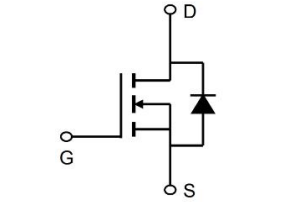
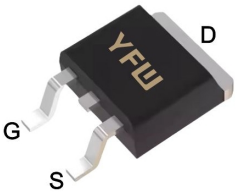
40V N-Channel Enhancement Mode MOSFET

MAIN CHARACTERISTICS

I_D	260A
V_{DSS}	40V
R_{DSON}-typ(@V_{GS}=10V)	＜1.35mΩ(Typ:1.13mΩ)



TO-220C



TO-263C

FEATURES

- Ultra-low RDS(ON)
- High Current Capability
- **YFW-SGT technology**

APPLICATIONS

- Battery protection
- Load switch
- Uninterruptible power supply

MECHANICAL DATA

- Case: TO-220C/AC TO-263C/ASC
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275℃ maximum,10s per JESD 22-B106

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	V_{DS}	40	V
Gate - Source Voltage	V_{GS}	±20	V
Continue Drain Current	I_D	260	A
Pulsed Drain Current (Note1)	I_{DM}	1040	A
Total Power Dissipation	P_D	138	W
Single Pulse Avalanche Energy (Note1)	E_{AS}	600	mJ
Operating Junction Temperature Range	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.9	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	45	°C/W

Note1:Pulse test: 300 μs pulse width, 2 % duty cycle

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	40	-	-	V
Drain-Source Leakage Current	V_{DS} = 40 V, V_{GS} = 0 V	I_{DSS}	-	-	1	μA
Gate Body Leakage Current	V_{GS}=±20V, V_{DS}=0V	I_{GSS}	-	-	±100	nA
Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	$V_{GS(th)}$	2.0	-	3.5	V
Drain-Source on-Resistance	V_{GS}=10V, I_D=50A	$R_{DS(ON)}$	-	1.13	1.35	mΩ
Input Capacitance	V_{DS}=20V V_{GS}=0V f=1MHz	C_{iss}	-	5300	-	pF
Output Capacitance		C_{oss}	-	3600	-	
Reverse Transfer Capacitance		C_{rss}	-	86	-	
Turn-on delay time	V_{DD}=20V V_{GS}=10V R_G= 6 Ω I_D=20A	$t_{d(on)}$	-	20	-	ns
Rise Time		T_r	-	37	-	
Turn-Off Delay Time		$t_{d(OFF)}$	-	60	-	
Fall Time		t_f	-	28	-	
Total Gate Charge	V_{DS}=20V V_{GS}=10V I_D=20A	Q_g	-	71	-	nC
Gate-Source Charge		Q_{gs}	-	22	-	
Gate-Drain Charge		Q_{gd}	-	11.7	-	
Maximun Body-Diode Continuous Current		I_S	-	-	260	A
Maximun Body-Diode Pulsed Current(Note2)		I_{SM}	-	-	1040	A
Drain-Source Diode Forward Voltage	V_{GS}=0V , IS=50A , TJ=25℃	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time(Note2)	I_S = I_F , I_{SD}=20A,V_{GS} = 0 V, dI / dt = 100 A/μs	t_{rr}	-	75	-	ns
Body Diode Reverse Recovery Charge(Note2)		Q_{rr}	-	67	-	nC

Note2:Pulse test: 300 μs pulse width, 2 % duty cycle

Ratings and Characteristic Curves

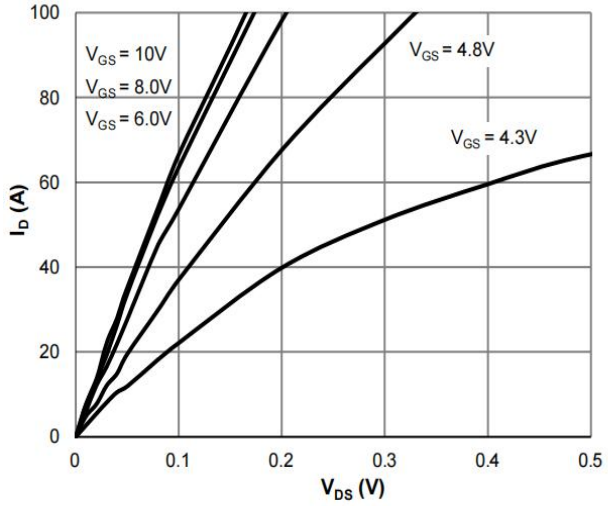


Figure 1: Saturation Characteristics

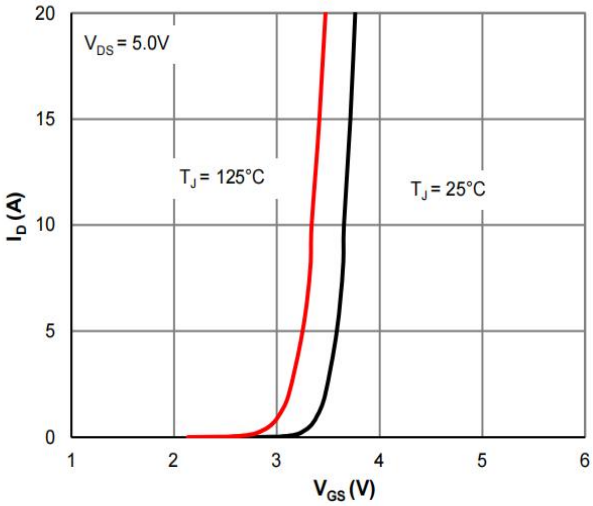


Figure 2: Transfer Characteristics

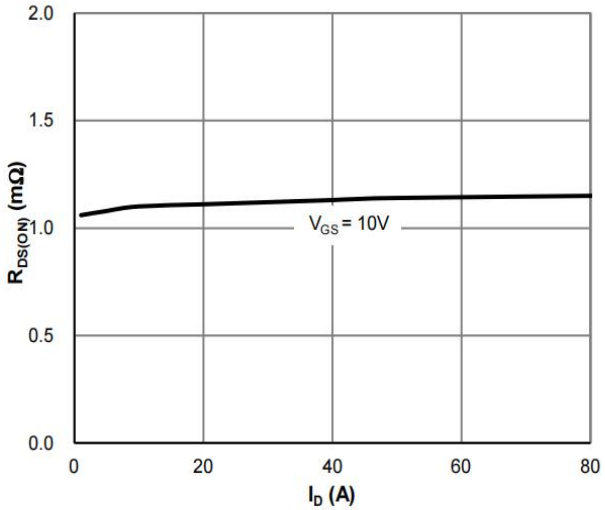


Figure 3: $R_{DS(ON)}$ vs. Drain Current

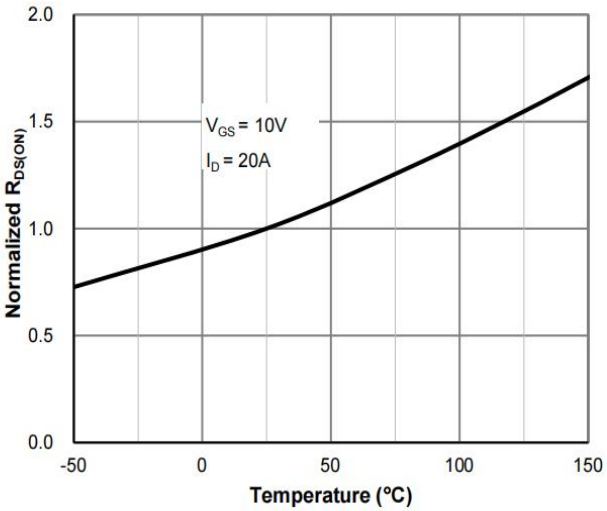


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

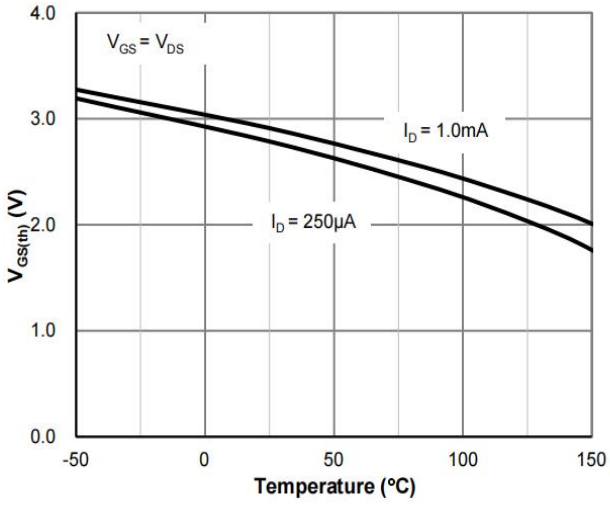


Figure 5: VGS(th) vs. Junction Temperature

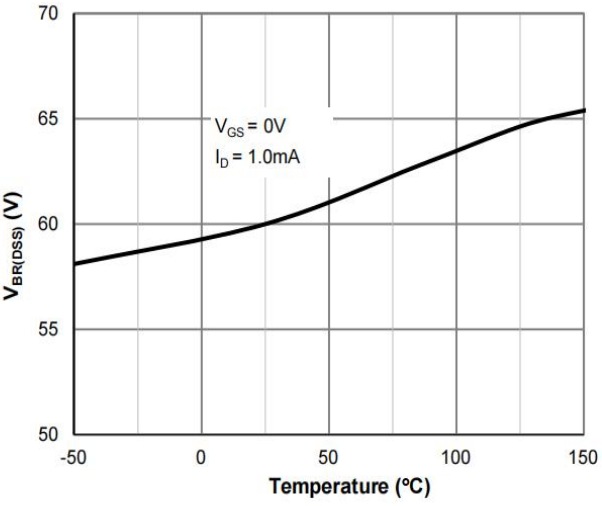


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Ratings and Characteristic Curves

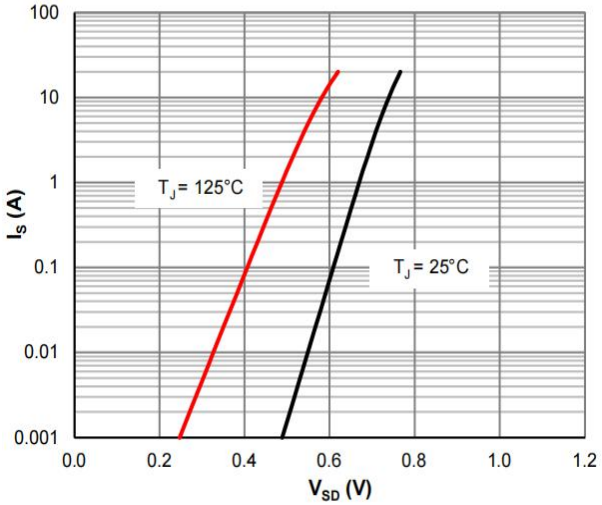


Figure 7: Body-Diode Characteristics

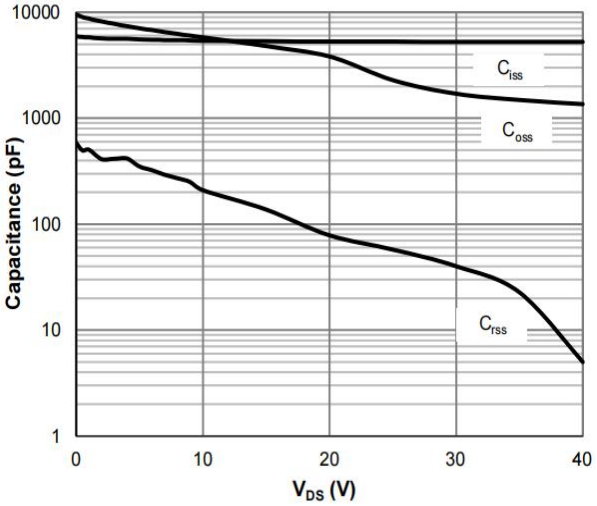


Figure 8: Capacitance Characteristics

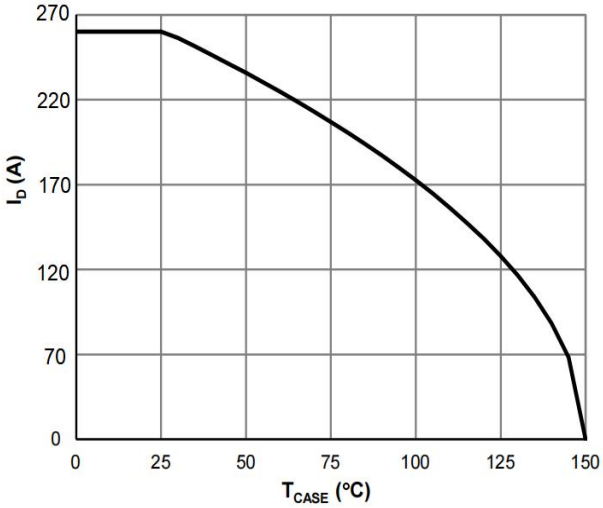


Figure 9: Current De-rating

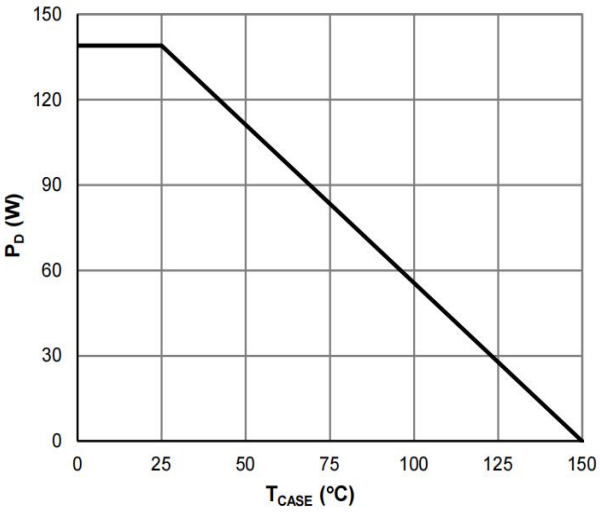


Figure 10: Power De-rating

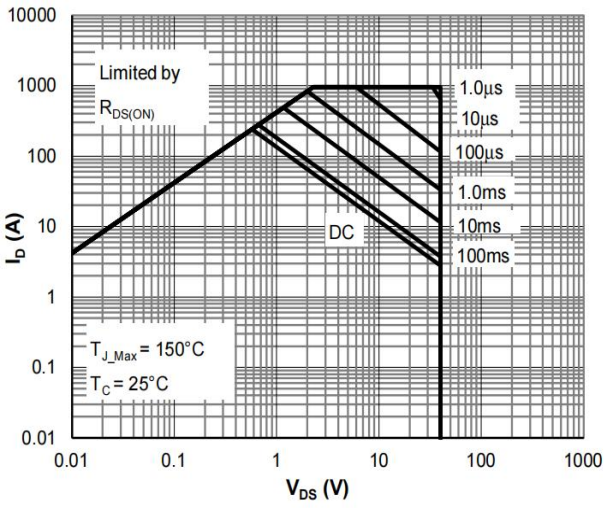


Figure 11: Maximum Safe Operating Area

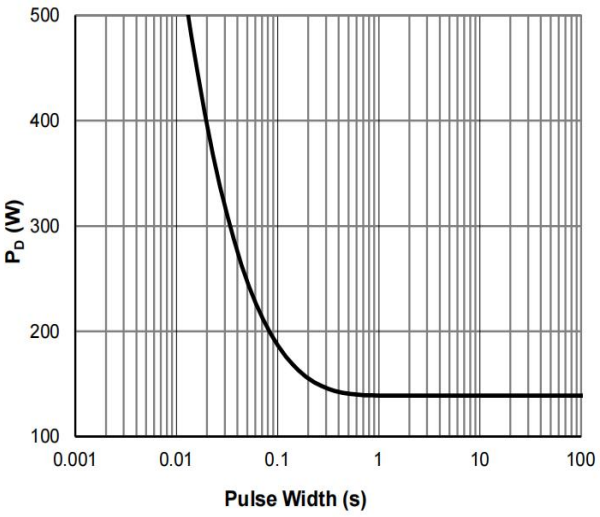
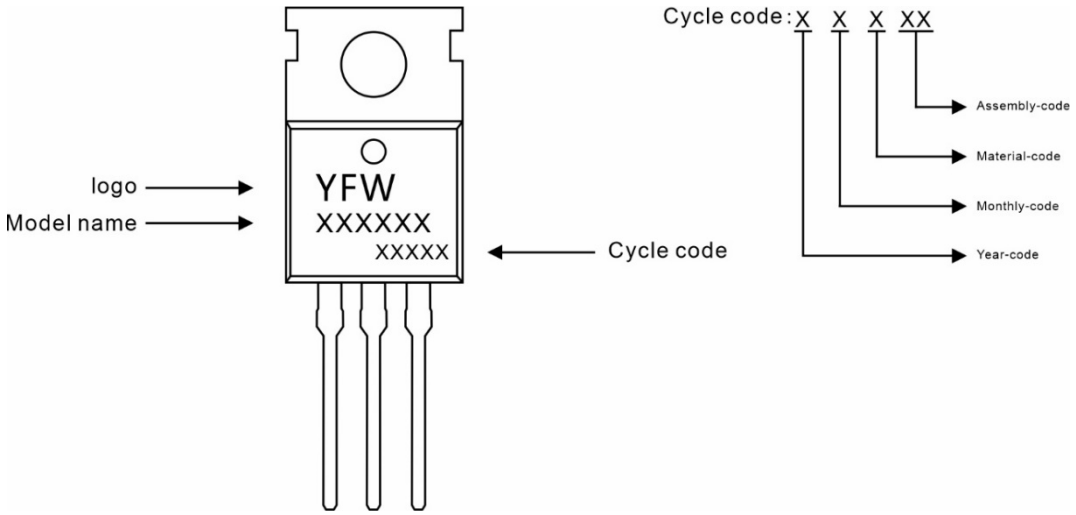


Figure 12: Single Pulse Power Rating, Junction-to-Case

Marking Diagram

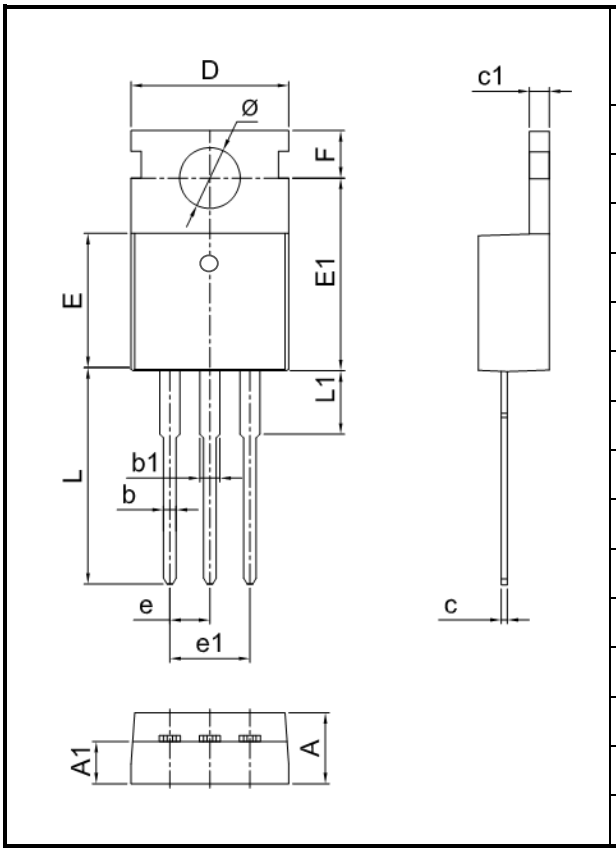


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG260N04AC	TO-220C	0.07oz(1.96g)	50pcs/tube	1000PCS/Box 5000PCS/Carton

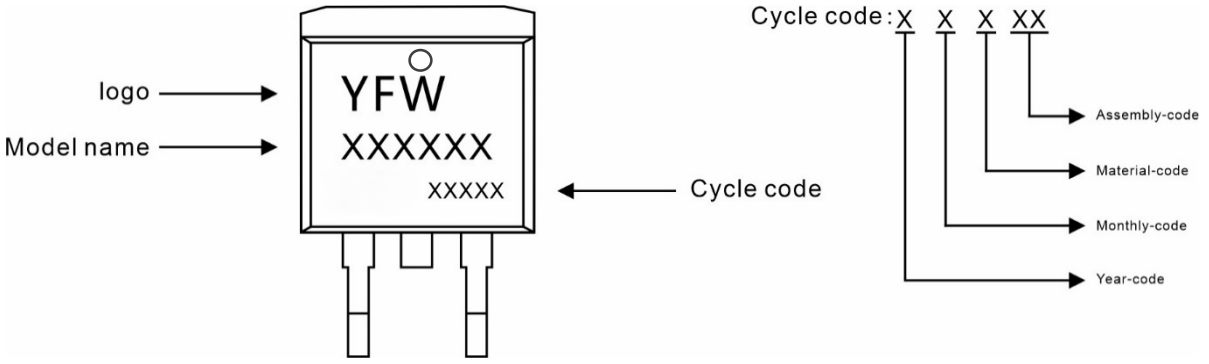
Package Dimensions

TO-220C



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.34	4.67	0.171	0.184
A1	2.52	2.82	0.099	0.111
b	0.71	0.91	0.028	0.036
b1	1.17	1.37	0.046	0.054
c	0.30	0.50	0.012	0.020
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
E1	12.00	12.50	0.472	0.492
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
F	2.60	2.80	0.102	0.110
L	13.20	13.80	0.520	0.543
L1	3.80	4.20	0.150	0.165
Φ	3.60	3.96	0.142	0.156

Marking Diagram

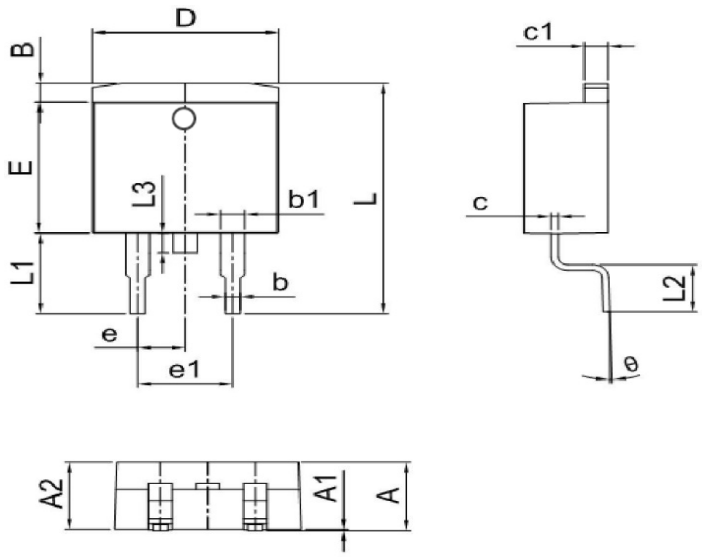


Ordering information

Model name	Package	Unit Weight	Base Quantity	Packing Quantity
YFWG260N04ASC	TO-263C	0.04oz(1.16g)	800pcs/reel	1600pcs/box 8000pcs/Carton

Package Dimensions

TO-263C



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.30	4.70	0.169	0.185
A1	0.00	0.15	0.000	0.006
A2	4.30	4.55	0.169	0.179
B	1.10	1.50	0.043	0.059
b	0.70	0.90	0.028	0.035
b1	1.20	1.50	0.047	0.059
c	0.30	0.60	0.012	0.024
c1	1.17	1.37	0.046	0.054
D	9.90	10.20	0.390	0.402
E	8.50	8.90	0.335	0.350
e	2.44	2.64	0.096	0.104
e1	4.88	5.28	0.192	0.208
L	15.00	15.30	0.591	0.602
L1	5.20	5.40	0.205	0.213
L2	2.40	2.60	0.094	0.102
L3	1.60	1.80	0.063	0.071

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