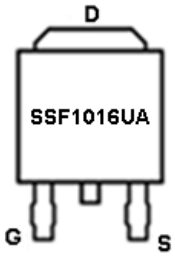
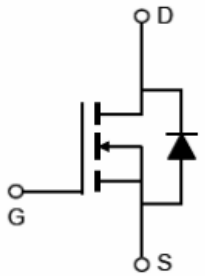
Main Product Characteristics:

V_{DSS}	100V
R_{DS}(on)	10.5mΩ (typ.)
I_D	57A

TO-263



Marking and Pin Assignment



Schematic Diagram

Features and Benefits:

- Advanced MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- Fast switching and reverse body recovery
- 150℃ operating temperature

Description:

It utilizes the latest processing techniques to achieve the high cell density and reduces the on-resistance with high repetitive avalanche rating. These features combine to make this design an extremely efficient and reliable device for use in power switching application and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	57	A
I_{DM}	Pulsed Drain Current ②	190	
P_D @TC = 25°C	Power Dissipation ③	170	W
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.3mH	86.4	mJ
I_{AS}	Single Pulse Avalanche Current @ L=0.3mH	24	A
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

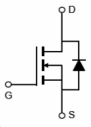
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	0.88	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

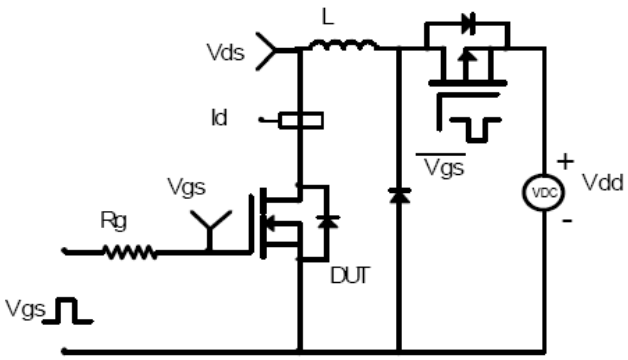
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	10.5	16	mΩ	V_{GS}=10V,I_D =30A
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =100V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	94	—	nC	I_D = 28A, V_{DS}=80V, V_{GS} = 10V
Q_{gs}	Gate-to-Source charge	—	15	—		
Q_{gd}	Gate-to-Drain("Miller") charge	—	22	—		
$t_{d(on)}$	Turn-on delay time	—	17.3	—	ns	V_{GS}=10V, V_{DS}=40V, R_{GEN}=2.2Ω I_D =18A
t_r	Rise time	—	29.1	—		
$t_{d(off)}$	Turn-Off delay time	—	46.3	—		
t_f	Fall time	—	9.1	—		
C_{iss}	Input capacitance	—	3488	—	pF	V_{GS} = 0V V_{DS} = 100V f = 1MHz
C_{oss}	Output capacitance	—	191	—		
C_{rss}	Reverse transfer capacitance	—	144	—		

Source-Drain Ratings and Characteristics

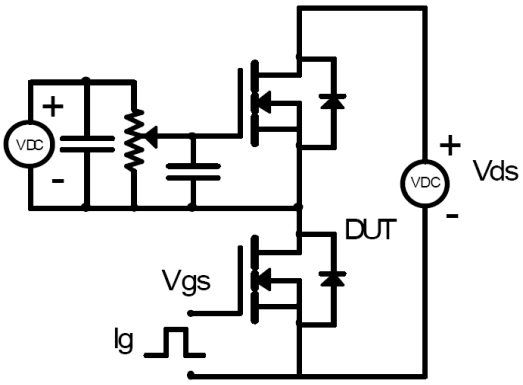
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	57	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{sd}	Diode Forward Voltage	—	—	1.2	V	I_S=28A, V_{GS}=0V
trr	Reverse Recovery Time	—	35	—	ns	I_S=28A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	55	—	nC	

Test circuits and Waveforms

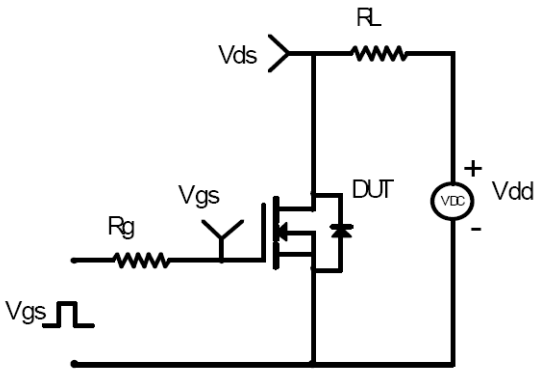
EAS Test Circuit:



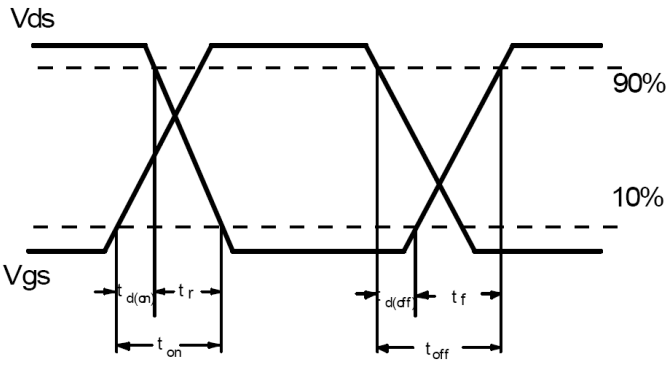
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.
②Repetitive rating; pulse width limited by max. junction temperature.
③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Typical electrical and thermal characteristics

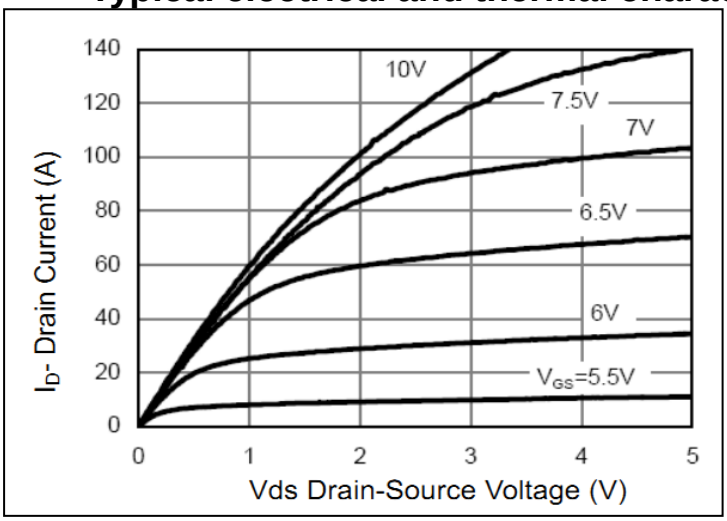


Figure 1: Typical Output Characteristics

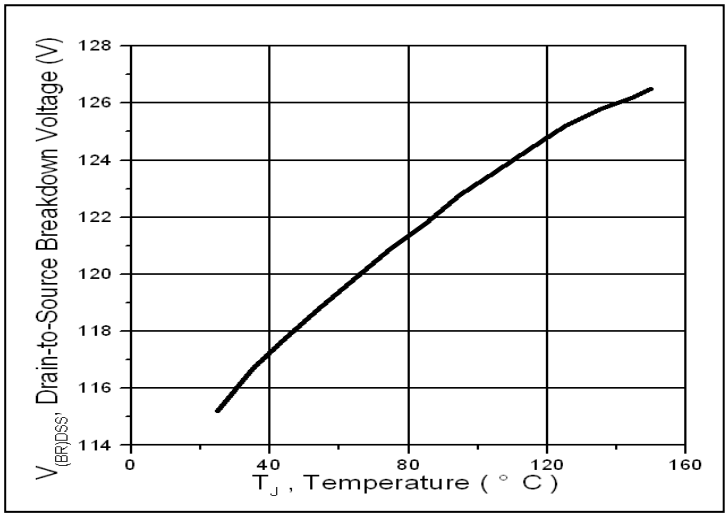


Figure 2: Drain-to-Source Breakdown Voltage vs. Temperature

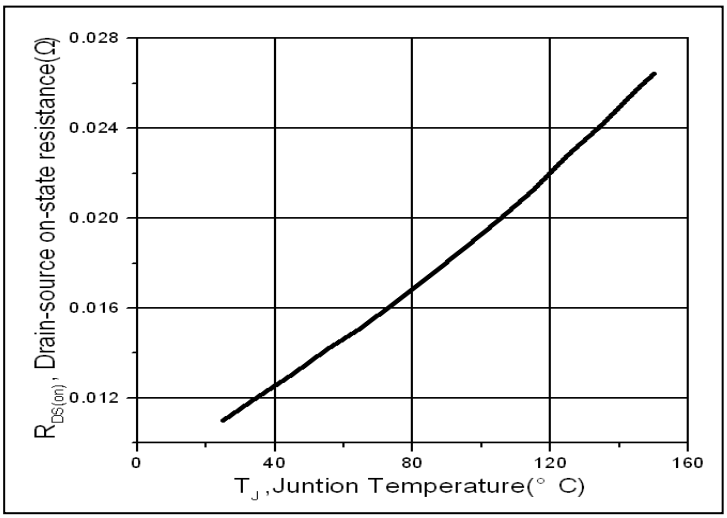


Figure 3: Normalized On-Resistance Vs. Case Temperature

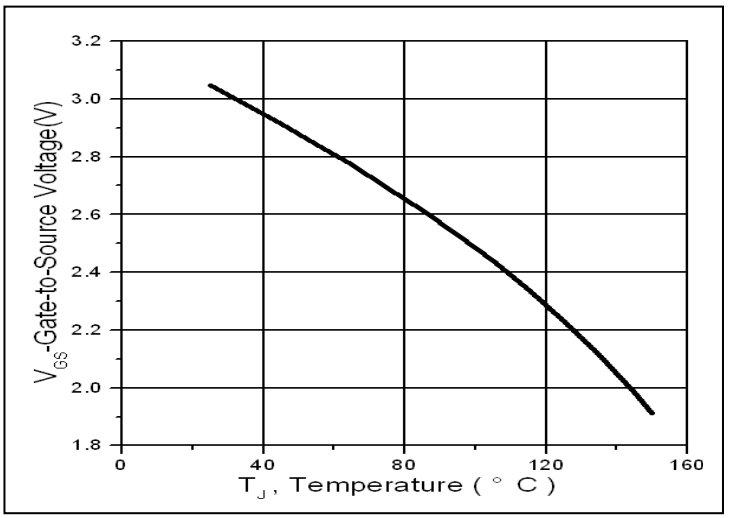


Figure 4: Gate to source cut-off voltage

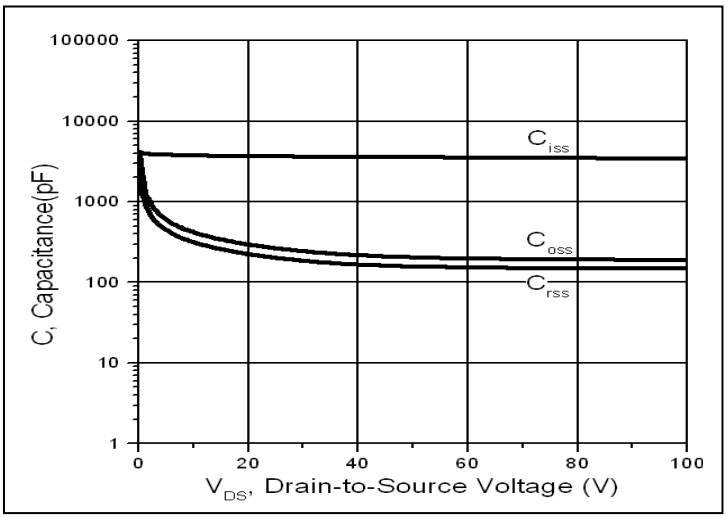


Figure 5: Capacitance vs Vds

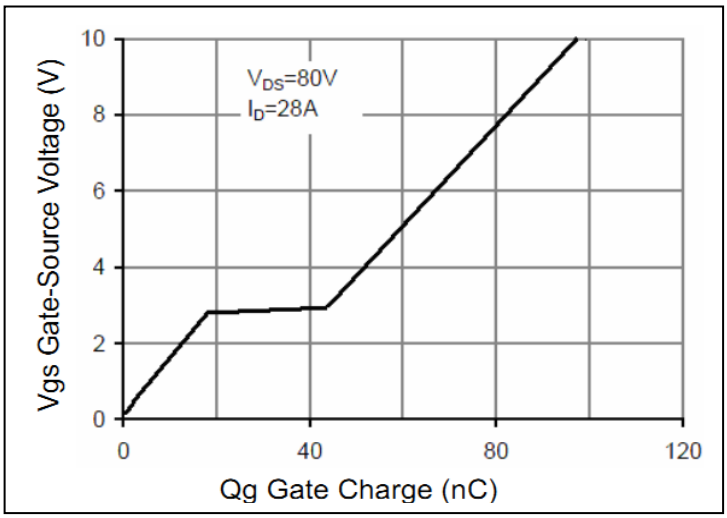


Figure 6: Gate Charge

Typical electrical and thermal characteristics

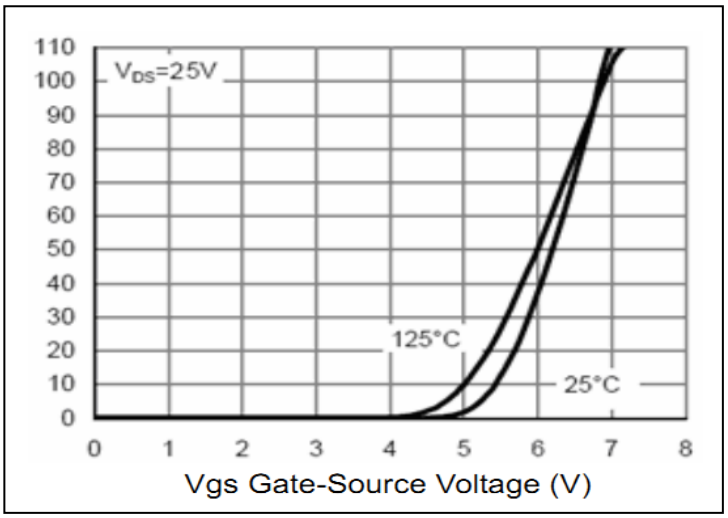


Figure 7: Transfer Characteristics

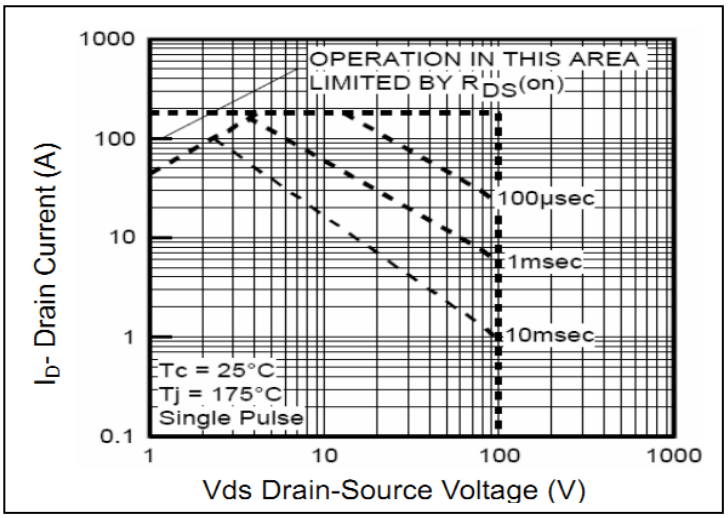


Figure 8: Safe Operation Area

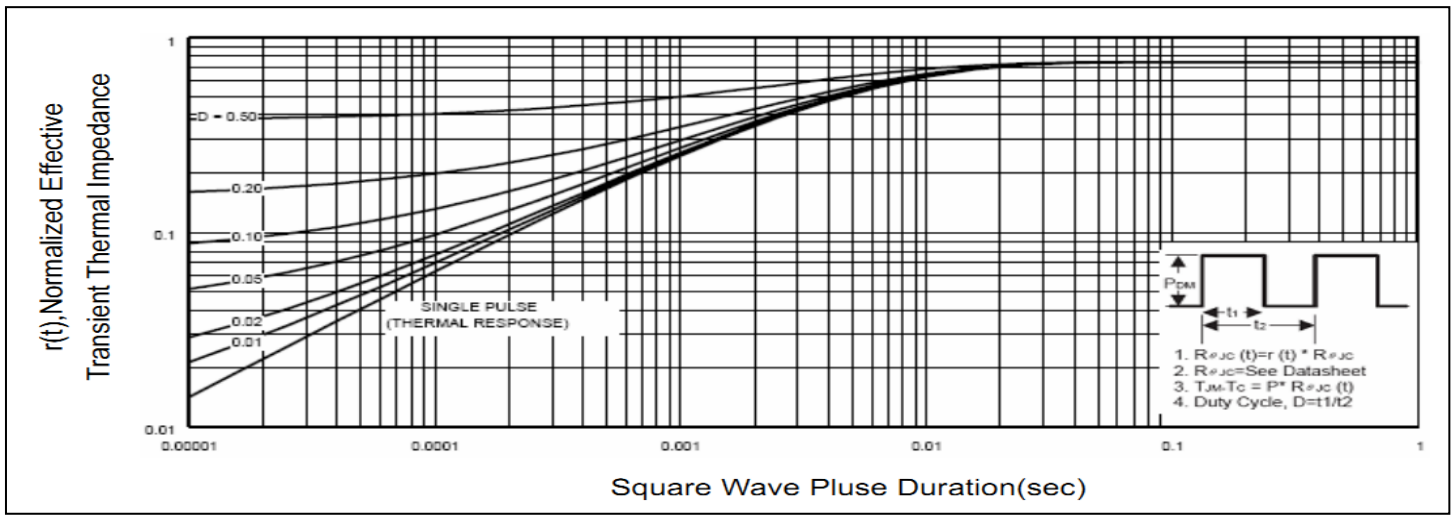


Figure 9: Normalized Maximum Transient Thermal Impedance

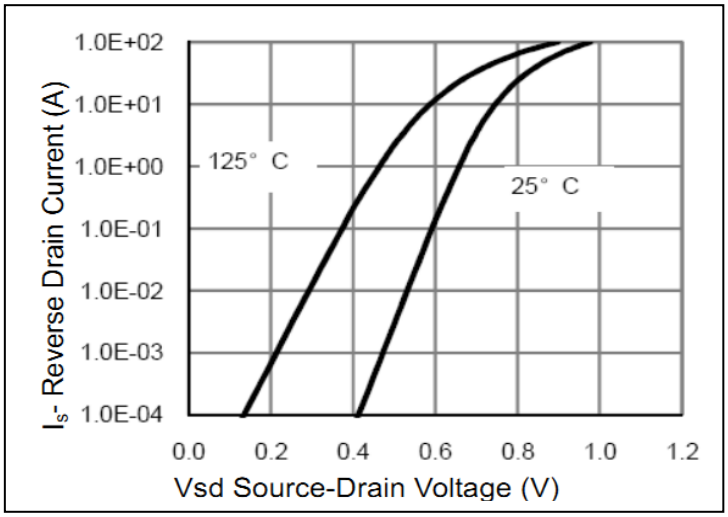
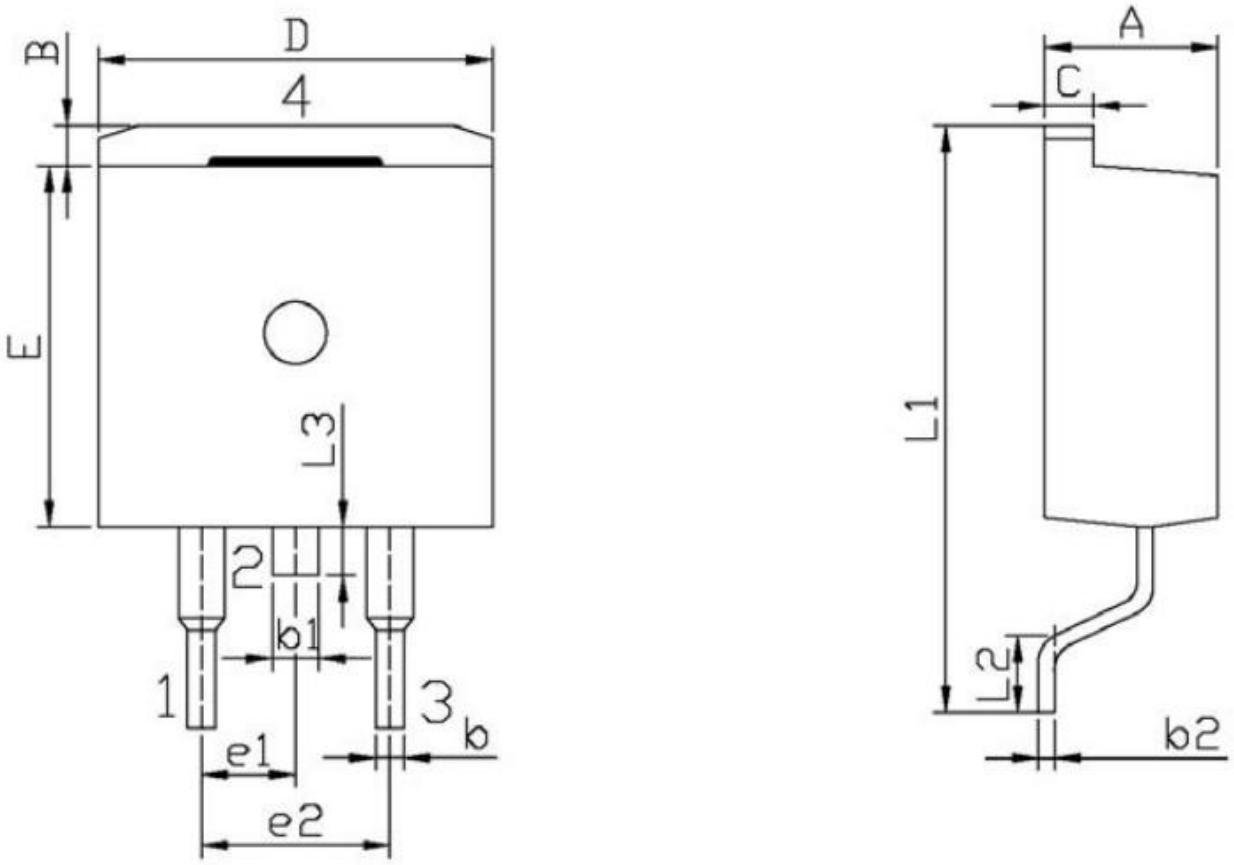


Figure 10: Source-Drain Diode Forward

Mechanical Data：



单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

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