

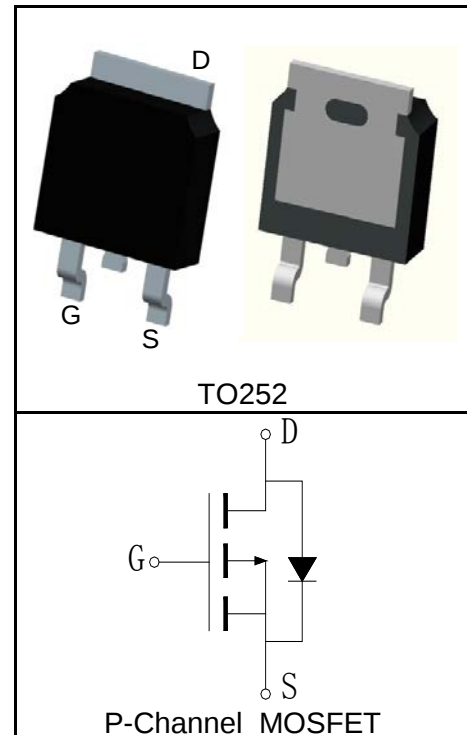
Features

- -20V/-18A,
 $R_{DS(ON)} = 30m\Omega(Typ.)@V_{GS} = -4.5V$
 $R_{DS(ON)} = 45m\Omega(Typ.)@V_{GS} = -2.5V$
- Low On-Resistance
- Super High Dense Cell Design
- Fast Switching and Fully Avalanche Rated
- 100% avalanche tested
- 175°C Operating Temperature
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Load Switch
- Power Management

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±12	
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	-18	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	-72	A
I _D ^②	Continuous Drain Current(V _{GS} =-10V)	T _C =25°C	-18	A
		T _C =100°C	-13	
P _D	Maximum Power Dissipation	T _C =25°C	30	W
		T _C =100°C	15	
R _{θJC}	Thermal Resistance-Junction to Case		5	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^③	Avalanche Energy, Single Pulsed		56	mJ

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

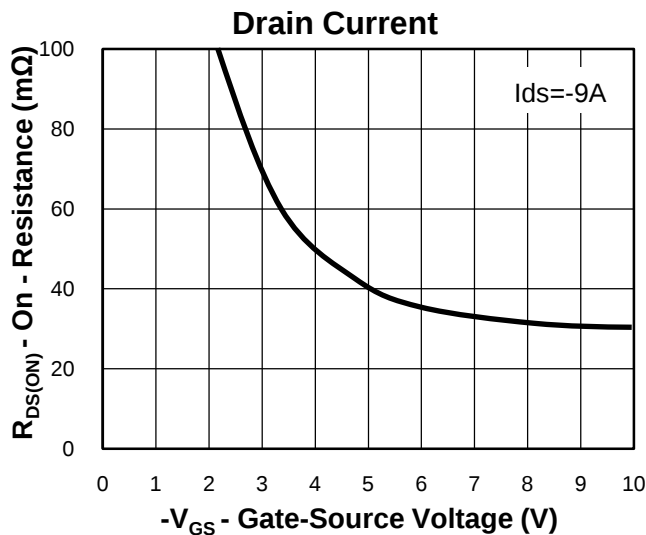
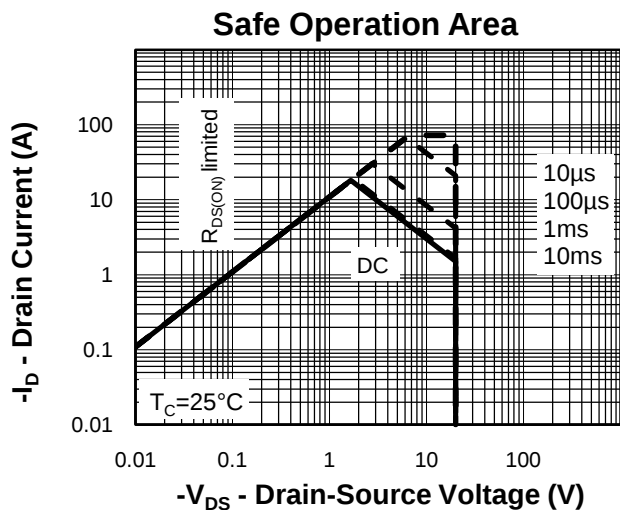
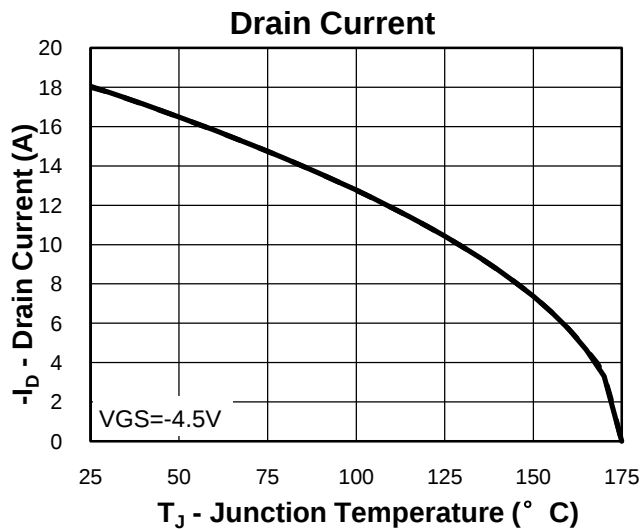
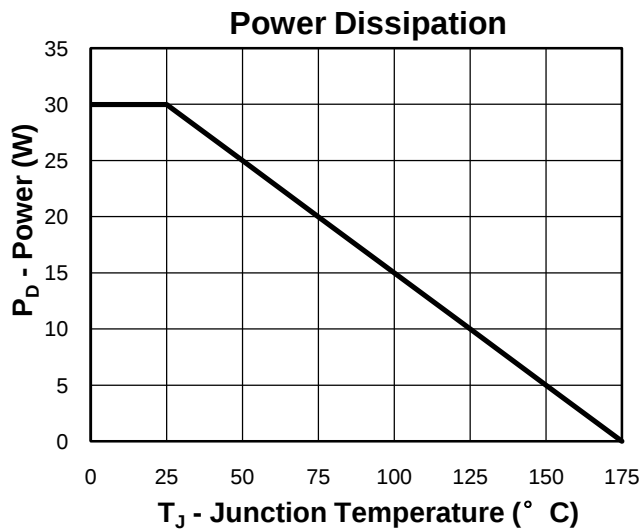
Symbol	Parameter	Test Condition	RU20P18L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	μA
			T _J =125°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.4		-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-9A		30	40	mΩ
		V _{GS} =-2.5V, I _{DS} =-6A		45	60	mΩ
Diode Characteristics						
V _{SD} ^④	Diode Forward Voltage	I _{SD} =-18A, V _{GS} =0V			-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-9A, dI _{SD} /dt=100A/μs		13		ns
Q _{rr}	Reverse Recovery Charge			8		nC
Dynamic Characteristics ^⑤						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz		545		pF
C _{oss}	Output Capacitance			90		
C _{rss}	Reverse Transfer Capacitance			45		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, I _{DS} =-9A, V _{GEN} =-4.5V, R _G =6Ω		7		ns
t _r	Turn-on Rise Time			11		
t _{d(OFF)}	Turn-off Delay Time			27		
t _f	Turn-off Fall Time			15		
Gate Charge Characteristics ^⑤						
Q _g	Total Gate Charge	V _{DS} =-16V, V _{GS} =-4.5V, I _{DS} =-9A		7		nC
Q _{gs}	Gate-Source Charge			1.4		
Q _{gd}	Gate-Drain Charge			2.5		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ Limited by T_{Jmax} , $I_{AS}=-15A$, $V_{DD}=-16V$, $R_G=50\Omega$, 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.

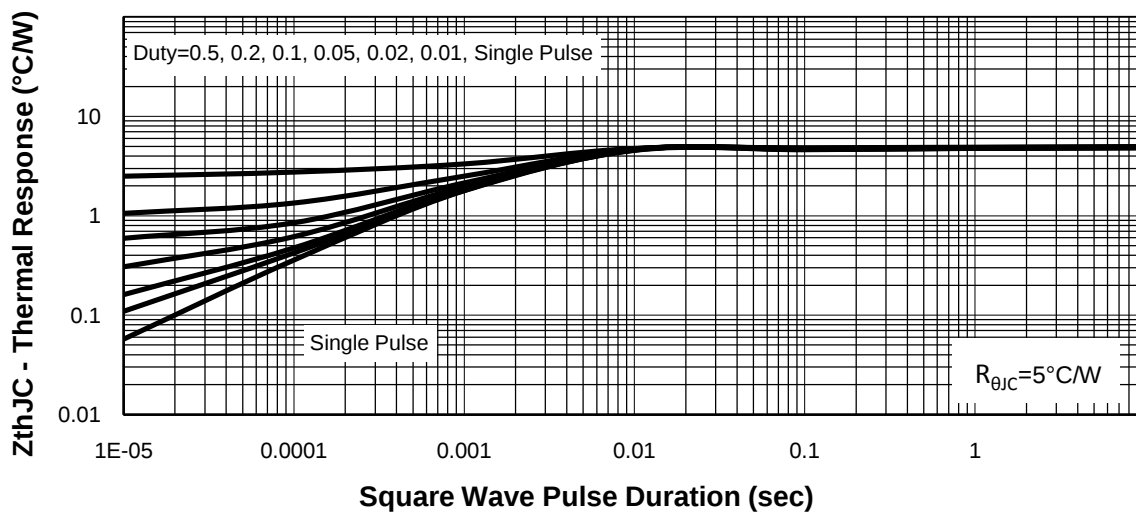
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU20P18L	RU20P18L	TO252	Tape&Reel	2500	13"	16mm

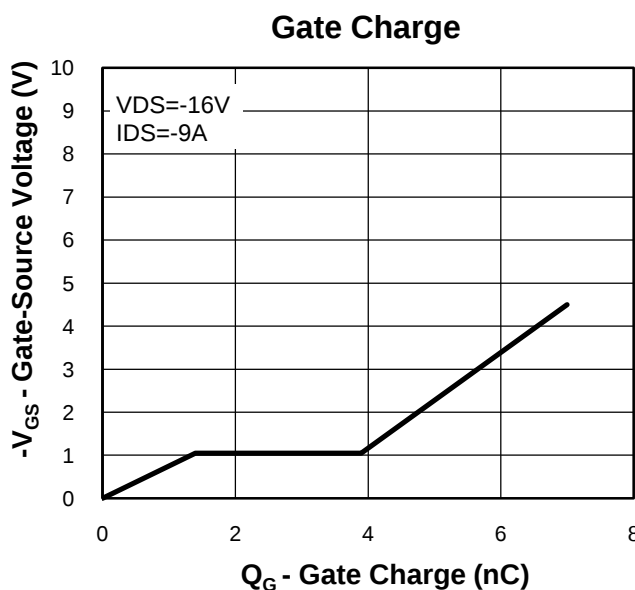
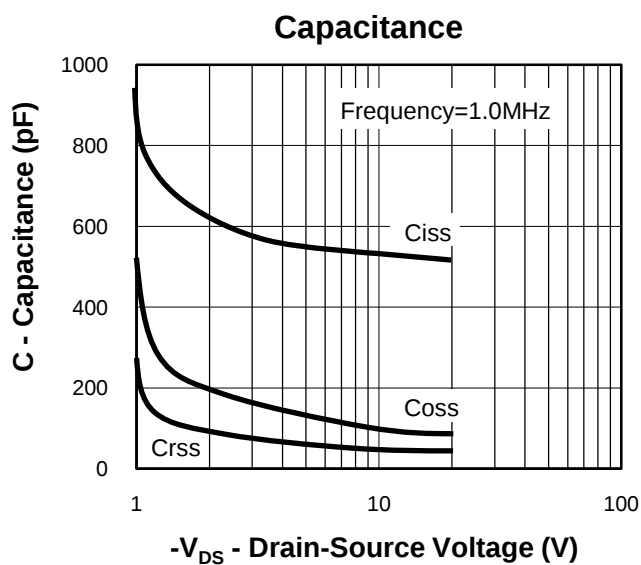
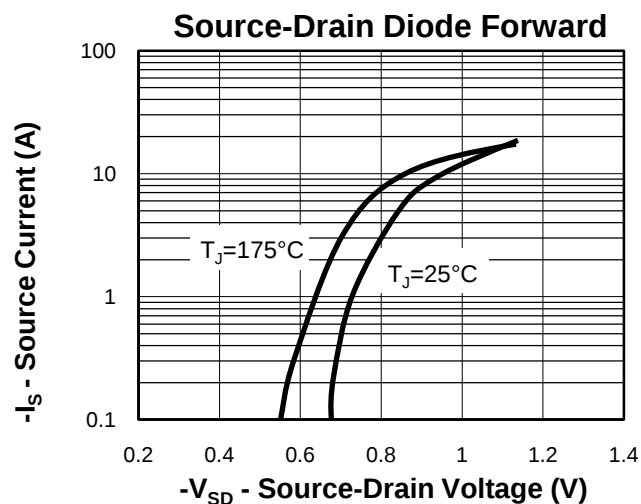
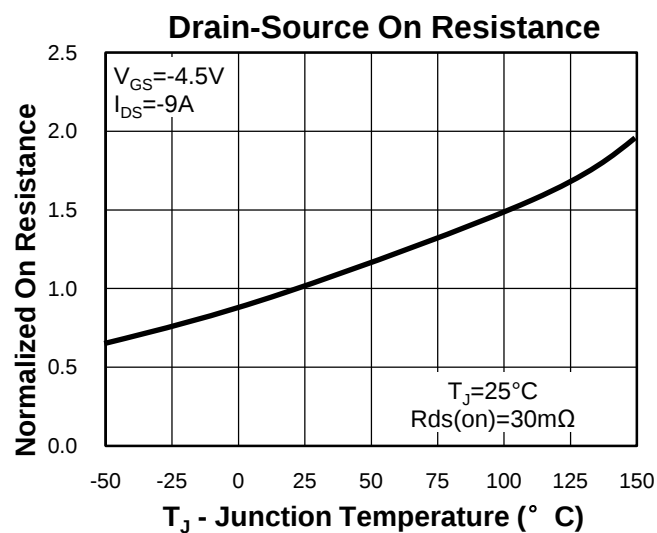
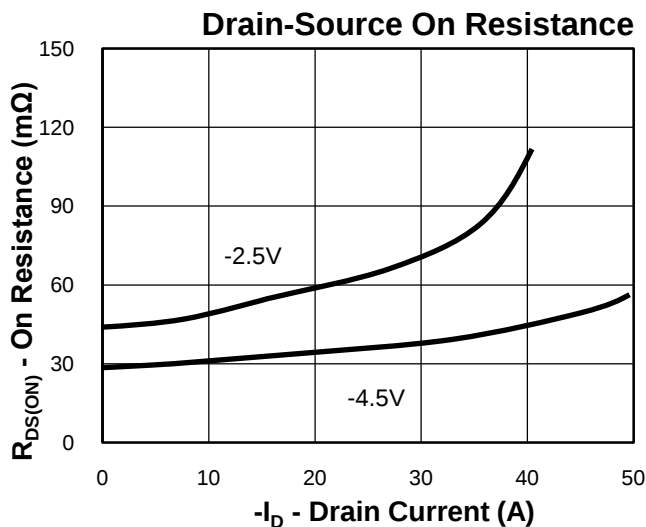
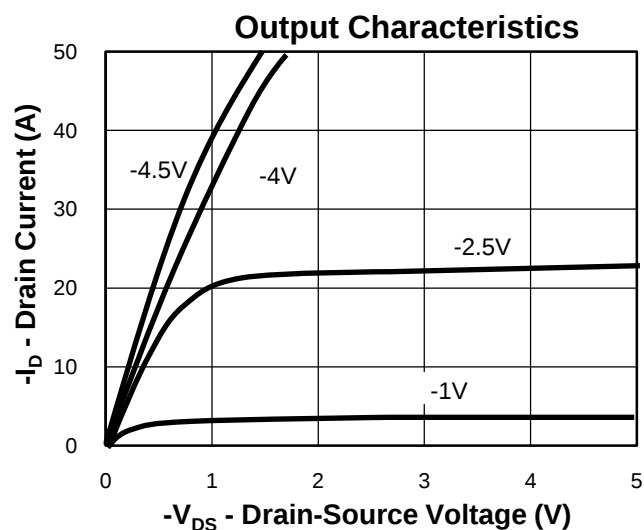
Typical Characteristics



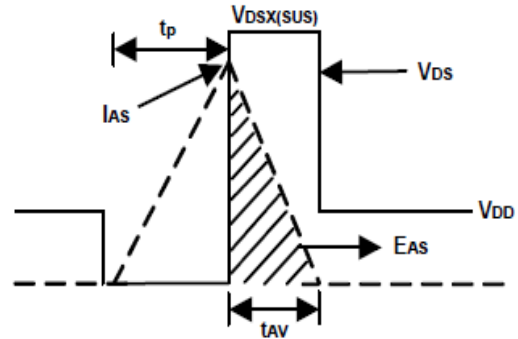
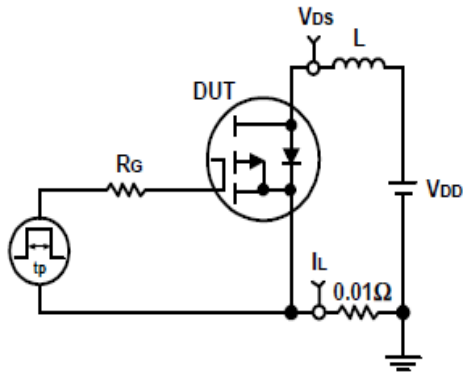
Thermal Transient Impedance



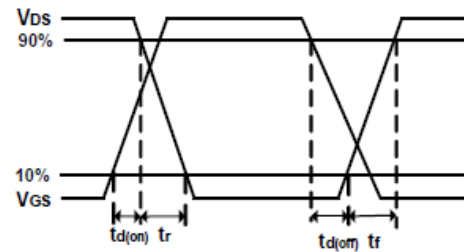
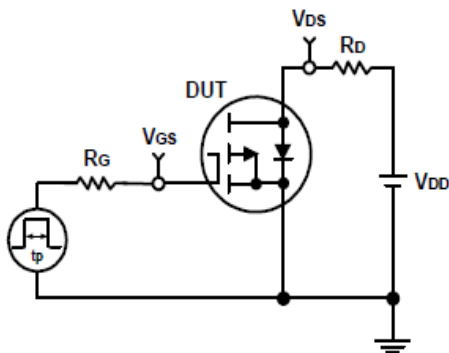
Typical Characteristics



Avalanche Test Circuit and Waveforms

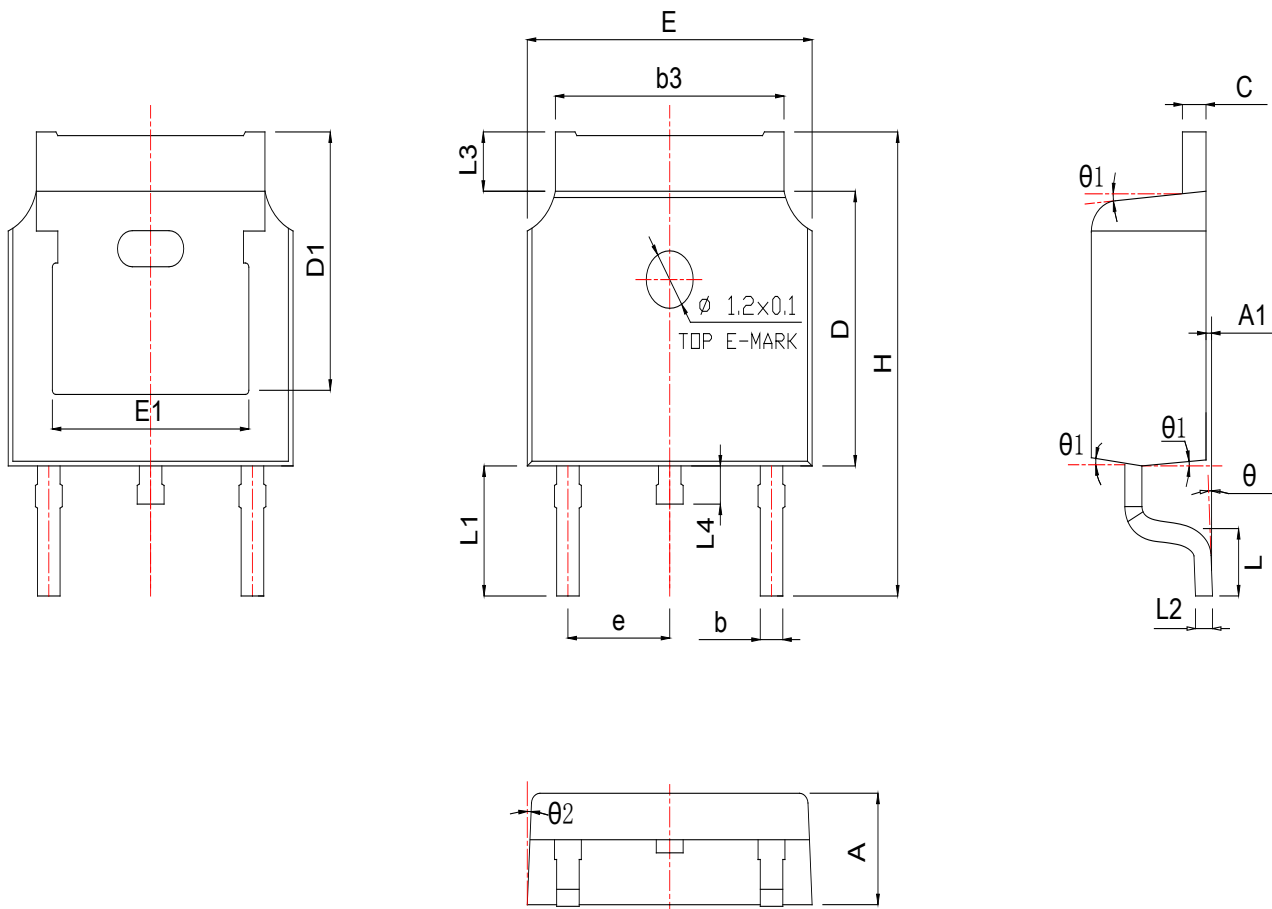


Switching Time Test Circuit and Waveforms



Package Information

TO252



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.290	2.380	0.087	0.090	0.094
A1	0.000		0.100	0.000		0.004
b	0.720	0.785	0.850	0.028	0.031	0.033
b3	5.230	5.345	5.460	0.206	0.210	0.215
c	0.470	0.525	0.580	0.019	0.021	0.023
D	6.000	6.100	6.200	0.236	0.240	0.244
D1		5.30 REF			0.20 REF	
E	6.500	6.600	6.700	0.256	0.260	0.264
E1	4.700	4.810	4.920	0.185	0.189	0.194
e	2.28 REF			0.09 REF		
H	9.900	10.100	10.300	0.390	0.398	0.406
L	1.400	1.550	1.700	0.055	0.061	0.067
L1		2.743 REF			0.108 REF	
L2	0.510 BSC			0.020 BSC		
L3	0.900	1.075	1.250	0.035	0.042	0.049
L4	0.600	0.800	1.000	0.024	0.031	0.039
θ	0°		8°	0°		8°
$\theta 1$	5°	7°	9°	5°	7°	9°
$\theta 2$	5°	7°	9°	5°	7°	9°

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