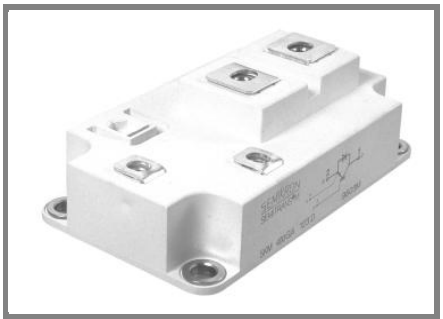
SKM 600GA176D



SEMITRANS^{TM} 4

Trench IGBT Modules

SKM 600GA176D

Target Data

Features

- Homogeneous Si
- Trench = Trenchgate technology
- $V_{CE(sat)}$ with positive temperature coefficient
- High short circuit capability, self limiting to 6 x I_C

Typical Applications

- AC inverter drives mains 575 - 790 V AC
- Public transport (auxiliary systems)

Remarks

- $I_{DC} \leq 500$ A limited for $T_{Terminal}$ = 100°C

Absolute Maximum Ratings	T_{case} = 25°C, unless otherwise specified		
Symbol	**Conditions**	**Values**	**Units**
IGBT			
V_{CES}		1700	V
I_C	T_c = 25 (80) °C	660 (470)	A
I_{CRM}	t_p = 1 ms	800	A
V_{GES}		± 20	V
T_{vj}, (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... +150 (125)	°C
V_{isol}	AC, 1 min.	4000	V
Inverse diode			
I_F	T_c = 25 (80) °C	600 (410)	A
I_{FRM}	t_p = 1 ms	800	A
I_{FSM}	t_p = 10 ms; sin.; T_j = 150 °C		A

Characteristics	T_{case} = 25°C, unless otherwise specified				
Symbol	**Conditions**	**min.**	**typ.**	**max.**	**Units**
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}$, I_C = 16 mA	5,2	5,8	6,4	V
I_{CES}	V_{GE} = 0, $V_{CE} = V_{CES}$, T_j = 25 () °C		0,2	0,6	mA
$V_{CE(TO)}$	T_j = 25 () °C		1 (0,9)	1,2 (1,1)	V
r_{CE}	V_{GE} = 15 V, T_j = 25 (125) °C		2,5 (3,9)	3,1 (4,5)	mΩ
$V_{CE(sat)}$	I_{Cnom} = 400 A, V_{GE} = 15 V, chip level		2 (2,45)	2,45 (2,9)	V
C_{ies}	under following conditions		28,5		nF
C_{oes}	V_{GE} = 0, V_{CE} = 25 V, f = 1 MHz		1,5		nF
C_{res}			1,2		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip T_c= 25 (125) °C		0,18 (0,22)		mΩ
$t_{d(on)}$	V_{CC} = 900 V, I_{Cnom} = 400 A				ns
t_r	$R_{Gon} = R_{Goff}$ = 4 Ω, T_j = 125 °C				ns
$t_{d(off)}$	V_{GE} V				ns
t_f					ns
E_{on} (E_{off})			290 (110)		mJ
Inverse diode					
$V_F = V_{EC}$	I_{Fnom} = 400 A; V_{GE} = 0 V; T_j = 25 (125) °C		1,6 (1,6)	1,9 (1,9)	V
$V_{(TO)}$	T_j = 25 (125) °C		1,1	1,3	V
r_T	T_j = 25 (125) °C		1,3	1,5	mΩ
I_{RRM}	I_{Fnom} = 400 A; T_j = 125 ( ) °C				A
Q_{rr}	di/dt = A/µs				µC
E_{rr}	V_{GE} = V				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,044	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,09	K/W
$R_{th(c-s)}$	per module			0,038	K/W
Mechanical data					
M_s	to heatsink M6	3		5	Nm
M_t	to terminals M6, M4	2,5		5	Nm
w				330	g

GA

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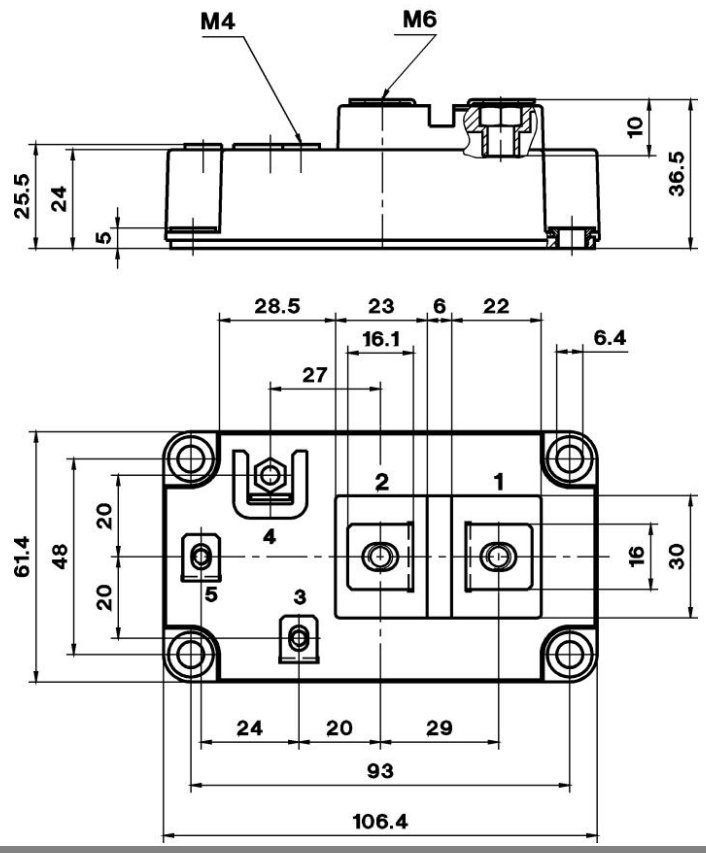
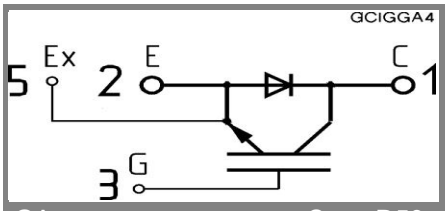
Dimensions in mm

CASED59



Case D 59



GA Case D59

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX.

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