Features

- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effec t declin e
- Advanced high cell density Trench technology
- 100% EAS Guaranteed

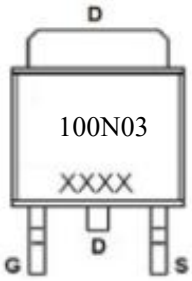
Bvdss	Rdson	ID
30V	3.5mΩ	100A

RoHS

Application

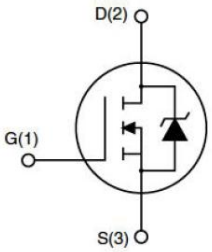
- Battery switching application
- Hard switched and high frequency circuits
- Power management

Package



Marking and pin assignment

TO-252 top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
100N03	100N03	TO-252	2500

Absolute Maximum Ratings (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25° C	I_D	100	A
	T_C=100° C	I_D	65	A
Pulsed Drain Current		I_{DM} a1	400	A
Single Pulse Avalanche Energy		E_{AS} a2	95	mJ
Power Dissipation	T_C = 25℃	P_D	80	W
Operating junction and storage temperature		T_J, T_{STG}	-55+175	℃
Maximum Temperature for Soldering		T_L	300	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.9	℃/W
Thermal resistance, junction – ambient	$R_{\theta JA^*}$	--	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL100N03	TO-252	1	2	3	Tape Reel

Electrical Characteristics (Tj=25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30	-	-	V
Gate-body Leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 30V, V_{GS} = 0V	-	-	1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS} , I_D = 250μA	1	1.5	2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 30A	-	3.5	4.7	mΩ
		V_{GS} = 4.5V, I_D = 20A	-	5.5	10	
Forward Trans-conductance	gfs	--	--	-	-	S
Input Capacitance	C_{ISS}	V_{DS} = 15V,V_{GS} =0V, f =1MHz	-	2100	-	pF
Output Capacitance	C_{OSS}		-	326	-	
Reverse Transfer Capacitance	C_{RSS}		-	282	-	
Gate Resistance	R_g	--	-	--	-	Ω
Total Gate Charge	Q_g	V_{DS} = 15V,I_D = 30A, V_{GS} = 10V	-	45	-	nC
Gate-Source Charge	Q_{gs}		-	3	-	
Gate-Drain Charge	Q_{gd}		-	15	-	
Turn-On Delay Time	$T_{d(on)}$	V_{DS} = 15V, I_D = 30A,R_{GEN} = 3Ω, V_{GS} = 10V	-	21	-	ns
Rise Time	T_R		-	32	-	
Turn-Off Delay Time	$T_{d(off)}$		-	59	-	
Fall Time	T_F		-	34	-	
Diode Forward Current	I_S	T_C=25℃	-	-	50	A
Diode Pulse Current	I_{SM}		-	-	200	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=30A	-	-	1.2	V

Reverse Recovery time	T_{rr}	IF=20A, dI/dt=100A/μs	-	15	-	ns
Reverse Recovery Charge	Q_{rr}		-	4	-	nC

Note :

a1.Repetitive rating; pulse width limited by maximum junction temperature

a2.EAS condition: TJ=25℃, VG=10V, RG=25Ω，L=0.5mH，IAS=18.4A

a3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Fig1:Typ. output characteristics

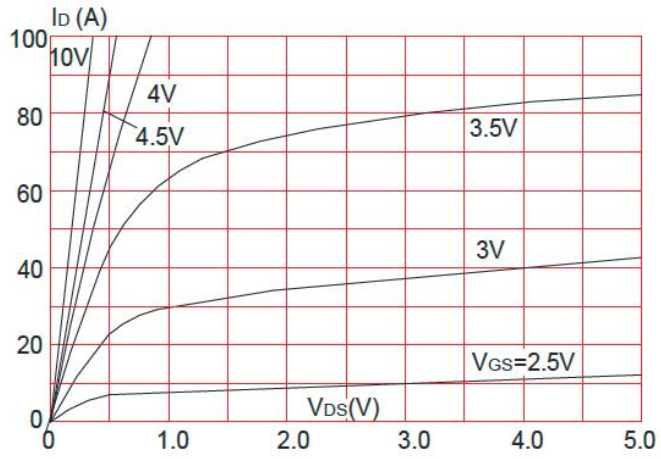


Fig2: Typical Transfer Characteristics

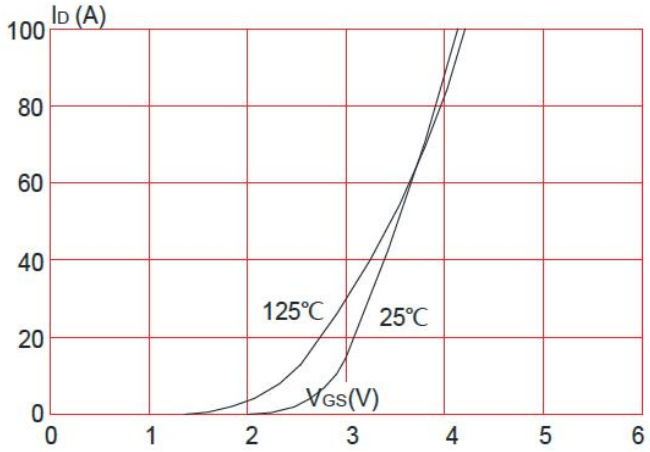


Fig3: On-resistance vs. Drain Current

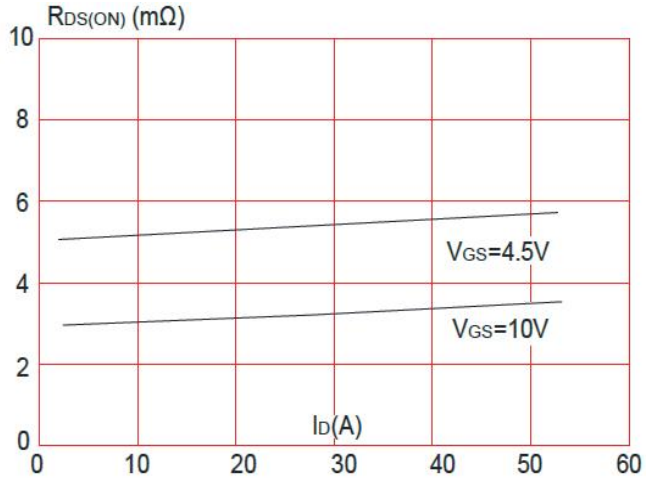


Fig4: Body Diode Characteristics

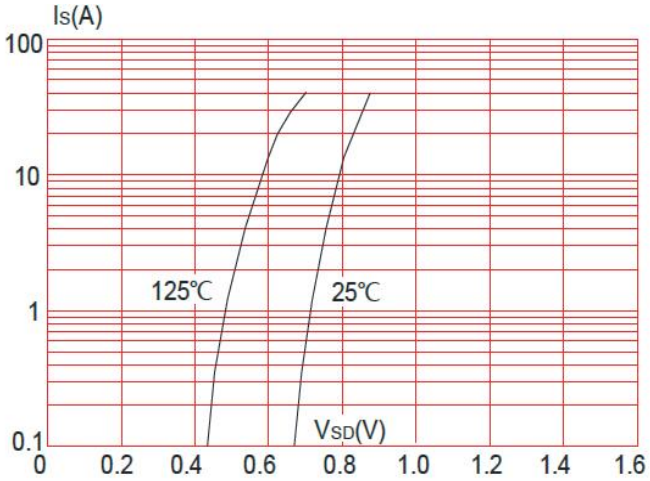


Fig5: Gate Charge Characteristics

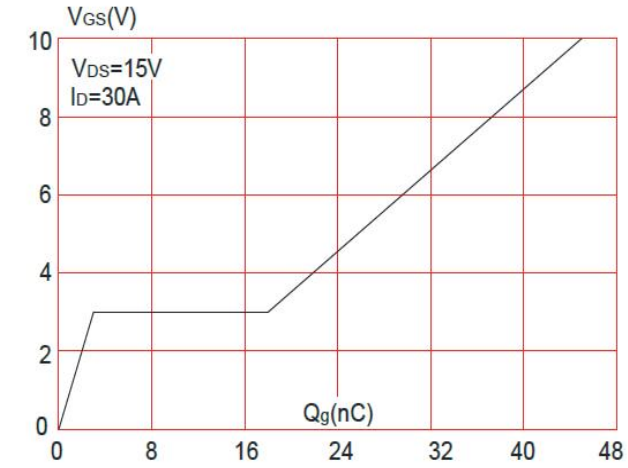


Fig6: Capacitance Characteristics

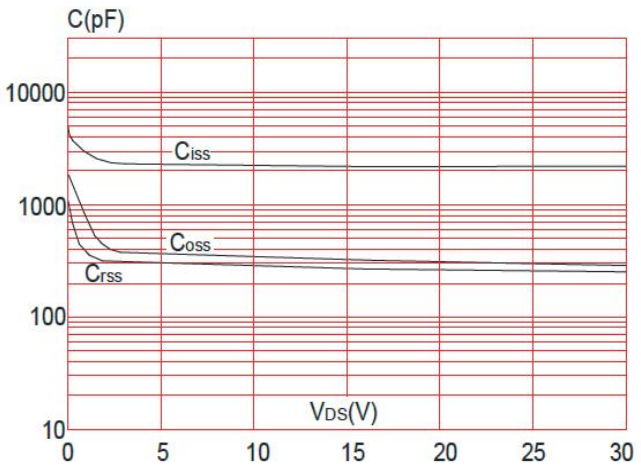


Fig7: Normalized Breakdown Voltage vs. Junction Temperatur

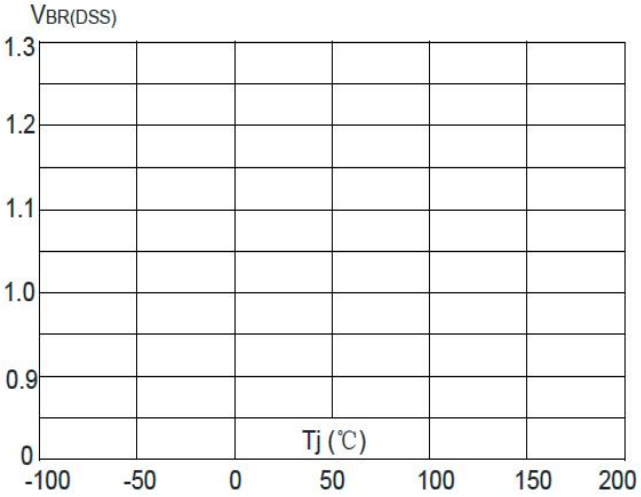


Fig8: Normalized on Resistance vs. Junction Temperature

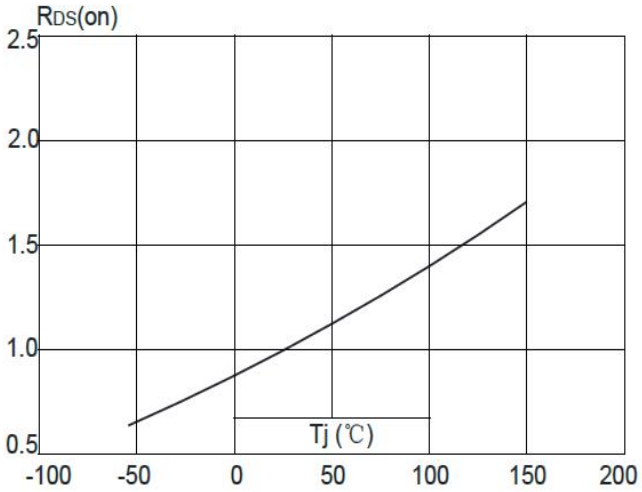


Fig9: Maximum Safe Operating Area

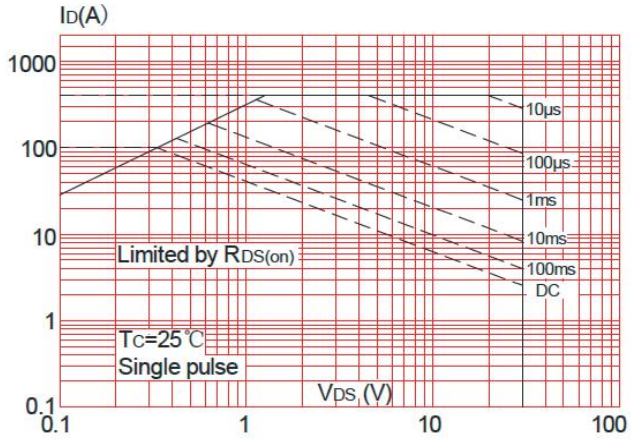


Fig10: Maximum Continuous Drain Curr vs. Case Temperature

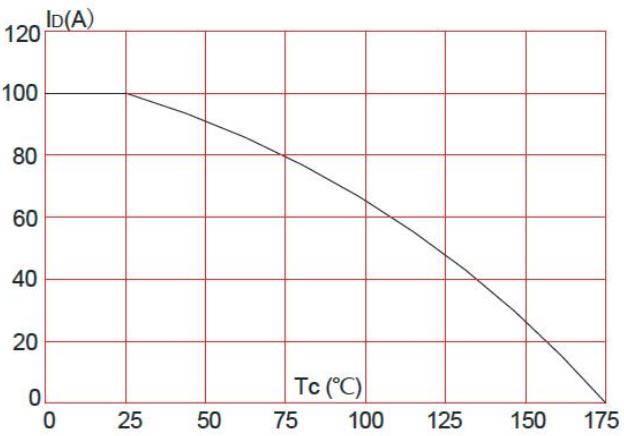
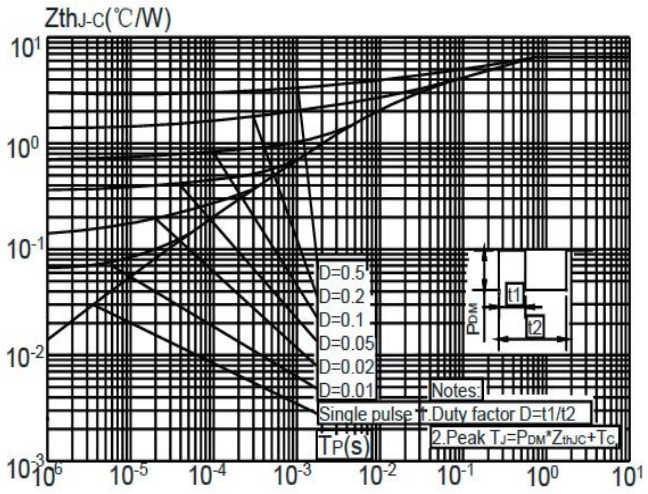


Fig11: Maximum Effective Transient Thermal Impedance, Junction-to-Caseermal Impedance



Test Circuit

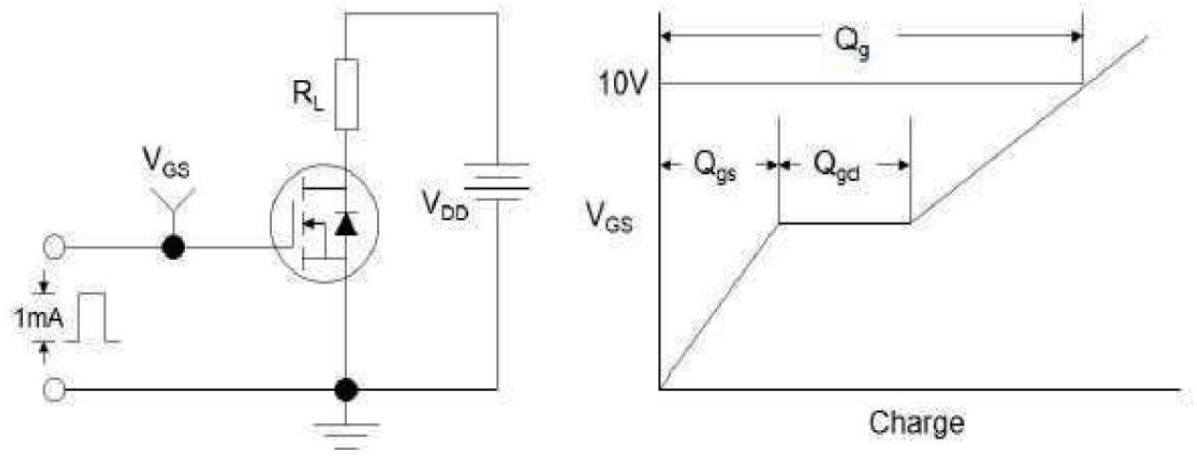


Figure1:Gate Charge Test Circuit & Waveform

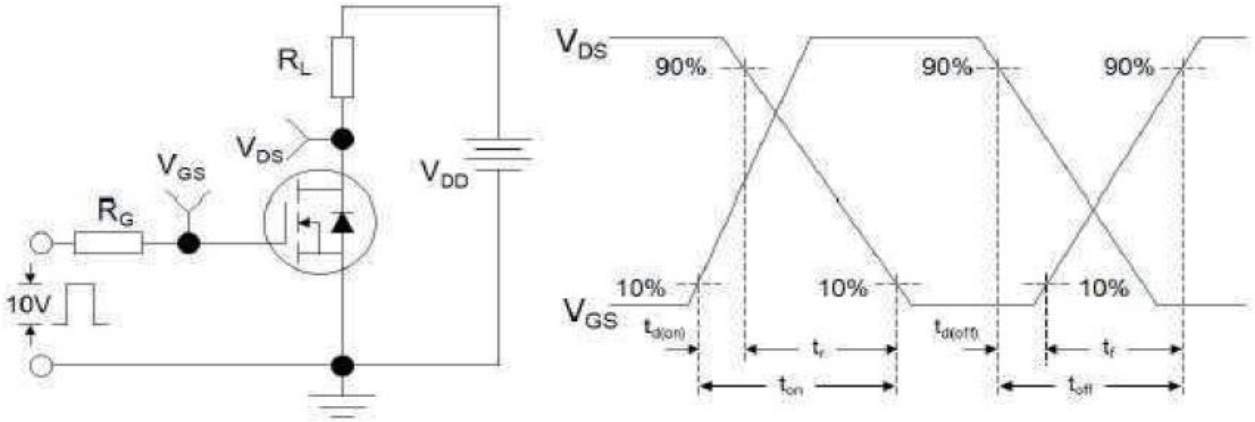


Figure 2: Resistive Switching Test Circuit & Waveforms

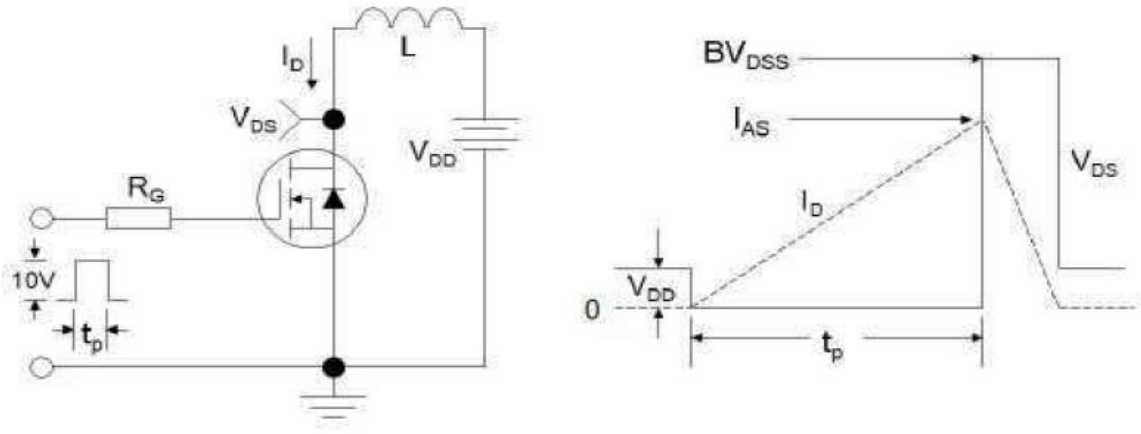
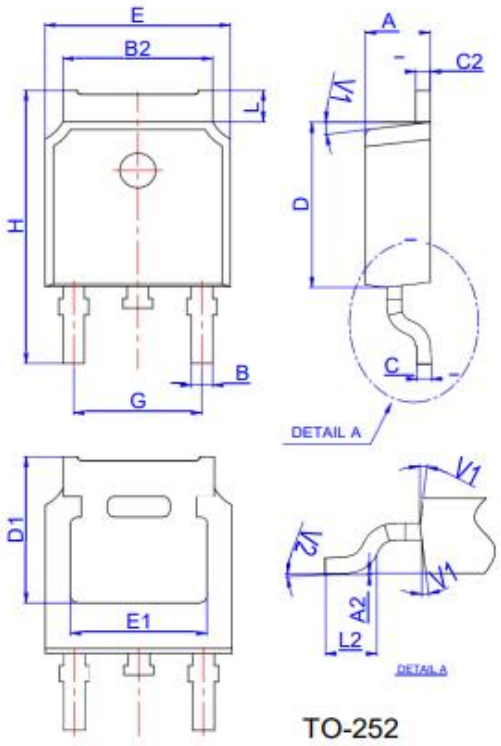


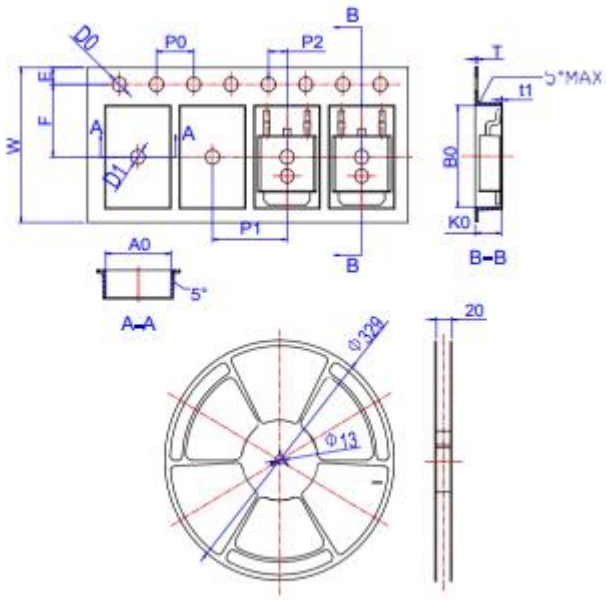
Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Dimensions TO252



TO-252

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

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