

VDS	RDS(on)	ID@25℃
650V	20mΩ	92A

**Applications:**

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- EV Charging
- Motor Drives

**Features:**

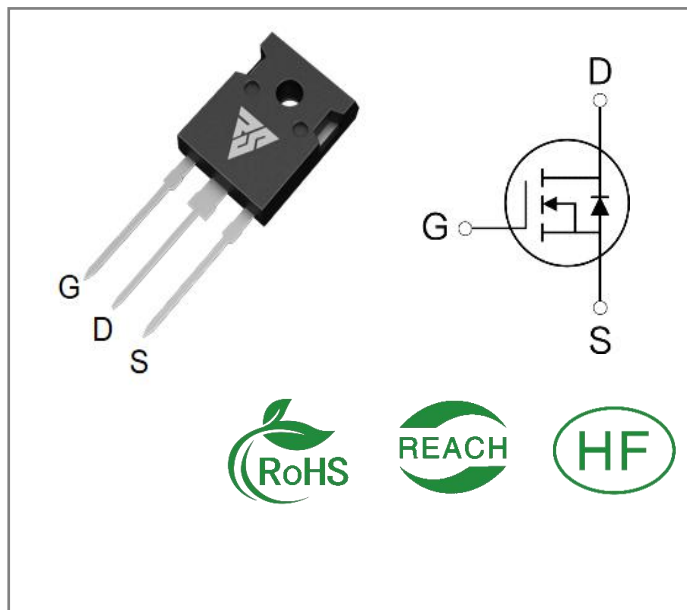
- High Blocking Voltage with Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness

**Benefits:**

- Higher System Efficiency
- Reduced Cooling Requirements
- Increased Power Density
- Increased System Switching Frequency

**Ordering Information**

Part Number	Package	Marking	Packing	Qty.
RSM065020W	TO-247-3	RSM065020W	Tube	30 PCS


**Maximum Ratings** (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
VDSmax	Drain - Source Voltage	650	V	VGS=0V, ID =100μA	
VGSmax	Gate - Source Voltage	-8/+22	V	Absolute maximum values	
VGSop	Gate - Source Voltage	-5/+18	V	Recommended operational values	
ID	Continuous Drain Current	92 64	A	VGS=18V, TC =25℃ VGS=18V, TC =100℃	
ID(pulse)	Pulsed Drain Current	257	A	Pulse width tp limited by TJmax	
PD	Power Dissipation	312	W	TC =25℃, TJ =175℃	
TL	Solder Temperature	260	℃		
TJ, Tstg	Operating Junction and Storage Temperature	-55 to +175	℃		

**Electrical Characteristics** (TJ= 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V(BR)DSS	Drain-Source Breakdown Voltage	650			V	VGS=0V, ID =100μA	
VGS(th)	Gate Threshold Voltage	1.9	2.6	4.0	V	VGS= VDS, IDS=15mA, TC =25°C	
			1.8		V	VGS= VDS, IDS=15mA, TC =175°C	
IDSS	Zero Gate Voltage Drain Current		1	100	μA	VDS= 650V, VGS=0V	
IGSS+	Gate-Source Leakage Current		10	250	nA	VGS=22V, VDS= 0V	
IGSS-	Gate-Source Leakage Current		10	250	nA	VGS=-8V, VDS= 0V	
RDS(on)	Drain-Source on-state Resistance		20	30	mΩ	VGS=18V, ID =50A, TC =25°C	
			28			VGS=18V, ID =50A, TC =175°C	
Ciss	Input Capacitance		3180		pF	VGS=0V, VDS=400 V, f=1MHz, VAC=25 mV	
Coss	Output Capacitance		281				
Crss	Reverse Transfer Capacitance		33				
EON	Turn-On Switching Energy		520		μJ	VDS =400V, VGS =-4/18V, ID = 30A, RG(ext) = 2.5Ω, L= 100μH	
EOFF	Turn-Off Energy		700				
td(on)	Turn-On Delay Time		17		ns	VDS =400V, VGS =-4/18 V ID = 30A, RG(ext) =2. 5 Ω , RL =20Ω	
tr	Rise Time		15				
td(off)	Turn-Off Delay Time		65				
tf	Fall Time		14				
RG(int)	Internal Gate Resistance		3.2		Ω	f=1 MHz, VAC=25mV	
Qgs	Gate to Source Charge		49		nC	VDS=400V, VGS=-4/18V ID = 30A	
Qgd	Gate to Drain Charge		31		nC		
Qg	Total Gate Charge		187				

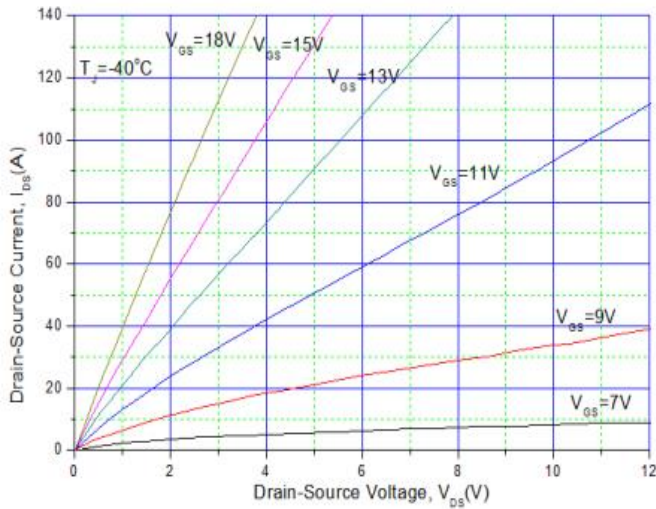
**Reverse Diode Characteristics** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
VSD	Diode Forward Voltage	4.2		V	V <sub>GS</sub> =-4V, I <sub>SD</sub> = 25 A, T <sub>J</sub> = 25°C	
		3.8		V	V <sub>GS</sub> =-4V, I <sub>SD</sub> =25 A, T <sub>J</sub> = 175°C	
I <sub>S</sub>	Continuous Diode Forward Current		72	A	V <sub>GS</sub> =-4V, T <sub>C</sub> = 25°C	
t <sub>rr</sub>	Reverse Recovery time	26		ns	I <sub>SD</sub> = 30 A, V <sub>R</sub> = 400V	
Q <sub>rr</sub>	Reverse Recovery Charge	58		nC		
I <sub>rrm</sub>	Peak Reverse Recovery Current	3.4		A		

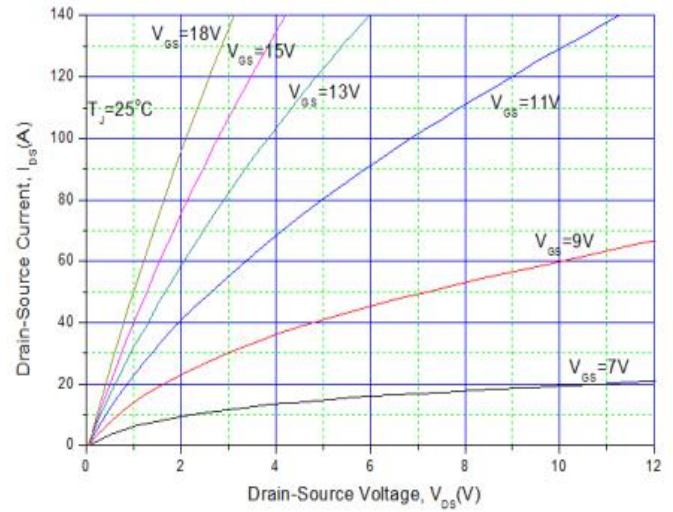
**Thermal Characteristics** (T<sub>J</sub>= 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
R <sub>θJC</sub>	Thermal Resistance from Junction to Case	0.48	°C/W		
R <sub>θJA</sub>	Thermal Resistance From Junction to Ambient	40			

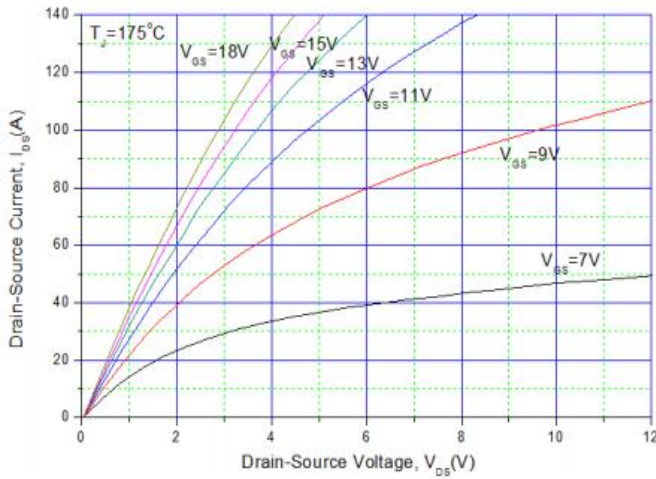
**Typical Feature Curve**



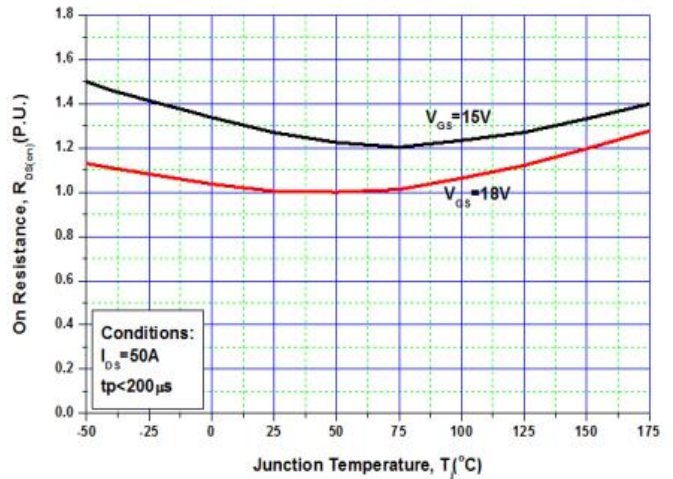
**Figure 1. Output Characteristics  $T_j = -40^\circ\text{C}$**



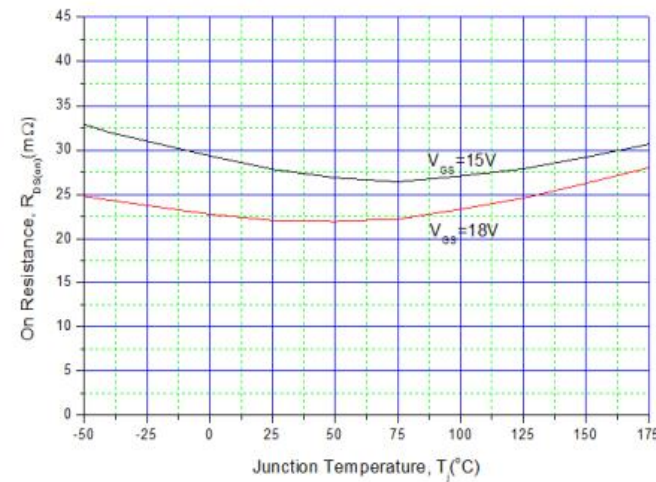
**Figure 2. Output Characteristics  $T_j = 25^\circ\text{C}$**



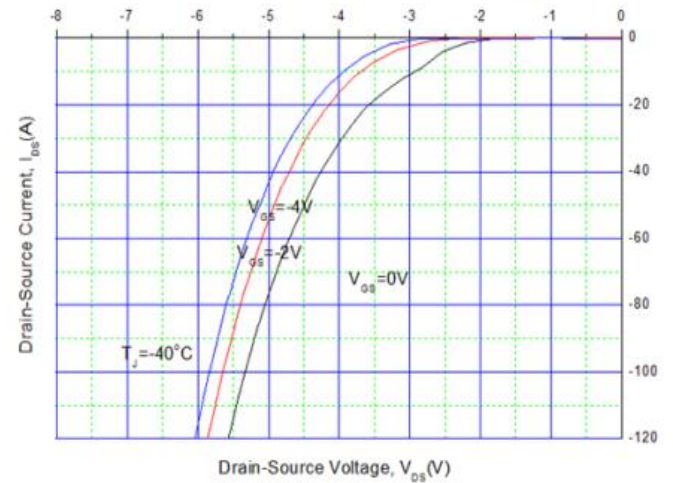
**Figure 3. Output Characteristics  $T_j = 175^\circ\text{C}$**



**Figure 4. Normalized On-Resistance vs. Temperature**



**Figure 5. On-Resistance vs. Temperature  
For Various Gate Voltage**



**Figure 6. Body Diode Characteristic at  $-40^\circ\text{C}$**



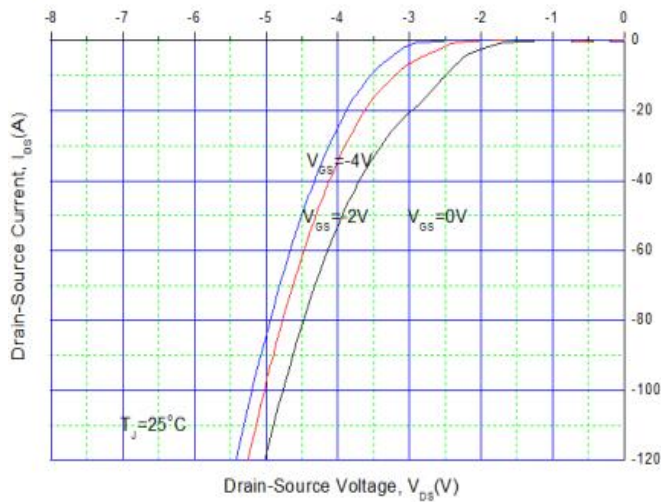


Figure 7. Body Diode Characteristic at 25°C

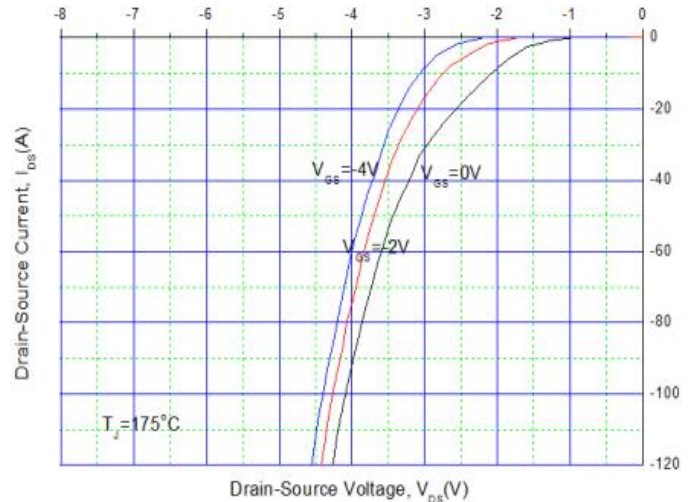


Figure 8. Body Diode Characteristic at 175°C

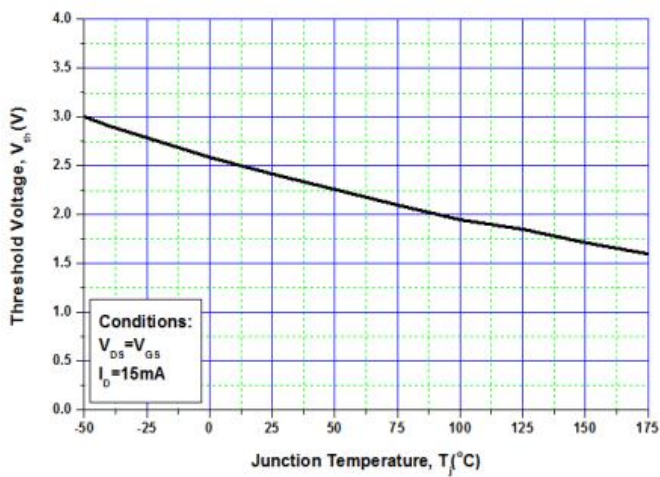


Figure 9. Threshold Voltage vs. Temperature

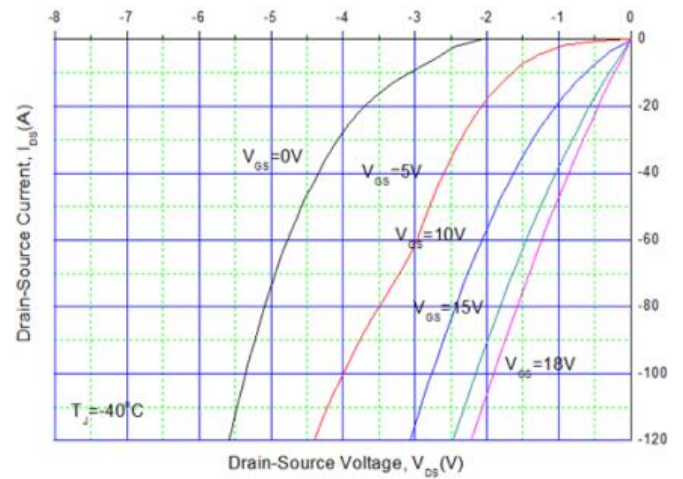


Figure 10. 3rd Quadrant Characteristic at -40°C

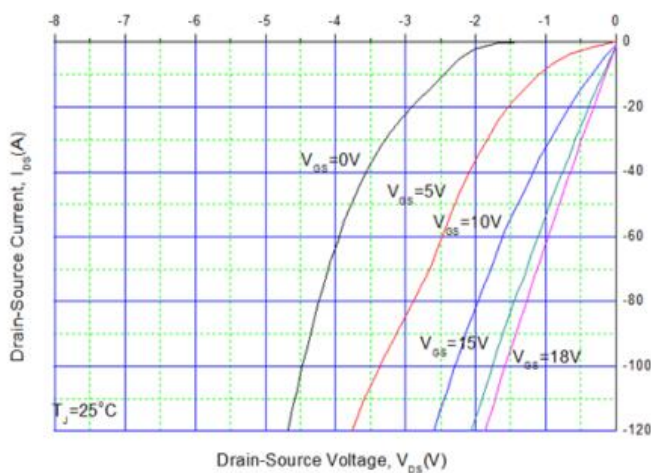


Figure 11 3rd Quadrant Characteristic at 25°C

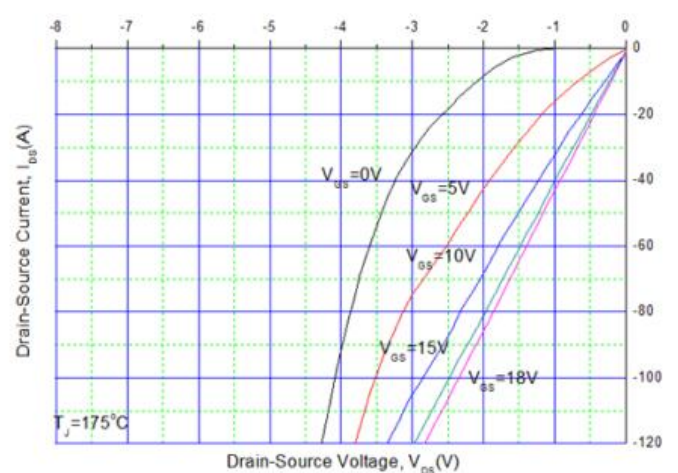
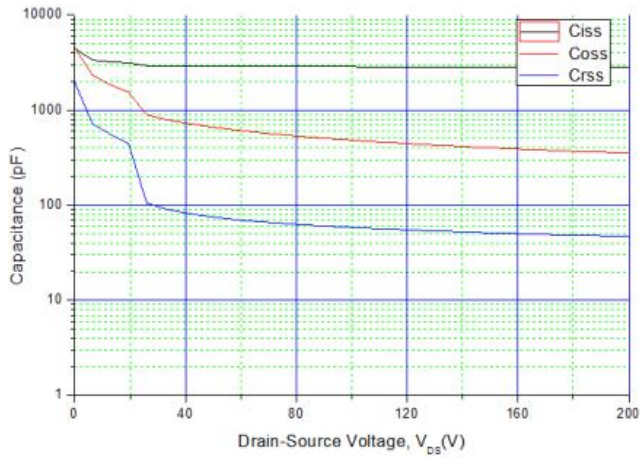
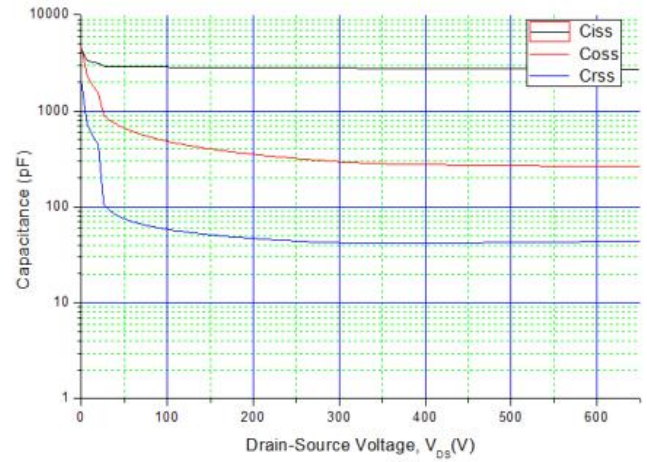


Figure 12 3rd Quadrant Characteristic at 175°C

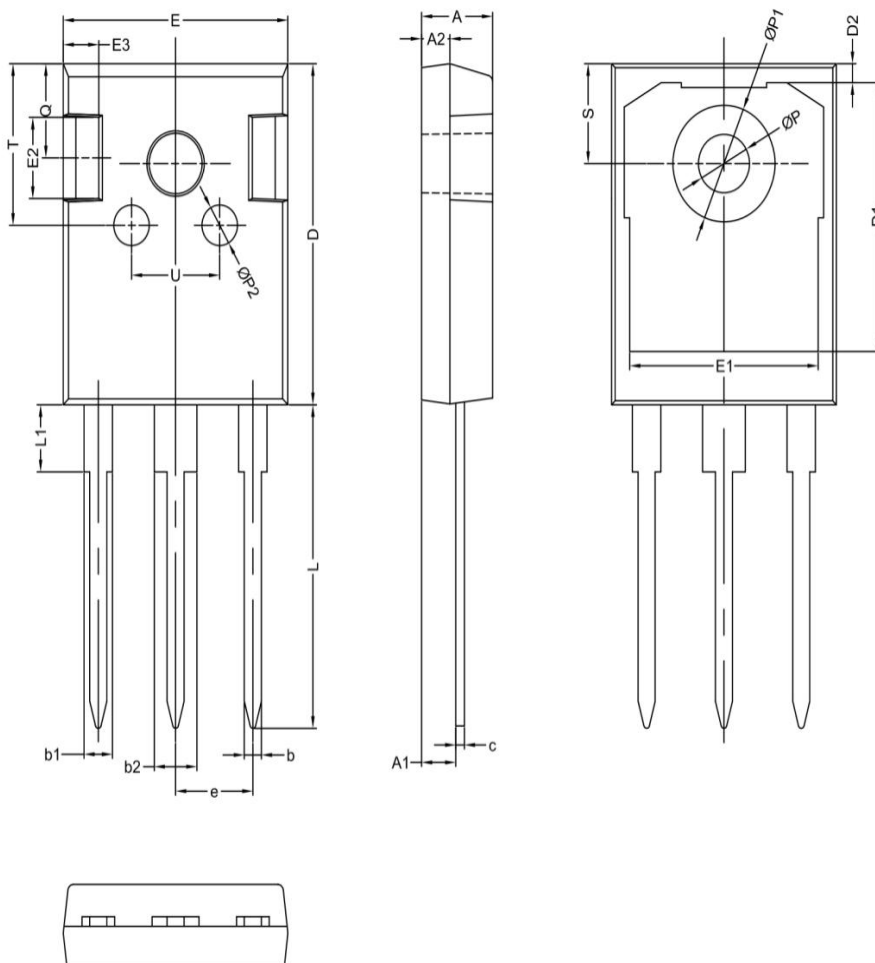


**Figure 13 Capacitances vs. Drain-Source Voltage (0 - 200V)**



**Figure 14 Capacitances vs. Drain-Source Voltage (0 - 650V)**

**Package outline drawing(TO-247-3 Unit: mm )**



符号	机械尺寸/mm		
	最小值	典型值	最大值
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.90	2.00	2.10
b	1.10	1.20	1.35
b1		2.00	
b2		3.00	
c	0.55	0.60	0.75
D	20.80	21.00	21.20
D1		16.55	
D2		1.20	
E	15.60	15.80	16.0
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.42
L1		4.13	
P	3.50	3.60	3.70
P1	-	-	7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	

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