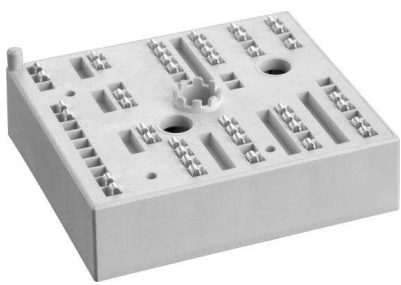


SKiiP 23NAB126V20



MiniSKiiP[®]2

3-phase bridge rectifier +
brake chopper + 3-phase
bridge inverter
SKiiP 23NAB126V20

Preliminary Data

Features

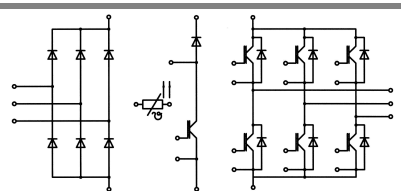
- Fast Trench IGBTs
- Robust and soft freewheeling diodes in CAL technology
- Highly reliable spring contacts for electrical connections
- UL recognised file no. E63532

Typical Applications*

- Inverter up to 16 kVA
- Typical motor power 7 kW

Remarks

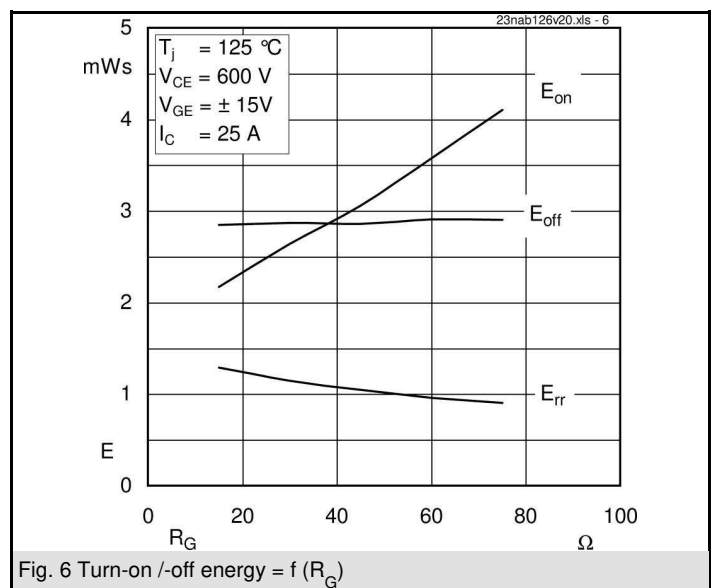
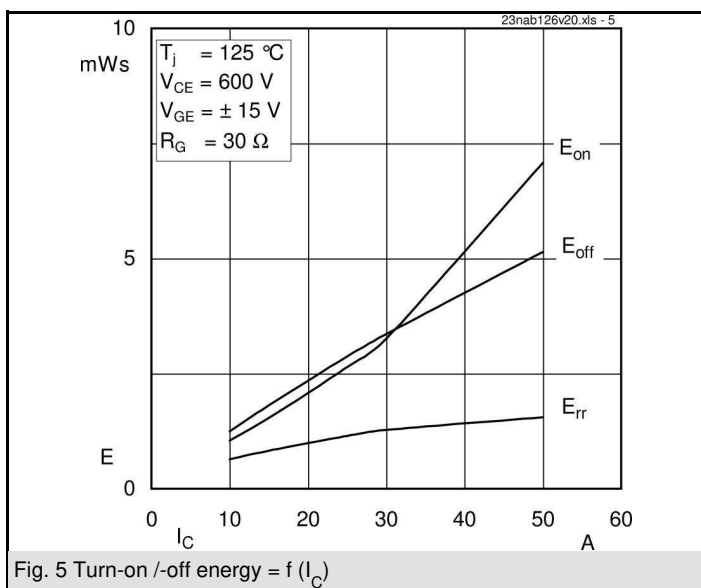
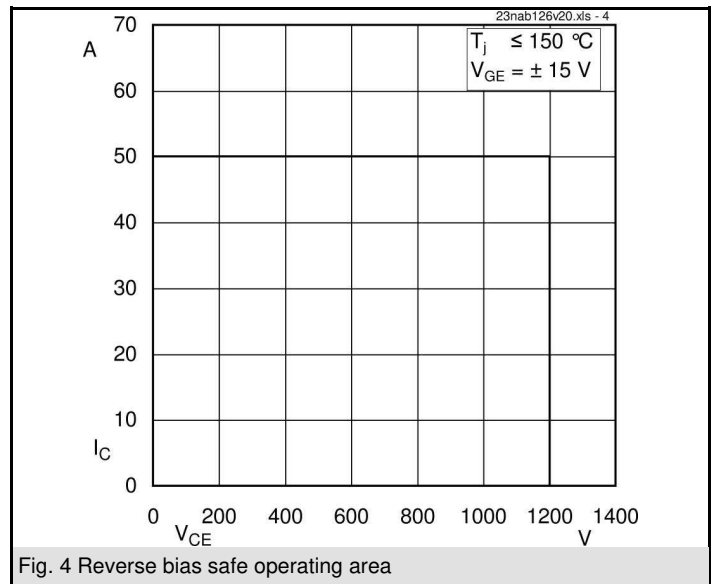
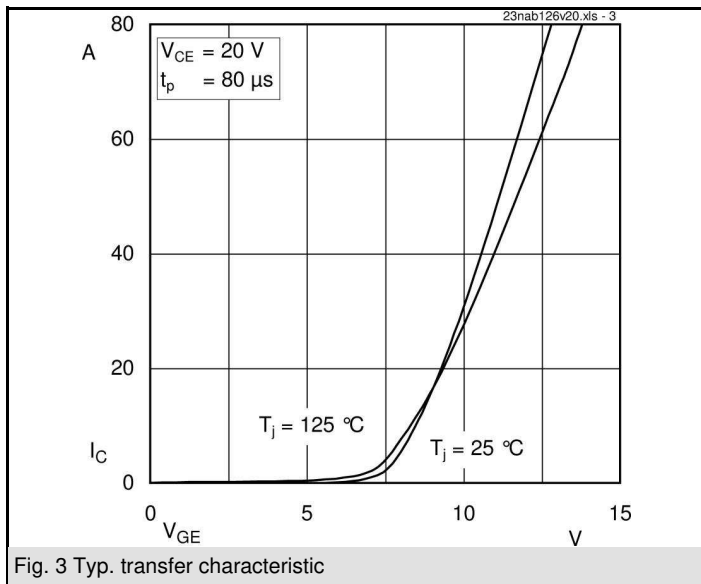
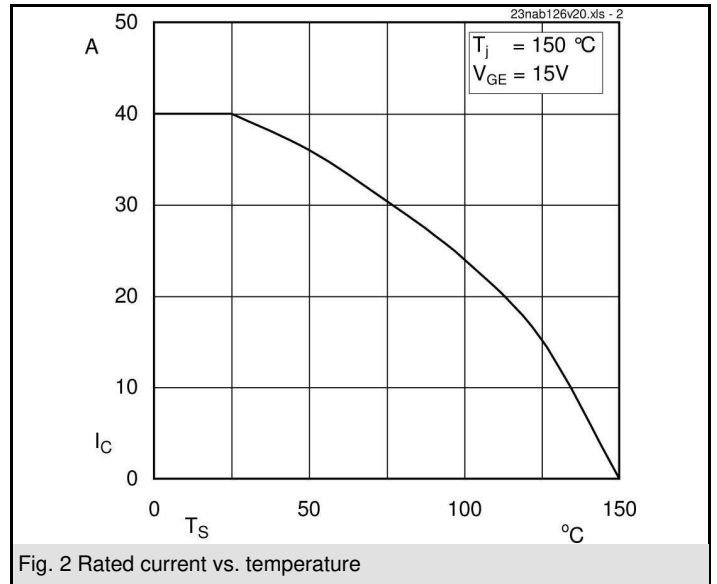
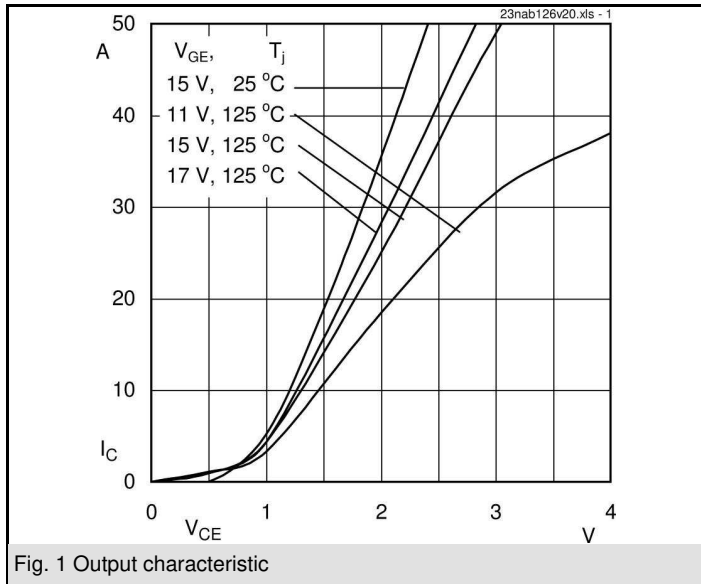
- V_{CEsat} , V_F = chip level value



NAB

Absolute Maximum Ratings		$T_S = 25^\circ\text{C}$, unless otherwise specified		
Symbol	Conditions	Values	Units	
IGBT - Inverter, Chopper				
V_{CES}	$T_S = 25 (70)^\circ\text{C}$	1200	V	
I_C		41 (31)	A	
I_{CRM}		50	A	
V_{GES}		± 20	V	
T_j		-40...+150	$^\circ\text{C}$	
Diode - Inverter, Chopper				
I_F	$T_S = 25 (70)^\circ\text{C}$	27 (21)	A	
I_{FRM}		50	A	
T_j		-40...+150	$^\circ\text{C}$	
Diode - Rectifier				
V_{RRM}	$T_S = 70^\circ\text{C}$	1600	V	
I_F		46	A	
I_{FSM}		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	370	A
i^2t		$t_p = 10 \text{ ms, sin } 180^\circ, T_j = 25^\circ\text{C}$	680	A^2s
T_j		-40...+150	$^\circ\text{C}$	
Module				
I_{RMS}	per power terminal (20 A / spring)	40	A	
T_{stg}		-40...+125	$^\circ\text{C}$	
V_{isol}	AC, 1 min.	2500	V	

Characteristics		$T_S = 25^\circ\text{C}$, unless otherwise specified			
Symbol	Conditions	min.	typ.	max.	Units
IGBT - Inverter, Chopper					
V_{CEsat}	$I_{Cnom} = 25 \text{ A}, T_j = 25 (125)^\circ\text{C}$		1,7 (2)	2,1 (2,4)	V
$V_{GE(th)}$	$V_{GE} = V_{CE}, I_C = 1 \text{ mA}$	5	5,8	6,5	V
$V_{CE(TO)}$	$T_j = 25 (125)^\circ\text{C}$		1 (0,9)	1,2 (1,1)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		28 (44)	36 (52)	$\text{m}\Omega$
C_{ies}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		1,8		nF
C_{oes}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,3		nF
C_{res}	$V_{CE} = 25 \text{ V}, V_{GE} = 0 \text{ V}, f = 1 \text{ MHz}$		0,2		nF
$R_{th(j-s)}$	per IGBT		0,9		K/W
$t_{d(on)}$	under following conditions		75		ns
t_r	$V_{CC} = 600 \text{ V}, V_{GE} = \pm 15 \text{ V}$		30		ns
$t_{d(off)}$	$I_{Cnom} = 25 \text{ A}, T_j = 125^\circ\text{C}$		460		ns
t_f	$R_{Gon} = R_{Goff} = 30 \Omega$		90		ns
E_{on}	inductive load		2,7		mJ
E_{off}			2,9		mJ
Diode - Inverter, Chopper					
$V_F = V_{EC}$	$I_{Fnom} = 25 \text{ A}, T_j = 25 (125)^\circ\text{C}$		2,4 (2,2)	2,9 (2,7)	V
$V_{(TO)}$	$T_j = 25 (125)^\circ\text{C}$		0,9 (0,6)	1,1 (0,8)	V
r_T	$T_j = 25 (125)^\circ\text{C}$		60 (64)	72 (76)	$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,5		K/W
I_{RRM}	under following conditions		30,2		A
Q_{rr}	$I_{Fnom} = 25 \text{ A}, V_R = 600 \text{ V}$		3,1		μC
E_{rr}	$V_{GE} = 0 \text{ V}, T_j = 125^\circ\text{C}$		1,2		mJ
	$di_F/dt = 1200 \text{ A}/\mu\text{s}$				
Diode - Rectifier					
V_F	$I_{Fnom} = 25 \text{ A}, T_j = 25^\circ\text{C}$		1,1		V
$V_{(TO)}$	$T_j = 150^\circ\text{C}$		0,8		V
r_T	$T_j = 150^\circ\text{C}$		13		$\text{m}\Omega$
$R_{th(j-s)}$	per diode		1,25		K/W
Temperature Sensor					
R_{ts}	3 %, $T_r = 25 (100)^\circ\text{C}$		1000(1670)		Ω
Mechanical Data					
w			65		g
M_s	Mounting torque	2		2,5	Nm



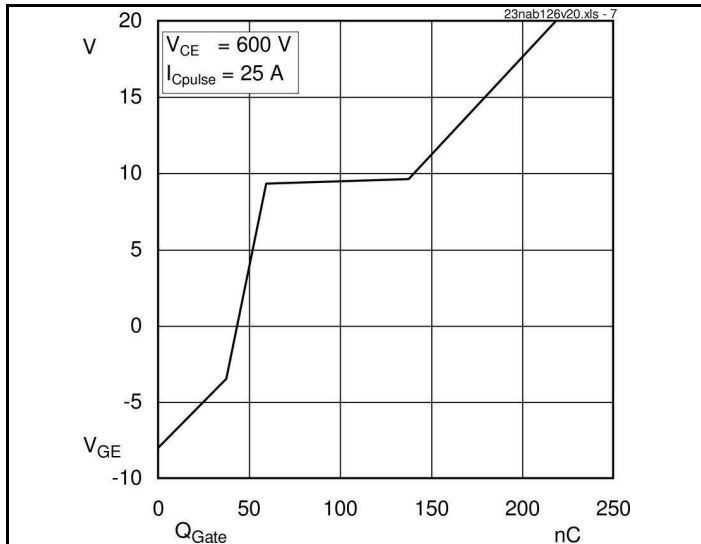


Fig. 7 Typ. Gate charge characteristic

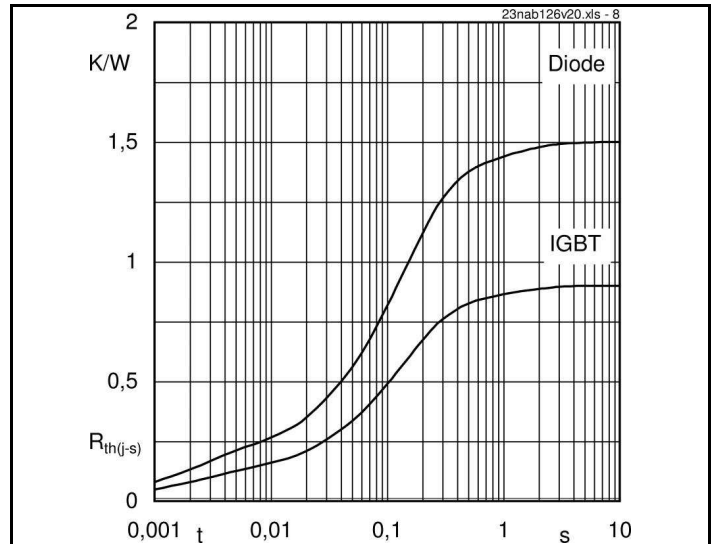


Fig. 8 Thermal impedance

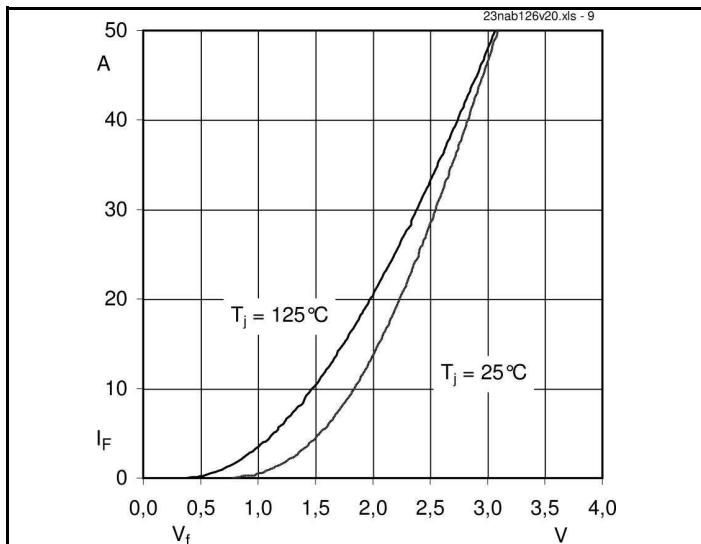


Fig. 9 Freewheeling diode forward characteristic

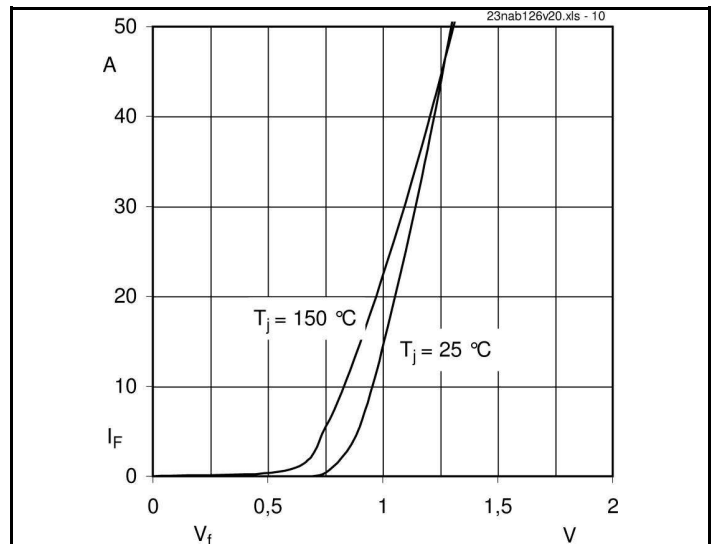
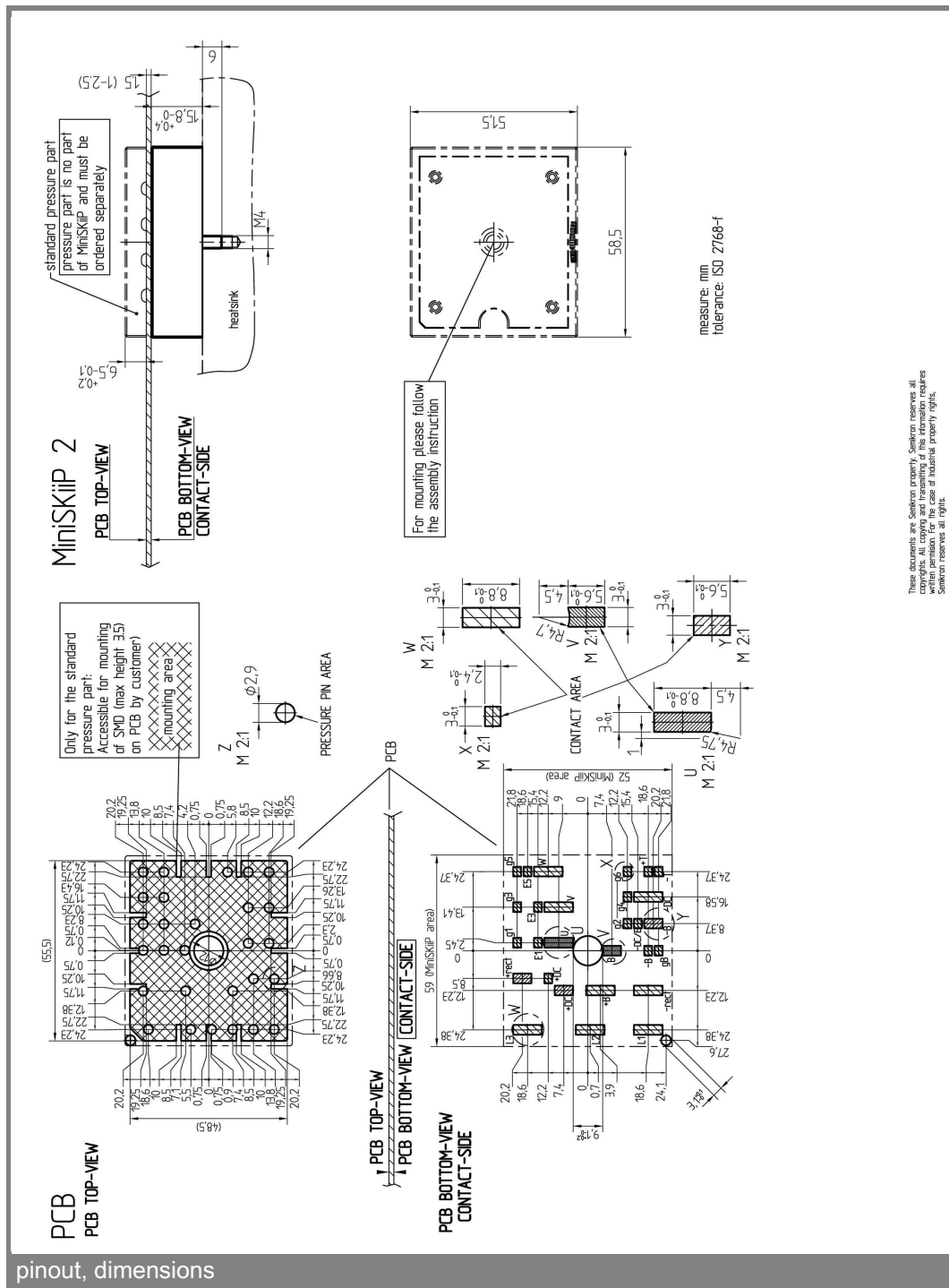
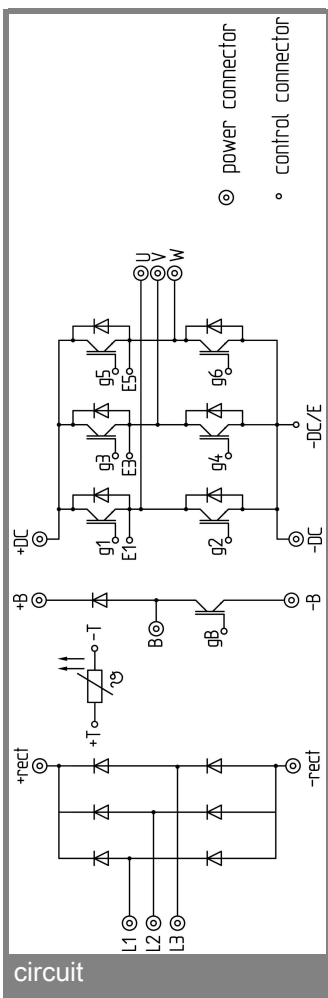


Fig. 10 Typ. input bridge forward characteristic



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

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