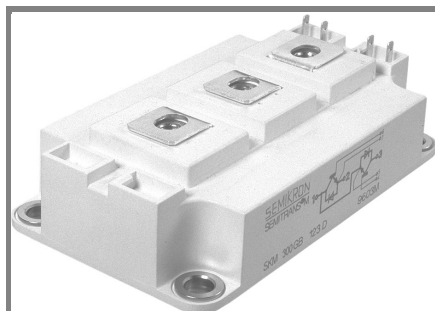


SKM 300GB063D



SEMITRANS™ 3

Superfast IGBT Modules

SKM 300GB063D

SKM 300GAR063D

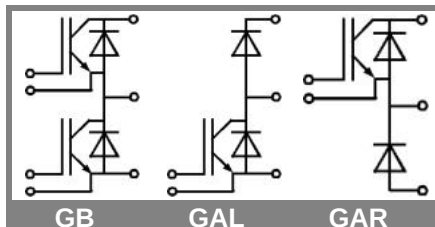
SKM 300GAL063D

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

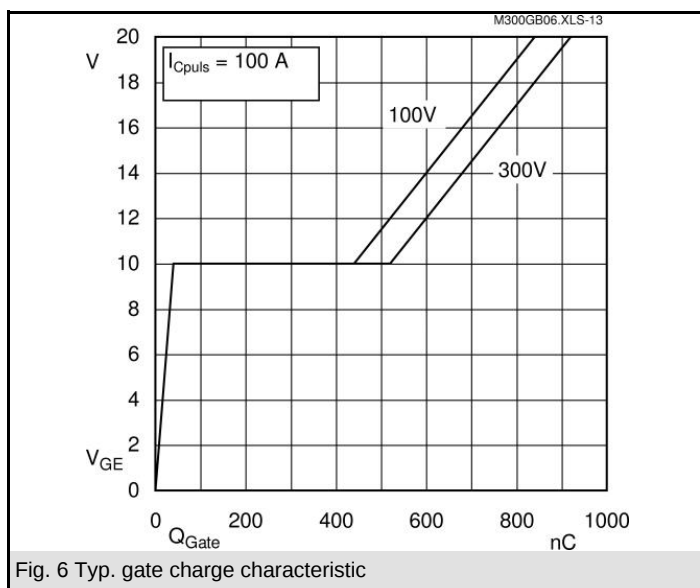
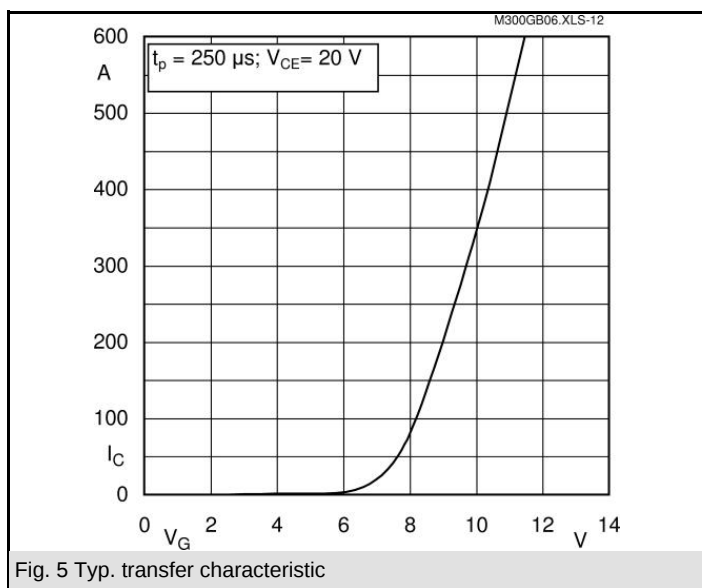
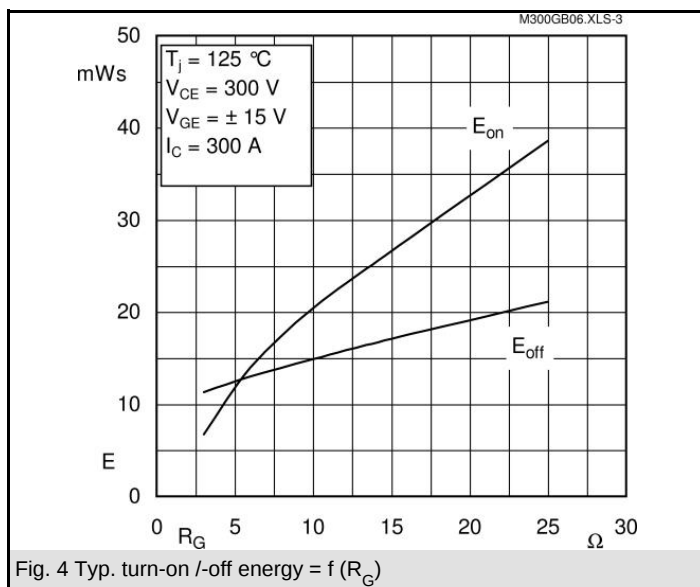
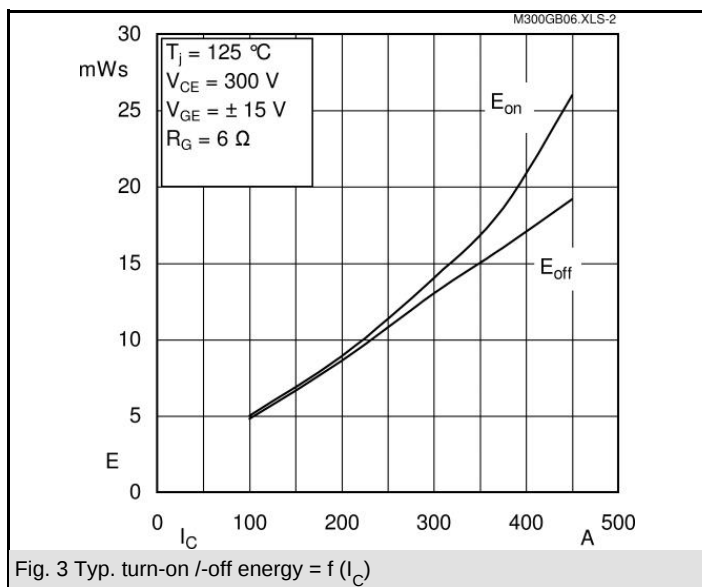
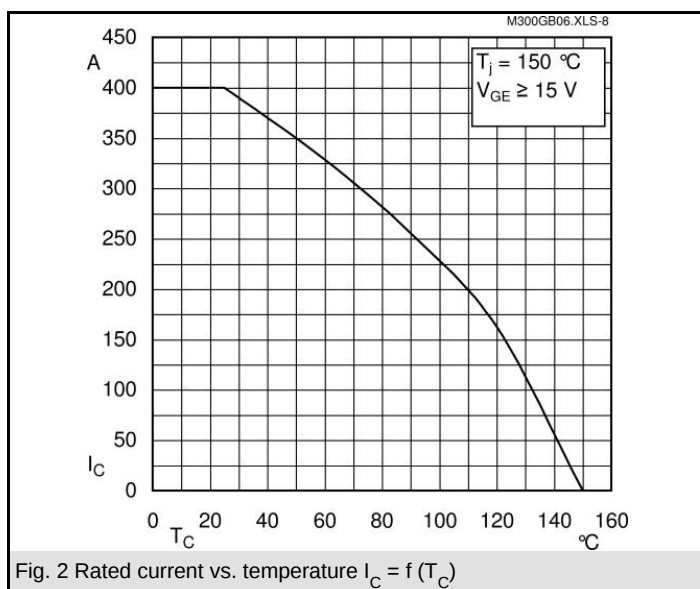
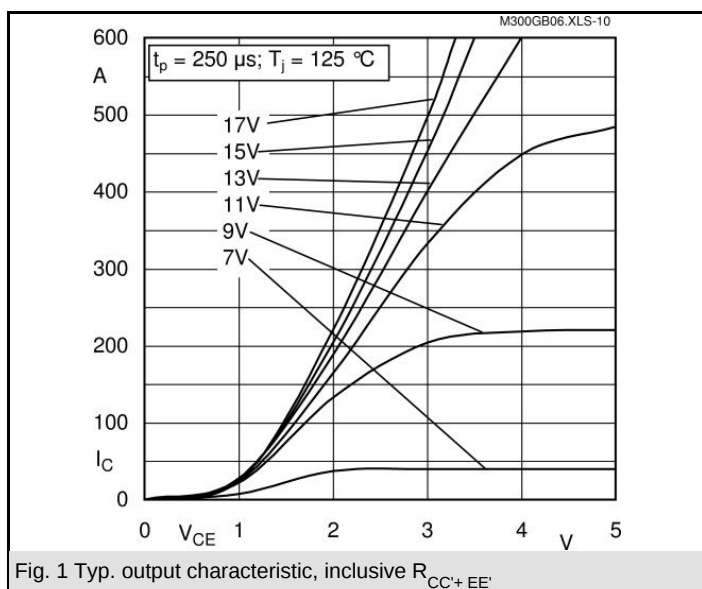
Characteristics		$T_c = 25\text{ }^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 6\text{ mA}$	4,5	5,5	6,5	V
I_{CES}	$V_{GE} = 0, V_{CE} = V_{CES}, T_j = 25\text{ (125) }^\circ\text{C}$		0,2	0,6	mA
$V_{CE(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		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
$V_{CE(sat)}$	$I_{Cnom} = 300\text{ A}, V_{GE} = 15\text{ V}, \text{ chip level}$		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	$R_{Gon} = R_{Goff} = 6\text{ }^\circ\Omega, T_j = 125\text{ }^\circ\text{C}$		80		ns
$t_{d(off)}$	$V_{GE} = \pm 15\text{ V}$		550		ns
t_f			50		ns
$E_{on} (E_{off})$			14 (13)		mJ

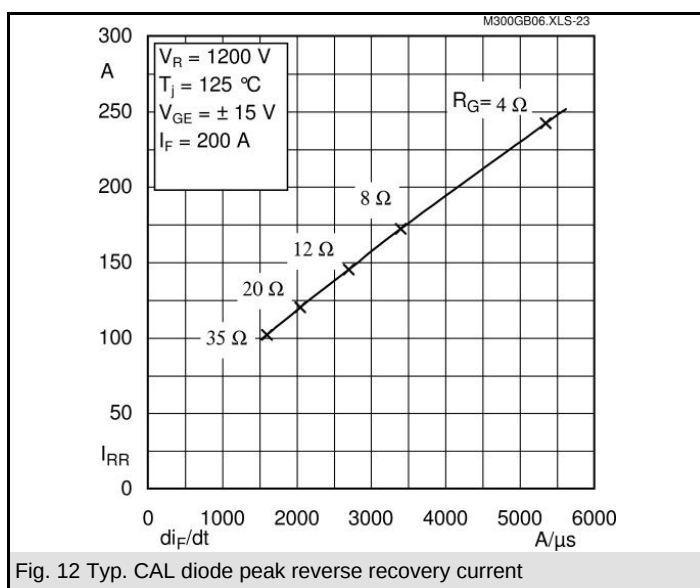
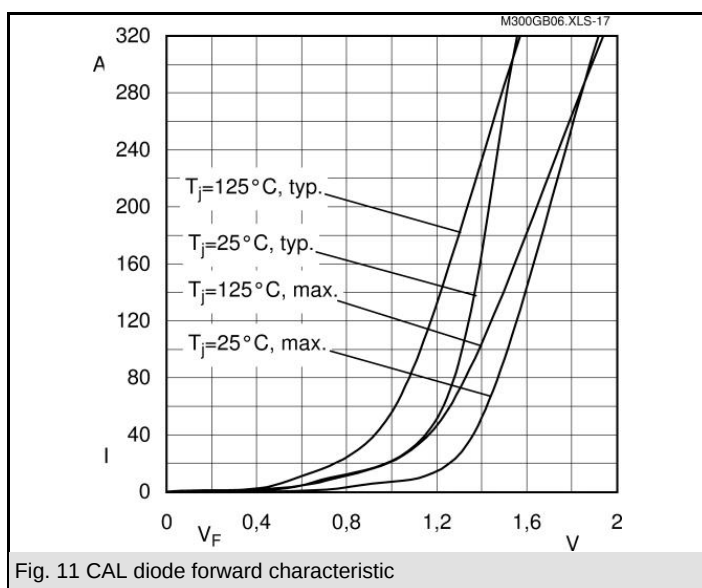
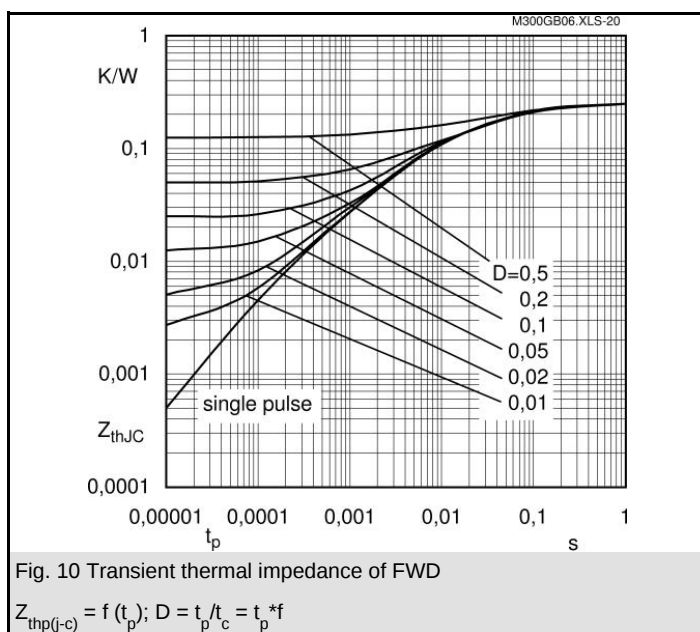
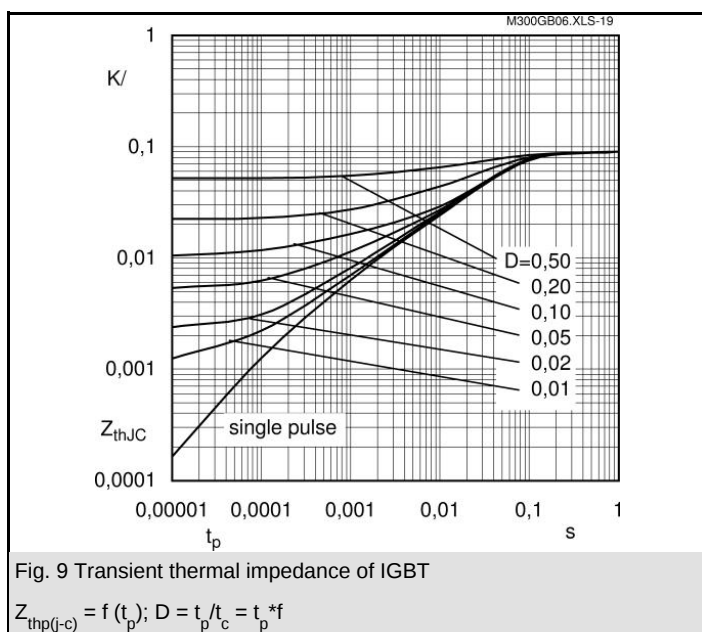
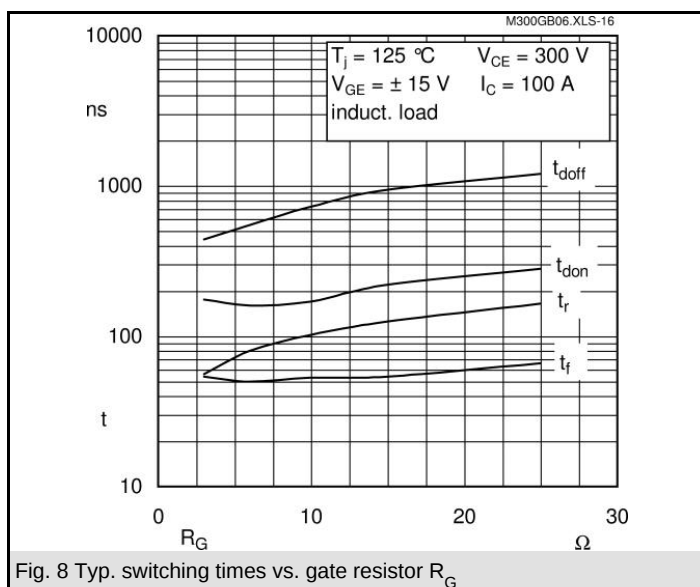
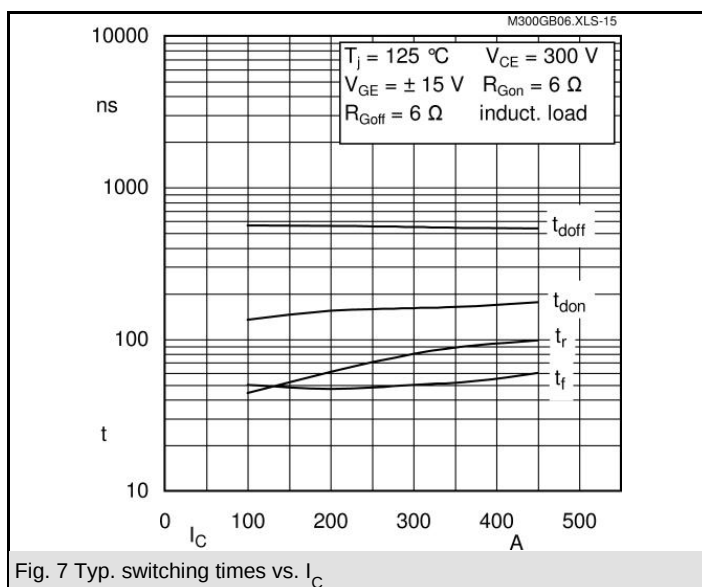
Inverse diode			
$V_F = V_{EC}$	$I_{Fnom} = 300\text{ A}; V_{GE} = 0\text{ V}; T_j = 25\text{ (125) }^\circ\text{C}$	1,65 (1,65)	2 (2)
$V_{(TO)}$	$T_j = 25\text{ (125) }^\circ\text{C}$		(0,9)
r_T	$T_j = 25\text{ (125) }^\circ\text{C}$	(3)	(3,7)
I_{RRM}	$I_{Fnom} = 300\text{ A}; T_j = 125\text{ () }^\circ\text{C}$	120	
Q_{rr}	$di/dt = A/\mu s$	18	
E_{rr}	$V_{GE} = V$		

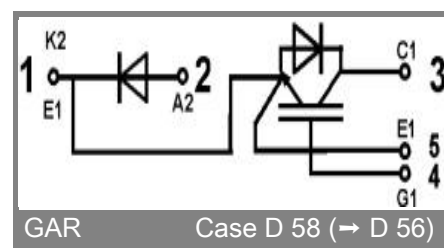
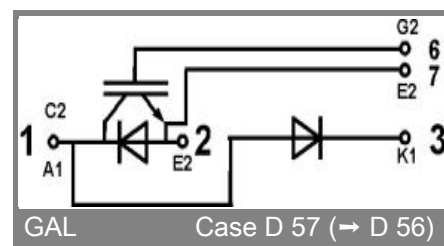
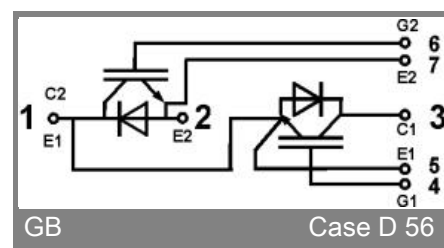
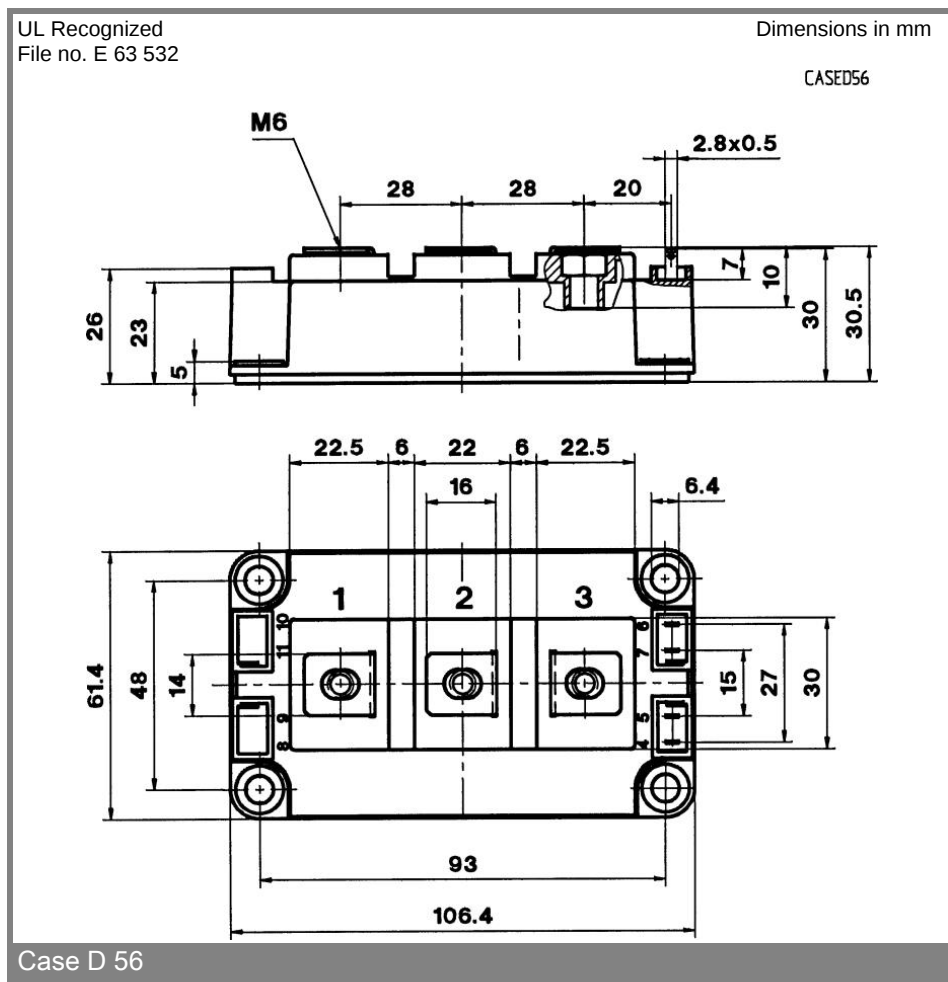
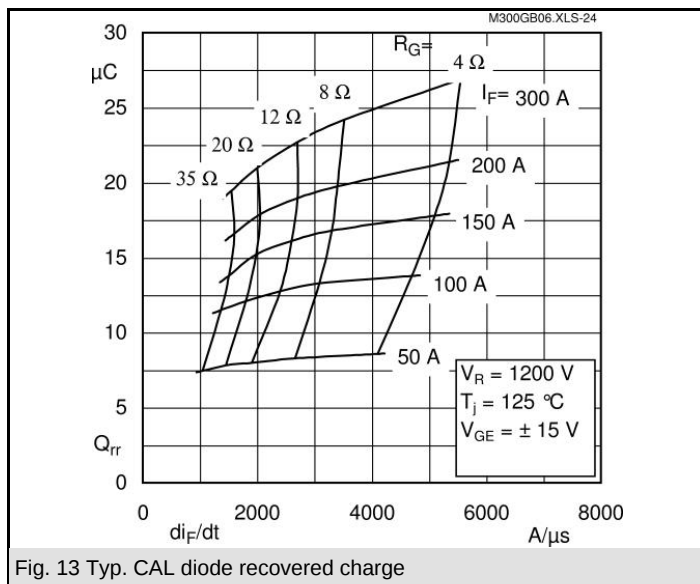
FWD			
$V_F = V_{EC}$	$I_F = 400\text{ A}; V_{GE} = 0\text{ V}, T_j = 25\text{ (125) }^\circ\text{C}$	1,65 (1,65)	2 (2)
$V_{(TO)}$	$T_j = 125\text{ () }^\circ\text{C}$		0,9
r_T	$T_j = 125\text{ () }^\circ\text{C}$		(3)
I_{RRM}	$I_F = 300\text{ A}; T_j = 125\text{ () }^\circ\text{C}$	130	
Q_{rr}	$di/dt = A/\mu s$	23	
E_{rr}	$V_{GE} = V$		

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	Nm
M_t	to terminals M6	2,5	Nm
w		325	g







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

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