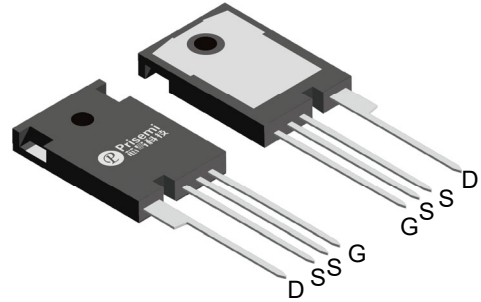


Description

MOSFET Product Summary

$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
1200	40	69



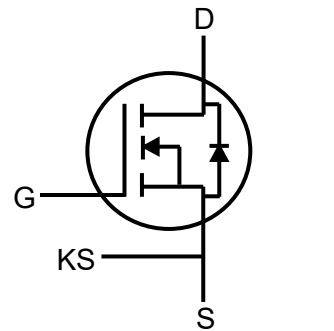
TO-247-4L (Top View)

Feature

- High Speed Switching with Low Capacitances
- High Blocking Voltage with Low $R_{DS(on)}$
- Avalanche Ruggednes

Applications

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC-DC Converters
- Battery Chargers



Schematic diagram

Absolute maximum rating@25°C

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	1200	V
Gate-Source Voltage (Absolute maximum values)		V_{GSmax}	-8/+22	V
Gate-Source Voltage (Recommended operational values)		V_{GSop}	-4/+18	V
Continuous Drain Current	$T_C=25^\circ C$	I_D	69	A
	$T_C=100^\circ C$		50	
Pulsed drain current ($T_C = 25^\circ C$, tp limited by T_{jmax})		$I_{D\ pulse}$	139	A
Power dissipation		P_D	346	W
Operating Junction Temperature		T_J	-40 to +175	$^\circ C$
Storage Temperature		T_{STG}	-40 to +175	$^\circ C$

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Units
Statistic Characteristics							
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 100μA		1200	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 1200V, V _{GS} = 0V		-	1	100	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = 18V, V _{DS} = 0V		-	-	250	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 10mA	T _j =25°C	2.2	2.8	4.0	V
			T _j =175°C	-	2.0	-	
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 15V, I _D = 33.3A	T _j =25°C	-	40	52	mΩ
			T _j =175°C	-	62	-	
		V _{GS} = 18V, I _D = 33.3A	T _j =25°C	-	32	40	
			T _j =175°C	-	59	-	
Transconductance	g _{fs}	V _{DS} = 20V, I _D =33.3A		-	20	-	S
Dynamic Characteristics							
Input Capacitance	C _{iss}	V _{DS} = 1000V, V _{GS} = 0V, V _{AC} =25mV, f=100kHz,		-	2336	-	pF
Output Capacitance	C _{oss}			-	107	-	
Reverse Transfer Capacitance	C _{rss}			-	10	-	
Turn-On Energy (Body Diode)	E _{on}	V _{DS} =800V, I _D =33.3A, V _{GS} =-4/+18V, R _g =2.5Ω, L=120μH		-	248	-	mJ
Turn-Off Energy (Body Diode)	E _{off}			-	88	-	
Turn-on Delay Time	t _{d(on)}			-	16	-	ns
Turn-on Rise Time	t _r			-	19	-	
Turn-Off Delay Time	t _{d(off)}			-	28	-	
Turn-Off Fall Time	t _f			-	10	-	
Internal Gate Resistance	R _{G(int)}	V _{AC} =25mV, f=1MHz		-	1	-	Ω
Total Gate Charge	Q _g	V _{DS} =800V, V _{GS} =-4/+18V, I _D =33.3A		-	100	-	nC
Gate-Source Charge	Q _{gs}			-	17	-	
Gate-Drain Charge	Q _{gd}			-	37	-	

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Reverse Diode Characteristics						
Body Diode Forward Voltage	V_{SD}	$V_{GS}=-4V, I_{SD}=20A, T_J=25^{\circ}C$	-	4.9	-	V
		$V_{GS}=-4V, I_{SD}=40A, T_J=175^{\circ}C$	-	4.4	-	
Continuous Diode Forward Current	I_S	$V_{GS}=-4V, T_C=25^{\circ}C$	-	43	-	A
		$V_{GS}=-4V, T_C=100^{\circ}C$	-	23	-	
Body Diode Reverse Recovery Time	t_{rr}	$V_{GS}=-4V, I_{SD}=33.3A, V_R=800V, di/dt=1070A/\mu s, T_J=175^{\circ}C$	-	29	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	692	-	nC
Peak Reverse Recovery Current	I_{rrm}		-	35	-	A

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	-	0.46	$^{\circ}C/W$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	-	-	40	$^{\circ}C/W$

Typical Characteristics

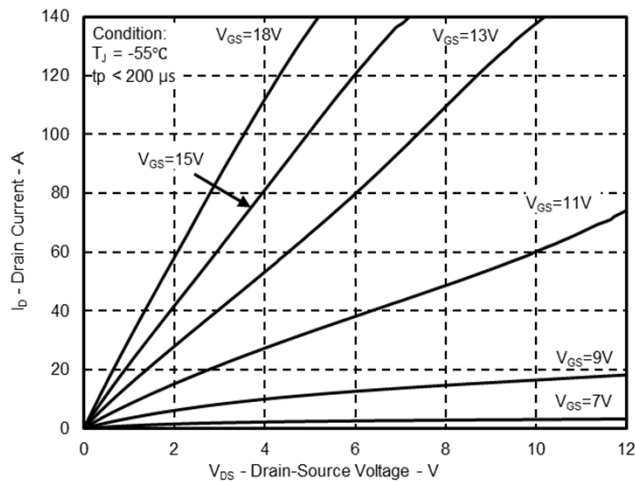
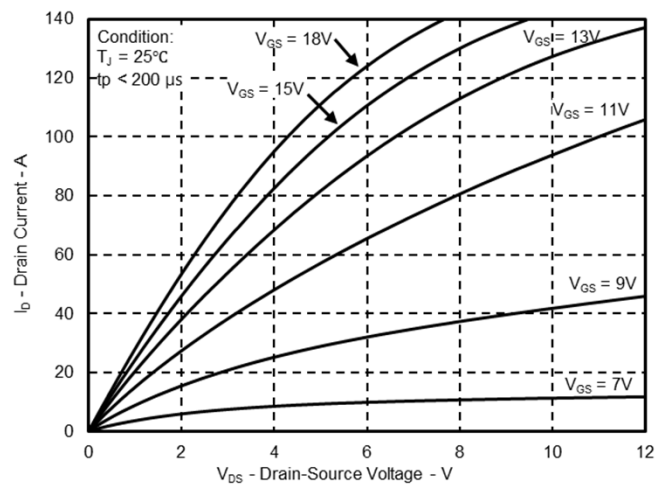
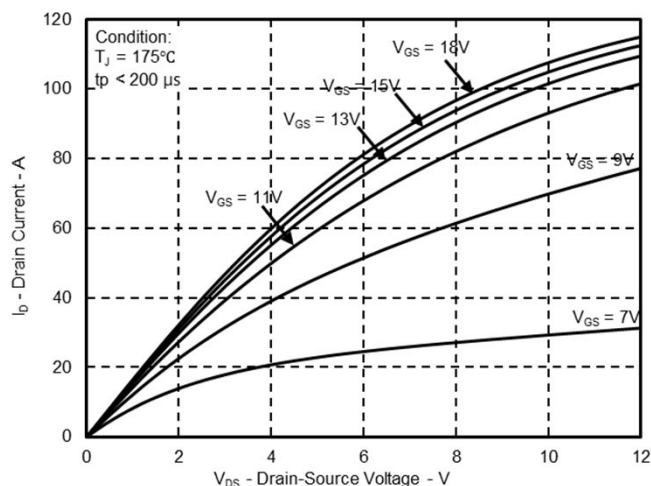
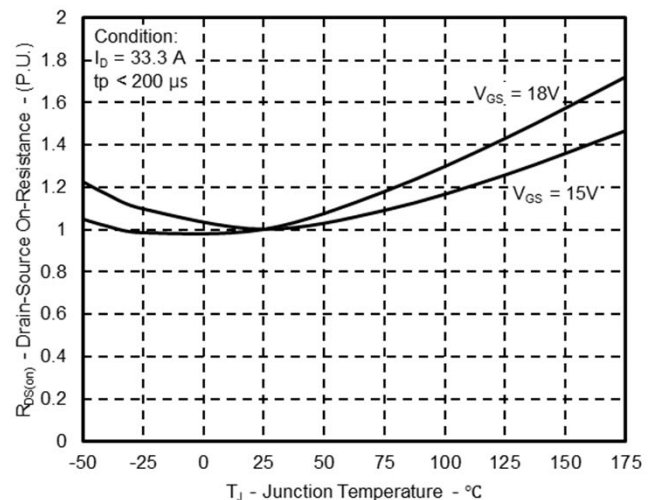
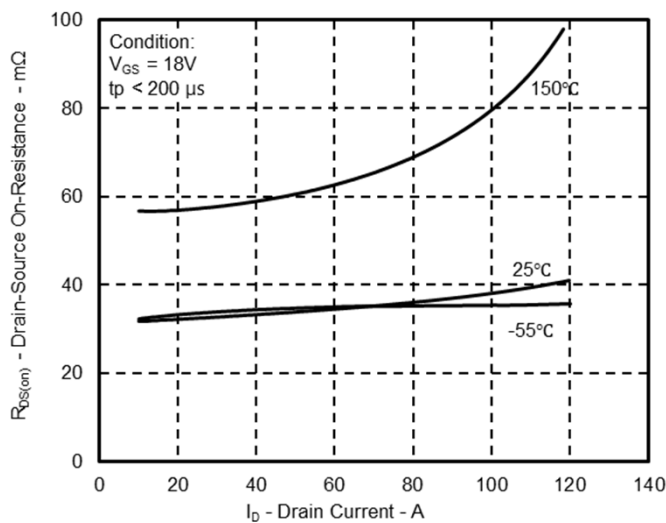
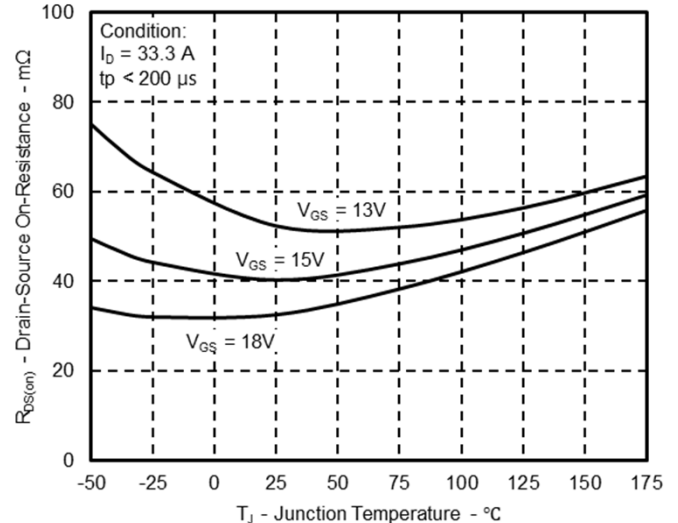
Figure 1. Output Characteristics $T_j = -55^\circ\text{C}$ Figure 2. Output Characteristics $T_j = 25^\circ\text{C}$ Figure 3. Output Characteristics $T_j = 175^\circ\text{C}$ 

Figure 4. Normalized On-Resistance vs. Temperature

Figure 5. On-Resistance vs. Drain Current
For Various TemperaturesFigure 6. On-Resistance vs. Temperature
For Various Gate Voltage

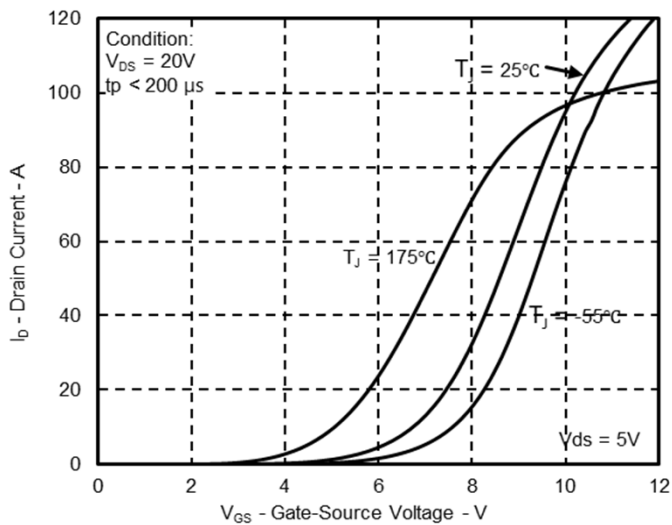


Figure 7. Transfer Characteristic for Various Junction Temperatures

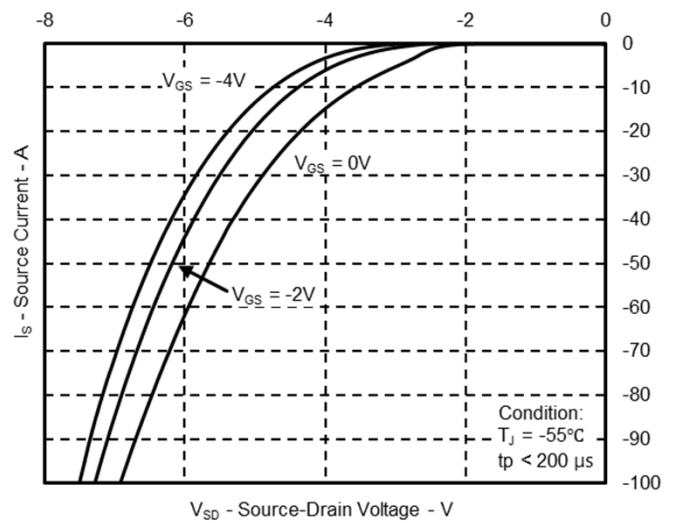


Figure 8. Body Diode Characteristic at -55 °C

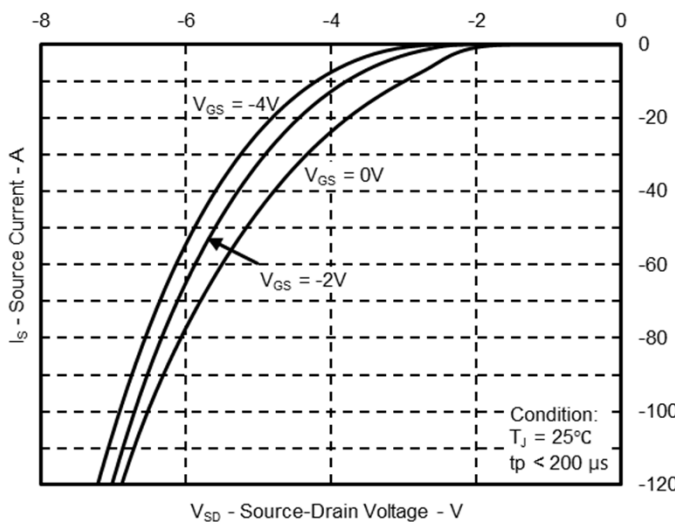


Figure 9. Body Diode Characteristic at 25 °C

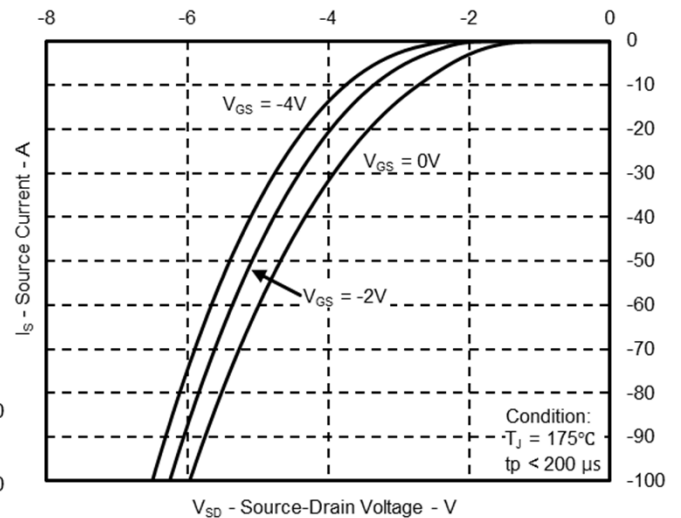


Figure 10. Body Diode Characteristic at 175 °C

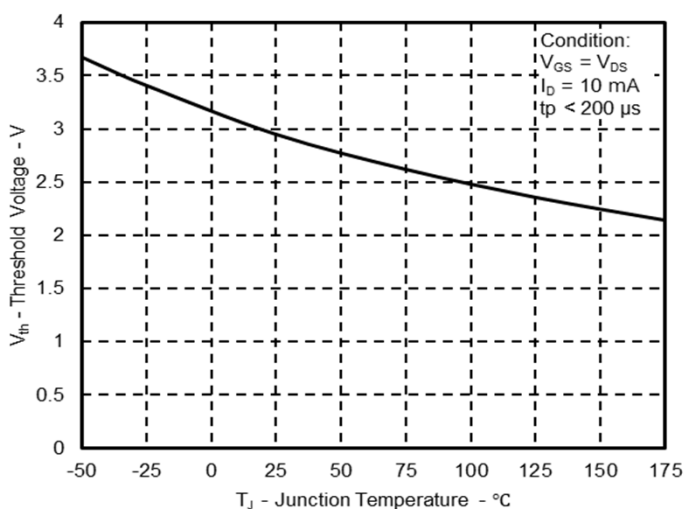


Figure 11. Threshold Voltage vs. Temperature

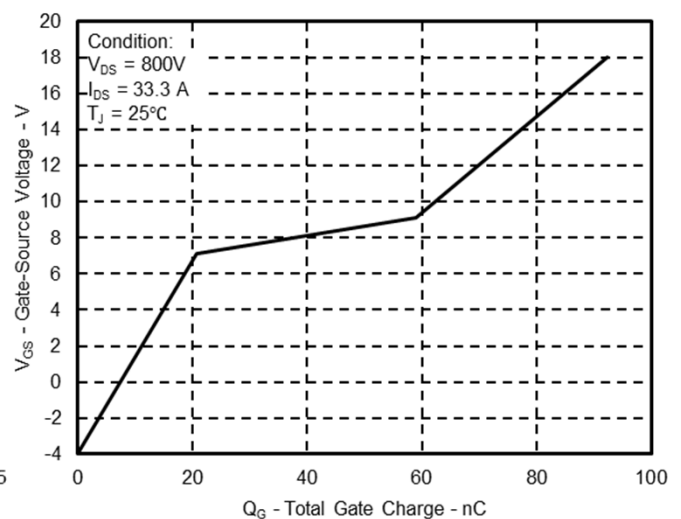


Figure 12. Gate Charge Characteristics

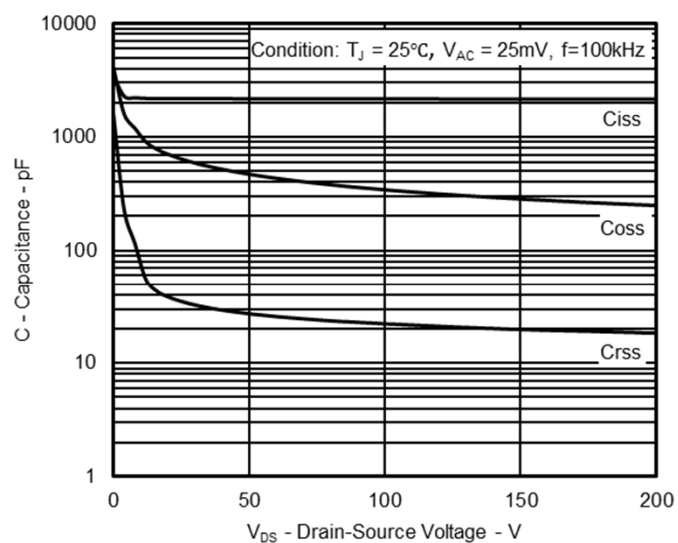


Figure 13. Capacitances vs. Drain-Source Voltage (0 - 200V)

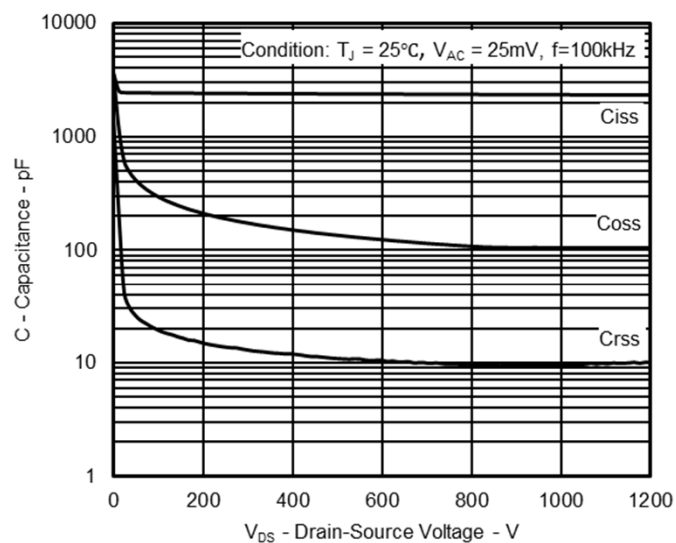
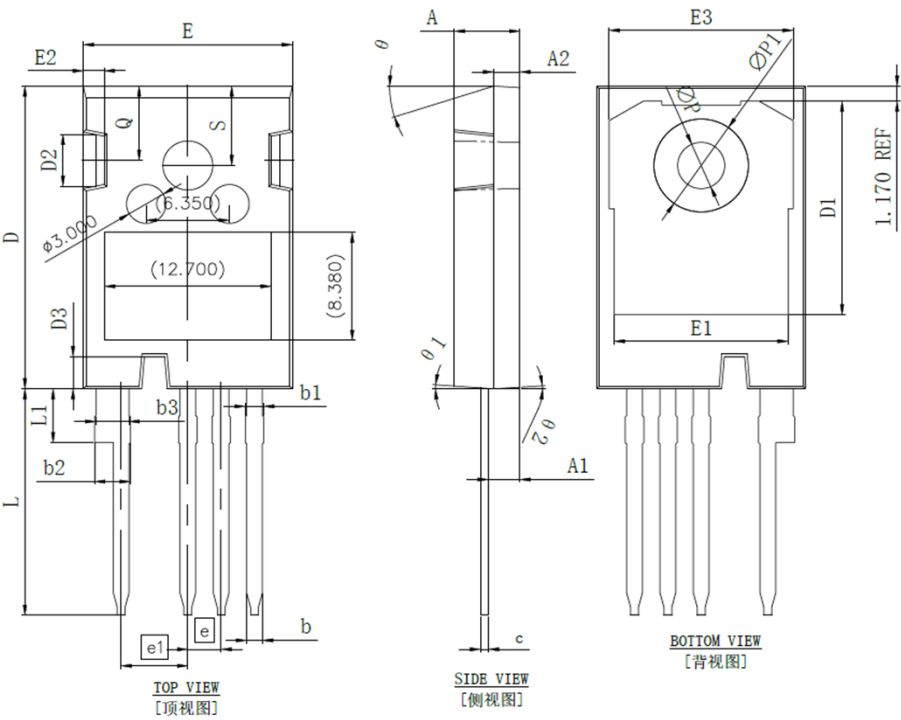


Figure 14. Capacitances vs. Drain-Source Voltage (0 - 1200V)

Product dimension (TO-247-4L)



Dim	Millimeters		
	Min	Nom	Max
A	4.83	5.02	5.21
A1	2.29	2.41	2.54
A2	1.91	2.00	2.16
c	0.55	0.6	0.68
b	1.07	1.2	1.33
b1	1.07	-	1.60
b2	2.39	-	2.94
b3	2.39	2.53	2.69
D	23.3	23.45	23.6
E	15.75	15.94	16.13
D1	16.25	16.55	16.85
E1	13.11	13.26	13.41
E3	13.92	14.02	14.12
D2	3.68	-	5.1
E2	1	-	1.9
D3	2.35	-	2.65
e	2.54 BSC		
e1	5.08 BSC		
L	17.35	17.55	17.75
L1	3.97	4.17	4.37
S	6.04	6.15	6.3
Q	5.5	5.75	6
Φp	3.51	-	3.65
$\Phi p1$	7.19 REF		
θ	17.5° REF		
$\theta 1$	7° REF		
$\theta 2$	7° REF		

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