

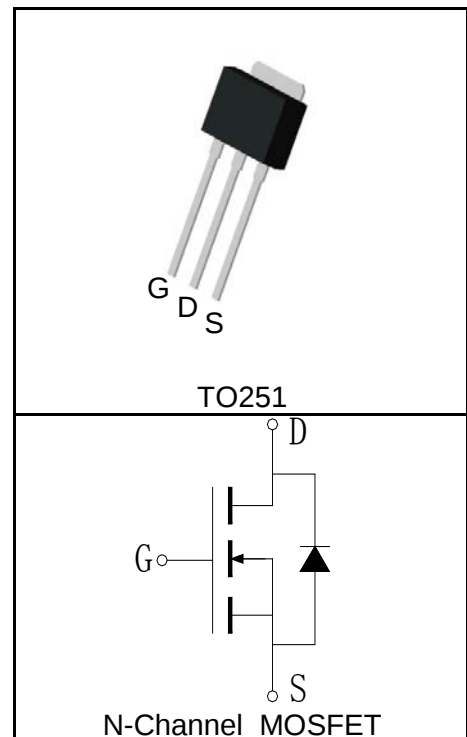
Features

- 100V/40A,
RDS (ON) =21mΩ(Typ.)@VGS=10V
- Super High Dense Cell Design
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- High Speed Power Switching

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±25	
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Diode Continuous Forward Current	T _C =25°C	40	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	160	A
I _D ^②	Continuous Drain Current(V _{GS} =10V)	T _C =25°C	40	A
		T _C =100°C	30	
P _D	Maximum Power Dissipation	T _C =25°C	97	W
		T _C =100°C	48	
R _{θJC}	Thermal Resistance-Junction to Case		1.55	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		90	mJ

Electrical Characteristics ($T_C=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU1H35K			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V			1	μA
			T _J =85°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	2	3	4	V
I _{GSS}	Gate Leakage Current	V _{GS} =±25V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =16A		21	25	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =16A, V _{GS} =0V		0.8	1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =16A, dI _{SD} /dt=100A/μs		100		ns
Q _{rr}	Reverse Recovery Charge			430		nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz		2.8		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =50V, Frequency=1.0MHz		2100		pF
C _{oss}	Output Capacitance			250		
C _{rss}	Reverse Transfer Capacitance			115		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, R _L =3Ω, I _{DS} =16A, V _{GEN} =10V, R _G =4.7Ω		22		ns
t _r	Turn-on Rise Time			76		
t _{d(OFF)}	Turn-off Delay Time			60		
t _f	Turn-off Fall Time			23		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} =10V, I _{DS} =16A		44		nC
Q _{gs}	Gate-Source Charge			10		
Q _{gd}	Gate-Drain Charge			20		

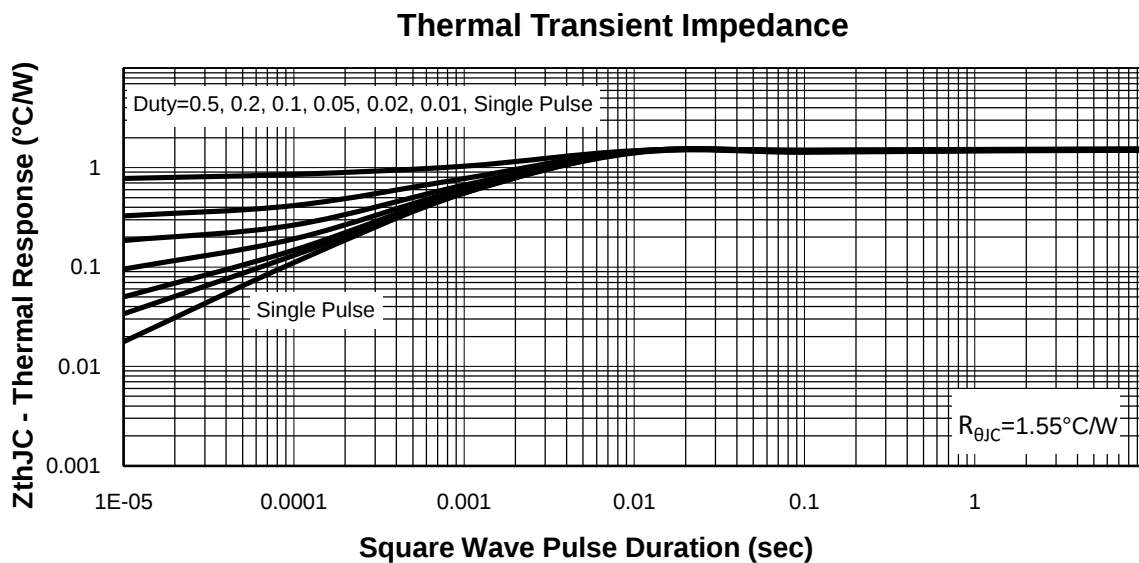
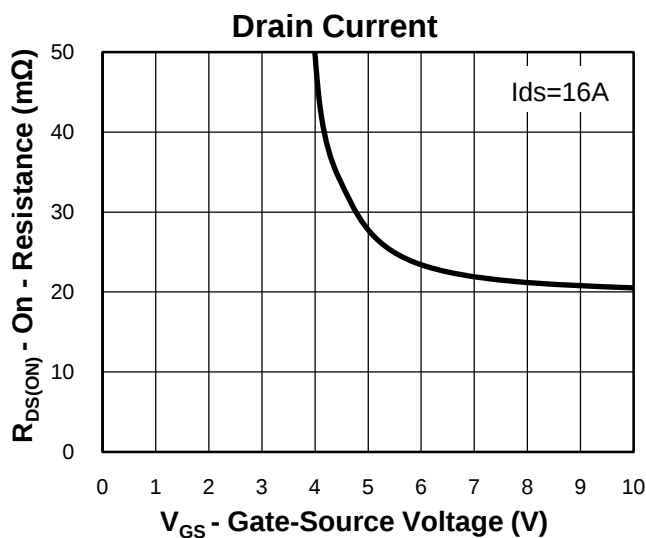
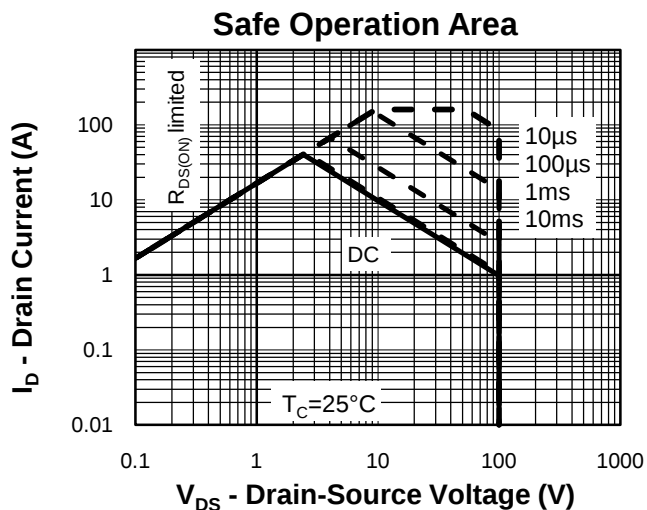
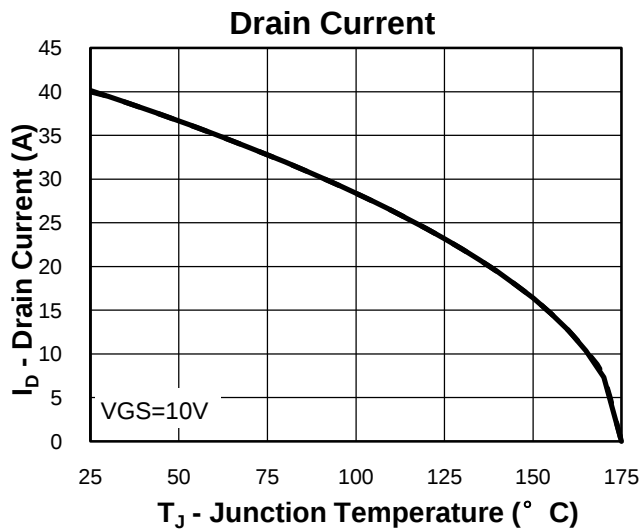
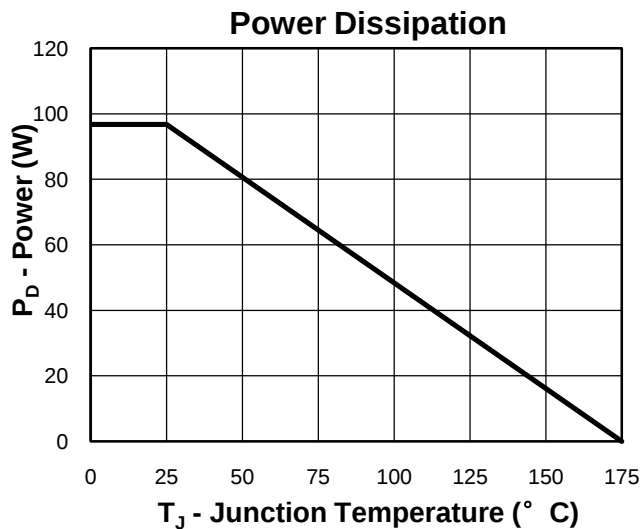
Notes:

- ① Pulse width limited by safe operating area.
- ② Calculated continuous current based on maximum allowable junction temperature.
- ③ Limited by T_{Jmax} , $I_{AS}=19A$, $V_{DD}=48V$, $R_G=47\Omega$, Starting $T_J=25^{\circ}\text{C}$.
- ④ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- ⑤ Guaranteed by design, not subject to production testing.

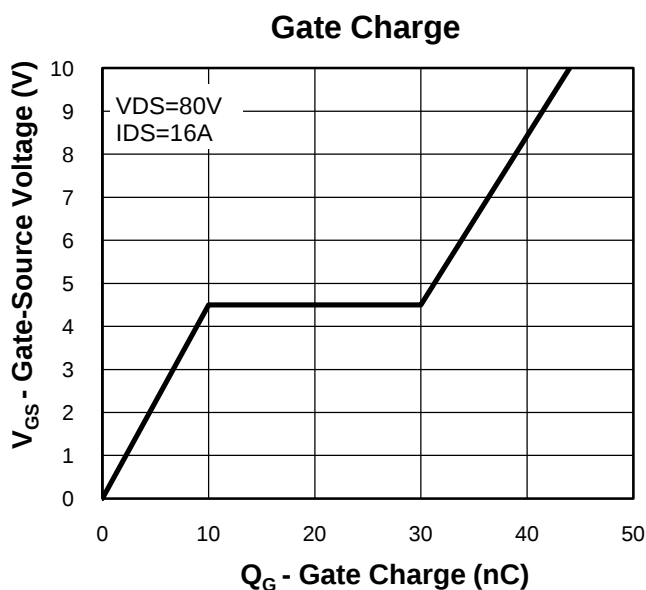
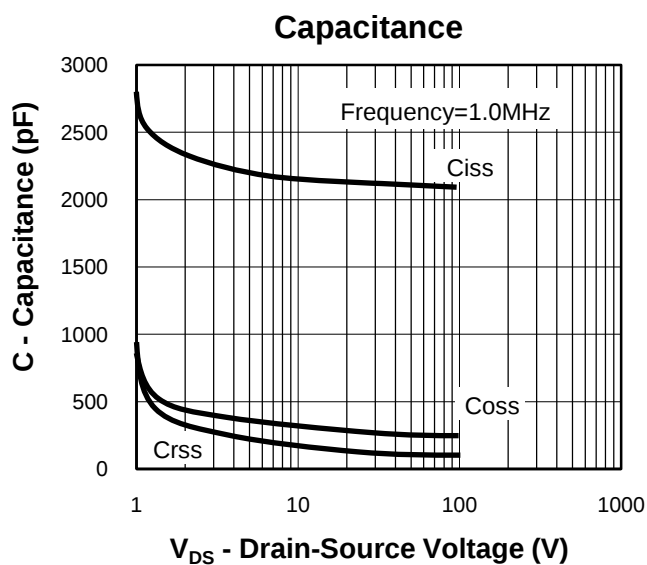
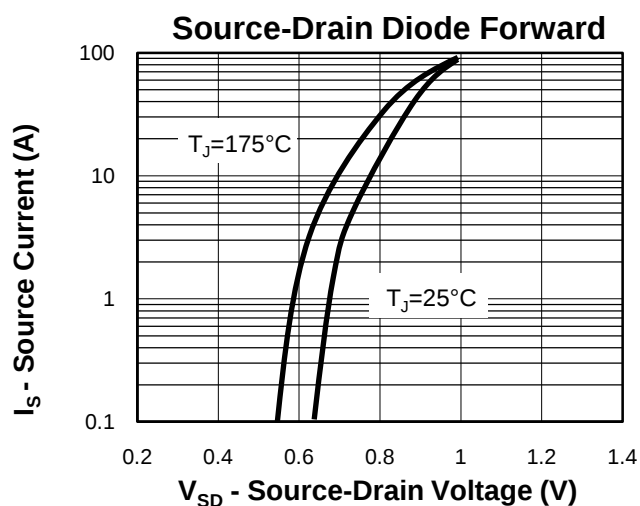
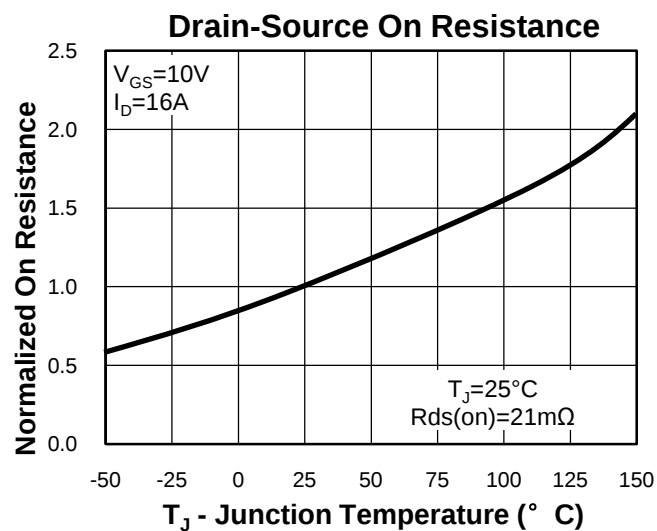
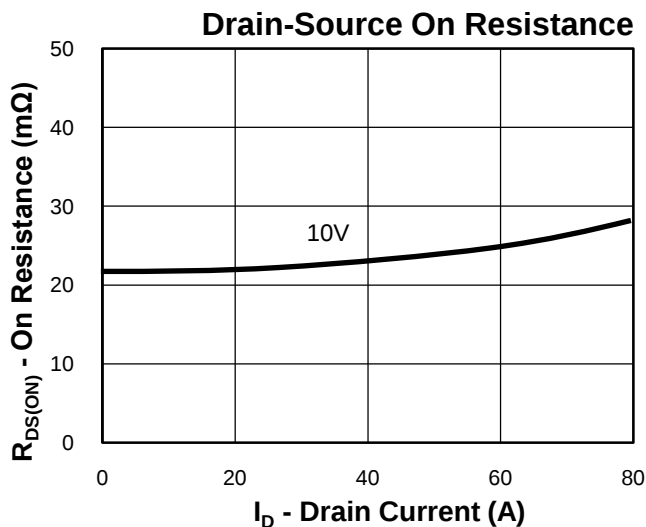
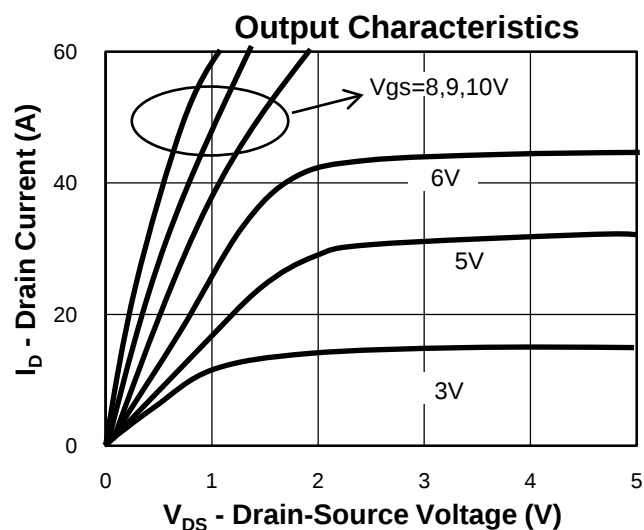
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1H35K	RU1H35K	TO251	Tube	75	-	-

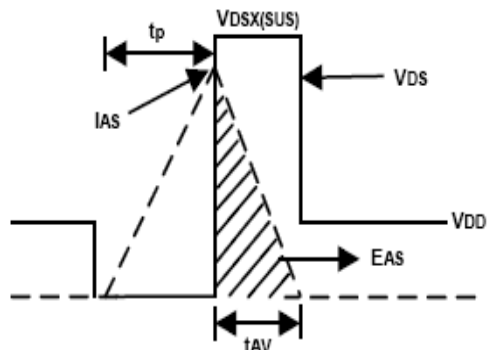
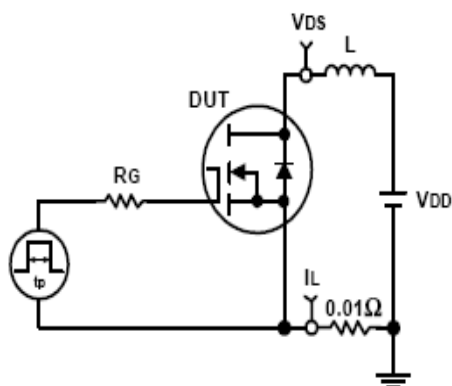
Typical Characteristics



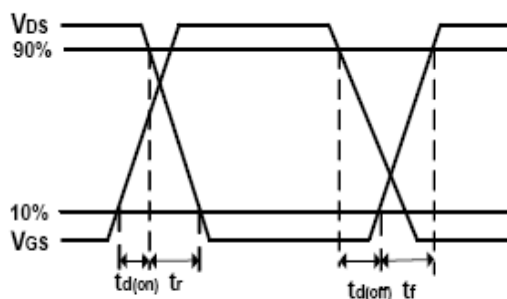
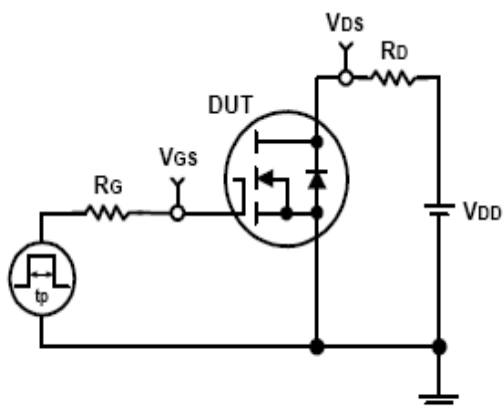
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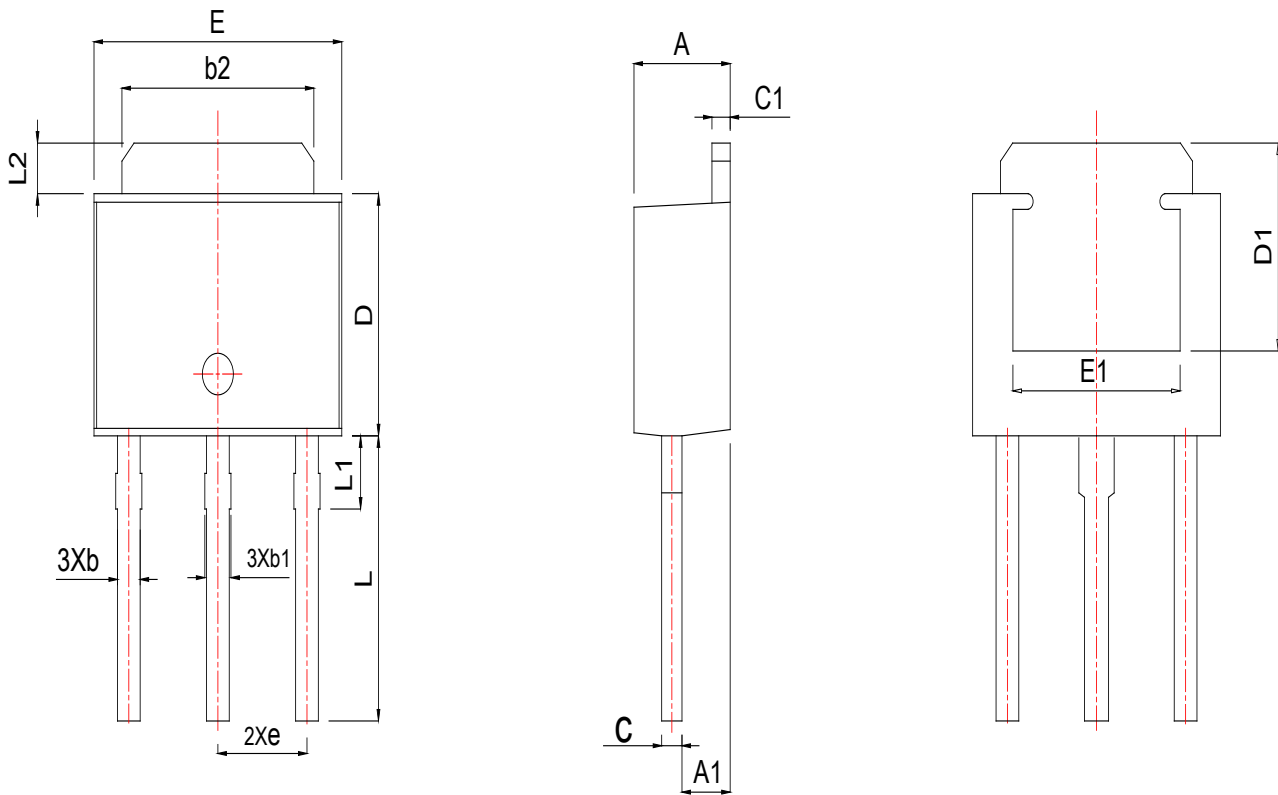


Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Package Information
TO251


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.220	2.320	2.420	0.087	0.091	0.095
A1	0.890	1.015	1.140	0.035	0.040	0.045
b	0.550	0.610	0.670	0.022	0.024	0.026
b1	0.760	0.860	0.960	0.030	0.034	0.038
b2	5.200	5.300	5.400	0.205	0.209	0.213
c	0.460	0.515	0.570	0.018	0.020	0.022
c1	0.450	0.500	0.550	0.018	0.020	0.022
D	5.950	6.100	6.250	0.234	0.240	0.246
D1	4.200	4.350	4.500	0.165	0.171	0.177
E	6.400	6.550	6.700	0.252	0.258	0.264
E1	4.750	4.800	4.850	0.187	0.189	0.191
e	2.280 REF			0.090 REF		
L	8.900	9.200	9.500	0.350	0.362	0.374
L1	1.900	2.095	2.290	0.075	0.082	0.090
L2	0.900	0.950	1.000	0.035	0.037	0.039

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