



PD55008L

RF POWER TRANSISTORS The LdmoST Plastic FAMILY

PRELIMINARY DATA

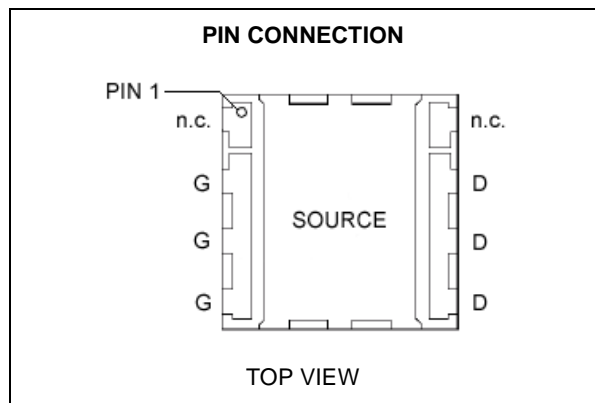
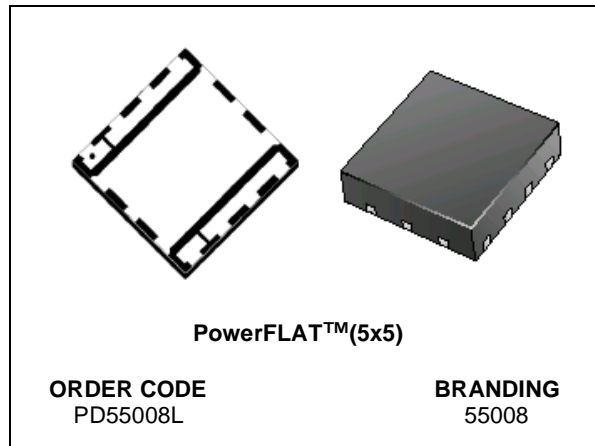
N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 8\text{ W}$ with 17 dB gain @ 500 MHz / 12.5V
- INTEGRATED ESD PROTECTION
- NEW LEADLESS PLASTIC PACKAGE
- SUPPLIED IN TAPE & REEL OF 3K UNITS

DESCRIPTION

The PD55008L is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor. It is designed for high gain, broad band commercial and industrial applications. It operates at 12 V in common source mode at frequencies up to 1 GHz.

PD55008L boasts the excellent gain, linearity and reliability of STH1LV latest LDMOS technology mounted in the innovative leadless SMD plastic package, PowerFLAT™. PD55008L's superior linearity performance makes it an ideal solution for car mobile radio.



ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)

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	4	A
P_{DISS}	Power Dissipation (@ $T_c = 70^{\circ}\text{C}$)	45	W
T_j	Max. Operating Junction Temperature	150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature	-65 to +150	$^{\circ}\text{C}$

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	1.8	$^{\circ}\text{C}/\text{W}$
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PD55008L

ELECTRICAL SPECIFICATION ($T_{CASE} = 25\text{ }^{\circ}\text{C}$)

STATIC

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
I_{DSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 28\text{ V}$			1	μA
I_{GSS}	$V_{GS} = 5\text{ V}$ $V_{DS} = 0\text{ V}$			1	μA
$V_{GS(Q)}$	$V_{DS} = 10\text{ V}$ $I_D = 150\text{ mA}$	2.0		5.0	V
$V_{DS(ON)}$	$V_{GS} = 10\text{ V}$ $I_D = 0.5\text{ A}$		0.13	0.14	V
G_{FS}	$V_{DS} = 10\text{ V}$ $I_D = 1.5\text{ A}$		1.6		mho
C_{ISS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 12.5\text{ V}$ $f = 1\text{ MHz}$		53		pF
C_{OSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 12.5\text{ V}$ $f = 1\text{ MHz}$		38		pF
C_{RSS}	$V_{GS} = 0\text{ V}$ $V_{DS} = 12.5\text{ V}$ $f = 1\text{ MHz}$		3.2		pF

DYNAMIC

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
P_{OUT}	$V_{DD} = 12.5\text{ V}$ $I_{DQ} = 150\text{ mA}$ $f = 500\text{ MHz}$	8			W
G_P	$V_{DD} = 12.5\text{ V}$ $I_{DQ} = 150\text{ mA}$ $P_{OUT} = 8\text{ W}$ $f = 500\text{ MHz}$	17	19		dB
η_D	$V_{DD} = 12.5\text{ V}$ $I_{DQ} = 150\text{ mA}$ $P_{OUT} = 8\text{ W}$ $f = 500\text{ MHz}$	55	63		%
Load mismatch	$V_{DD} = 15.5\text{ V}$ $I_{DQ} = 150\text{ mA}$ $P_{OUT} = 8\text{ W}$ $f = 500\text{ MHz}$ ALL PHASE ANGLES	20:1			VSWR

ESD PROTECTION CHARACTERISTICS

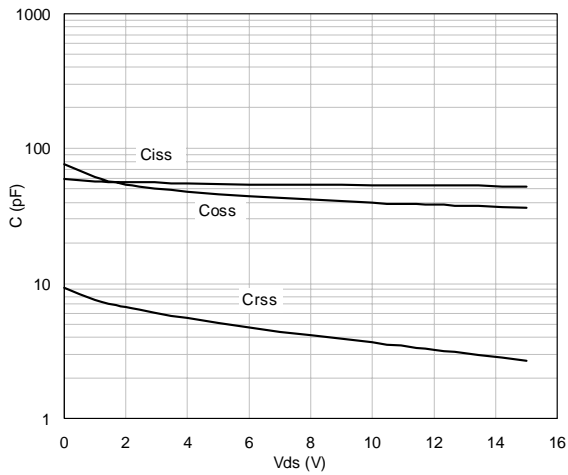
Test Conditions	Class
Human Body Model	2
Machine Model	M3

MOISTURE SENSITIVITY LEVEL

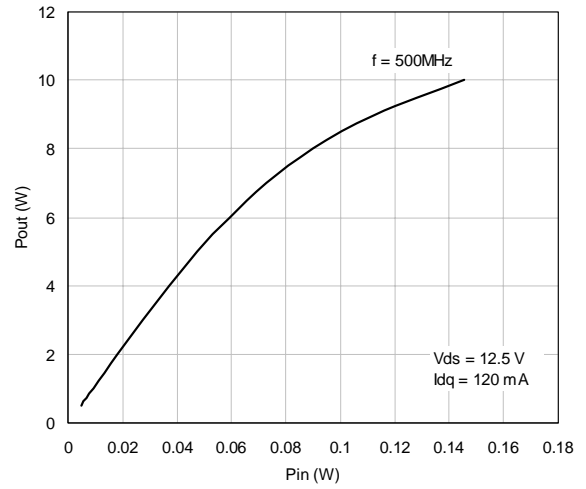
Test Methodology	Rating
J-STD-020B	MSL 3

TYPICAL PERFORMANCE

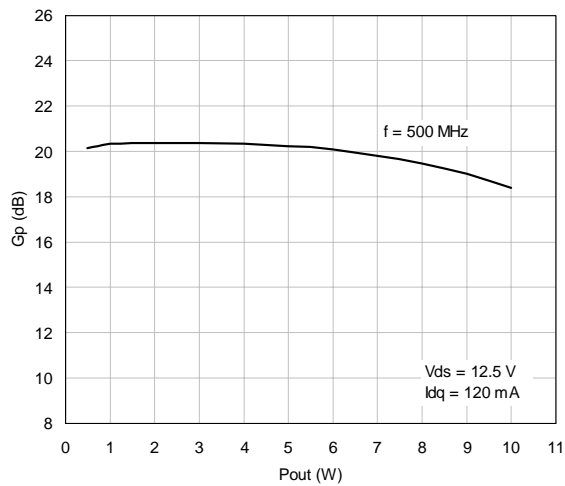
Capacitance Vs Supply Voltage



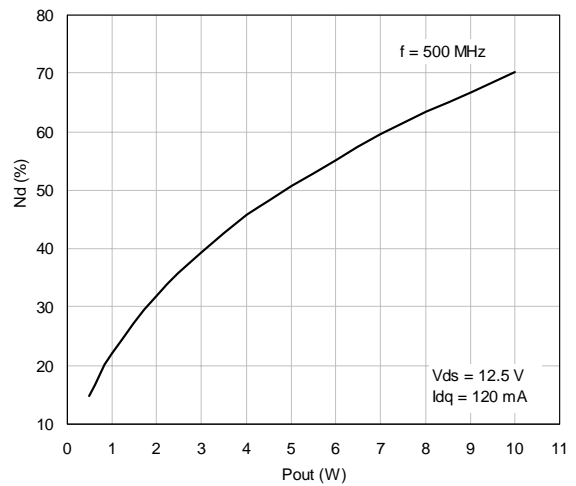
Output Power Vs Input Power



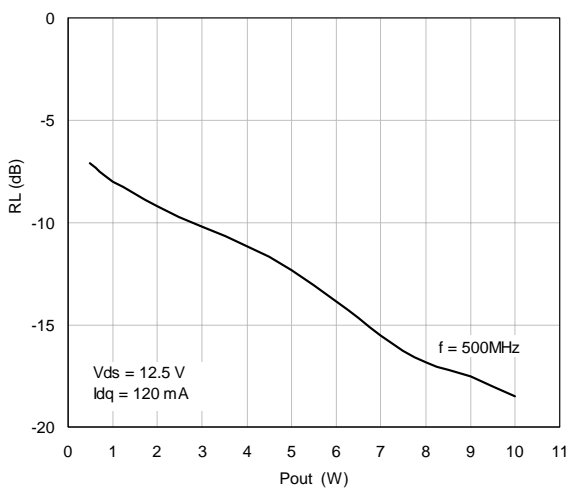
Power Gain Vs Output Power



Efficiency Vs Output Power



Input Return Loss Vs Output Power



PD55008L**S-PARAMETER (PD55008L)** $(V_{DS} = 12.5V \quad I_{DS} = 0.15A)$

FREQ (MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
50	0.783	-134	16.75	100	0.034	11	0.654	-135
100	0.774	-153	8.73	82	0.034	-6	0.667	-150
150	0.791	-159	5.61	70	0.033	-15	0.698	-155
200	0.814	-163	4.00	61	0.029	-22	0.737	-157
250	0.838	-165	3.00	54	0.027	-28	0.775	-159
300	0.862	-166	2.34	47	0.023	-32	0.806	-161
350	0.879	-168	1.87	41	0.021	-35	0.837	-163
400	0.894	-169	1.52	37	0.018	-37	0.861	-164
450	0.908	-171	1.26	32	0.015	-37	0.881	-166
500	0.919	-172	1.06	28	0.013	-37	0.900	-167
550	0.927	-173	0.91	25	0.010	-36	0.911	-168
600	0.937	-174	0.78	22	0.009	-33	0.917	-169
650	0.942	-175	0.68	19	0.007	-20	0.931	-170
700	0.945	-176	0.60	16	0.005	-7	0.938	-171
750	0.948	-177	0.53	14	0.005	14	0.940	-172
800	0.953	-178	0.47	12	0.006	36	0.950	-173
850	0.956	-179	0.42	10	0.007	48	0.954	-173
900	0.956	-179	0.38	9	0.007	60	0.957	-174
950	0.957	180	0.34	7	0.009	66	0.960	-175
1000	0.957	179	0.31	6	0.010	71	0.960	-176
1050	0.958	178	0.28	4	0.012	73	0.960	-176
1100	0.959	177	0.26	3	0.013	75	0.967	-177
1150	0.960	177	0.24	2	0.014	73	0.967	-177
1200	0.959	176	0.22	1	0.015	79	0.966	-178
1250	0.958	176	0.20	0	0.017	78	0.970	-178
1300	0.957	175	0.19	-1	0.019	78	0.970	-179
1350	0.956	174	0.18	-2	0.020	78	0.971	-180
1400	0.954	174	0.16	-3	0.020	80	0.971	-180
1450	0.952	173	0.15	-4	0.022	80	0.968	180
1500	0.951	173	0.14	-5	0.023	81	0.970	179

S-PARAMETER (PD55008L)(V_{DS} = 12.5V I_{DS} = 0.8A)

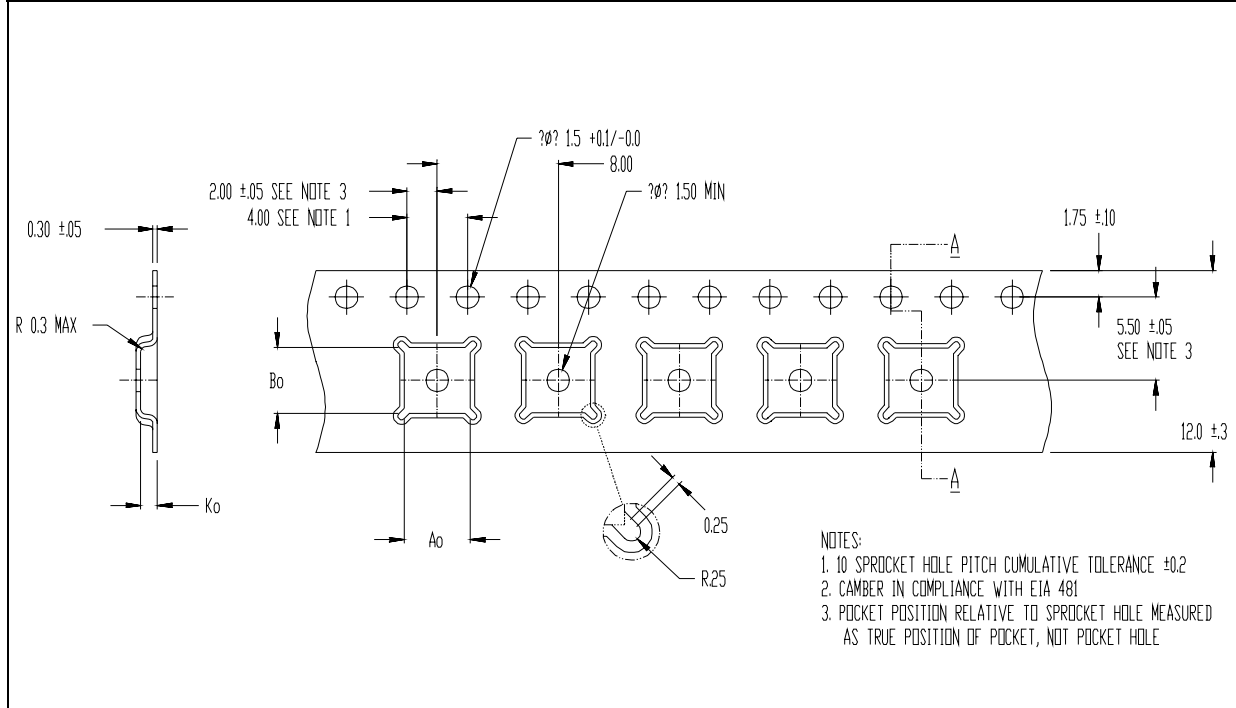
FREQ (MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
50	0.828	-147	19.60	97	0.023	11	0.691	-154
100	0.822	-162	10.11	84	0.023	-1	0.714	-164
150	0.829	-167	6.61	75	0.022	-7	0.729	-166
200	0.839	-169	4.82	68	0.021	-11	0.749	-167
250	0.852	-170	3.71	62	0.019	-16	0.772	-167
300	0.866	-171	2.97	56	0.017	-17	0.793	-168
350	0.877	-172	2.43	51	0.015	-18	0.815	-168
400	0.887	-173	2.02	46	0.014	-18	0.833	-169
450	0.898	-174	1.71	42	0.012	-16	0.852	-169
500	0.907	-175	1.47	38	0.010	-12	0.871	-170
550	0.916	-175	1.27	34	0.009	-10	0.879	-170
600	0.923	-176	1.10	31	0.008	1	0.887	-172
650	0.929	-177	0.98	27	0.007	12	0.904	-172
700	0.931	-178	0.86	25	0.007	23	0.911	-173
750	0.937	-179	0.77	22	0.008	37	0.916	-173
800	0.942	-179	0.69	20	0.008	44	0.928	-174
850	0.948	-180	0.62	17	0.009	53	0.933	-174
900	0.946	180	0.56	15	0.010	61	0.936	-175
950	0.948	179	0.51	13	0.011	65	0.940	-176
1000	0.950	178	0.47	12	0.012	67	0.943	-176
1050	0.950	178	0.43	10	0.013	71	0.945	-177
1100	0.953	177	0.39	8	0.016	71	0.951	-177
1150	0.953	176	0.36	7	0.016	72	0.951	-178
1200	0.953	176	0.34	5	0.017	75	0.953	-178
1250	0.952	175	0.31	4	0.019	75	0.958	-179
1300	0.952	175	0.29	3	0.021	75	0.958	-179
1350	0.951	174	0.27	1	0.022	75	0.960	-180
1400	0.951	174	0.25	0	0.023	76	0.960	180
1450	0.949	173	0.23	0	0.024	76	0.959	180
1500	0.950	173	0.21	0	0.025	75	0.960	179

PD55008L**S-PARAMETER (PD55008L)** $(V_{DS} = 12.5V \quad I_{DS} = 1.5 A)$

FREQ (MHz)	$ S_{11} $	$S_{11}\angle\Phi$	$ S_{21} $	$S_{21}\angle\Phi$	$ S_{12} $	$S_{12}\angle\Phi$	$ S_{22} $	$S_{22}\angle\Phi$
50	0.835	-145	18.15	98	0.023	11	0.681	-156
100	0.831	-161	9.38	84	0.023	-1	0.711	-164
150	0.837	-166	6.14	75	0.022	-7	0.729	-166
200	0.847	-169	4.47	68	0.020	-11	0.751	-167
250	0.858	-170	3.44	61	0.019	-15	0.773	-168
300	0.872	-171	2.74	55	0.017	-17	0.794	-168
350	0.882	-172	2.24	50	0.015	-17	0.819	-168
400	0.893	-173	1.87	46	0.014	-18	0.837	-169
450	0.904	-174	1.58	41	0.012	-16	0.855	-170
500	0.913	-175	1.35	37	0.010	-13	0.875	-170
550	0.920	-176	1.17	33	0.009	-5	0.881	-170
600	0.927	-177	1.02	30	0.008	1	0.890	-172
650	0.931	-177	0.89	27	0.007	13	0.905	-172
700	0.935	-178	0.79	24	0.007	28	0.914	-173
750	0.940	-179	0.70	22	0.008	41	0.919	-173
800	0.944	-180	0.63	19	0.008	48	0.930	-174
850	0.948	180	0.57	17	0.009	55	0.934	-175
900	0.948	179	0.51	15	0.010	61	0.936	-175
950	0.947	179	0.47	13	0.011	65	0.943	-176
1000	0.949	178	0.43	11	0.013	66	0.943	-176
1050	0.949	177	0.39	10	0.014	70	0.947	-177
1100	0.951	177	0.36	8	0.015	72	0.953	-177
1150	0.951	176	0.33	7	0.016	72	0.955	-178
1200	0.952	176	0.30	5	0.018	74	0.957	-178
1250	0.951	175	0.28	4	0.019	73	0.960	-179
1300	0.950	174	0.26	3	0.021	75	0.959	-179
1350	0.951	174	0.24	2	0.021	75	0.961	-180
1400	0.950	173	0.22	1	0.023	76	0.962	-180
1450	0.948	173	0.21	1	0.024	76	0.960	180
1500	0.949	172	0.20	1	0.025	75	0.963	179

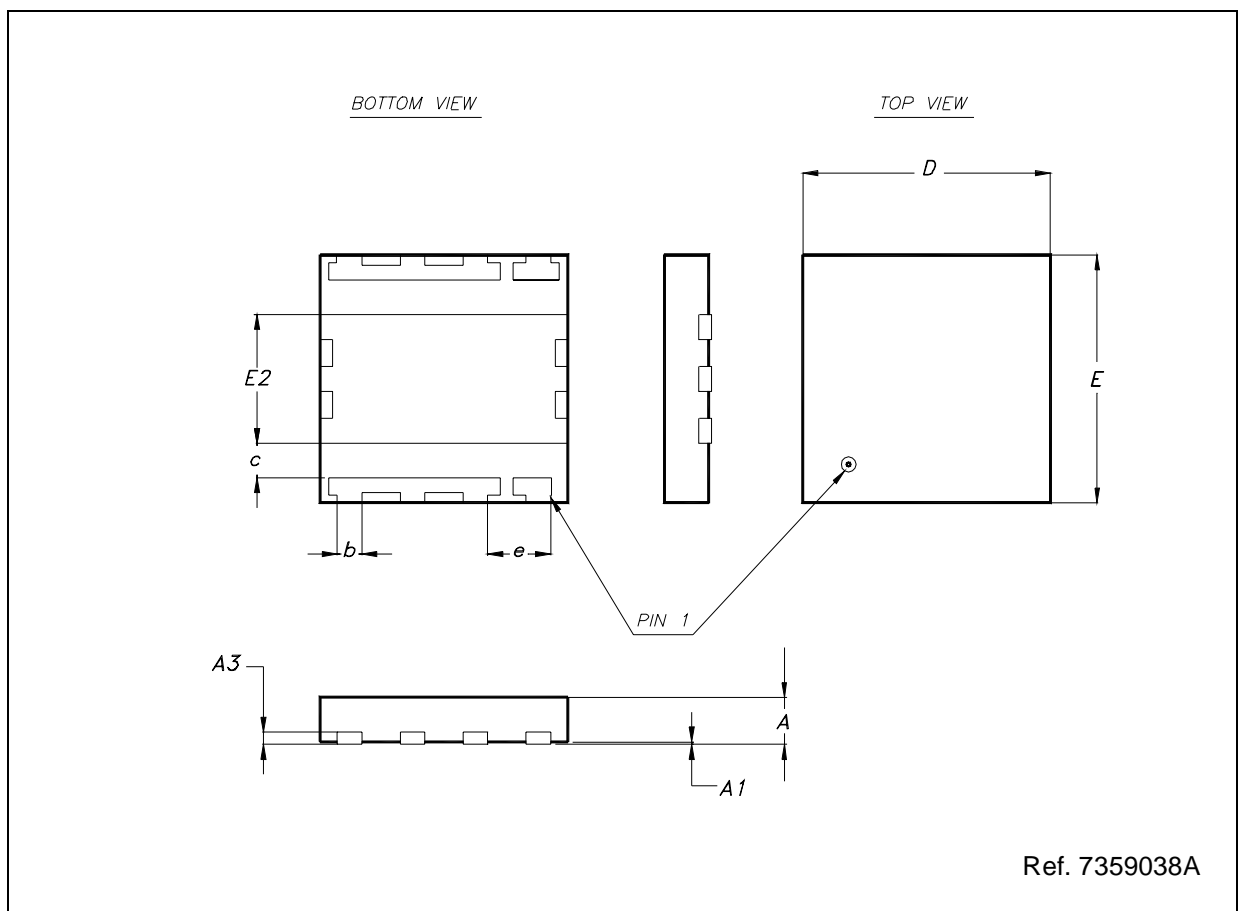
TAPE & REEL DIMENSIONS

	mm		
	MIN.	TYP.	MAX
Ao	5.15	5.25	5.35
Bo	5.15	5.25	5.35
Ko	1.0	1.1	1.2



PowerFLAT™ MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A		0.90	1.00		0.035	0.039
A1		0.02	0.05		0.001	0.002
A3		0.24			0.009	
b	0.43	0.51	0.58	0.017	0.020	0.023
c	0.64	0.71	0.79	0.025	0.028	0.031
D		5.00			0.197	
E		5.00			0.197	
E2	2.49	2.57	2.64	0.098	0.101	0.104
e		1.27			0.050	



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