

SKM 500GA174D



SEMITRANS™ 4

Low Loss IGBT Modules

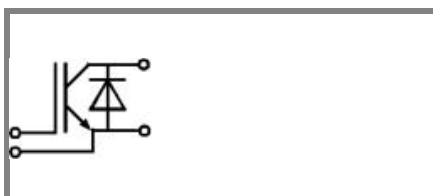
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Features

- 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 (13 mm) and creepage distances (20 mm)

Typical Applications

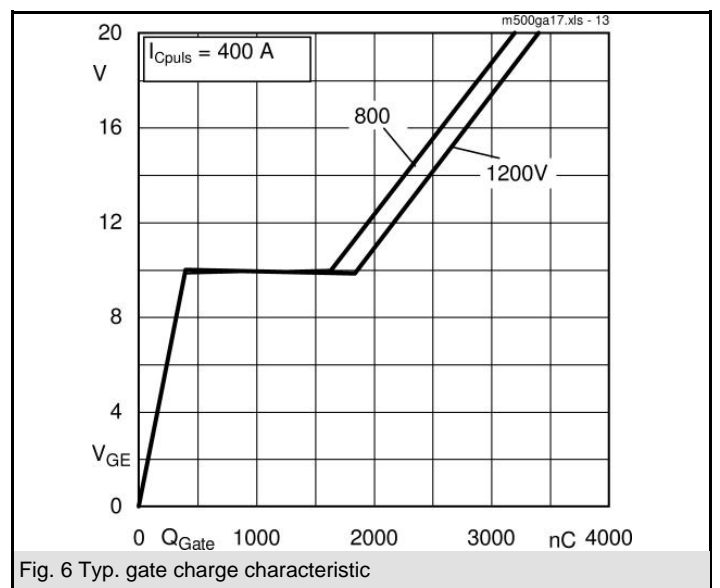
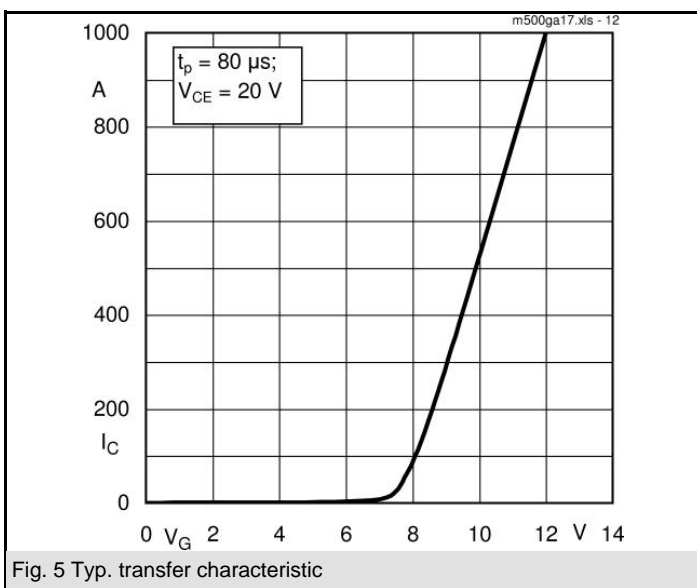
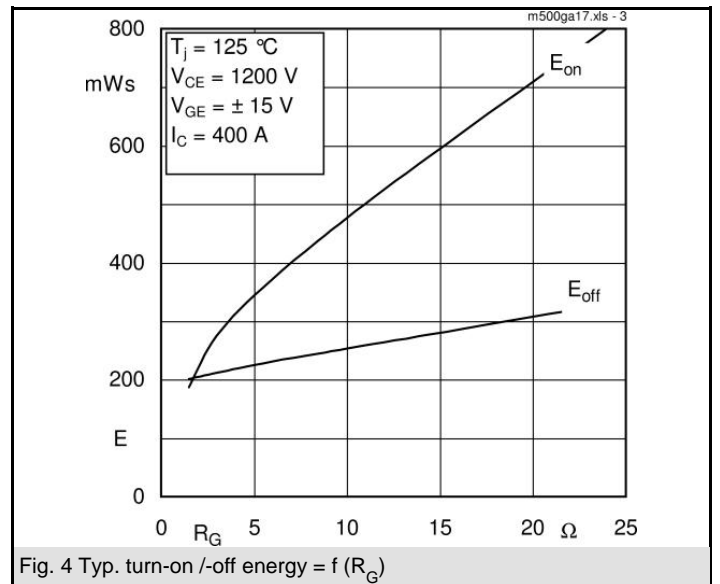
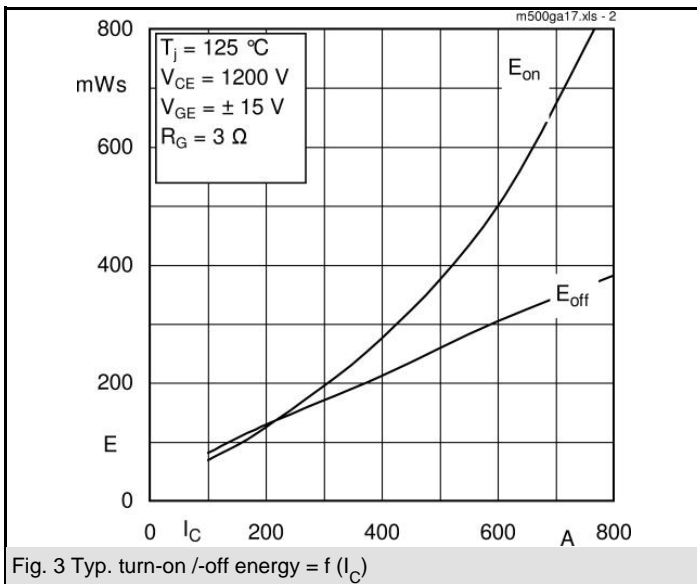
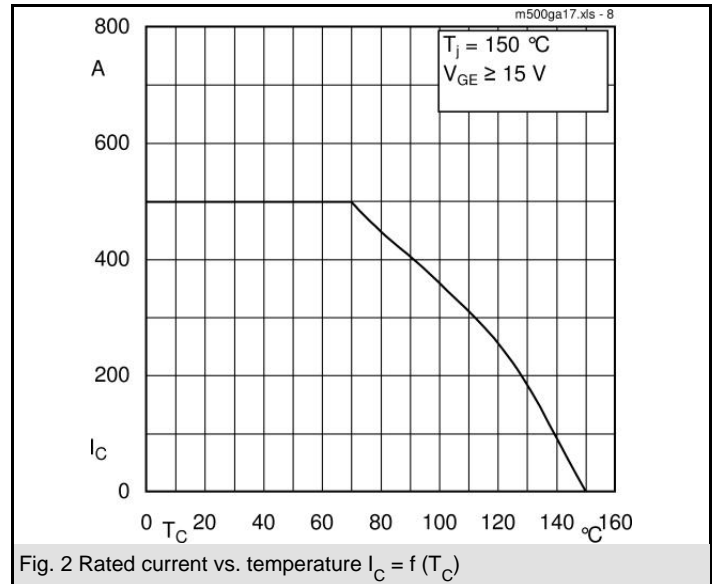
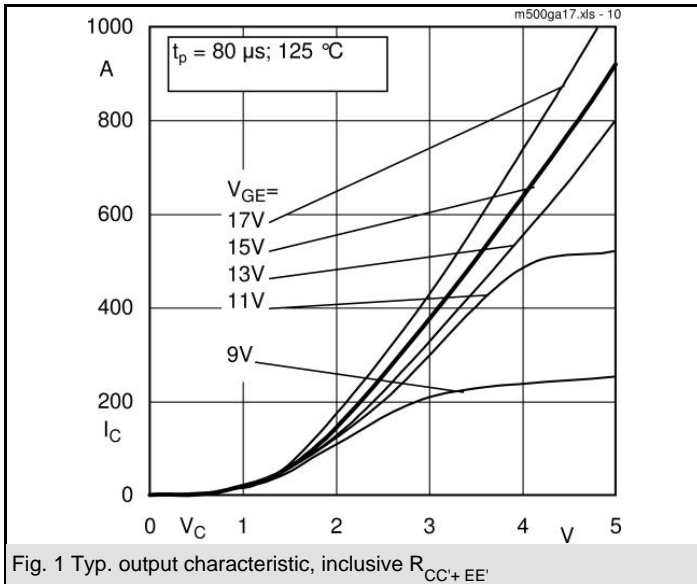
- AC inverter drives on mains 575 - 750 V_{AC}
- DC bus voltage 750 - 1200 V_{DC}
- Public transport (auxiliary syst.)
- Switching (not for linear use)

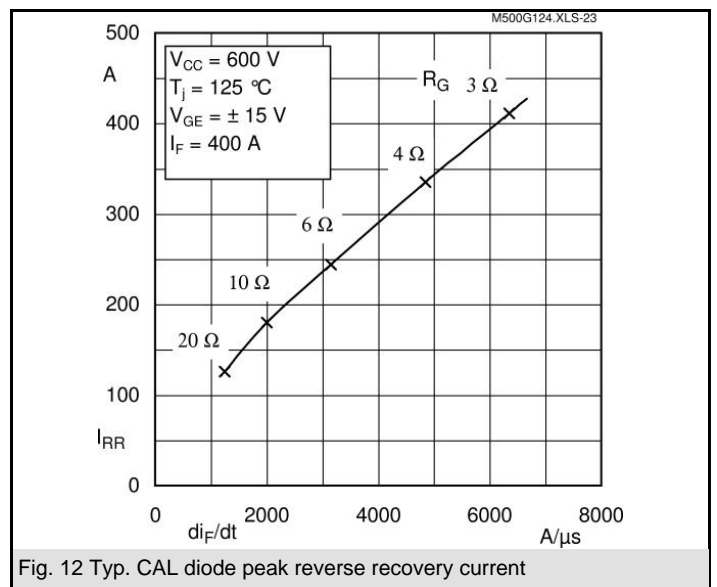
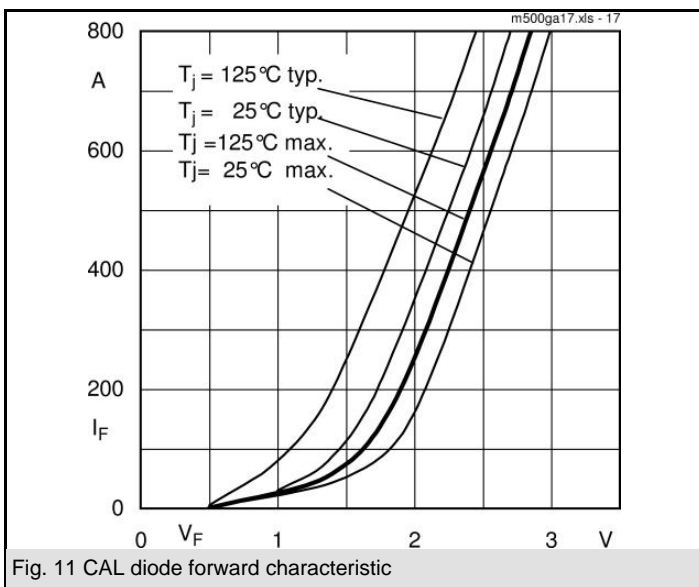
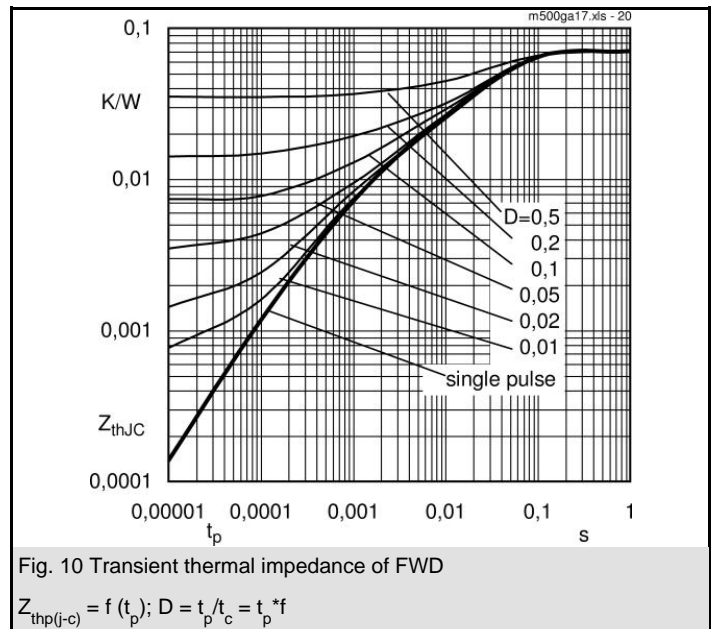
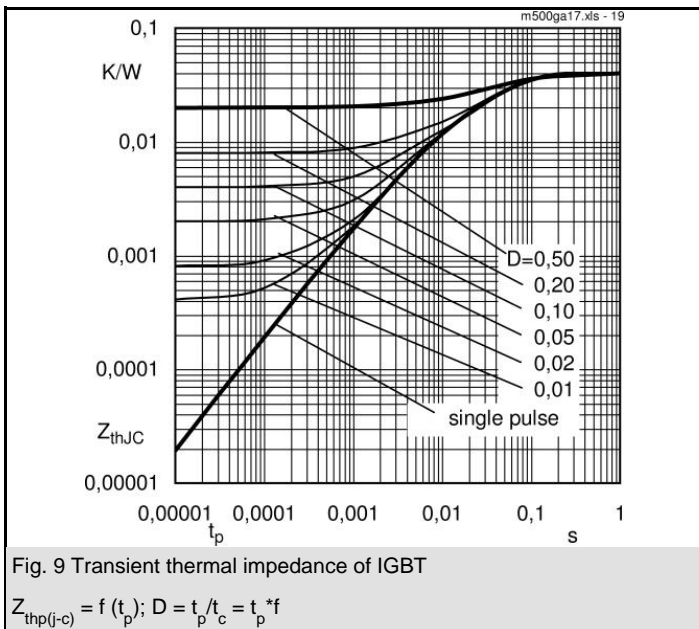
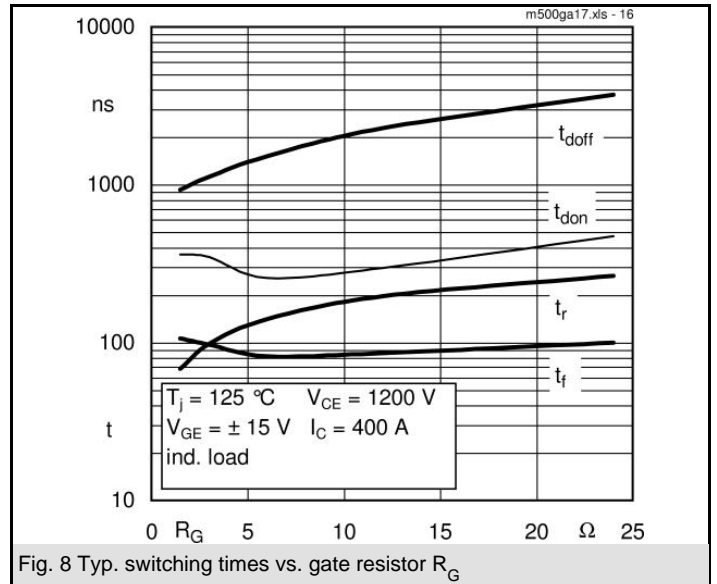
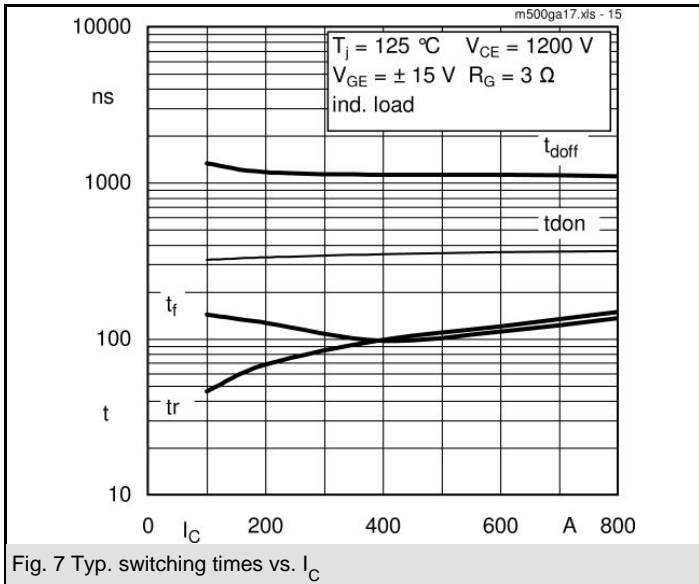


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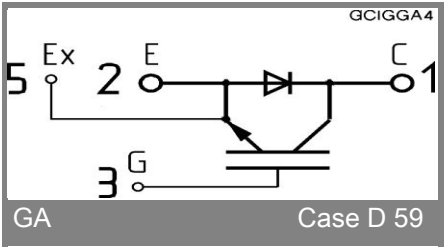
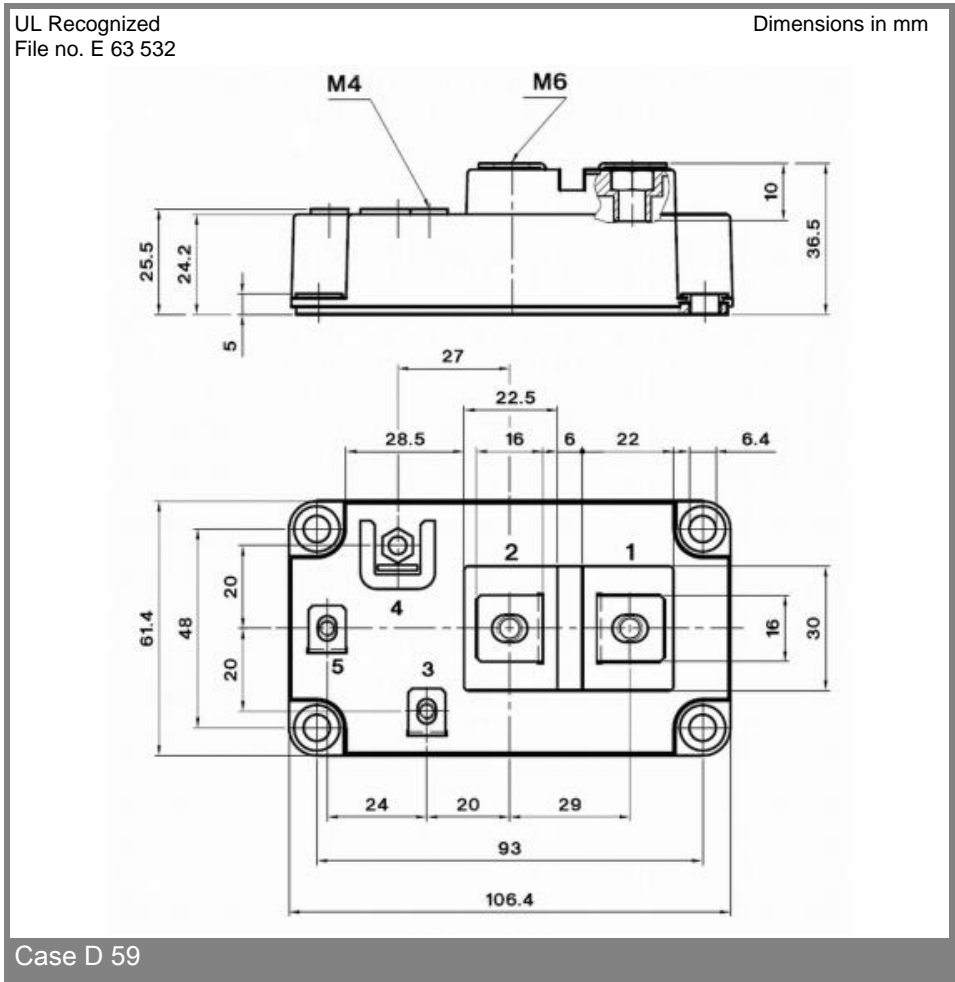
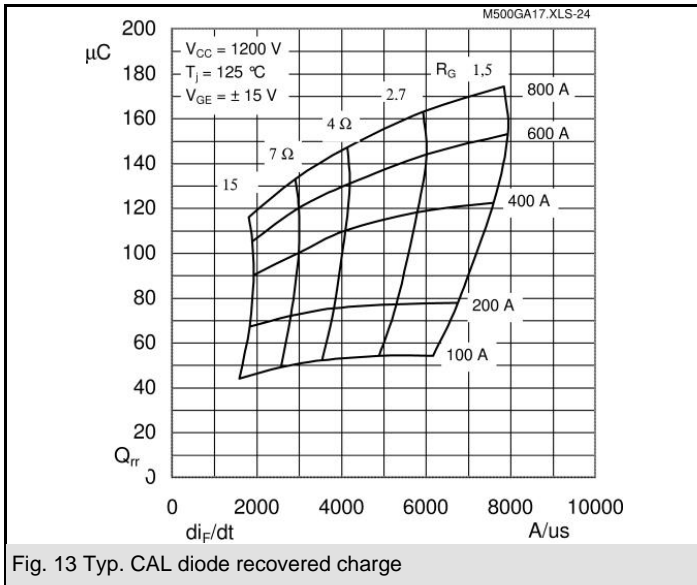
Absolute Maximum Ratings		T _c = 25 °C, unless otherwise specified	
Symbol	Conditions	Values	Units
IGBT			
V _{CES}		1700	V
I _C	T _c = 25 (80) °C	600 (440)	A
I _{CRM}	t _p = 1 ms	800	A
V _{GES}		± 20	V
T _{vj} ' (T _{stg})	T _{OPERATION} ≤ T _{stg}	- 40 ... + 150 (125)	°C
V _{isol}	AC, 1 min.	3400	V
Inverse diode			
I _F	T _c = 25 (80) °C	600 (440)	A
I _{FRM}	t _p = 1 ms	800	A
I _{FSM}	t _p = 10 ms; sin.; T _j = 150 °C	4400	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 = 18 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		1,35 (1,5)	1,65 (1,8)	V
r _{CE}	V _{GE} = 20 V, T _j = 25 (125) °C		3,625 (4,25)	4,125 (4,5)	mΩ
V _{CE(sat)}	I _{Cnom} = 400 A, V _{GE} = 15 V, chip level		2,8 (3,2)	3,3 (3,6)	V
C _{ies}	under following conditions		27		nF
C _{oes}	V _{GE} = 0, V _{CE} = 25 V, f = 1 MHz		3,8		nF
C _{res}			1,3		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} = 1200 V, I _{Cnom} = 400 A		350		ns
t _r	R _{Gon} = R _{Goff} = 3 Ω, T _j = 125 °C		100		ns
t _{d(off)}	V _{GE} = ± 15 V		1100		ns
t _f			100		ns
E _{on} (E _{off})			300 (210)		mJ
Inverse diode					
V _F = V _{EC}	I _{Fnom} = 400 A; V _{GE} = 0 V; T _j = 25 (125)		2,15 (1,8)	2,4 (2,2)	V
V _(TO)	T _j = 125 () °C		1,3	1,5	V
r _T	T _j = 125 () °C		1,6	2,1	mΩ
I _{RRM}	I _{Fnom} = 400 A; T _j = 25 (125) °C		270 (550)		A
Q _{rr}	di/dt = 400 A/μs		70 (117)		μC
E _{rr}	V _{GE} = V				mJ
Thermal characteristics					
R _{th(j-c)}	per IGBT			0,04	K/W
R _{th(j-c)D}	per Inverse Diode			0,07	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 (1,1)		5 (2)	Nm
w				330	g





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

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