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1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings ($T_{CASE} = 25^{\circ}C$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-source voltage	40	V
V_{GS}	Gate-source voltage	-0.5 to +15	V
I_D	Drain current	8	A
P_{DISS}	Power dissipation (@ $T_C = 70^{\circ}C$)	95	W
T_J	Max. operating junction temperature	165	$^{\circ}C$
T_{STG}	Storage temperature	-65 to +150	$^{\circ}C$

1.2 Thermal data

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Junction - case thermal resistance	1.0	$^{\circ}C/W$

2 Electrical characteristics

$T_{CASE} = +25\text{ }^{\circ}\text{C}$

2.1 Static

Table 4. Static

Symbol	Test conditions		Min	Typ	Max	Unit
I_{DSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 25\text{ V}$			1	μA
I_{GSS}	$V_{GS} = 5\text{ V}$	$V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 10\text{ V}$	$I_D = 250\text{ mA}$	3.4		4.6	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$	$I_D = 3\text{ A}$		0.64	0.7	V
C_{ISS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 7\text{ V}$		77		pF
C_{OSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 7\text{ V}$		54		pF
C_{RSS}	$V_{GS} = 0\text{ V}$	$V_{DS} = 7\text{ V}$		2.3		pF

2.2 Dynamic

Table 5. Dynamic

Symbol	Test conditions		Min.	Typ.	Max.	Unit
P3dB	$V_{DD} = 7.5\text{ V}$, $I_{DQ} = 300\text{ mA}$	$f = 870\text{ MHz}$	10	12		W
G_P	$V_{DD} = 7.5\text{ V}$, $I_{DQ} = 300\text{ mA}$, $P_{OUT} = 2\text{ W}$, $f = 870\text{ MHz}$		15	16.3		dB
h_D	$V_{DD} = 7.5\text{ V}$, $I_{DQ} = 300\text{ mA}$, $P_{OUT} = P_{3dB}$, $f = 870\text{ MHz}$		60	73		%
Load mismatch	$V_{DD} = 9.5\text{ V}$, $I_{DQ} = 300\text{ mA}$, $P_{OUT} = 20\text{ W}$, $f = 870\text{ MHz}$ All phase angles		20:1			VSWR

2.3 ESD protection characteristics

Table 6. ESD protection characteristics

Test conditions	Class
Human body model	2
Machine model	M3

2.4 Moisture sensitivity level

Table 7. Moisture sensitivity level

Test methodology	Rating
J-STD-020B	MSL 3

3 Impedance

Figure 2. Current conventions

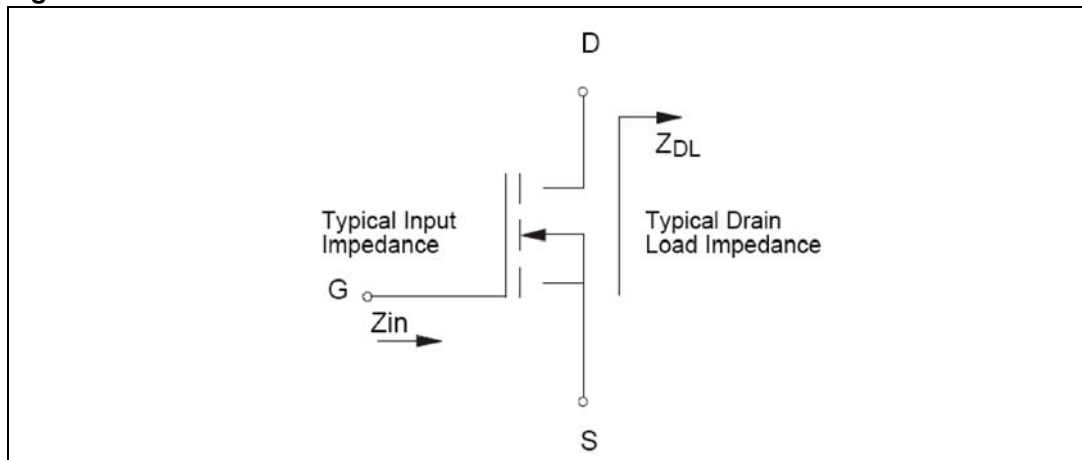


Table 8. Impedance data

Frequency (MHz)	$Z_{IN} (\Omega)$	$Z_{DL}(\Omega)$
870 MHz	$0.35 + j 1.1$	$1.53 - j 0.23$

4 Typical performance

Figure 3. Threshold voltage

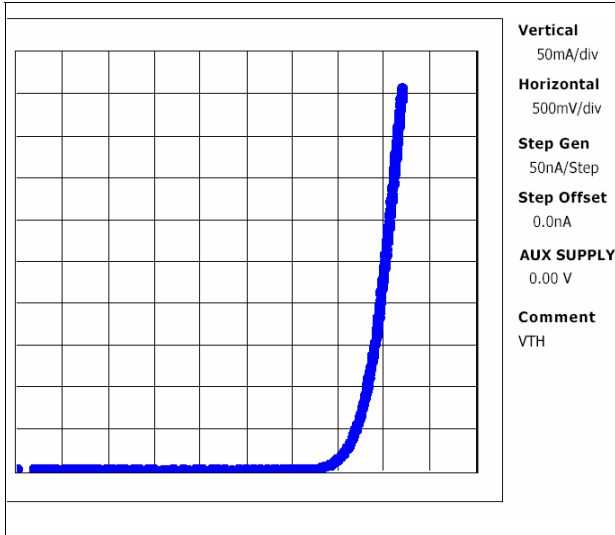


Figure 4. DC output characteristic

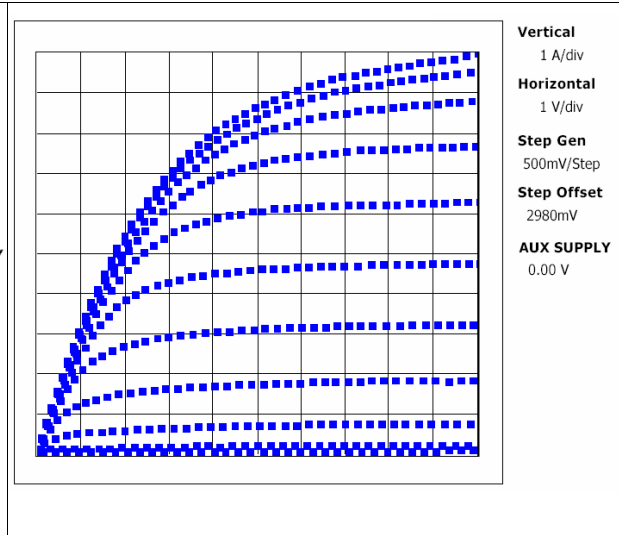


Figure 5. ID vs VGS

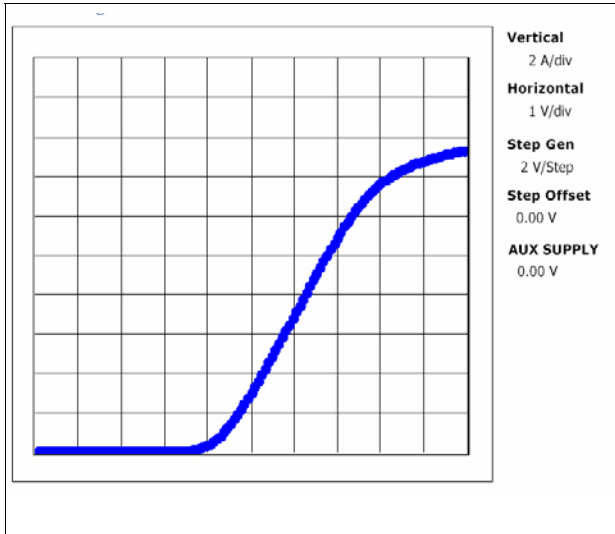


Figure 6. Capacitances vs voltage

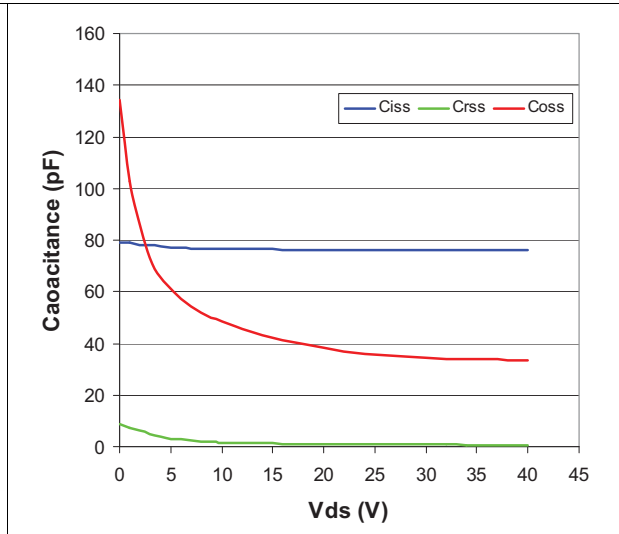


Figure 7. Pout and Id vs VGS

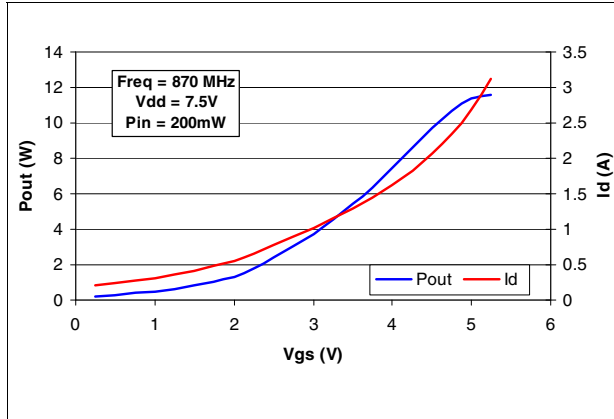


Figure 8. Pout and Id vs supply voltage @ Pin = 200 mW

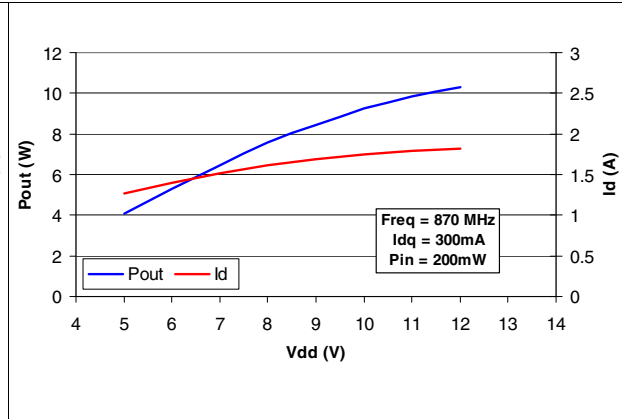


Figure 9. Pout and id vs supply voltage @ Pin = 400 mW

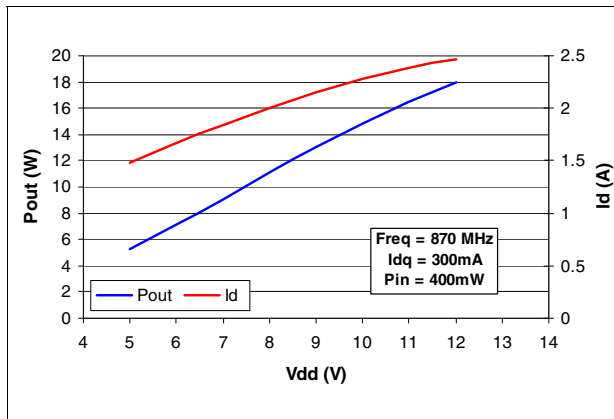


Figure 10. Pout and id vs supply voltage @ Pin = 800 mW

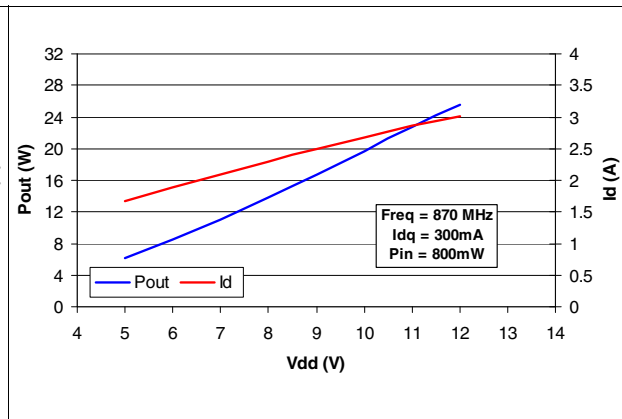


Figure 11. Gain vs Pout and bias current

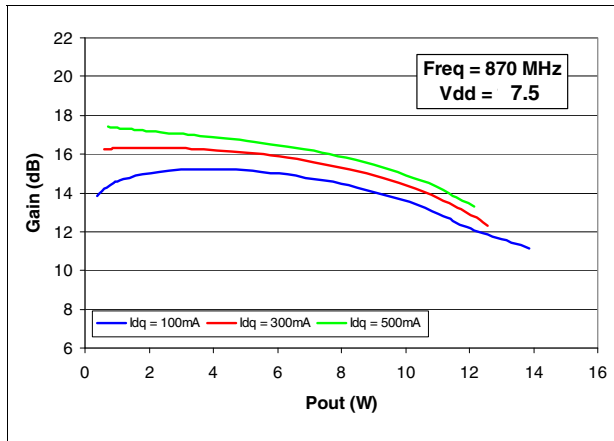
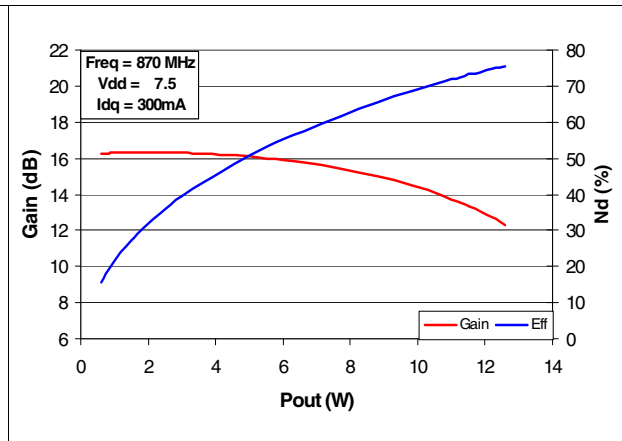


Figure 12. Gain and efficiency vs Pout



5 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

Table 9. PowerSO-10RF formed lead (gull wing) mechanical data

Dim.	mm.			Inch		
	Min	Typ	Max	Min	Typ	Max
A1	0	0.05	0.1	0.	0.0019	0.0038
A2	3.4	3.5	3.6	0.134	0.137	0.142
A3	1.2	1.3	1.4	0.046	0.05	0.054
A4	0.15	0.2	0.25	0.005	0.007	0.009
a		0.2			0.007	
b	5.4	5.53	5.65	0.212	0.217	0.221
c	0.23	0.27	0.32	0.008	0.01	0.012
D	9.4	9.5	9.6	0.370	0.374	0.377
D1	7.4	7.5	7.6	0.290	0.295	0.298
E	13.85	14.1	14.35	0.544	0.555	0.565
E1	9.3	9.4	9.5	0.365	0.37	0.375
E2	7.3	7.4	7.5	0.286	0.292	0.294
E3	5.9	6.1	6.3	0.231	0.24	0.247
F		0.5			0.019	
G		1.2			0.047	
L	0.8	1	1.1	0.030	0.039	0.042
R1			0.25			0.01
R2		0.8			0.031	
T	2 deg	5 deg	8 deg	2 deg	5 deg	8 deg
T1		6 deg			6 deg	
T2		10 deg			10 deg	

Note: Resin protrusions not included (max value: 0.15 mm per side)

Figure 13. Package dimensions

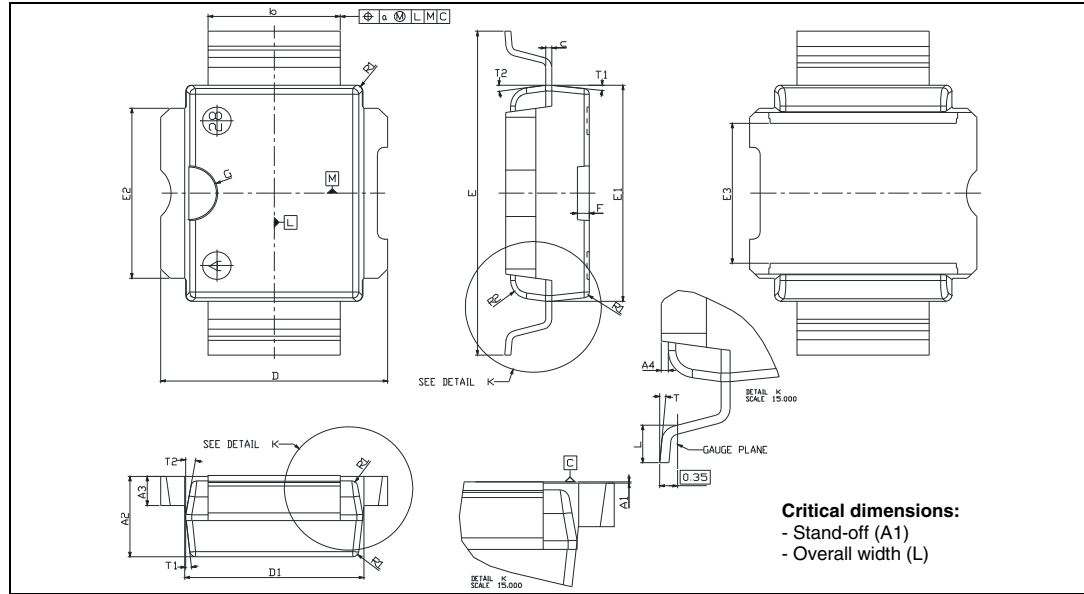


Table 10. PowerSO-10RF straight lead mechanical data

Dim.	mm.			Inch		
	Min	Typ	Max	Min	Typ	Max
A1	1.62	1.67	1.72	0.064	0.065	0.068
A2	3.4	3.5	3.6	0.134	0.137	0.142
A3	1.2	1.3	1.4	0.046	0.05	0.054
A4	0.15	0.2	0.25	0.005	0.007	0.009
a		0.2			0.007	
b	5.4	5.53	5.65	0.212	0.217	0.221
c	0.23	0.27	0.32	0.008	0.01	0.012
D	9.4	9.5	9.6	0.370	0.374	0.377
D1	7.4	7.5	7.6	0.290	0.295	0.298
E	15.15	15.4	15.65	0.595	0.606	0.615
E1	9.3	9.4	9.5	0.365	0.37	0.375
E2	7.3	7.4	7.5	0.286	0.292	0.294
E3	5.9	6.1	6.3	0.231	0.24	0.247
F		0.5			0.019	
G		1.2			0.047	
R1			0.25			0.01
R2		0.8			0.031	
T1		6 deg			6 deg	
T2		10 deg			10 deg	

Note: Resin protrusions not included (max value: 0.15 mm per side)

Figure 14. Package dimensions

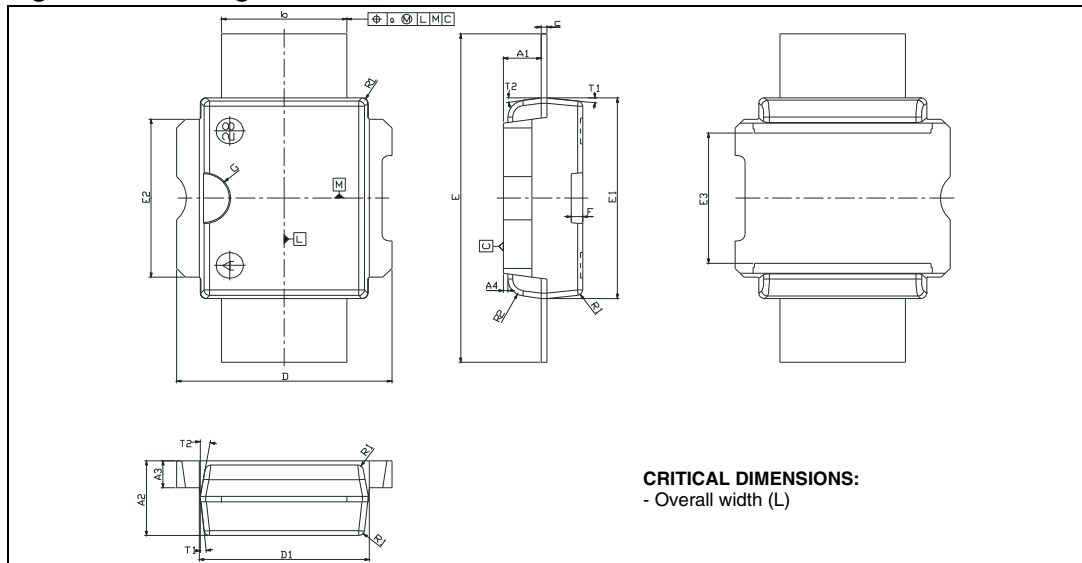


Figure 15. Tube information

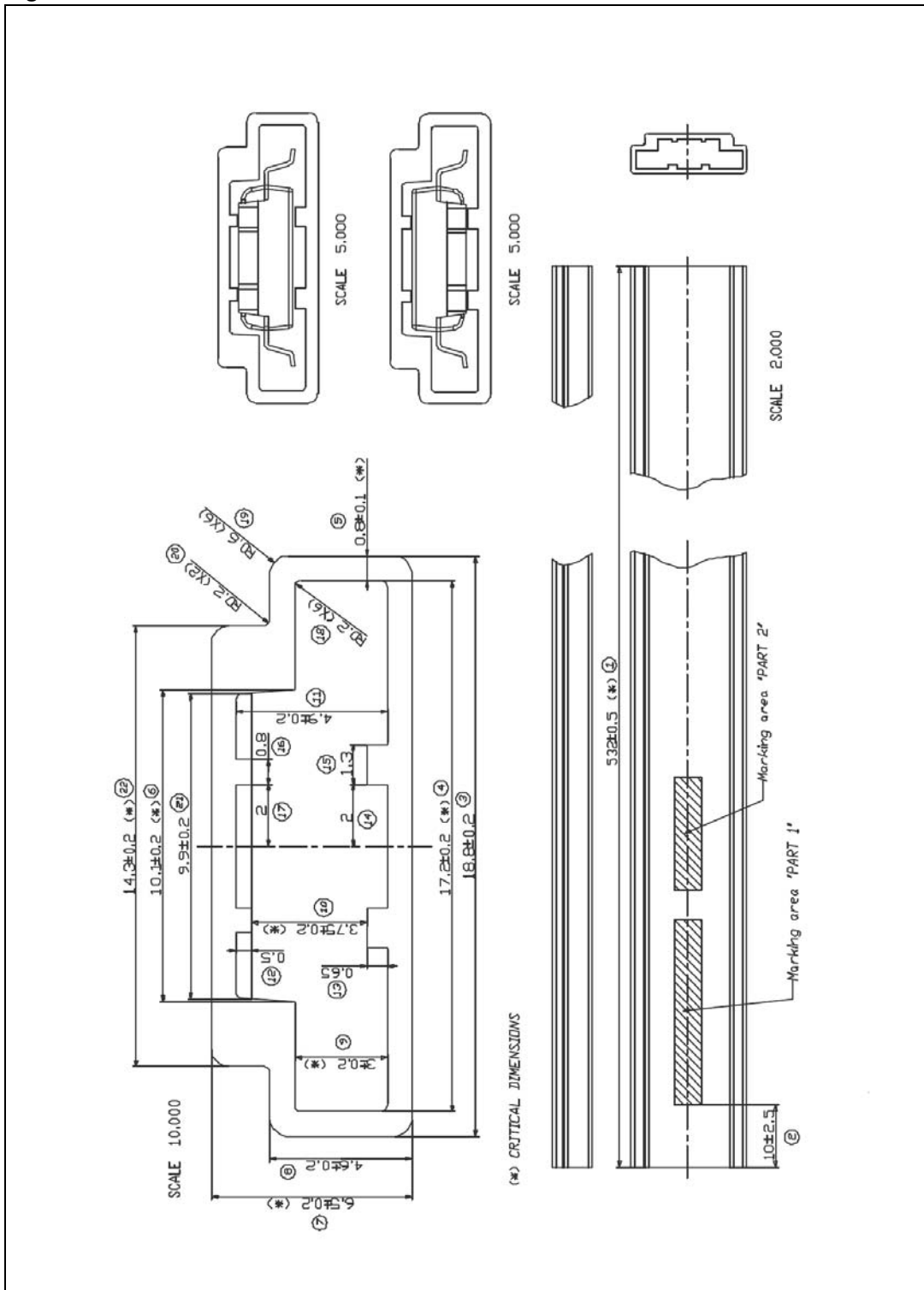
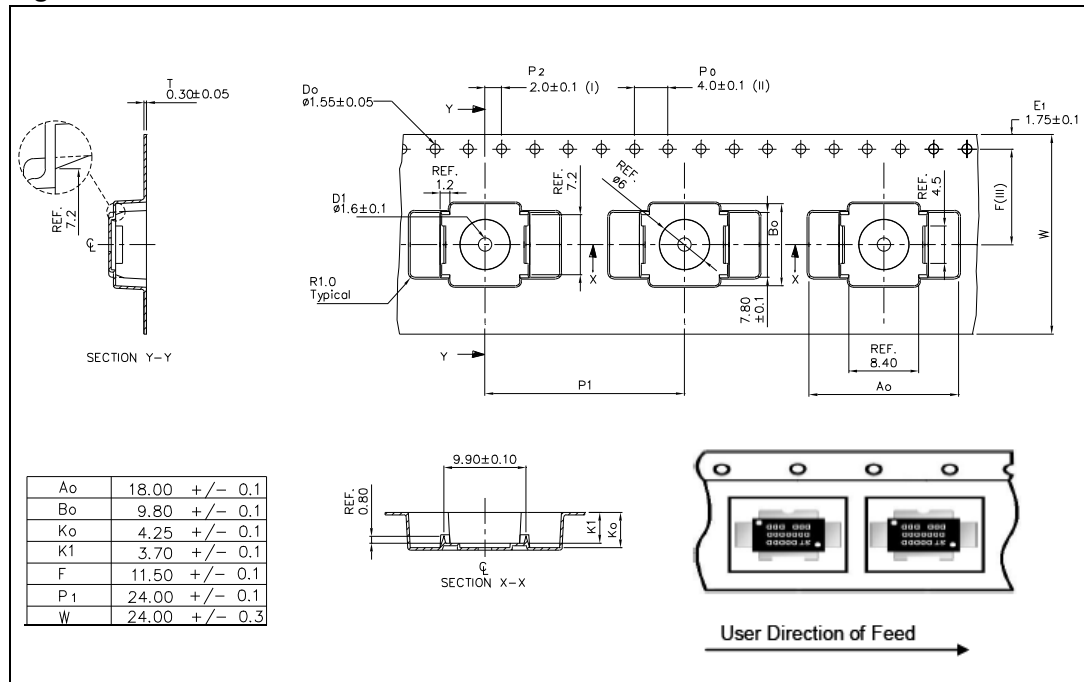


Figure 16. Reel information



6 Revision history

Table 11. Document revision history

Date	Revision	Changes
31-Jul-2007	1	Initial release.
04-May-2011	2	Updated Table 4 on page 4 and Figure 16: Reel information .
07-Jun-2012	3	Removed commercial PD84010S-E and updated Table 1: Device summary .

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