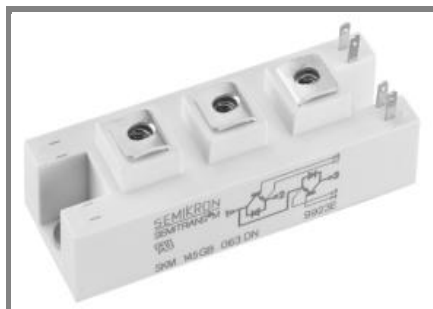


SKM 145GB174DN



SEMITRANS™ 2N

Low Loss IGBT Modules

SKM 145GB174DN

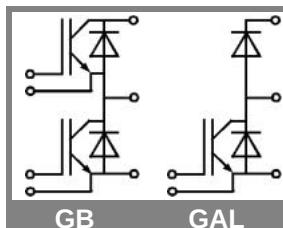
SKM 145GAL174DN

Features

- N channel, homogeneous Silicon structure (NPT- Non punch-through IGBT)
- Low inductance case
- High short circuit capability, self limiting
- Fast & soft inverse CAL diodes
- Without hard mould
- Large clearance (10 mm) and creepage distances (20 mm)

Typical Applications

- AC inverter drives on mains
- 575 - 750 V AC
- DC bus voltage 750 - 1200 V_{DC}
- Public transport (auxiliary syst.)
- Switching (not for linear use)



Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V _{CES}		1700	V
I _C	T _c = 25 (80) °C	160 (110)	A
I _{CRM}	t _p = 1 ms	200	A
V _{GES}		± 20	V
T _{vj} (T _{stg})	T _{OPERATION} ≤ T _{stg}	- 40 ... + 150 (125)	°C
V _{isol}	AC, 1 min.	3400	V
Inverse diode			
I _F	T _c = 25 (80) °C	145 (100)	A
I _{FRM}	t _p = 1 ms	200	A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	720	A
Freewheeling diode			
I _F	T _c = 25 (80) °C	145 (100)	A
I _{FRM}	t _p = 1 ms	200	A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	720	A

Characteristics		T _c = 25 °C, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT					
V _{GE(th)}	V _{GE} = V _{CE} , I _C = 5 mA	4,5	5,5	6,5	V
I _{CES}	V _{GE} = 0, V _{CE} = V _{CES} , T _j = 25 (125) °C		0,1	0,3	mA
V _{CE(TO)}	T _j = 25 (125) °C				V
r _{CE}	V _{GE} = 15 V, T _j = 25 (125) °C				mΩ
V _{CE(sat)}	I _{Cnom} = 100 A, V _{GE} = 15 V, chip level		2,6 (3,2)	3,3 (3,6)	V
C _{ies}	under following conditions		7	8,5	nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz		1,1	1,5	nF
C _{res}			0,4	0,6	nF
L _{CE}				25	nH
R _{CC'+EE'}	res., terminal-chip T _c = 25 (125) °C		0,75 (1)		mΩ
t _{d(on)}	V _{CC} = 1200 V, I _{Cnom} = 100 A		90		ns
t _r	R _{Gon} = R _{Goff} = 15 Ω, T _j = 125 °C		80		ns
t _{d(off)}	V _{GE} = ± 15 V		900		ns
t _f			80		ns
E _{on} (E _{off})			50 (70)		mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 100 A; V _{GE} = 0 V; T _j = 25 (125) °C		2,2 (1,9)	2,7 (2,4)	V
V _(TO)	T _j = 25 (125) °C		1,3	1,5	V
r _T	T _j = 25 (125) °C		9	12	mΩ
I _{RRM}	I _{Fnom} = 100 A; T _j = 125 () °C		160		A
Q _{rr}	di/dt = 2400 A/μs		32		μC
E _{rr}	V _{GE} = 0 V		14		mJ
FWD					
V _F = V _{EC}	I _F = 100 A; V _{GE} = 0 V, T _j = 25 (125) °C		2,2 (1,9)	2,7 (2,4)	V
V _(TO)	T _j = 25 (125) °C		1,3	1,5	V
r _T	T _j = 25 (125) °C		9	12	mΩ
I _{RRM}	I _F = 100 A; T _j = 125 () °C		160		A
Q _{rr}	di/dt = 2400 A/μs		32		μC
E _{rr}	V _{GE} = 0 V		14		mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,16	K/W
R _{th(j-c)D}	per Inverse Diode			0,3	K/W
R _{th(j-c)FD}	per FWD			0,3	K/W
R _{th(c-s)}	per module			0,05	K/W
Mechanical data					
M _s	to heatsink M6	3		5	Nm
M _t	to terminals M5	2,5		5	Nm
w				160	g

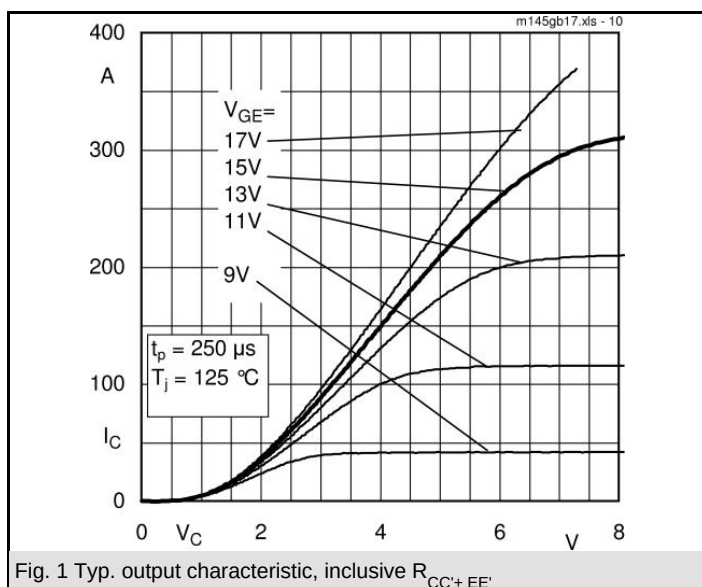


Fig. 1 Typ. output characteristic, inclusive $R_{CC'+EE'}$

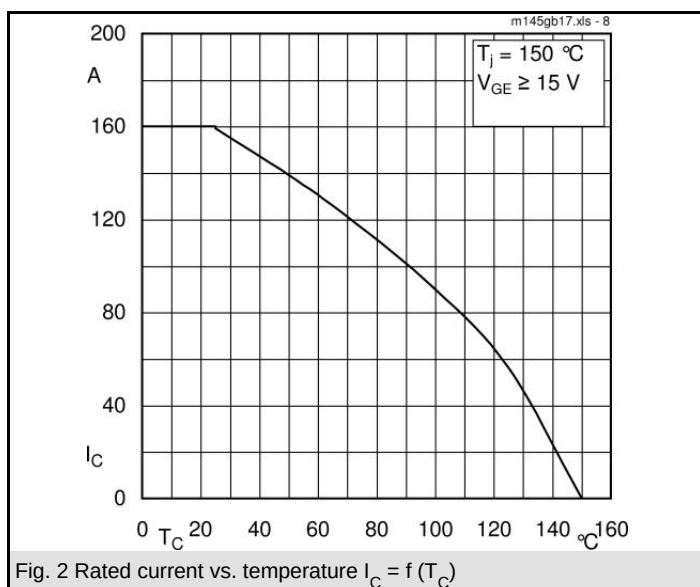


Fig. 2 Rated current vs. temperature $I_C = f(T_C)$

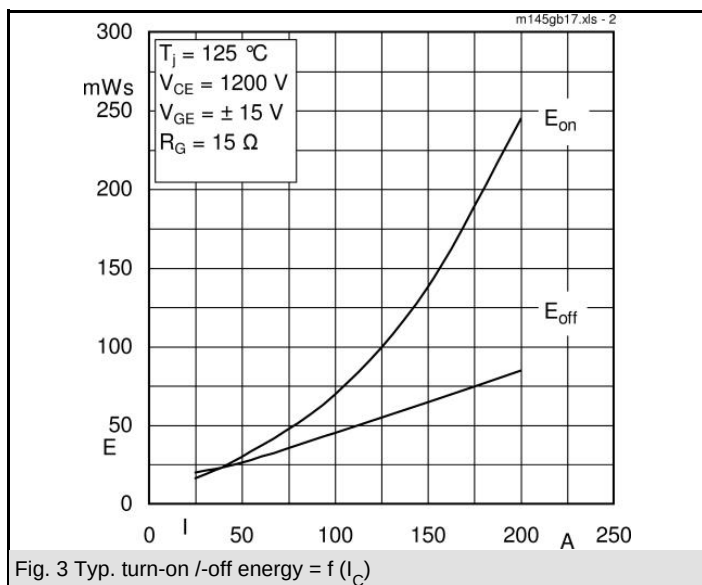


Fig. 3 Typ. turn-on /off energy = $f(I_C)$

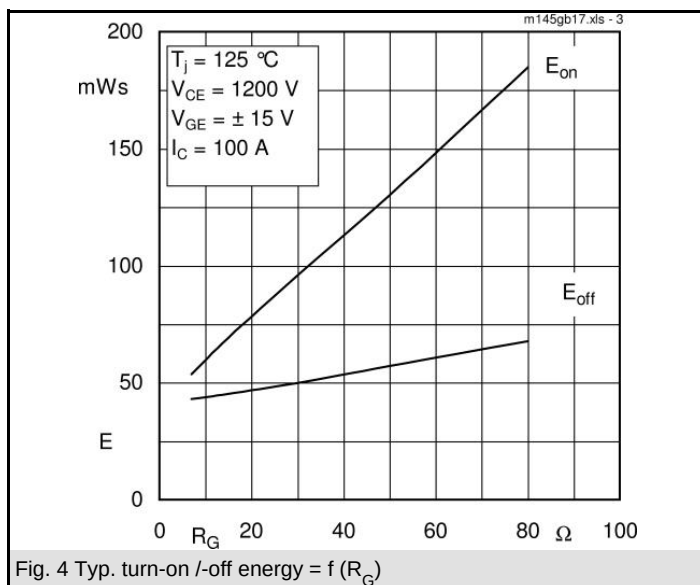


Fig. 4 Typ. turn-on /off energy = $f(R_G)$

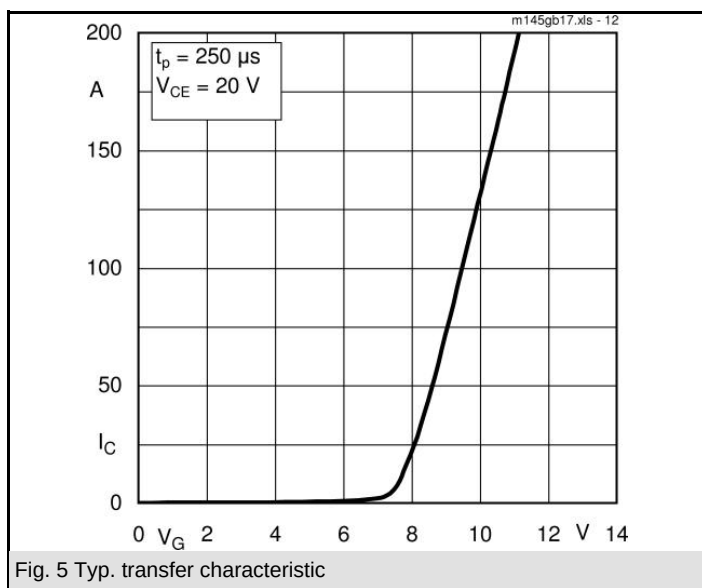


Fig. 5 Typ. transfer characteristic

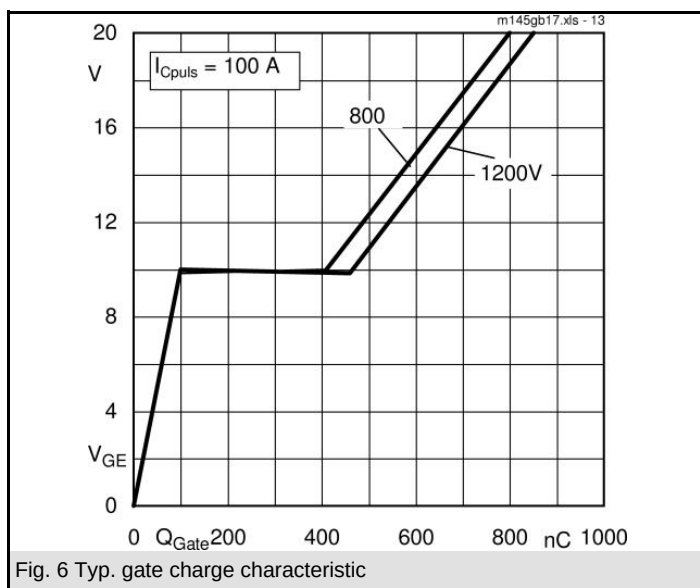
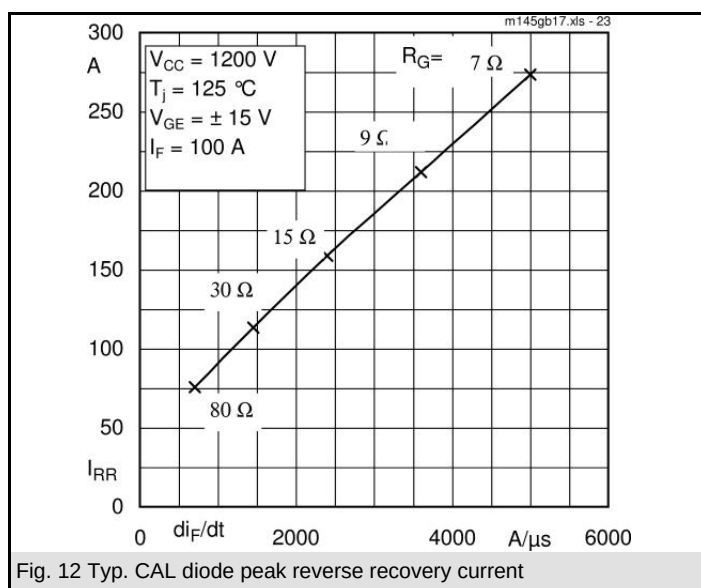
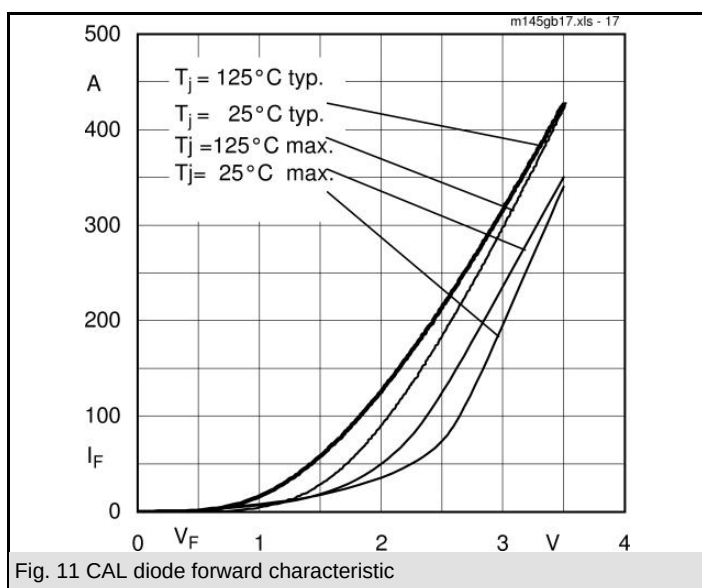
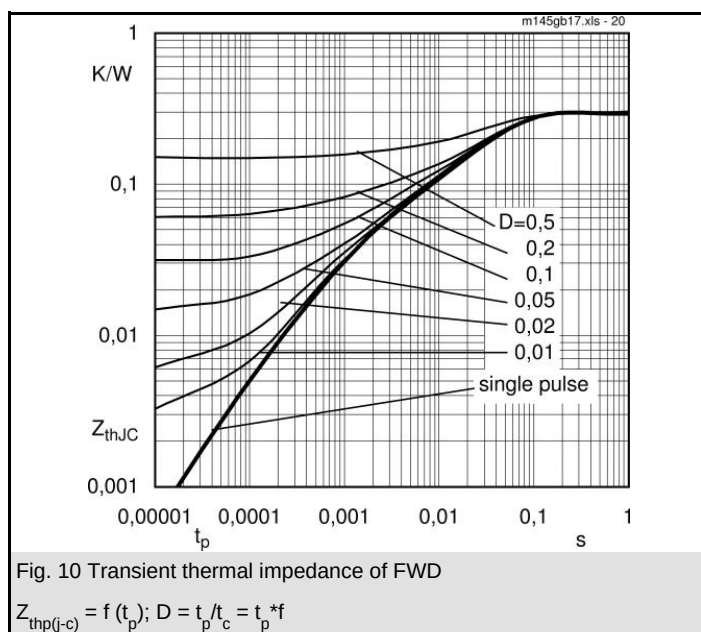
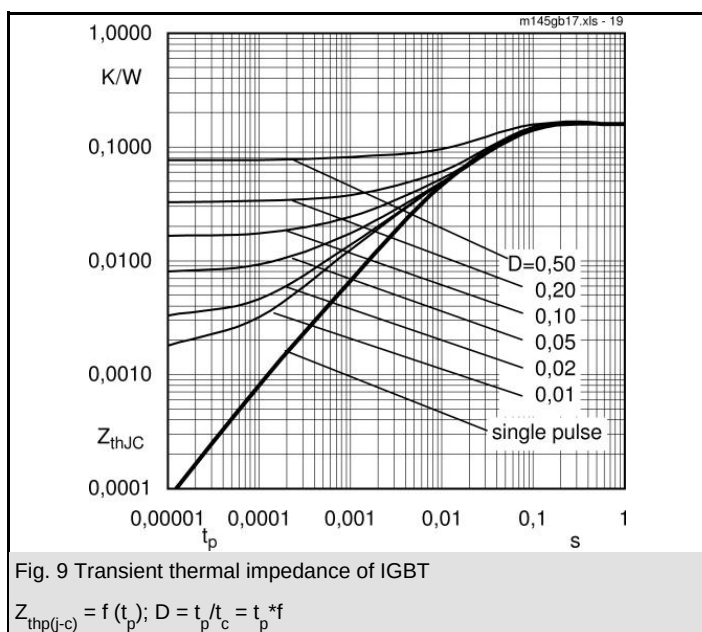
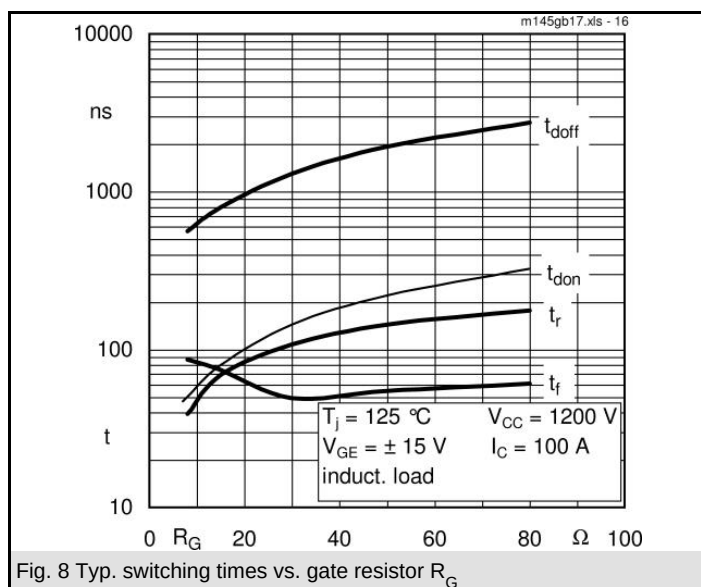
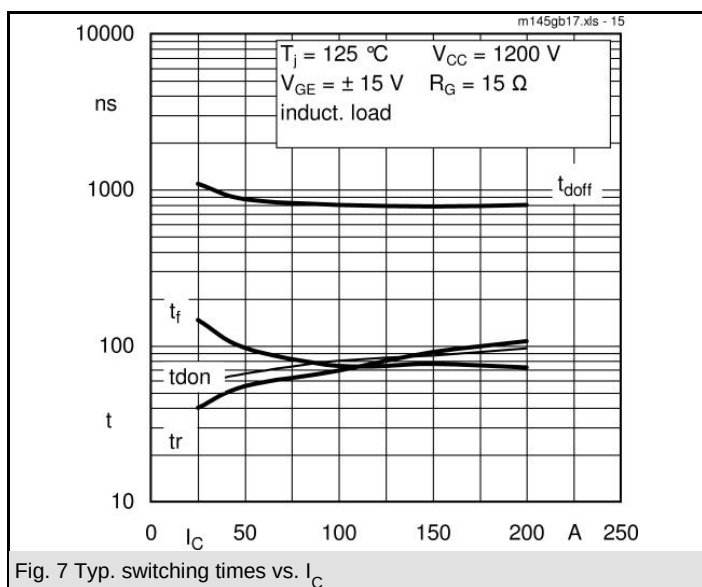
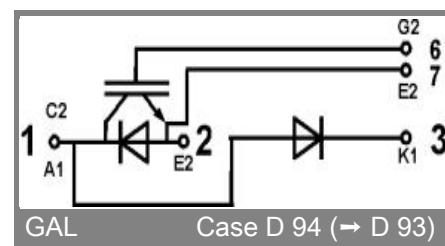
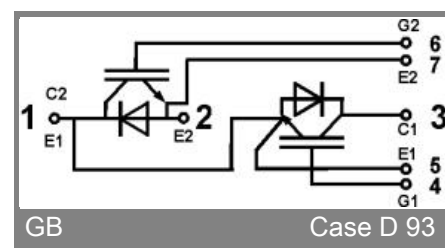
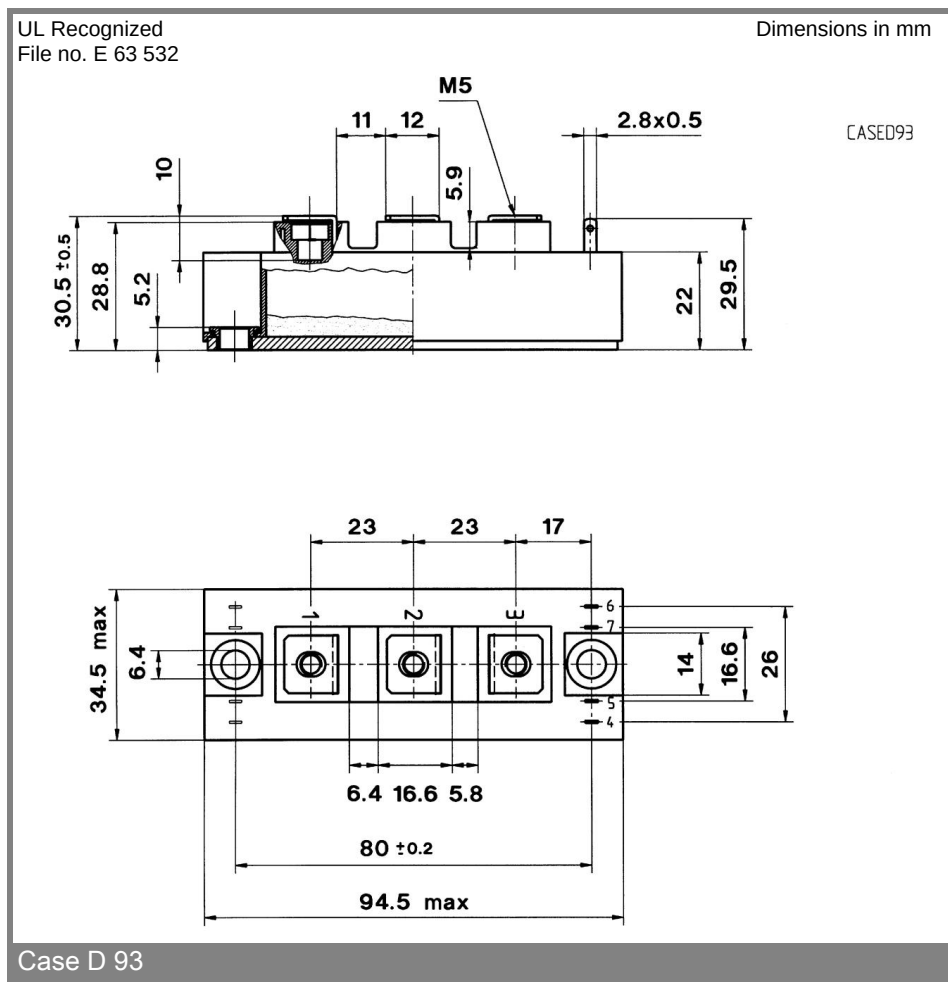
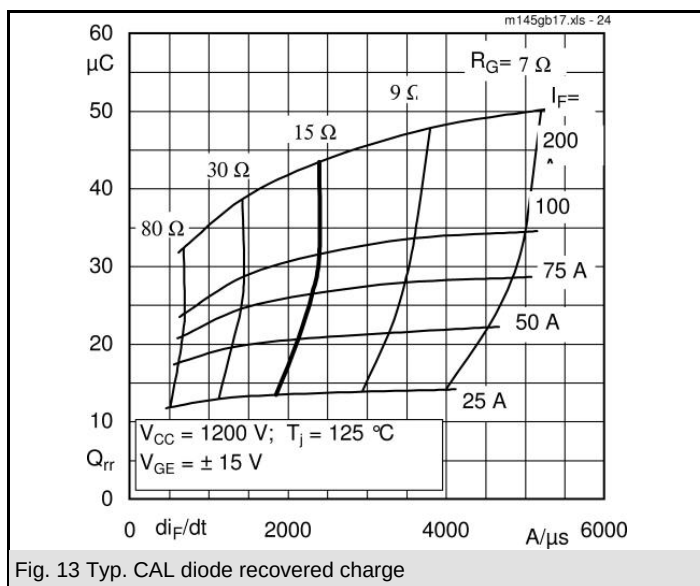


Fig. 6 Typ. gate charge characteristic





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

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