

SKM 300GB063D



SEMITRANS™ 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

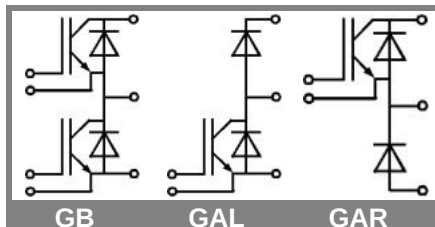
SKM 300GAL063D

Features

- N channel, homogeneous Silicon structure (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)

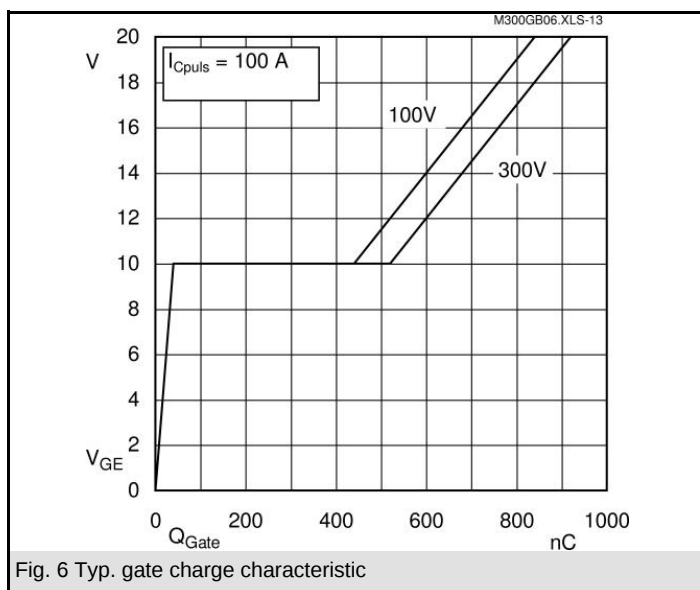
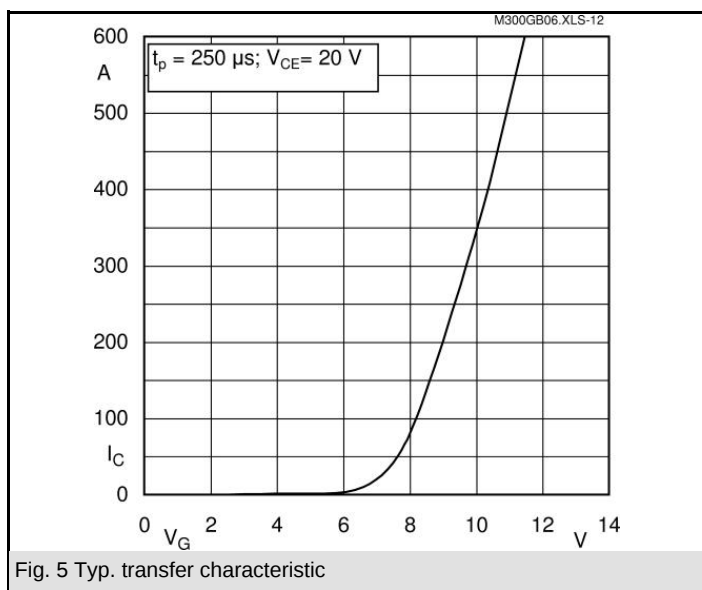
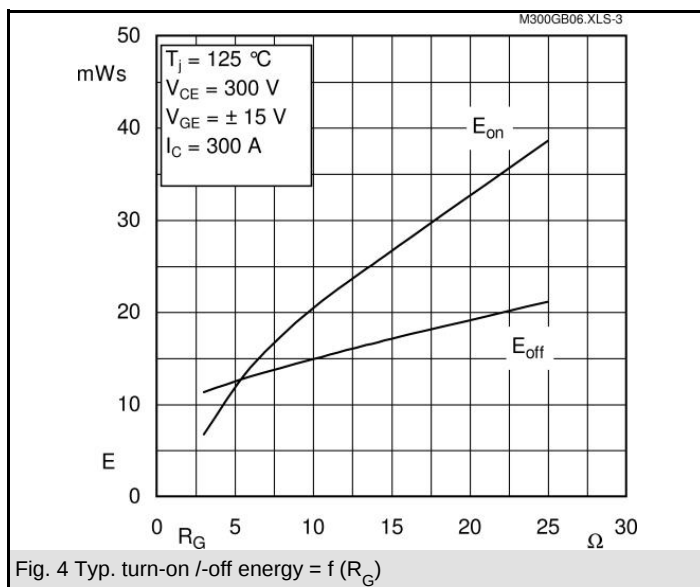
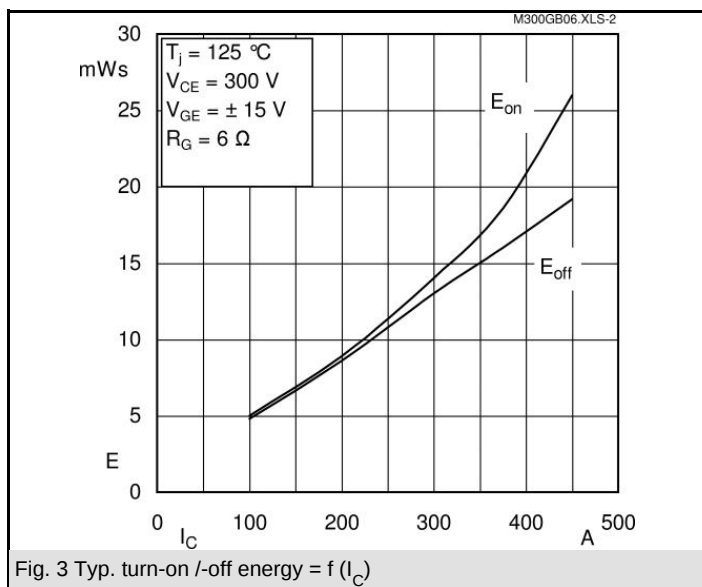
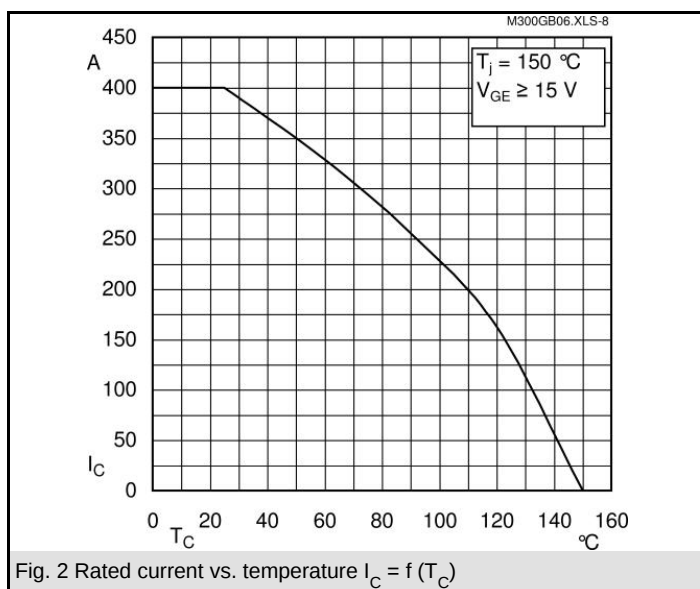
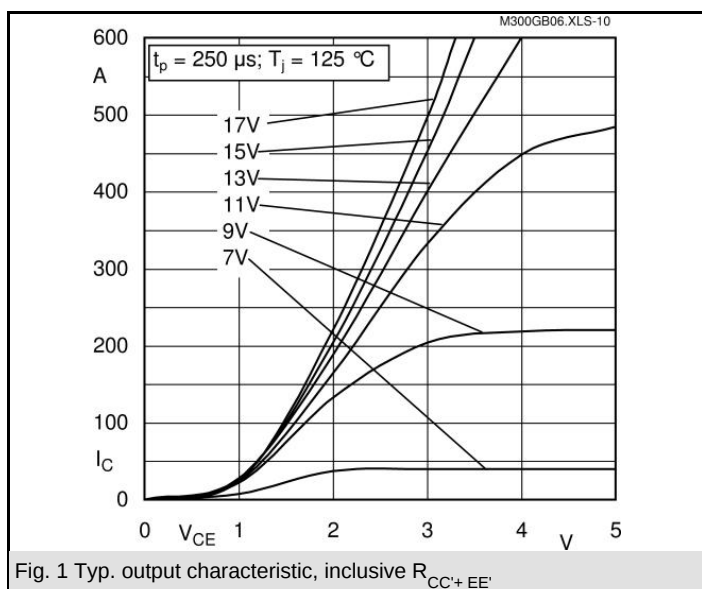
Typical Applications

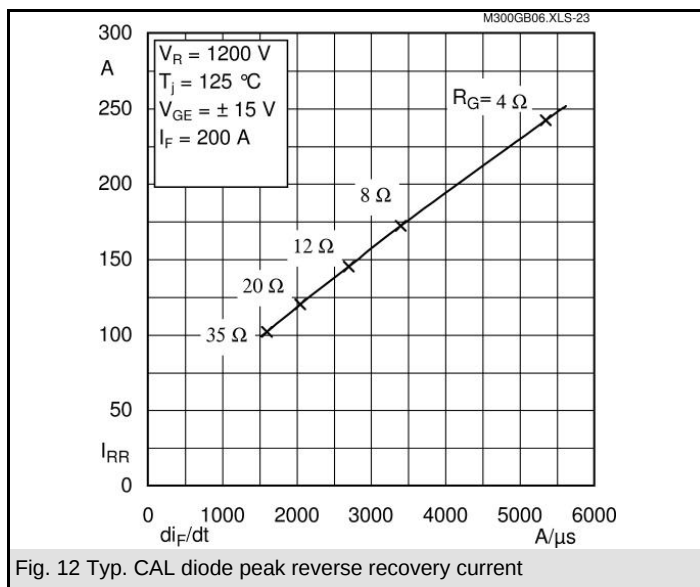
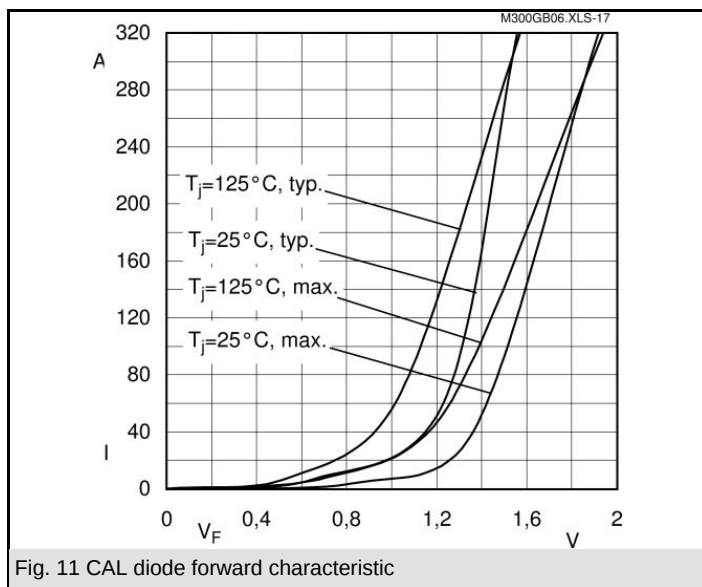
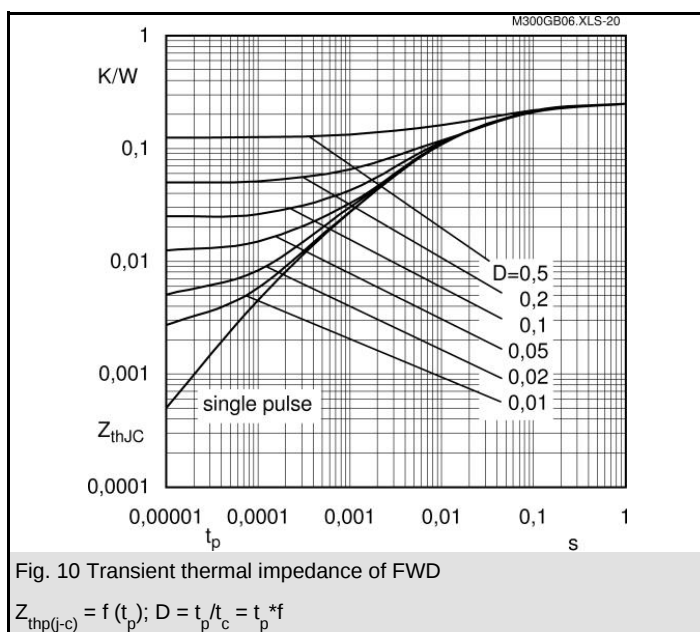
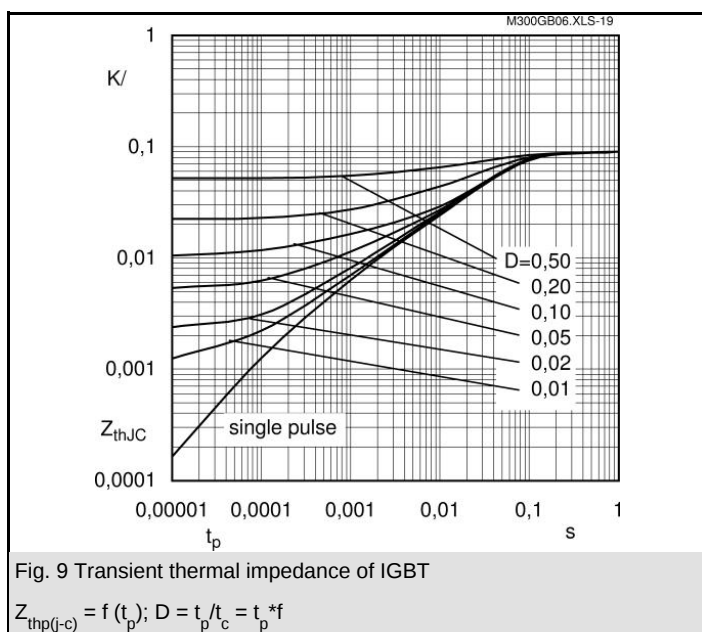
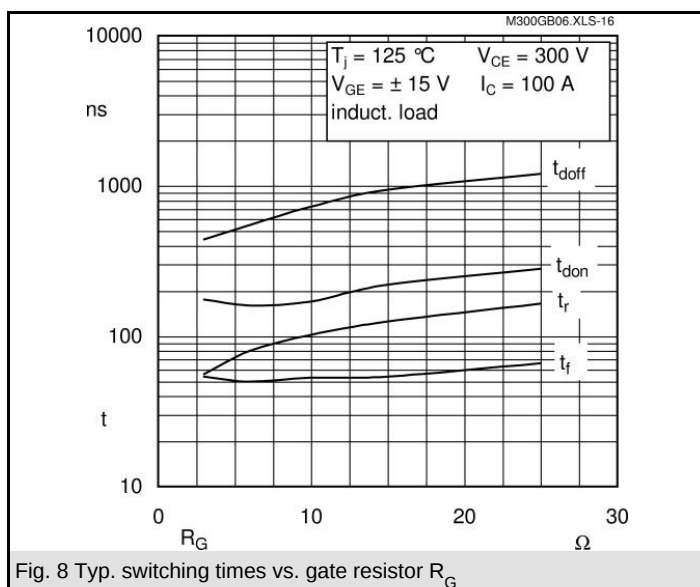
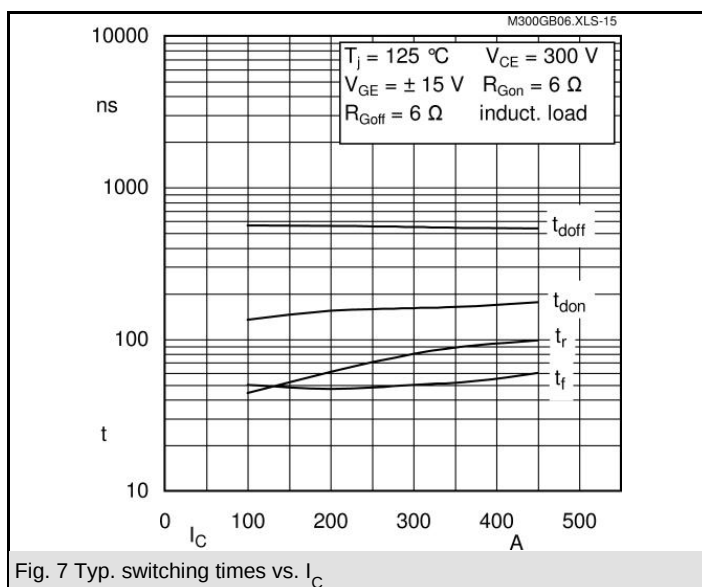
- Switching (not for linear use)
- Switched mode power supplies
- AC inverter servo drives
- UPS uninterruptable power supplies
- Welding inverters



Absolute Maximum Ratings		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V_{CES}		600	V
I_C	$T_c = 25\text{ (70) }^\circ\text{C}$	400 (300)	A
I_{CRM}	$t_p = 1\text{ ms}$	600	A
V_{GES}		± 20	V
T_{vj} (T_{stg})	$T_{OPERATION} \leq T_{stg}$	- 40 ... + 150 (125)	$^\circ\text{C}$
V_{isol}	AC, 1 min.	2500	V
Inverse diode			
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	250 (170)	A
I_{FRM}	$t_p = 1\text{ ms}$	600	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	1600	A
Freewheeling diode			
I_F	$T_c = 25\text{ (80) }^\circ\text{C}$	400 (270)	A
I_{FRM}	$t_p = 1\text{ ms}$	800	A
I_{FSM}	$t_p = 10\text{ ms}$; sin.; $T_j = 150\text{ }^\circ\text{C}$	2800	A

Characteristics		$T_c = 25\text{ }^\circ\text{C}$, 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}	$V_{GE} = 0$, $V_{CE} = V_{CES}$, $T_j = 25\text{ (125) }^\circ\text{C}$		0,2	0,6	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		1,05 (1)		V
r_{CE}	$V_{GE} = 15\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		3,2 (4,7)		m Ω
$V_{CE(sat)}$	$I_{Cnom} = 300\text{ A}$, $V_{GE} = 15\text{ V}$, chip level		2,1 (2,4)	2,5 (2,8)	V
C_{ies}	under following conditions		17		nF
C_{oes}	$V_{GE} = 0$, $V_{CE} = 25\text{ V}$, $f = 1\text{ MHz}$		2		nF
C_{res}			1,2		nF
L_{CE}				20	nH
$R_{CC'+EE'}$	res., terminal-chip $T_c = 25\text{ (125) }^\circ\text{C}$		0,35 (0,5)		m Ω
$t_{d(on)}$	$V_{CC} = 300\text{ V}$, $I_{Cnom} = 300\text{ A}$		160		ns
t_r	$R_{Gon} = R_{Goff} = 6\text{ }\Omega$, $T_j = 125\text{ }^\circ\text{C}$		80		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		550		ns
t_f			50		ns
E_{on} (E_{off})			14 (13)		mJ
Inverse diode					
$V_F = V_{EC}$	$I_{Fnom} = 300\text{ A}$; $V_{GE} = 0\text{ V}$; $T_j = 25\text{ (125) }^\circ\text{C}$		1,65 (1,65)	2 (2)	V
$V_{(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$			(0,9)	V
r_T	$T_j = 25\text{ (125) }^\circ\text{C}$		(3)	(3,7)	m Ω
I_{RRM}	$I_{Fnom} = 300\text{ A}$; $T_j = 125\text{ () }^\circ\text{C}$		120		A
Q_{rr}	$di/dt = A/\mu s$		18		μC
E_{rr}	$V_{GE} = V$				mJ
FWD					
$V_F = V_{EC}$	$I_F = 400\text{ A}$; $V_{GE} = 0\text{ V}$, $T_j = 25\text{ (125) }^\circ\text{C}$		1,65 (1,65)	2 (2)	V
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$			0,9	V
r_T	$T_j = 125\text{ () }^\circ\text{C}$			(3)	m Ω
I_{RRM}	$I_F = 300\text{ A}$; $T_j = 125\text{ () }^\circ\text{C}$		130		A
Q_{rr}	$di/dt = A/\mu s$		23		μC
E_{rr}	$V_{GE} = V$				mJ
Thermal characteristics					
$R_{th(j-c)}$	per IGBT			0,09	K/W
$R_{th(j-c)D}$	per Inverse Diode			0,25	K/W
$R_{th(j-c)FD}$	per FWD			0,15	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	2,5		5	Nm
w				325	g





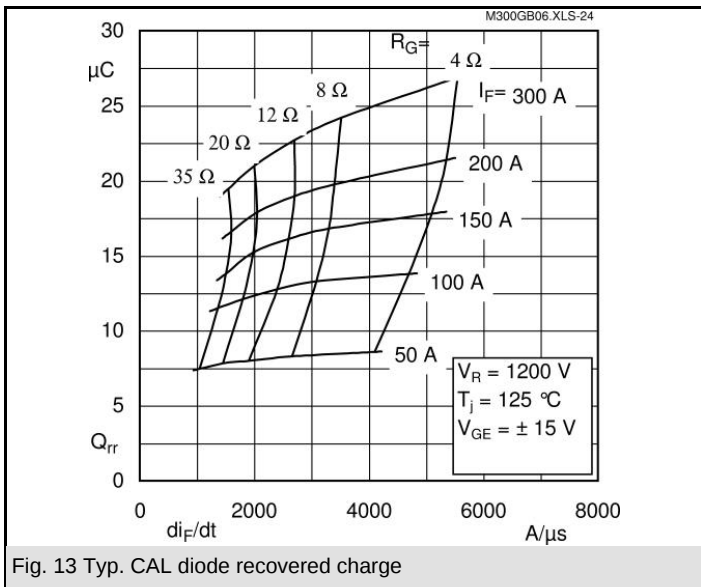


Fig. 13 Typ. CAL diode recovered charge

UL Recognized
File no. E 63 532

Dimensions in mm

CASED56

The technical drawing shows two views of a mechanical component, Case D 56. The top view is a side elevation showing a base with a total width of 106.4 mm and a height of 30.5 mm. It features three mounting points labeled 1, 2, and 3, each with a central hole. The side view shows a profile with a total height of 61.4 mm and a base width of 93 mm. It includes a central section with a width of 16 mm and a height of 27 mm. The drawing also shows a cross-section of a hole with a diameter of 2.8 mm and a depth of 0.5 mm. The component is identified as CASED56 and is UL Recognized.

M6

28

28

20

2.8x0.5

7

10

30

30.5

26

23

5

22.5

6

22

6

22.5

6.4

1

2

3

61.4

48

14

15

27

30

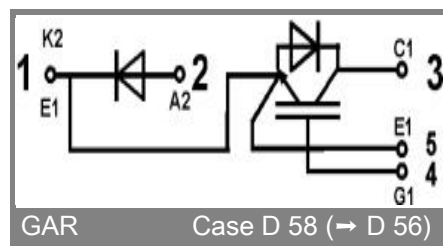
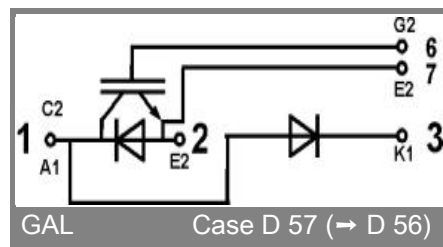
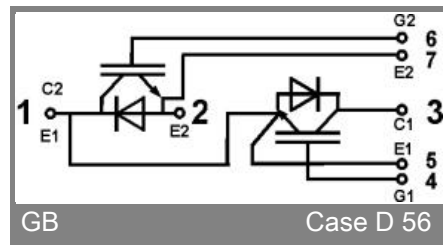
93

106.4

Case D 56

CASED56

CASED56



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.