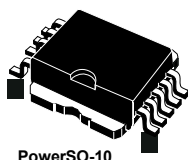


Quad high-side smart power solid-state relay



Product status link

[VN340SP-E & VN340SP-33-E](#)

Product label



Features

- Operating output current: 0.7 A (VN340SP-E) or 1 A (VN340SP-33-E)
- Digital I/O clamped at 32 V minimum voltage
- Shorted load and overtemperature protections
- Protection against loss of ground
- Built-in current limiter
- Undervoltage shutdown
- Open drain diagnostic output
- Fast demagnetization of inductive loads
- Conforms to IEC 61131-2

Applications

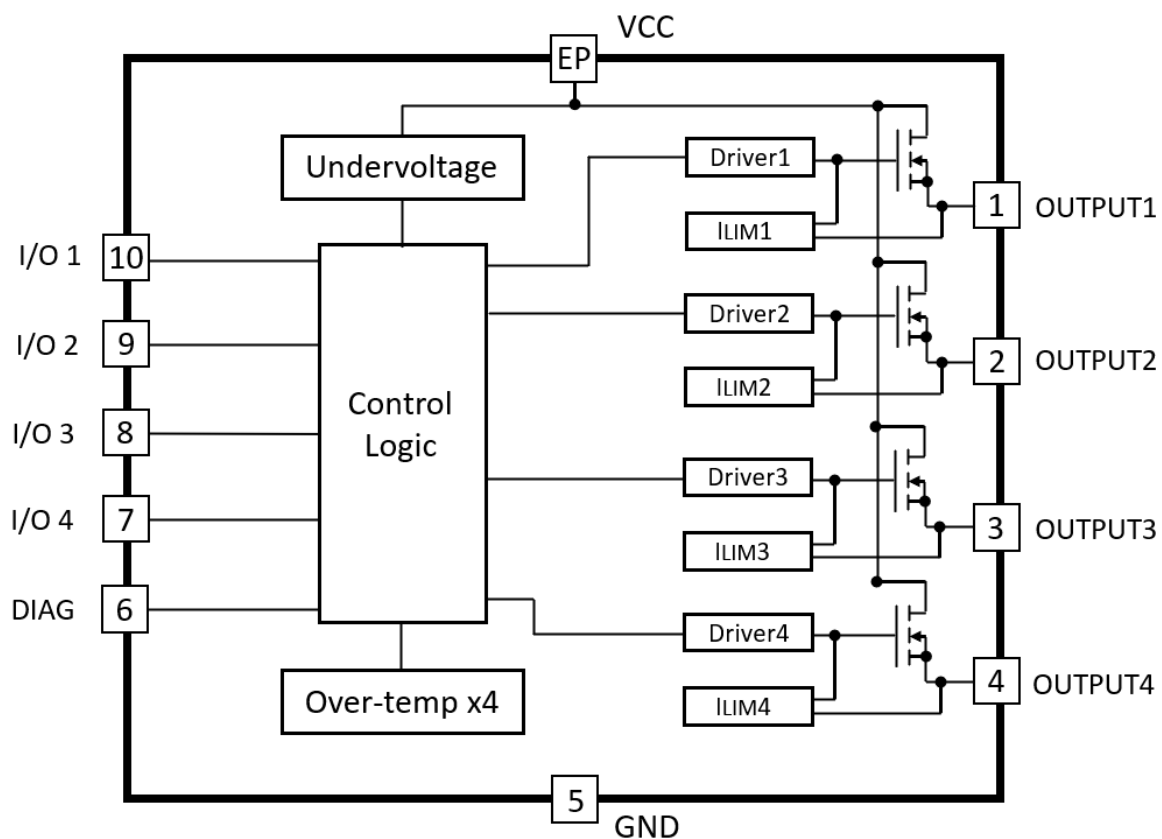
- Vending machines
- Industrial PC peripheral input/output
- Numerical control machines
- General high-side switch applications

Description

VN340SP-E & VN340SP-33-E are monolithic devices developed using STMicroelectronics' VIPower technology, intended to drive four independent resistive or inductive loads with one side connected to ground. Active current limitation prevents dropping of the system power supply in case of shorted load. Built-in thermal shutdown protects the chip from overtemperature and short-circuit. The open drain diagnostic output indicates overtemperature conditions. Each I/O is pulled down when the overtemperature condition of the relative channel is verified.

1 Block diagram

Figure 1. Block diagram



2 Pin connection

Figure 2. Connection diagram (top view)

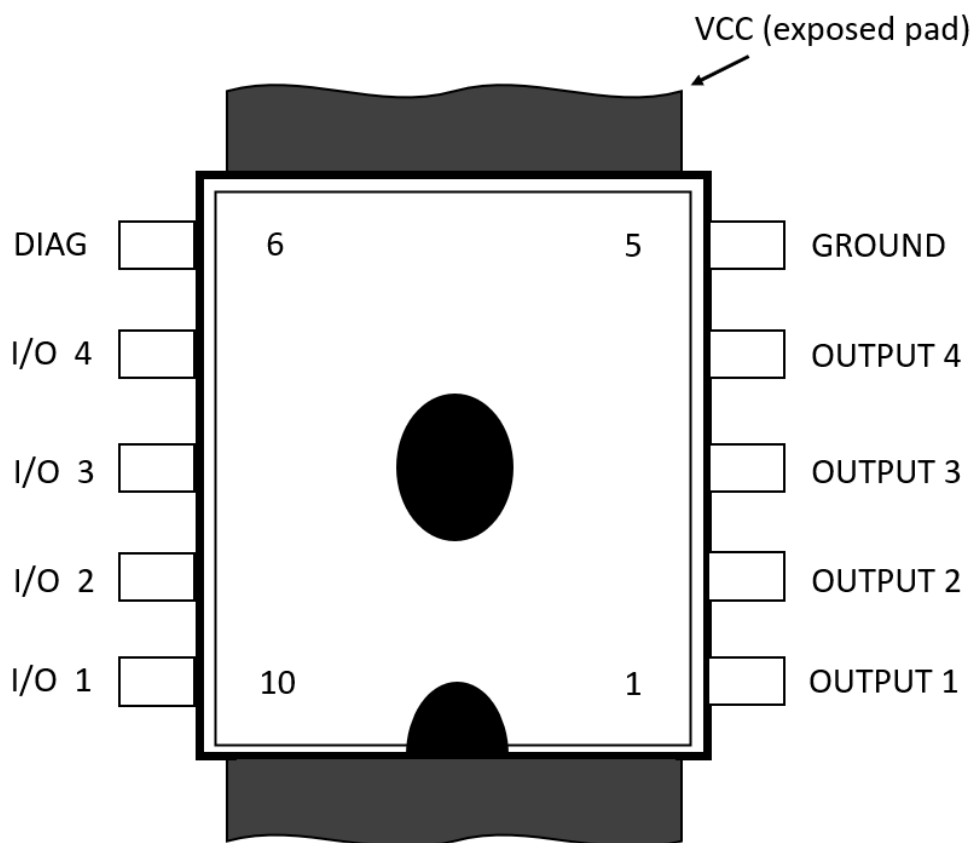
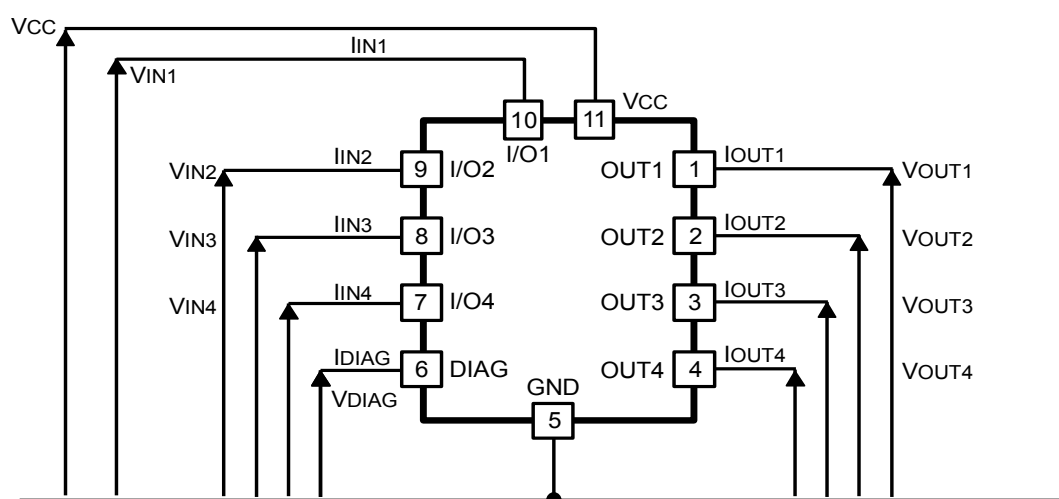


Figure 3. Current and voltage conventions



3 Maximum ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CC}	Power supply voltage	45	V
$-V_{CC}$	Reverse supply voltage	-4	V
I_{OUT}	Output current	Internally limited	A
I_R	Reverse output current (per channel)	-6	A
I_{IN}	Input current range	-1 to +10	mA
I_{DIAG}	Diag pin current	-1 to +10	mA
V_{ESD}	Electrostatic discharge ($R = 1.5\text{ k}\Omega$; $C = 100\text{ pF}$)	2000	V
E_{AS}	Single pulse avalanche energy, one channel active, $T_J = 125\text{ }^\circ\text{C}$, $I_{LOAD} = 0.625\text{ A}$	10	J
	Single pulse avalanche energy all channels active simultaneously, $T_J = 125\text{ }^\circ\text{C}$, $I_{LOAD} = 0.625\text{ A}$	2	J
P_{TOT}	Power dissipation at $T_C = 25\text{ }^\circ\text{C}$	Internally limited	W
T_J	Junction operating temperature	Internally limited	$^\circ\text{C}$
T_{STG}	Storage temperature	-55 to 150	$^\circ\text{C}$

Table 2. Thermal data

Symbol	Parameter	Max Value	Unit
$R_{th(JC)}$	Thermal resistance junction-case ⁽¹⁾	3	$^\circ\text{C/W}$
$R_{th(JA)}$	Thermal resistance junction-ambient ⁽²⁾	50	$^\circ\text{C/W}$

1. Per channel.

2. When mounted on a four-layer FR4, with the minimum recommended pad size.

4 Electrical characteristics

10 V < V_{CC} < 36 V; -40 °C < T_J < 125 °C; unless otherwise specified

Table 3. Power section

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V _{CC}	Supply voltage		10		36	V
R _{DS(on)}	On-state resistance	I _{OUT} = 0.5 A @ T _J = 25 °C			0.2	Ω
		I _{OUT} = 0.5 A @ T _J = 85 °C			0.32	
		I _{OUT} = 0.5 A @ T _J = 125 °C			0.4	
I _S	Supply current	All channels in OFF-state			1	mA
		V _{IN} = 30 V, I _{OUT} = 0 V, T _J = 125 °C			6	
V _{OL}	Low state output voltage	V _{IN} = V _{IL} ; R _{LOAD} > = 10 MΩ			1.5	V
I _{LGND}	Output current at turn-off	V _{CC} = V _{IN} = V _{GND} = V _{STAT} = 18 to 30 V, T _A = - 25 °C to 85 °C			2	mA
V _{demag}	Demagnetization voltage	I _{OUT} = 0.5 A; L _{LOAD} >= 1 mH	V _{CC} -65	V _{CC} -55	V _{CC} -45	V

Table 4. Switching (V_{CC} = 24 V, T_J = 25 °C)

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
t _{d(ON)}	Turn-on delay time	I _{OUT} = 0.5 A, resistive load, input rise time < 0.1 μs		52	100	μs
t _r	Rise time of output current			94	250	
t _{d(OFF)}	Turn-off delay time of output current			34	50	
t _f	Fall time			8	20	

Table 5. Logic inputs

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
V _{IL}	I/O input low level voltage				2	V
V _{IH}	I/O input high level voltage		3.5			V
V _{I(HYST)}	I/O input hysteresis voltage			0.5		V
I _{IN}	I/O input current	V _{IN} = 30 V			25	μA
V _{ICL}	I/O input clamp voltage ⁽¹⁾	I _{IN} = 1 mA	32	36		V
		I _{IN} = -1 mA		-0.7		

1. The input voltage is internally clamped at 32 V minimum, the input pins can be connected to a higher voltage by an external resistor, which cannot exceed 10 mA

Table 6. Protection and diagnostic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{DIAG}^{(1)}$	Status voltage output low	$I_{DIAG} = 5 \text{ mA}$ (fault condition)			1	V
V_{SCL}	Status clamp voltage	$I_{DIAG} = 1 \text{ mA}$	32	36		V
		$I_{DIAG} = -1 \text{ mA}$		-0.7		V
V_{USD}	Undervoltage shutdown		5		8	V
I_{lim}	DC short-circuit current	$V_{CC} = 24 \text{ V}; R_{LOAD} < 10 \text{ m}\Omega$	0.7 ⁽²⁾		2	A
			1 ⁽³⁾			
I_{OVPK}	Peak short-circuit current	$V_{CC} = 24 \text{ V}; V_{IN} = 30 \text{ V}; R_{LOAD} < 10 \text{ m}\Omega$			4	A
I_{DIAGH}	Leakage on DIAG pin in high state	$V_{DIAG} = 24 \text{ V}$			25	μA
I_{LOAD}	Output leakage current	$V_{CC} = 10 \text{ to } 36 \text{ V}; V_{IN} = V_{IL}$			50	μA
t_{SC}	Delay time of current limiter				100	μs
T_{TSD}	Junction shutdown temperature		150	170		$^{\circ}\text{C}$
T_R	Junction reset temperature		135	155		$^{\circ}\text{C}$

1. Status determination > 100 μs after the switching edge.

2. VN340SP-E

3. VN340SP-33-E

Note: If the INPUT pin is left floating the corresponding channel automatically switches off. If GND pin is disconnected the channel switches off provided that V_{CC} does not exceed 36 V.

5 Test circuits

Figure 4. Avalanche energy test circuit

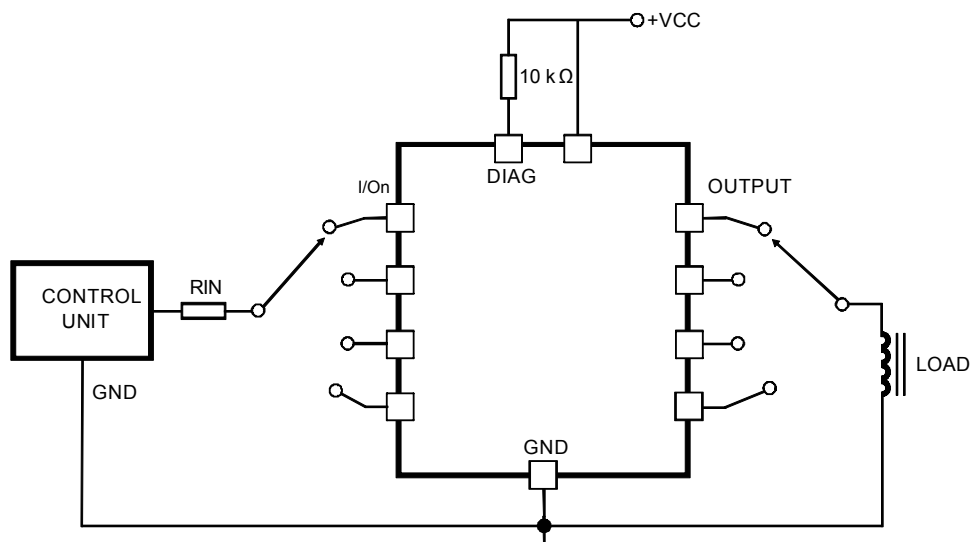


Figure 5. Peak short-circuit test diagram

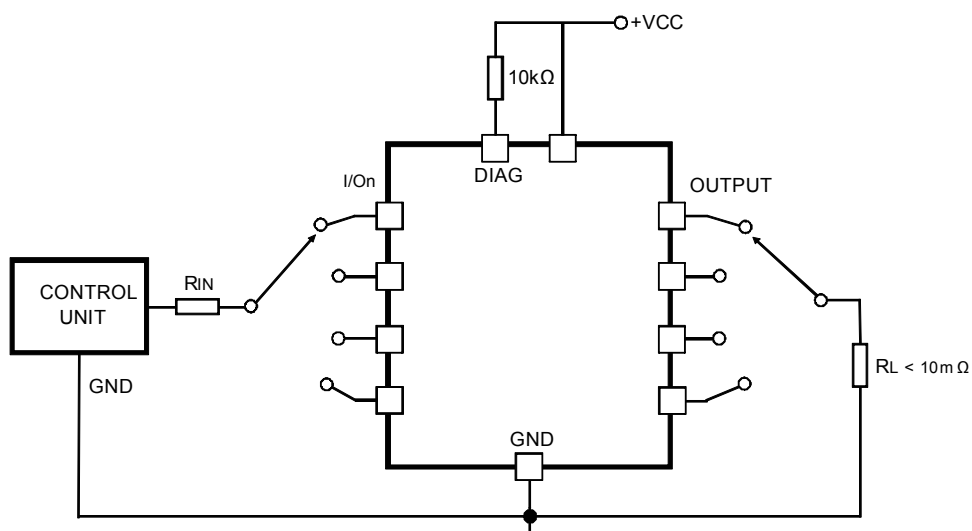
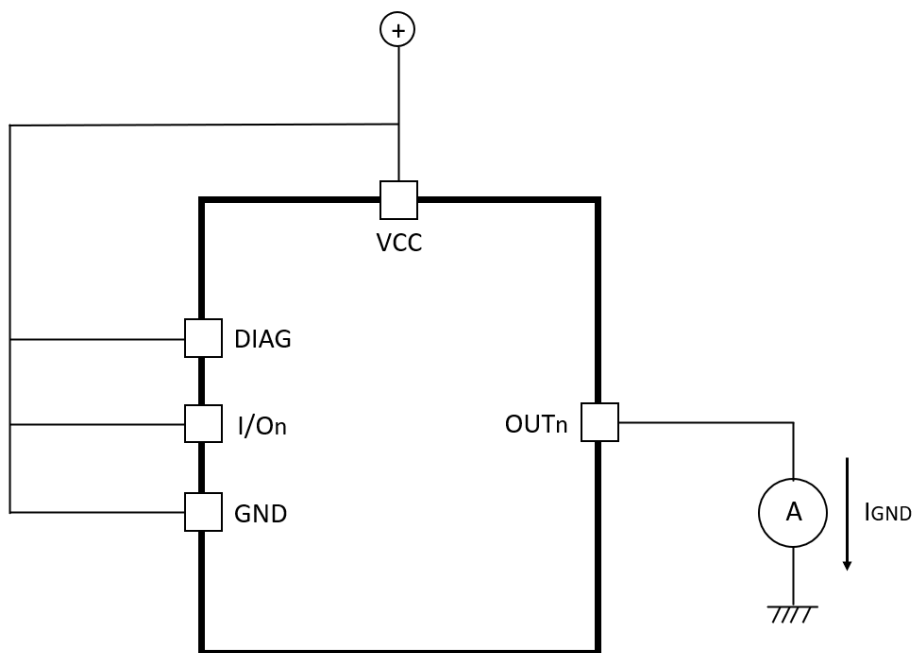


Figure 6. I_{LGND} test configuration


6 Switching time waveforms and truth table

Figure 7. Switching waveforms

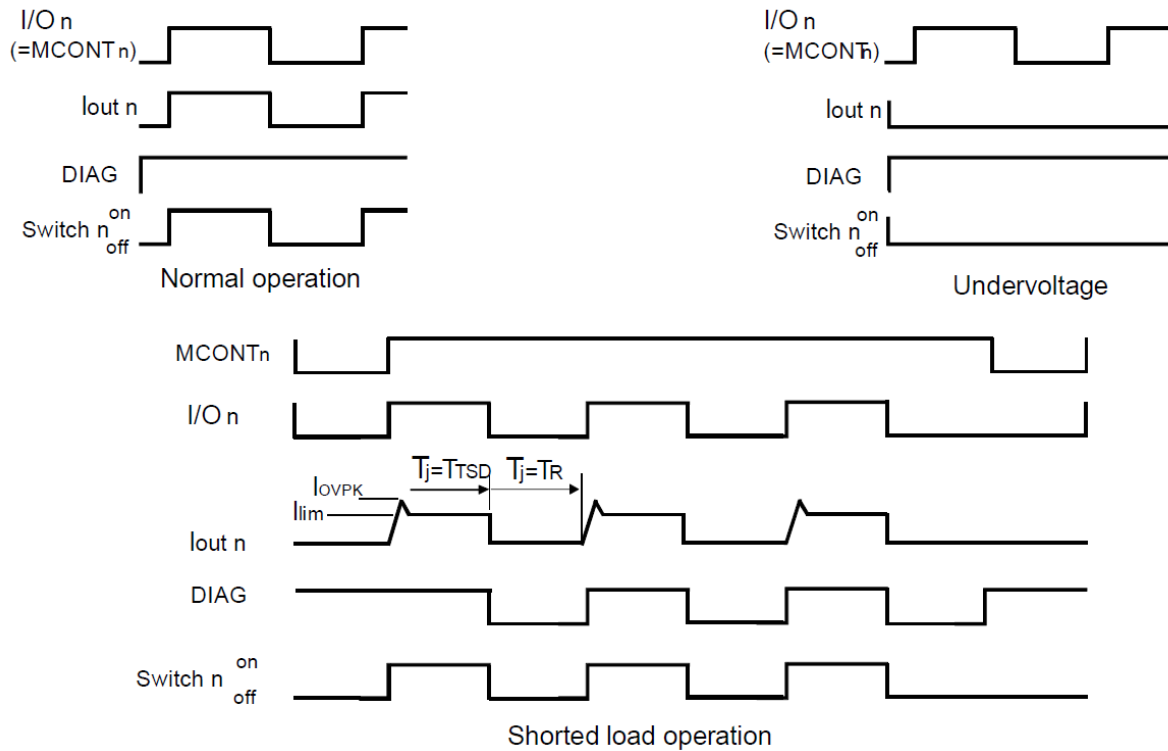


Figure 8. Switching parameter test conditions

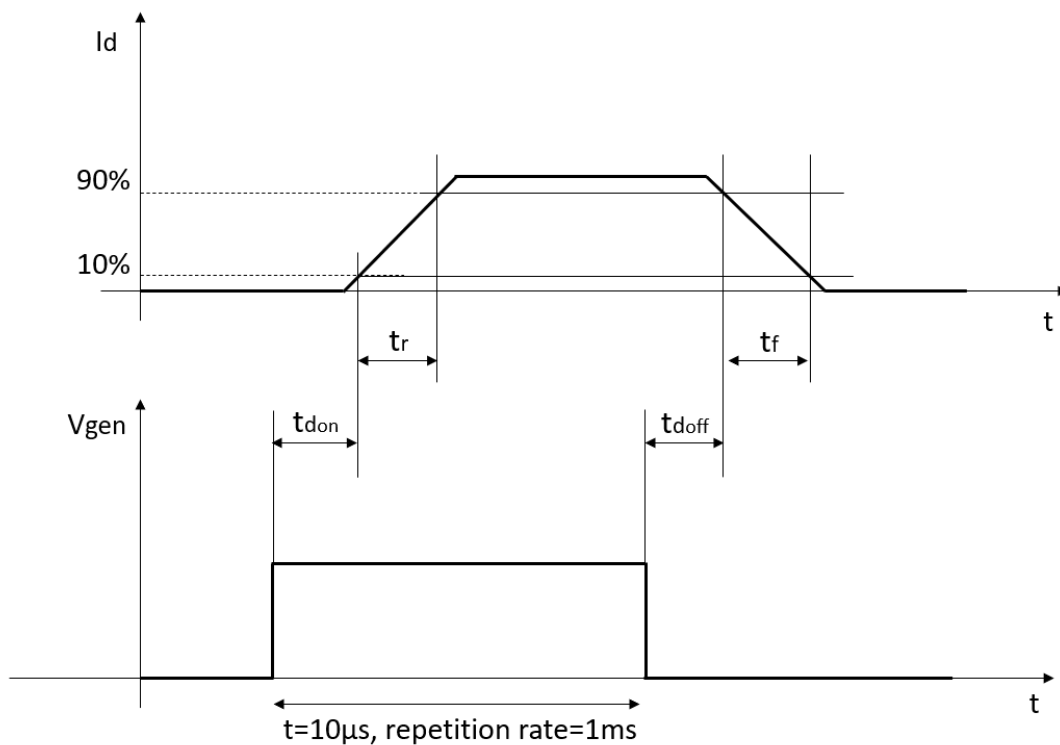
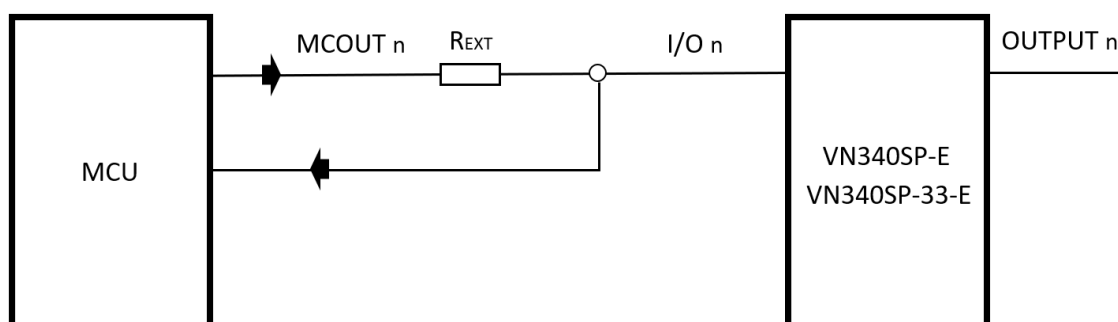


Table 7. Truth table

Conditions	MCOUTn	I/On	OUTPUTn	Diagnostic
Normal operation	L	L	L	H
	H	H	H	H
Junction overtemperature	L	L	L	H
	H	L	L	L
Undervoltage	L	L	L	H ⁽¹⁾
	H	H	L	H ⁽¹⁾
Shorted load (current limitation)	L	L	L	H
	H	H	H ⁽²⁾	H

1. DIAG pin is considered pulled-up at application voltage level

2. $V_{OUT} = R_{LOAD} \times I_{LIM}$

Figure 9. Driving circuit

Notes:

- The I/Os are internally pulled-down
- R_EXT is for enhancement of EMI robustness

7

7.1 PowerSO-10 package information

Technical drawing of a 16-pin D-subminiature connector, showing front, side, and detail views with dimensions and feature labels.

Front View (Top): Shows the connector body with 16 pins (8 on each side). Dimensions include $E3$ (body width), $E2$ (total width including pins), and $E1$ (pin pitch). Features include $R1$ (corner radius), $R2$ (pin base radius), and $R3$ (pin tip radius). A detail callout points to the pin base area.

Side View (Middle): Shows the profile of the connector. Dimensions include $T1$ (height to top of pins), $T2$ (height to base of pins), E (total height), $E1$ (pin pitch), L (pin length), $A4$ (pin diameter), T (pin thickness), R (pin base radius), and 0.35 (pin base width). A detail callout points to the pin base area.

Detail View (Bottom Left): Shows a close-up of the pin base area. Dimensions include $A1$ (pin base width), C (pin base thickness), and $A2$ (pin base radius). A detail callout points to the pin base area.

Detail View (Bottom Right): Shows a close-up of the pin base area. Dimensions include $A3$ (pin base width), $A2$ (pin base radius), $T2$ (height to top of pins), $T1$ (height to base of pins), and $D1$ (total height). A detail callout points to the pin base area.

Other Labels: $LEAD HUB$, $LEAD PLATE$, $GAUGE PLANE$, $SEE DETAIL K$, $SEE DETAIL L$, $SEE DETAIL M$, $SEE DETAIL N$, $SEE DETAIL O$, $SEE DETAIL P$, $SEE DETAIL Q$, $SEE DETAIL R$, $SEE DETAIL S$, $SEE DETAIL T$, $SEE DETAIL U$, $SEE DETAIL V$, $SEE DETAIL W$, $SEE DETAIL X$, $SEE DETAIL Y$, $SEE DETAIL Z$, $SEE DETAIL AA$, $SEE DETAIL AB$, $SEE DETAIL AC$, $SEE DETAIL AD$, $SEE DETAIL AE$, $SEE DETAIL AF$, $SEE DETAIL AG$, $SEE DETAIL AH$, $SEE DETAIL AI$, $SEE DETAIL AJ$, $SEE DETAIL AK$, $SEE DETAIL AL$, $SEE DETAIL AM$, $SEE DETAIL AN$, $SEE DETAIL AO$, $SEE DETAIL AP$, $SEE DETAIL AQ$, $SEE DETAIL AR$, $SEE DETAIL AS$, $SEE DETAIL AT$, $SEE DETAIL AU$, $SEE DETAIL AV$, $SEE DETAIL AW$, $SEE DETAIL AX$, $SEE DETAIL AY$, $SEE DETAIL AZ$, $SEE DETAIL BA$, $SEE DETAIL BB$, $SEE DETAIL BC$, $SEE DETAIL BD$, $SEE DETAIL BE$, $SEE DETAIL BF$, $SEE DETAIL BG$, $SEE DETAIL BH$, $SEE DETAIL BI$, $SEE DETAIL BJ$, $SEE DETAIL BK$, $SEE DETAIL BL$, $SEE DETAIL BM$, $SEE DETAIL BN$, $SEE DETAIL BO$, $SEE DETAIL BP$, $SEE DETAIL BQ$, $SEE DETAIL BR$, $SEE DETAIL BS$, $SEE DETAIL BT$, $SEE DETAIL BU$, $SEE DETAIL BV$, $SEE DETAIL BW$, $SEE DETAIL BX$, $SEE DETAIL BY$, $SEE DETAIL BZ$, $SEE DETAIL CA$, $SEE DETAIL CB$, $SEE DETAIL CC$, $SEE DETAIL CD$, $SEE DETAIL CE$, $SEE DETAIL CF$, $SEE DETAIL CG$, $SEE DETAIL CH$, $SEE DETAIL CI$, $SEE DETAIL CJ$, $SEE DETAIL CK$, $SEE DETAIL CL$, $SEE DETAIL CM$, $SEE DETAIL CN$, $SEE DETAIL CO$, $SEE DETAIL CP$, $SEE DETAIL CQ$, $SEE DETAIL CR$, $SEE DETAIL CS$, $SEE DETAIL CT$, $SEE DETAIL CU$, $SEE DETAIL CV$, $SEE DETAIL CW$, $SEE DETAIL CX$, $SEE DETAIL CY$, $SEE DETAIL CZ$, $SEE DETAIL DA$, $SEE DETAIL DB$, $SEE DETAIL DC$, $SEE DETAIL DD$, $SEE DETAIL DE$, $SEE DETAIL DF$, $SEE DETAIL DG$, $SEE DETAIL DH$, $SEE DETAIL DI$, $SEE DETAIL DJ$, $SEE DETAIL DK$, $SEE DETAIL DL$, $SEE DETAIL DM$, $SEE DETAIL DN$, $SEE DETAIL DO$, $SEE DETAIL DP$, $SEE DETAIL DQ$, $SEE DETAIL DR$, $SEE DETAIL DS$, $SEE DETAIL DT$, $SEE DETAIL DU$, $SEE DETAIL DV$, $SEE DETAIL DW$, $SEE DETAIL DX$, $SEE DETAIL DY$, $SEE DETAIL DZ$, $SEE DETAIL EA$, $SEE DETAIL EB$, $SEE DETAIL EC$, $SEE DETAIL ED$, $SEE DETAIL EE$, $SEE DETAIL EF$, $SEE DETAIL EG$, $SEE DETAIL EH$, $SEE DETAIL EI$, $SEE DETAIL EJ$, $SEE DETAIL EK$, $SEE DETAIL EL$, $SEE DETAIL EM$, $SEE DETAIL EN$, $SEE DETAIL EO$, $SEE DETAIL EP$, $SEE DETAIL EQ$, $SEE DETAIL ER$, $SEE DETAIL ES$, $SEE DETAIL ET$, $SEE DETAIL EU$, $SEE DETAIL EV$, $SEE DETAIL EW$, $SEE DETAIL EX$, $SEE DETAIL EY$, $SEE DETAIL EZ$, $SEE DETAIL FA$, $SEE DETAIL FB$, $SEE DETAIL FC$, $SEE DETAIL FD$, $SEE DETAIL FE$, $SEE DETAIL FF$, $SEE DETAIL FG$, $SEE DETAIL FH$, $SEE DETAIL FI$, $SEE DETAIL FJ$, $SEE DETAIL FK$, $SEE DETAIL FL$, $SEE DETAIL FM$, $SEE DETAIL FN$, $SEE DETAIL FO$, $SEE DETAIL FP$, $SEE DETAIL FQ$, $SEE DETAIL FR$, $SEE DETAIL FS$, $SEE DETAIL FT$, $SEE DETAIL FU$, $SEE DETAIL FV$, $SEE DETAIL FW$, $SEE DETAIL FX$, $SEE DETAIL FY$, $SEE DETAIL FZ$, $SEE DETAIL GA$, $SEE DETAIL GB$, $SEE DETAIL GC$, $SEE DETAIL GD$, $SEE DETAIL GE$, $SEE DETAIL GF$, $SEE DETAIL GG$, $SEE DETAIL GH$, $SEE DETAIL GI$, $SEE DETAIL GJ$, $SEE DETAIL GK$, $SEE DETAIL GL$, $SEE DETAIL GM$, $SEE DETAIL GN$, $SEE DETAIL GO$, $SEE DETAIL GP$, $SEE DETAIL GQ$, $SEE DETAIL GR$, $SEE DETAIL GS$, $SEE DETAIL GT$, $SEE DETAIL GU$, $SEE DETAIL GV$, $SEE DETAIL GW$, $SEE DETAIL GX$, $SEE DETAIL GY$, $SEE DETAIL GZ$, $SEE DETAIL HA$, $SEE DETAIL HB$, $SEE DETAIL HC$, $SEE DETAIL HD$, $SEE DETAIL HE$, $SEE DETAIL HF$, $SEE DETAIL HG$, $SEE DETAIL HH$, $SEE DETAIL HI$, $SEE DETAIL HJ$, $SEE DETAIL HK$, $SEE DETAIL HL$, $SEE DETAIL HM$, $SEE DETAIL HN$, $SEE DETAIL HO$, $SEE DETAIL HP$, $SEE DETAIL HQ$, $SEE DETAIL HR$, $SEE DETAIL HS$, $SEE DETAIL HT$, $SEE DETAIL HU$, $SEE DETAIL HV$, $SEE DETAIL HW$, $SEE DETAIL HX$, $SEE DETAIL HY$, $SEE DETAIL HZ$, $SEE DETAIL IA$, $SEE DETAIL IB$, $SEE DETAIL IC$, $SEE DETAIL ID$, $SEE DETAIL IE$, $SEE DETAIL IF$, $SEE DETAIL IG$, $SEE DETAIL IH$, $SEE DETAIL II$, $SEE DETAIL IJ$, $SEE DETAIL IK$, $SEE DETAIL IL$, $SEE DETAIL IM$, $SEE DETAIL IN$, $SEE DETAIL IO$, $SEE DETAIL IP$, $SEE DETAIL IQ$, $SEE DETAIL IR$, $SEE DETAIL IS$, $SEE DETAIL IT$, $SEE DETAIL IU$, $SEE DETAIL IV$, $SEE DETAIL IW$, $SEE DETAIL IX$, $SEE DETAIL IY$, $SEE DETAIL IZ$, $SEE DETAIL JA$, $SEE DETAIL JB$, $SEE DETAIL JC$, $SEE DETAIL JD$, $SEE DETAIL JE$, $SEE DETAIL JF$, $SEE DETAIL JG$, $SEE DETAIL JH$, $SEE DETAIL JI$, $SEE DETAIL JJ$, $SEE DETAIL JK$, $SEE DETAIL JL$, $SEE DETAIL JM$, $SEE DETAIL JN$, $SEE DETAIL JO$, $SEE DETAIL JP$, $SEE DETAIL JQ$, $SEE DETAIL JR$, $SEE DETAIL JS$, $SEE DETAIL JT$, $SEE DETAIL JU$, $SEE DETAIL JV$, $SEE DETAIL JW$, $SEE DETAIL JX$, $SEE DETAIL JY$, $SEE DETAIL JZ$, $SEE DETAIL KA$, $SEE DETAIL KB$, $SEE DETAIL KC$, $SEE DETAIL KD$, $SEE DETAIL KE$, $SEE DETAIL KF$, $SEE DETAIL KG$, $SEE DETAIL KH$, $SEE DETAIL KI$, $SEE DETAIL KJ$, $SEE DETAIL KK$, $SEE DETAIL KL$, $SEE DETAIL KM$, $SEE DETAIL KN$, $SEE DETAIL KO$, $SEE DETAIL KP$, $SEE DETAIL KQ$, $SEE DETAIL KR$, $SEE DETAIL KS$, $SEE DETAIL KT$, $SEE DETAIL KU$, $SEE DETAIL KV$, $SEE DETAIL KW$, $SEE DETAIL KX$, $SEE DETAIL KY$, $SEE DETAIL KZ$, $SEE DETAIL LA$, $SEE DETAIL LB$, $SEE DETAIL LC$, $SEE DETAIL LD$, $SEE DETAIL LE$, $SEE DETAIL LF$, $SEE DETAIL LG$, $SEE DETAIL LH$, $SEE DETAIL LI$, $SEE DETAIL LJ$, $SEE DETAIL LK$, $SEE DETAIL LL$, $SEE DETAIL LM$, $SEE DETAIL LN$, $SEE DETAIL LO$, $SEE DETAIL LP$, $SEE DETAIL LQ$, $SEE DETAIL LR$, $SEE DETAIL LS$, $SEE DETAIL LT$, $SEE DETAIL LU$, $SEE DETAIL LV$, $SEE DETAIL LW$, $SEE DETAIL LX$, $SEE DETAIL LY$, $SEE DETAIL LZ$, $SEE DETAIL MA$, $SEE DETAIL MB$, $SEE DETAIL MC$, $SEE DETAIL MD$, $SEE DETAIL ME$, $SEE DETAIL MF$, $SEE DETAIL MG$, $SEE DETAIL MH$, $SEE DETAIL MI$, $SEE DETAIL MJ$, $SEE DETAIL MK$, $SEE DETAIL ML$, $SEE DETAIL MM$, $SEE DETAIL MN$, $SEE DETAIL MO$, $SEE DETAIL MP$, $SEE DETAIL MQ$, $SEE DETAIL MR$, $SEE DETAIL MS$, $SEE DETAIL MT$, $SEE DETAIL MU$, $SEE DETAIL MV$, $SEE DETAIL MW$, $SEE DETAIL MX$,

page 11/20

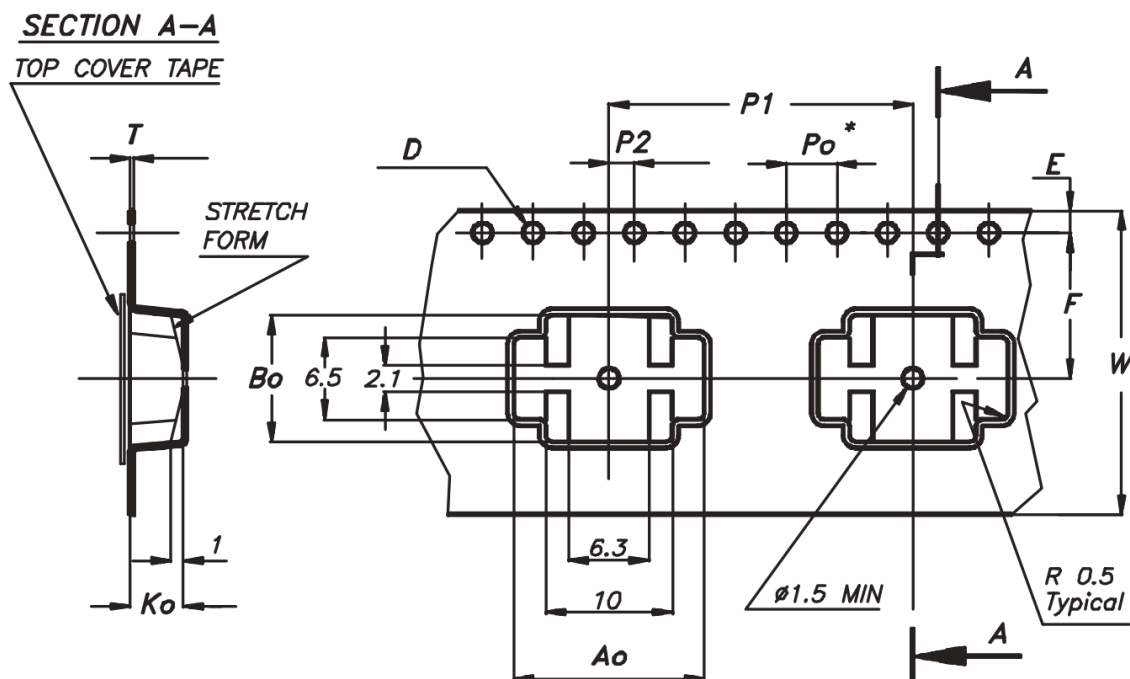
Table 8. PowerSO-10 package mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A1	0	0.05	0.08
A2	3.45	3.5	3.55
A3	1.24	1.28	1.32
A4	0.15	0.2	0.25
a		0.2	
b	0.4	0.45	0.5
c	0.24	0.27	0.3
D	9.45	9.52	9.59
D1	7.42	7.5	7.58
d	0	0.04	0.09
E	13.9	14.1	14.3
E1 ⁽¹⁾	9.33	9.4	9.47
E2	7.4	7.42	7.5
E3	5.95	6.1	6.25
e	1.22	1.27	1.32
e1		5.08	
F		0.5	
G		1.2	
L	0.85	1	1.1
R1			0.25
R2		0.8	
T	3 deg	5 deg	7 deg
T1		6 deg	
T2		10 deg	

1. Resin protrusions are not included (max. value 0.15 mm per side)

7.2 PowerSO-10 packing information

Figure 11. PowerSO-10 career tape outline

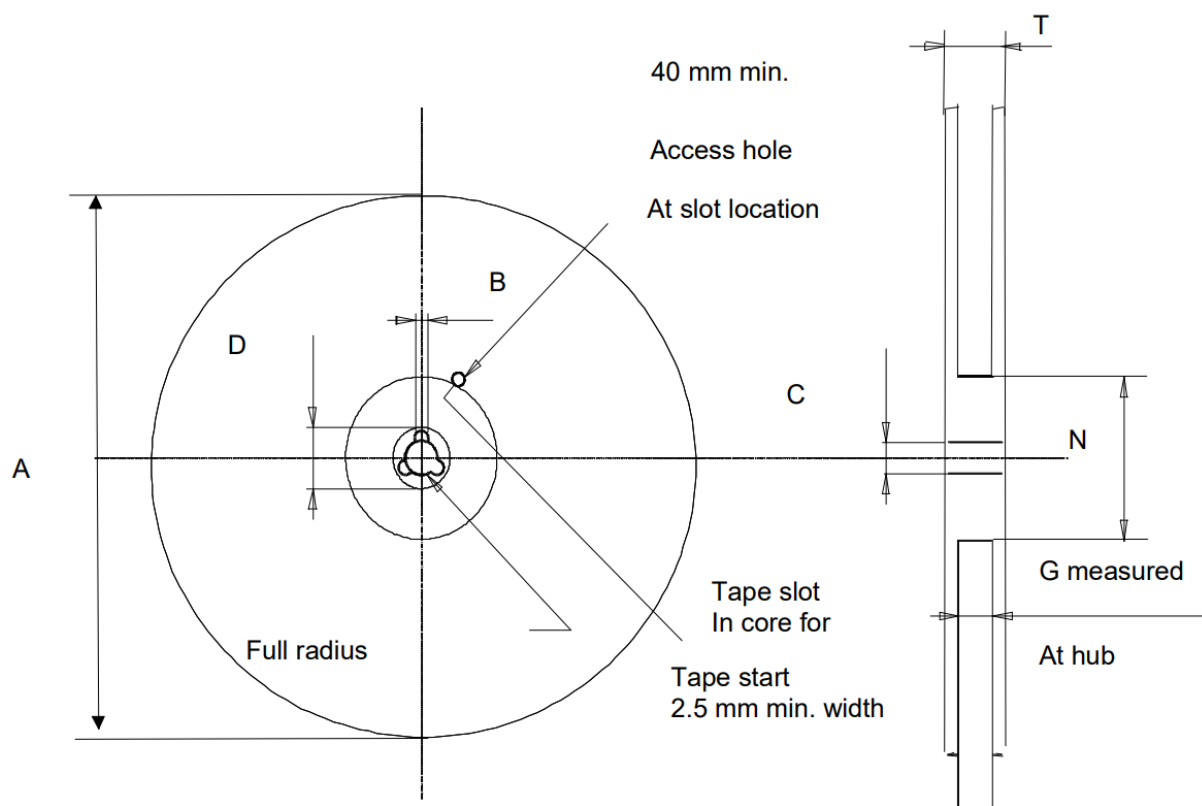


Note: Drawing is not in scale

Table 9. PowerSO-10 career tape dimension mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A0	14.9	15.0	15.1
B0	9.9	10.0	10.1
K0	4.15	4.25	4.35
F	11.4	11.5	11.6
E	1.65	1.75	1.85
W	23.7	24.0	24.3
P2	1.9	2.0	2.1
P0	3.9	4.0	4.1
P1	23.9	24.0	24.1
T	0.025	0.30	0.35
D(Ø)	1.50	1.55	1.60

Note: 10 sprocket hole pitch cumulative tolerance ± 0.2 mm

Figure 12. PowerSO-10 reel outline


Note: Drawing is not in scale

Table 10. PowerSO-10 reel dimension mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A			330
B	1.5		
C	12.8	13	13.2
D	20.2		
N	60		
G	23.7	24.4	
T			30.4

Note: 10 sprocket hole pitch cumulative tolerance ± 0.2 mm

Table 11. PowerSO-10 base and bulk quantity

Base quantity	Bulk quantity
600	600

8 Ordering information

Table 12. Ordering information

Part Number	Package	Packaging
VN340SP-E	PowerSO-10	Tube
VN340SPTR-E		Tape and reel
VN340SP-33-E		Tube
VN340SPTR-33-E		Tape and reel

Revision history

Table 13. Document revision history

Date	Revision	Changes
05-Sep-2005	1	Initial release.
19-Mar-2007	2	Document reformatted, typo in note 1.
22-Aug-2008	3	Updated table 9.
07-Sep-2015	4	Updated the table of absolute maximum ratings.
1-Sep-2022	5	Merged VN340SP-33 and VN340SP DS; some minor changes

Contents

1	Block diagram	2
2	Pin connection	3
3	Maximum ratings	4
4	Electrical characteristics.....	5
5	Test circuits	7
6	Switching time waveforms and truth table.....	9
7	Package information.....	11
7.1	PowerSO-10 package information	11
7.2	PowerSO-10 packing information	13
8	Ordering information	15
	Revision history	16
	List of tables	18
	List of figures.....	19

List of tables

Table 1.	Absolute maximum ratings	4
Table 2.	Thermal data	4
Table 3.	Power section	5
Table 4.	Switching ($V_{CC} = 24\text{ V}$, $T_J = 25\text{ °C}$).	5
Table 5.	Logic inputs.	5
Table 6.	Protection and diagnostic	6
Table 7.	Truth table	10
Table 8.	PowerSO-10 package mechanical data	12
Table 9.	PowerSO-10 carrier tape dimension mechanical data	13
Table 10.	PowerSO-10 reel dimension mechanical data	14
Table 11.	PowerSO-10 base and bulk quantity.	14
Table 12.	Ordering information.	15
Table 13.	Document revision history	16

List of figures

Figure 1.	Block diagram	2
Figure 2.	Connection diagram (top view)	3
Figure 3.	Current and voltage conventions	3
Figure 4.	Avalanche energy test circuit	7
Figure 5.	Peak short-circuit test diagram	7
Figure 6.	I _{LGND} test configuration	8
Figure 7.	Switching waveforms	9
Figure 8.	Switching parameter test conditions	9
Figure 9.	Driving circuit	10
Figure 10.	PowerSO-10 package outline	11
Figure 11.	PowerSO-10 carrier tape outline	13
Figure 12.	PowerSO-10 reel outline	14

IMPORTANT NOTICE – READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved