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1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage (I_E = 0)	-100	V
V_{CEO}	Collector-emitter voltage (I_B = 0)	-100	V
V_{EBO}	Emitter-base voltage (I_C = 0)	-5	V
I_C	Collector current	-3	A
I_{CM}	Collector peak current	-5	A
I_B	Base current	-1	A
P_{TOT}	Total dissipation at T_c = 25 °C	15	W
T_{stg}	Storage temperature range	-65 to 150	°C
T_j	Operating junction temperature range		

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	8.3	°C/W
$R_{thj\text{-}pcb}$ (1)	Thermal resistance junction-pcb	50	°C/W

1. When mounted on a 1-inch² FR-4 board, 2oz Cu

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2 Electrical characteristics

T_{case}=25 °C unless otherwise specified.

Table 4. On/off states

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector cut-off current (V_{BE} = 0)	V_{CE} = - 100 V		-	-20	µA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CB} = - 60 V		-	-50	µA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{EB} = - 5 V		-	-0.1	mA
$V_{CEO(sus)}$	Collector-emitter sustaining voltage (I_B = 0)	I_C = - 30 mA	-100	-		V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = - 3 A, I_B = - 375 mA		-	-1.2	V
$V_{BE(on)}$	Base-emitter on voltage	I_C = - 3 A, V_{CE} = - 4 V		-	-1.8	V
h_{FE}	DC current gain	I_C = - 1 A, V_{CE} = - 4 V	25	-		
		I_C = - 3 A, V_{CE} = - 4 V	10	-	50	

1. Pulse test: pulse duration ≤ 300 µs, duty cycle ≤ 2%

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2.1 Electrical characteristics (curves)

Figure 2. Safe operating area

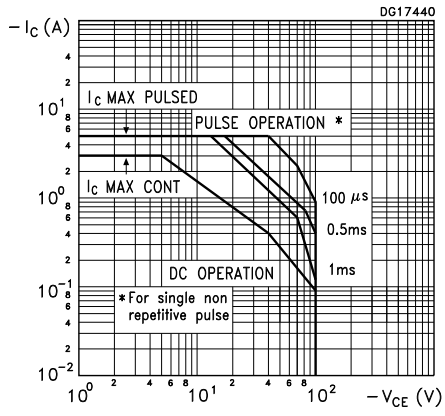

Figure 3. Derating curve

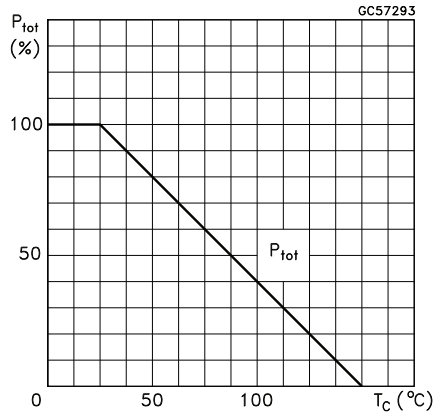

Figure 4. DC current gain (V_{CE} = - 2 V)

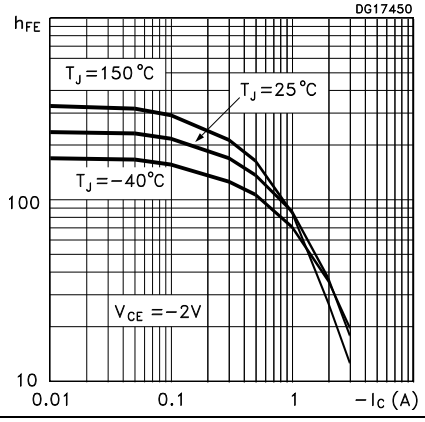

Figure 5. DC current gain (V_{CE} = - 4 V)

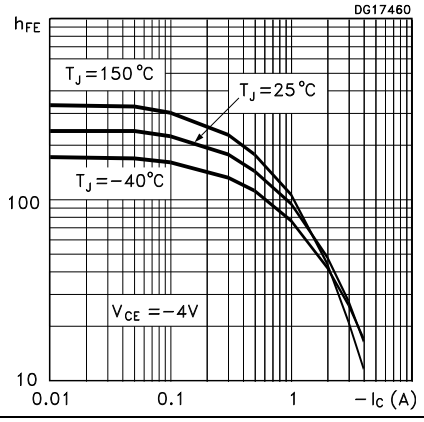

Figure 6. Collector-emitter saturation voltage

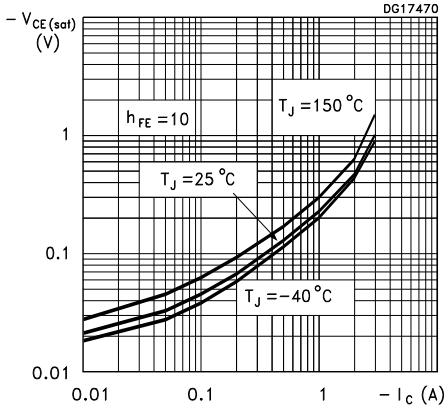

Figure 7. Base-emitter saturation voltage

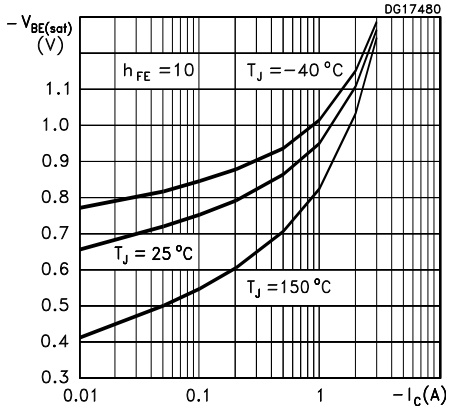

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Figure 8. Base-emitter on voltage

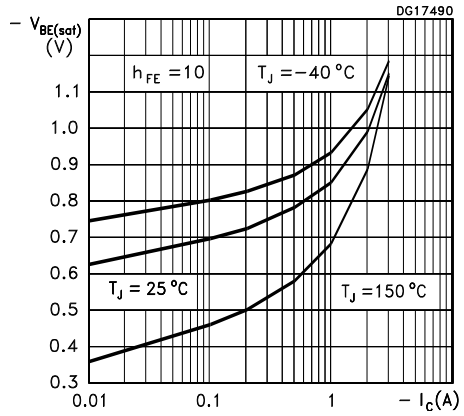


Figure 9. Resistive load switching time (on)

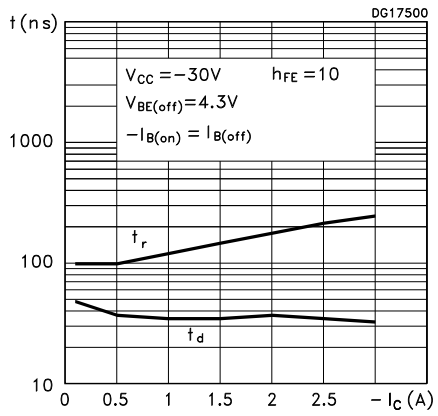
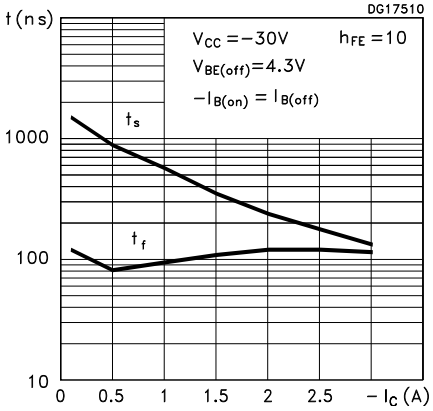


Figure 10. Resistive load switching time (off)



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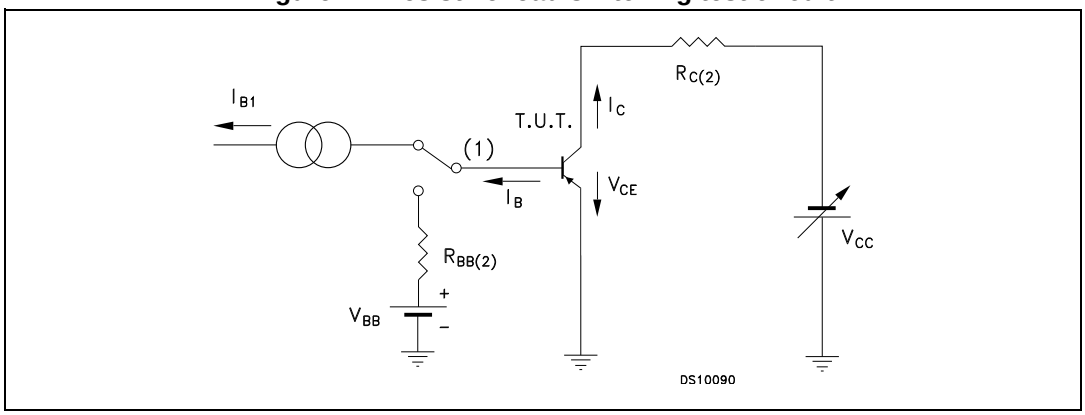
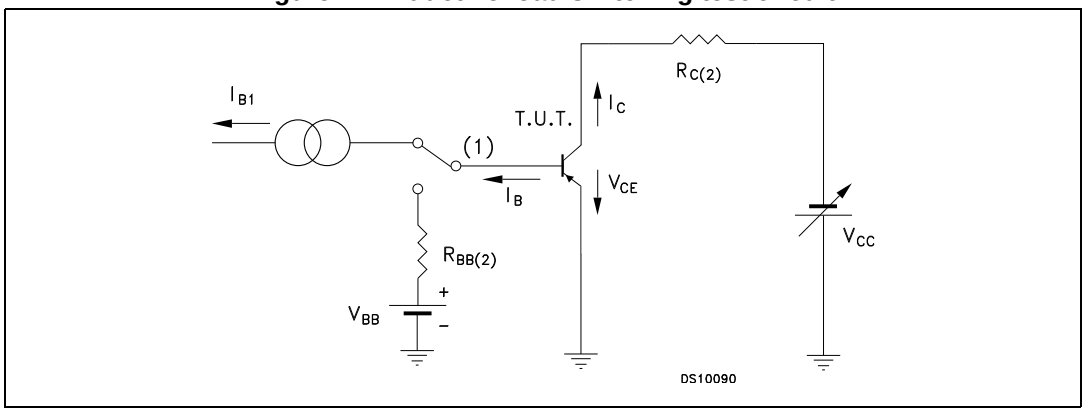
3 Test circuits

Figure 11. Resistive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor

Figure 12. Inductive load switching test circuit



1. Fast electronic switch
2. Non-inductive resistor
3. Fast recovery rectifier

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4 Package information

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.

4.1 DPAK (TO-252) type A package information

Figure 13. DPAK (TO-252) type A package outline

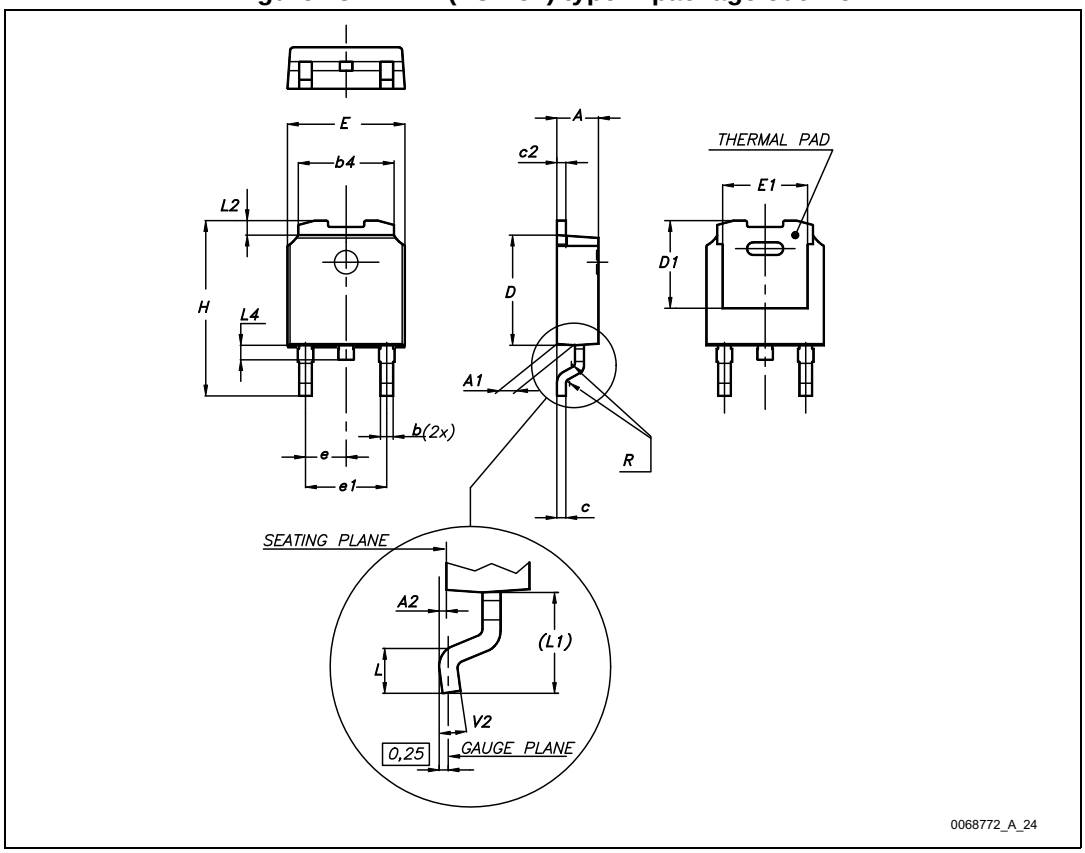

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Table 5. DPAK (TO-252) type A mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	2.20		2.40
A1	0.90		1.10
A2	0.03		0.23
b	0.64		0.90
b4	5.20		5.40
c	0.45		0.60
c2	0.48		0.60
D	6.00		6.20
D1	4.95	5.10	5.25
E	6.40		6.60
E1	4.60	4.70	4.80
e	2.16	2.28	2.40
e1	4.40		4.60
H	9.35		10.10
L	1.00		1.50
(L1)	2.60	2.80	3.00
L2	0.65	0.80	0.95
L4	0.60		1.00
R		0.20	
V2	0°		8°

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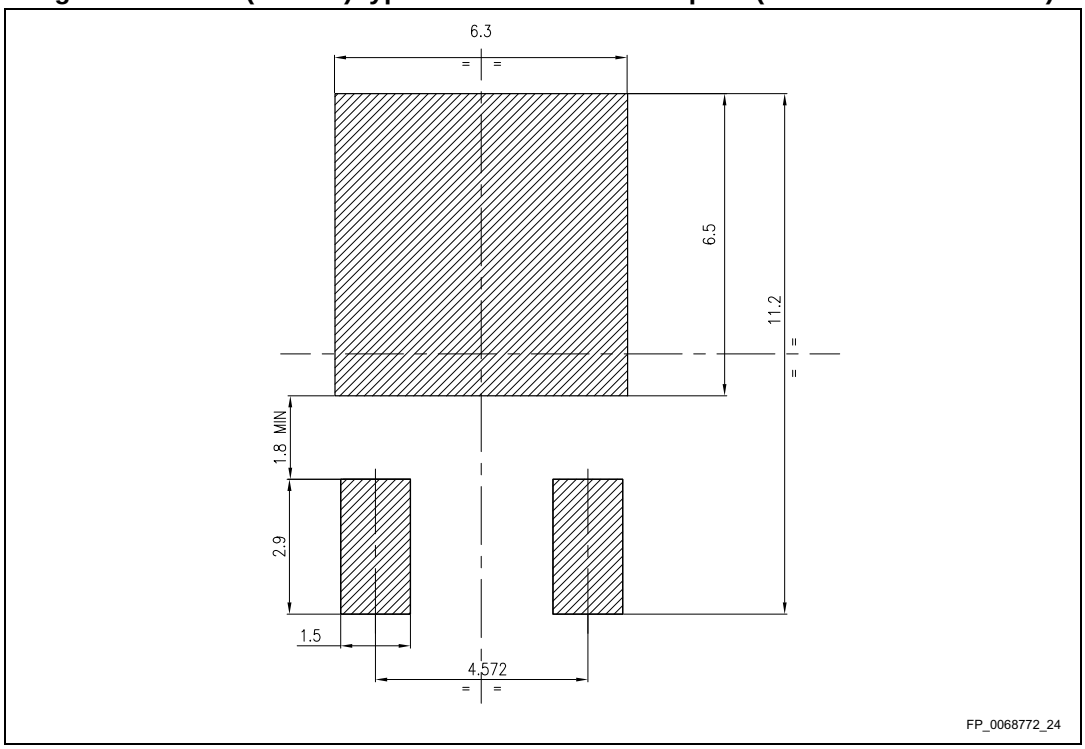
Figure 14. DPAK (TO-252) type A recommended footprint (dimensions are in mm)



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4.2 DPAK (TO-252) packing information

Figure 15. DPAK (TO-252) tape outline

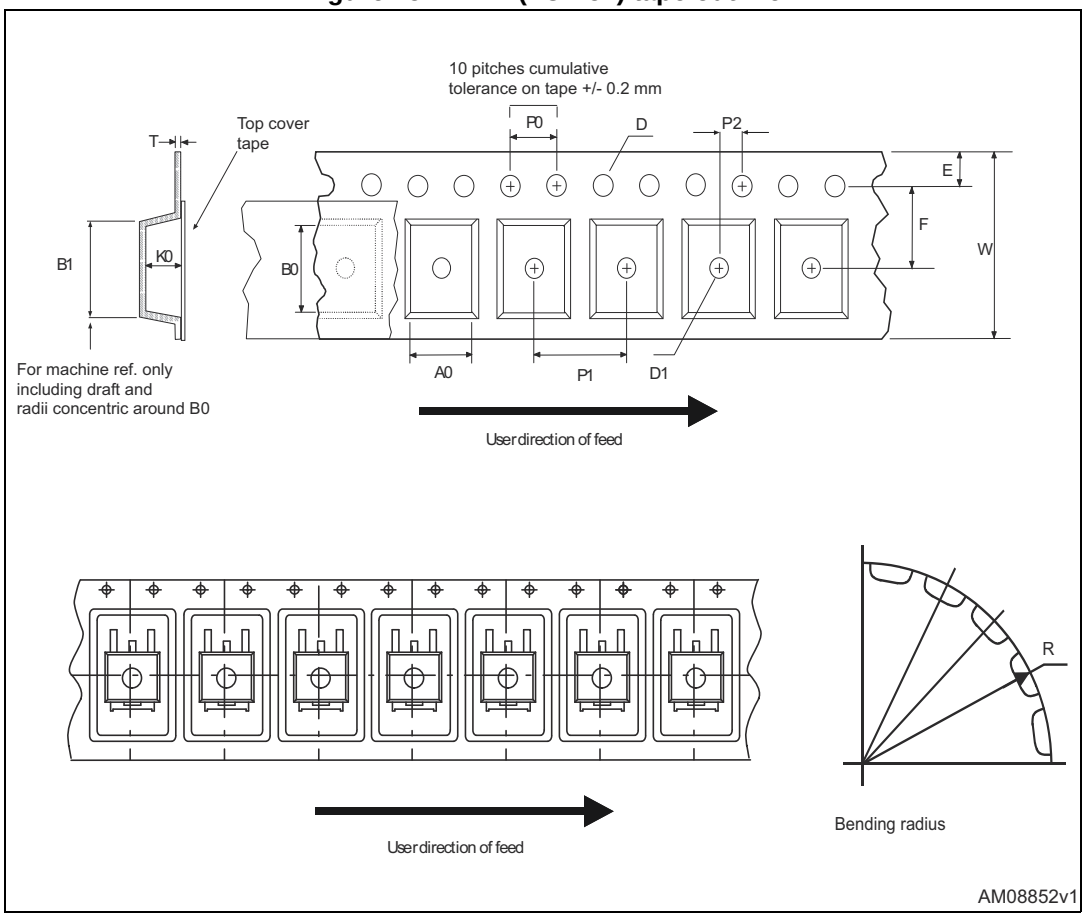

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Figure 16. DPAK (TO-252) reel outline

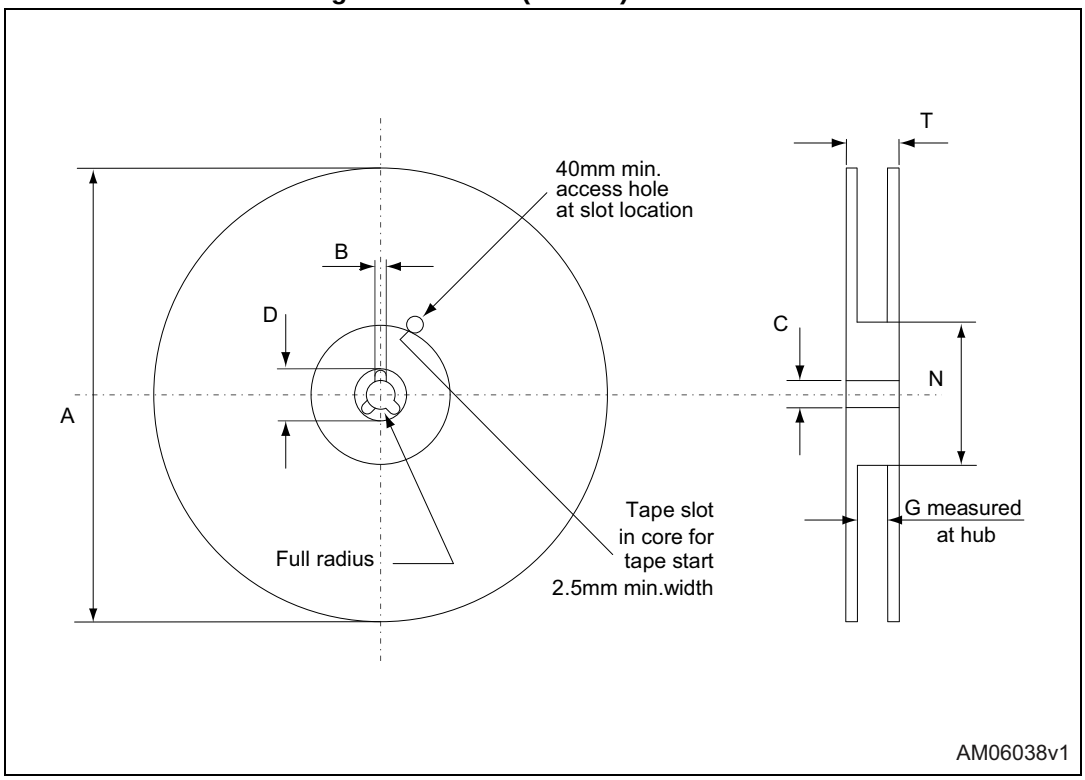

Table 6. DPAK (TO-252) tape and reel mechanical data

Tape			Reel		
Dim.	mm		Dim.	mm	
	Min.	Max.		Min.	Max.
A0	6.8	7	A		330
B0	10.4	10.6	B	1.5	
B1		12.1	C	12.8	13.2
D	1.5	1.6	D	20.2	
D1	1.5		G	16.4	18.4
E	1.65	1.85	N	50	
F	7.4	7.6	T		22.4
K0	2.55	2.75			
P0	3.9	4.1	Base qty.		2500
P1	7.9	8.1	Bulk qty.		2500
P2	1.9	2.1			
R	40				
T	0.25	0.35			
W	15.7	16.3			

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5 Revision history

Table 7. Document revision history

Date	Revision	Changes
01-Jun-2007	1	First release
09-Nov-2009	2	Updated package mechanical data.
14-Jan-2010	3	Modified *Table 3 on page 2*.
19-Jun-2012	4	Modified: mechanical data updated
24-Jan-2018	5	Modified title. Modified features on cover page. Updated *Section 4: Package information*. Minor text changes.

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