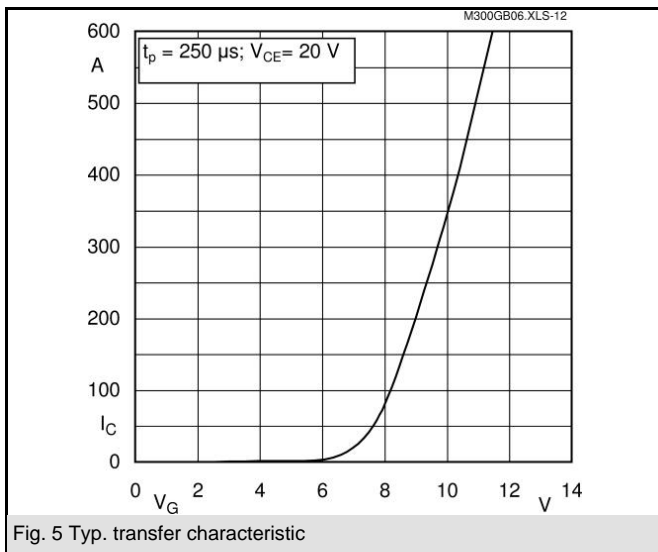
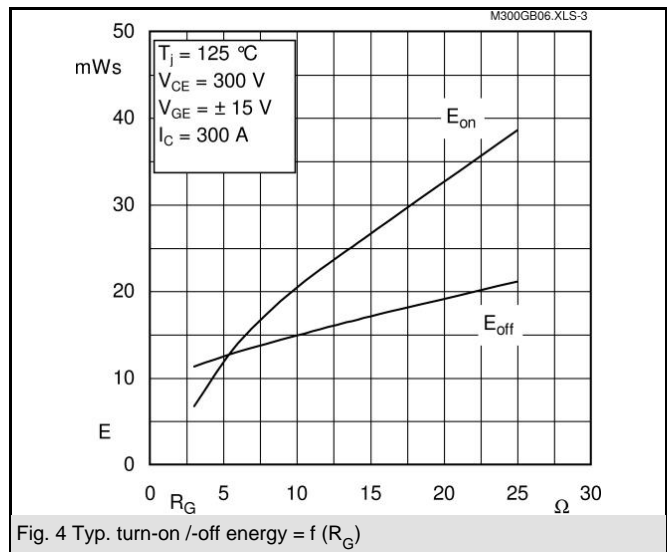
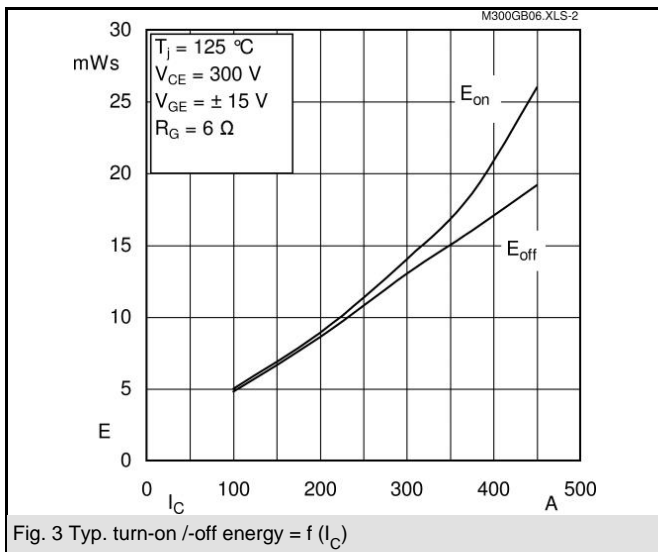
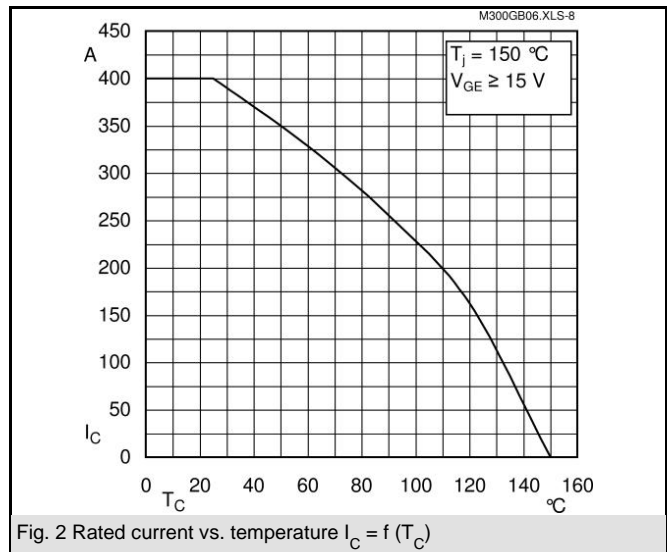
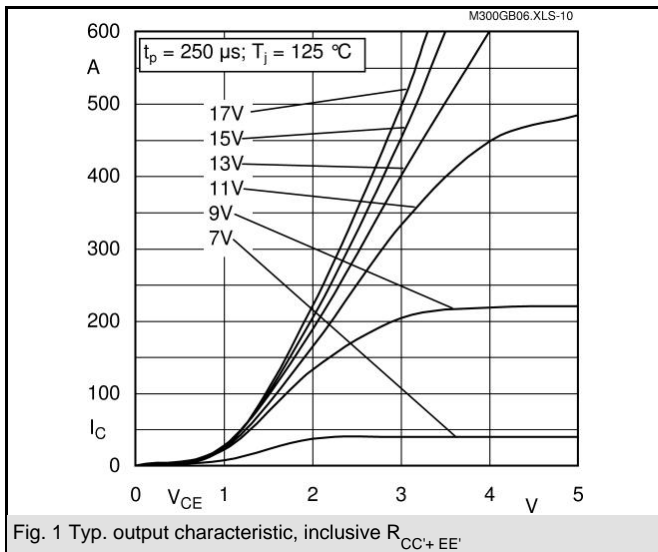
- NPT- Non punch-through IGBT
- Low tail current with low temperature dependence
- High short circuit capability, self limiting if term. G is clamped to E
- Pos. temp.-coeff. of V_{CEsat}
- 50 % less turn off losses
- 30 % less short circuit current
- Very low C_{ies} , C_{oes} , C_{res}
- Latch-up free
- 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)

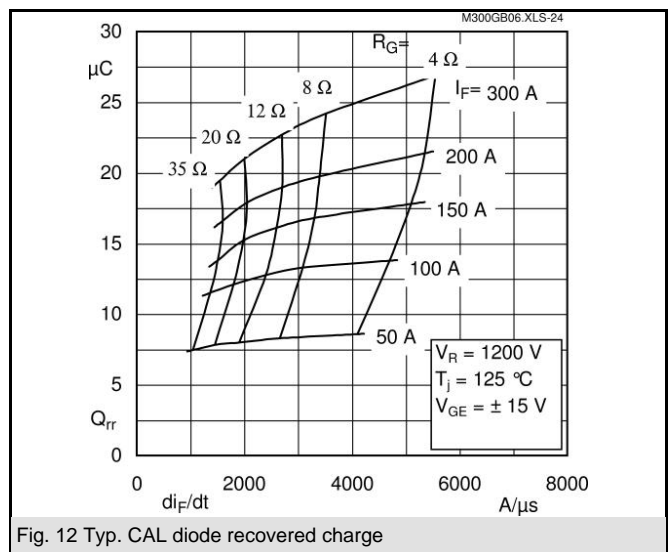
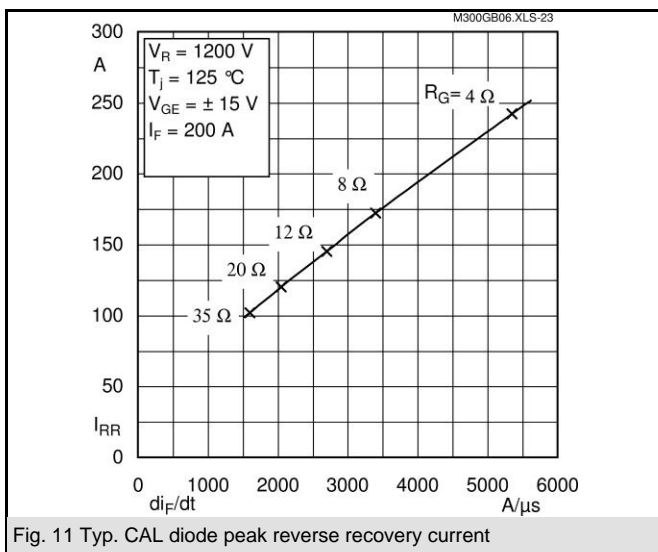
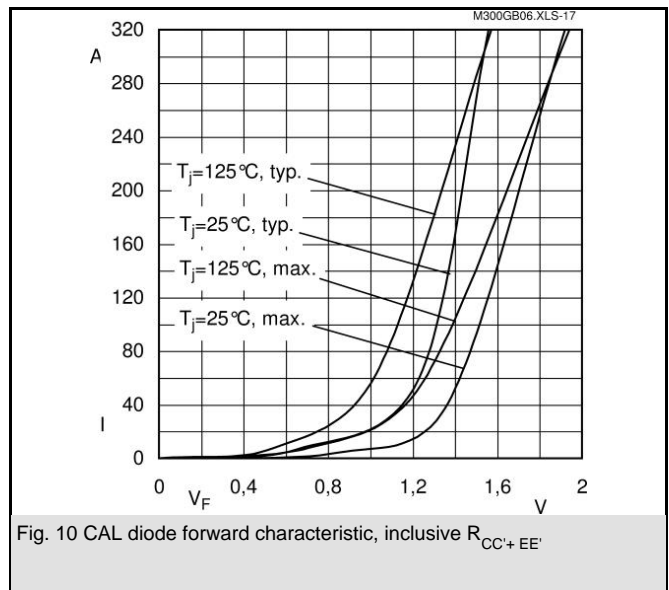
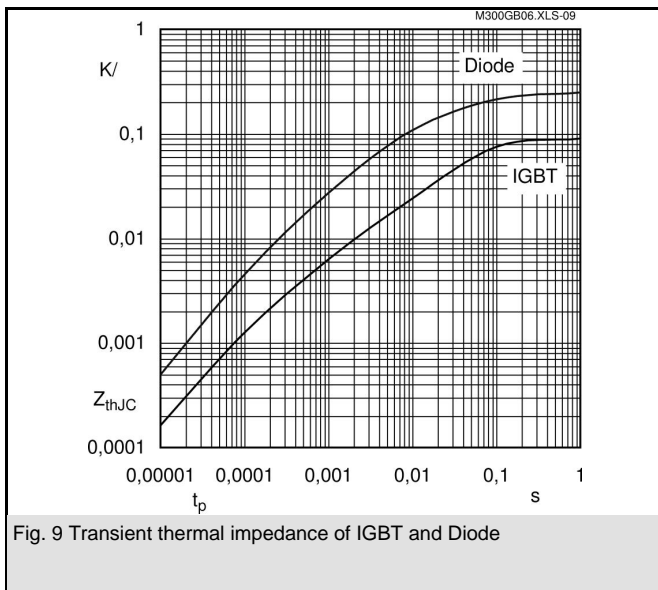
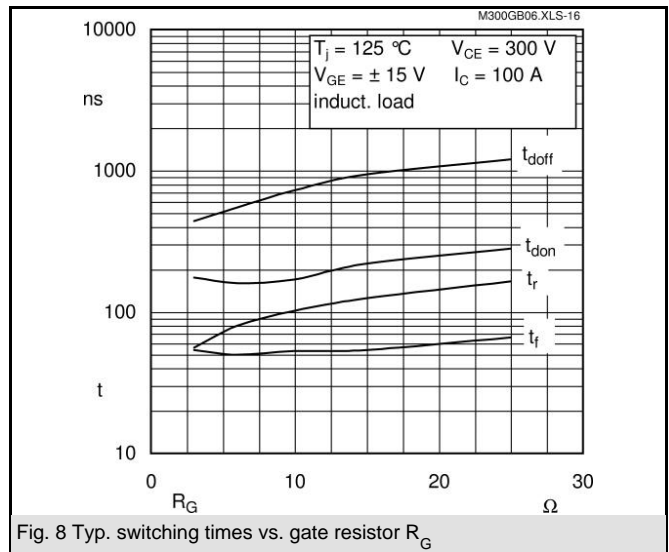
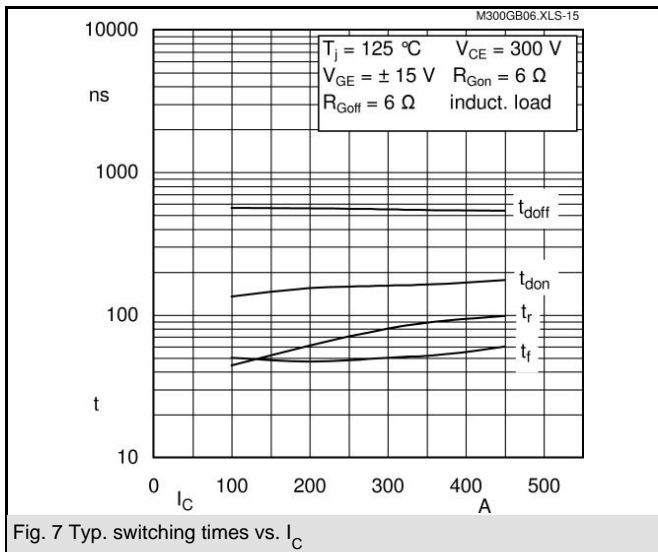
Typical Applications*

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

Z_{th}		Values	Units
Symbol	Conditions		
$Z_{th(j-c)}$			
R_{θ}	$i = 1$	65	mk/W
R_{θ}	$i = 2$	19	mk/W
R_{θ}	$i = 3$	4,7	mk/W
R_{θ}	$i = 4$	1,3	mk/W
τ_{θ}	$i = 1$	0,0518	s
τ_{θ}	$i = 2$	0,0241	s
τ_{θ}	$i = 3$	0,0021	s
τ_{θ}	$i = 4$	0,0001	s
$Z_{th(j-c)D}$			
R_{θ}	$i = 1$	140	mk/W
R_{θ}	$i = 2$	85	mk/W
R_{θ}	$i = 3$	20,55	mk/W
R_{θ}	$i = 4$	4,45	mk/W
τ_{θ}	$i = 1$	0,0613	s
τ_{θ}	$i = 2$	0,0041	s
τ_{θ}	$i = 3$	0,0045	s
τ_{θ}	$i = 4$	0,0003	s





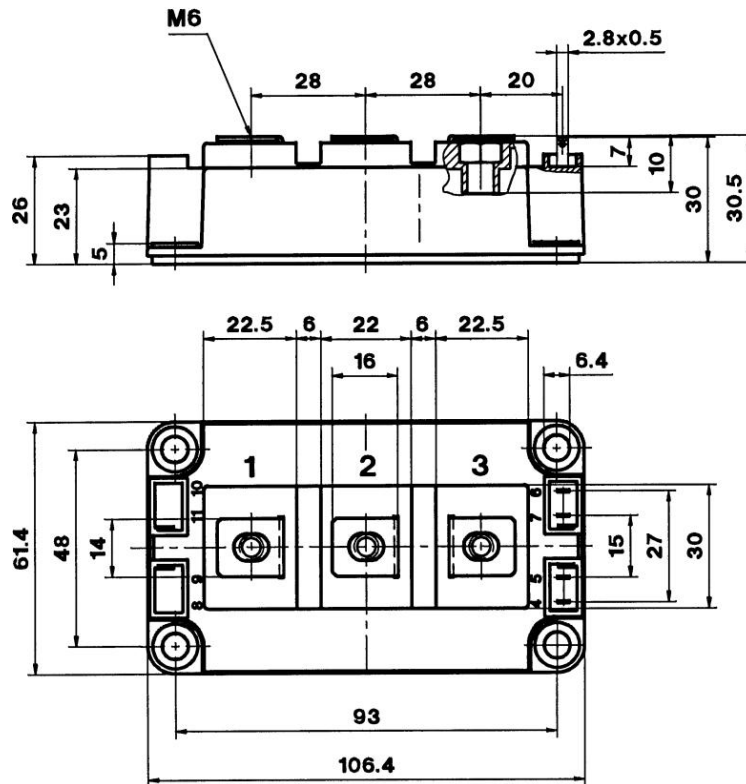


SKM 300GB063D

UL Recognized

CASED56

File no. E 63 532



Case D 56

