RUH120N35L

N-Channel Advanced Power MOSFET

Features

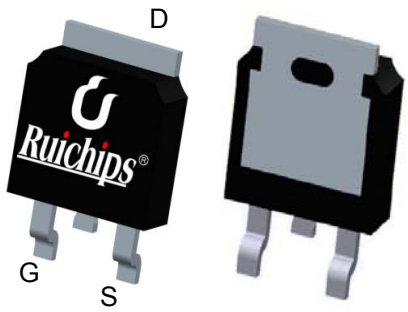
• 120V/35A,
$R_{DS\ (ON)}$ =28mΩ(Typ.)@V_{GS}=10V
• Uses Ruichips advanced RUISGT™ Technology
• Super High Dense Cell Design
• 100% avalanche tested
• Fast Switching Speed
• Qualified according to JEDEC criteria
• Lead Free and Green Devices Available (RoHS Compliant)

Pb-Free RoHS Halogen-Free

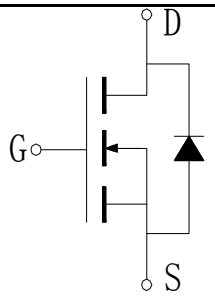
Applications

• Atomizer
• Switch Systems
• Synchronous rectification
• On board power for server

Pin Description



TO252



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		120	V
V_{GSS}	Gate-Source Voltage		±20	
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	20	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_C=25°C	120	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_C=25°C	35	A
		T_C=100°C	25	
P_D	Maximum Power Dissipation	T_C=25°C	38	W
		T_C=100°C	19	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		4	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		56	mJ

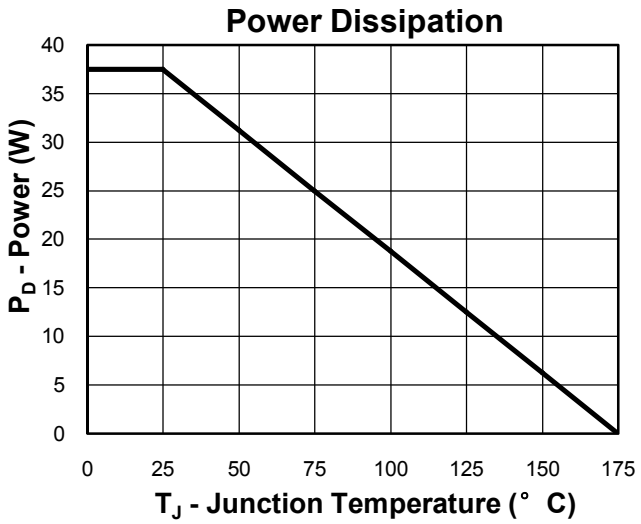
Electrical Characteristics (T_C=25°C Unless Otherwise Noted)

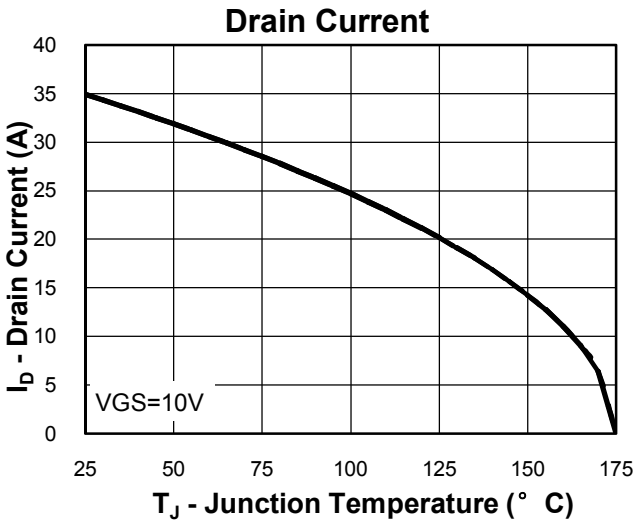
Symbol	Parameter	Test Condition	RUH120N35L			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	120			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	2		4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ③	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=20A		28	40	mΩ
Diode Characteristics						
V_{SD} ③	Diode Forward Voltage	I_{SD}=20A, V_{GS}=0V			1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=35A, dI_{SD}/dt=100A/μs		19		ns
Q_{rr}	Reverse Recovery Charge			11		nC
Dynamic Characteristics ⑤						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.7		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=60V, Frequency=1.0MHz		890		pF
C_{oss}	Output Capacitance			103		
C_{rss}	Reverse Transfer Capacitance			6		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=60V,I_{DS}=35A, V_{GEN}=10V,R_G=1.7Ω		5		ns
t_r	Turn-on Rise Time			31		
$t_{d(OFF)}$	Turn-off Delay Time			14		
t_f	Turn-off Fall Time			7		
Gate Charge Characteristics ⑤						
Q_g	Total Gate Charge	V_{DS}=96V, V_{GS}=10V, I_{DS}=35A		16		nC
Q_{gs}	Gate-Source Charge			5		
Q_{gd}	Gate-Drain Charge			3.5		

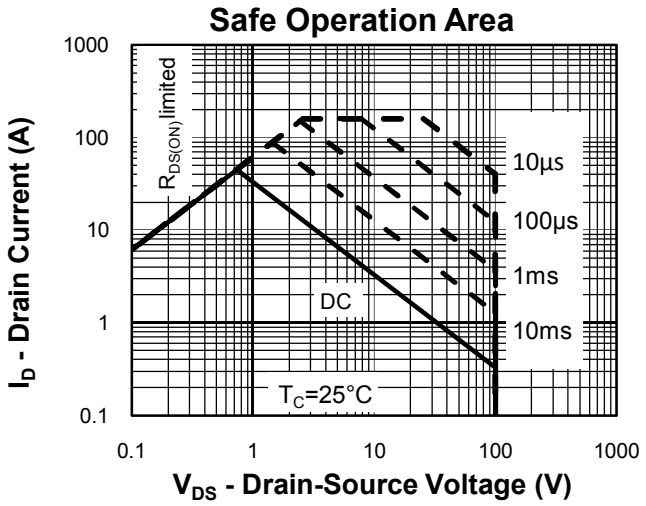
Notes:

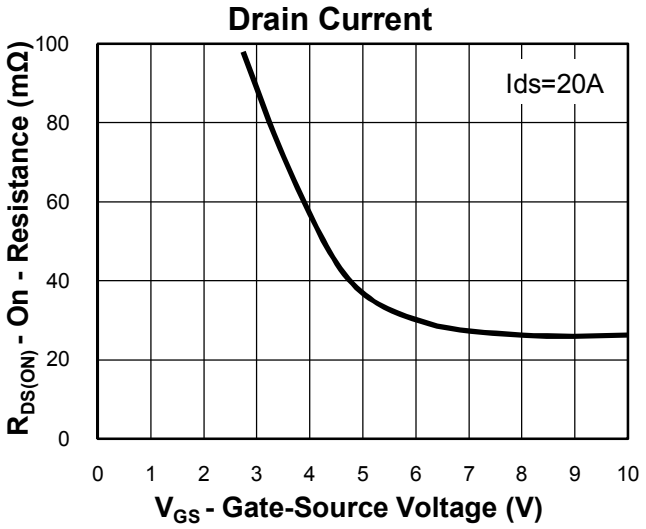
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t≤10sec.
④Limited by TJmax, IAS =15A, VDD = 48V, RG = 50Ω, Starting TJ = 25° C.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

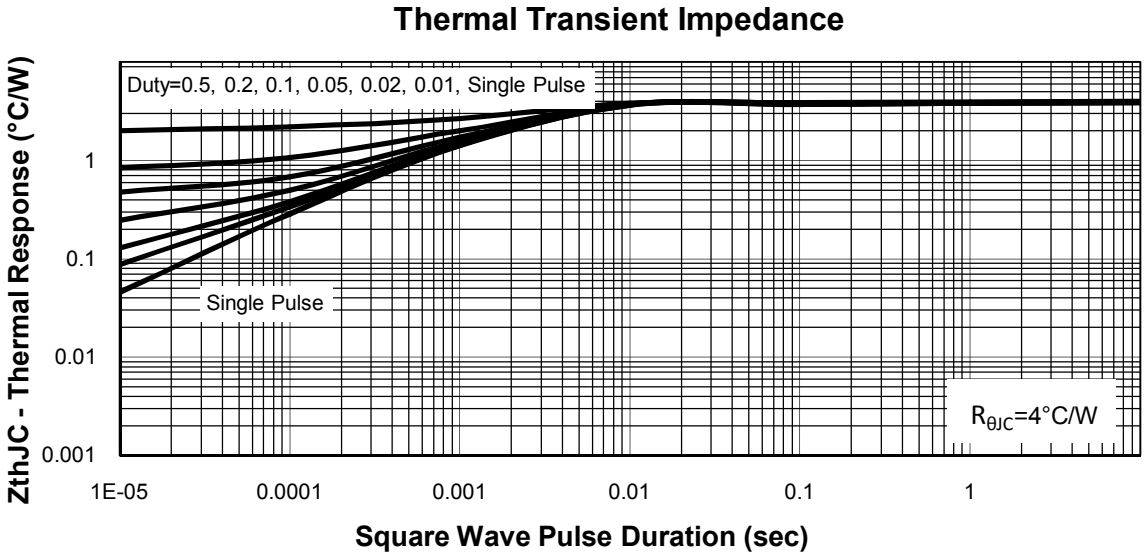
Typical Characteristics



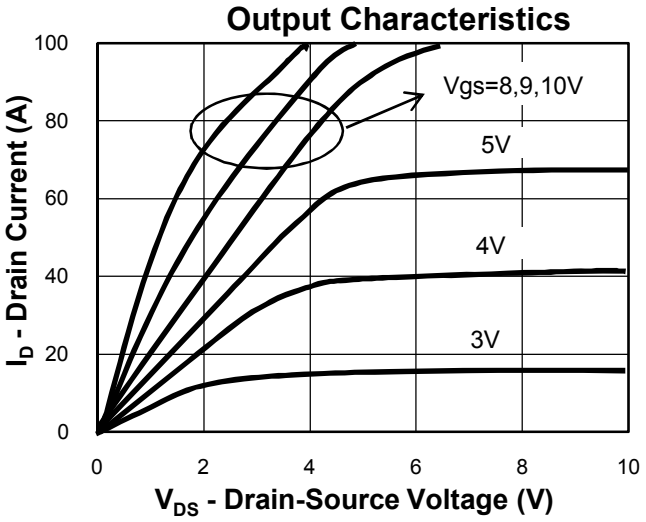


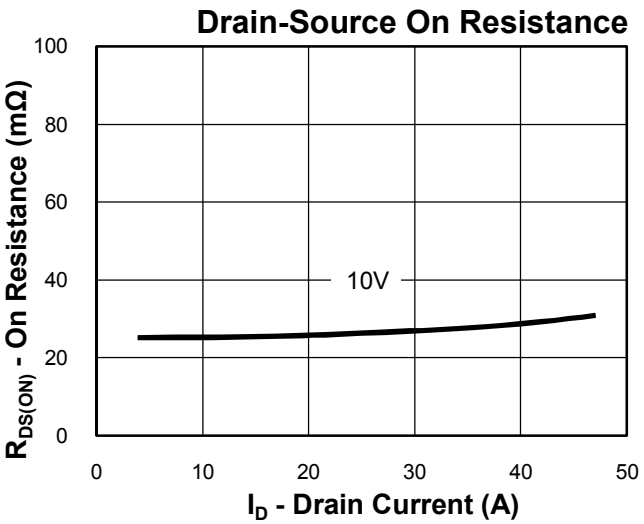


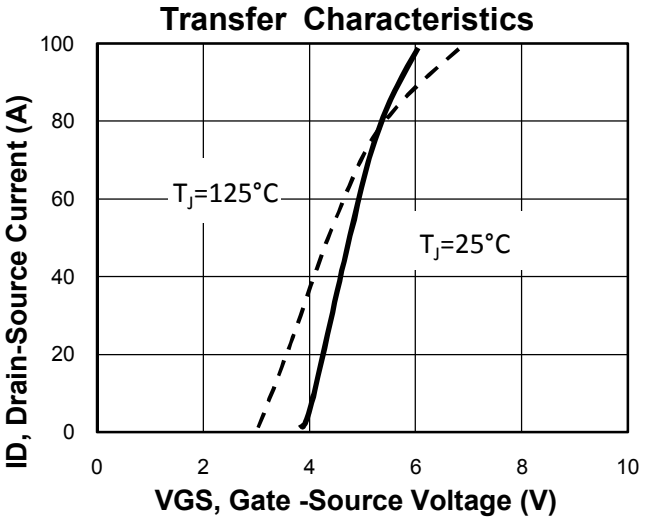


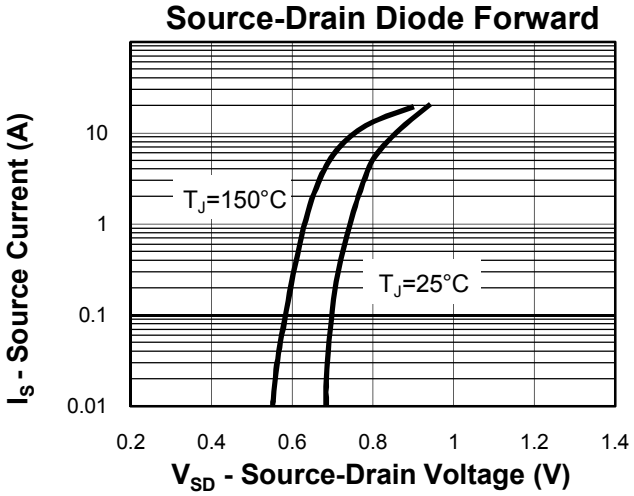


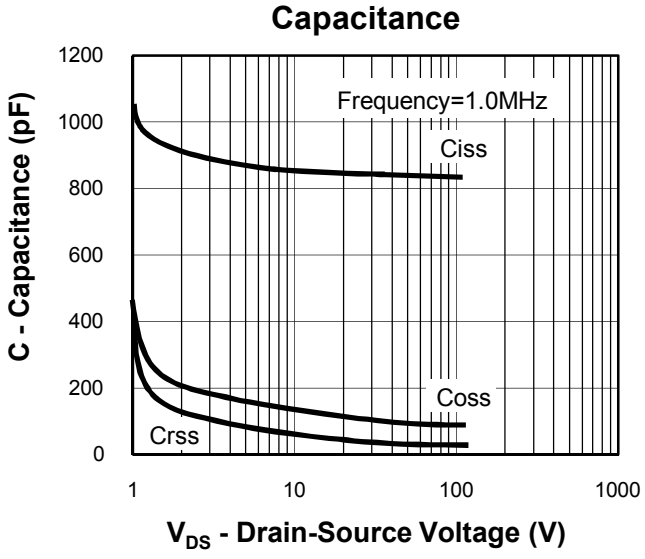
Typical Characteristics

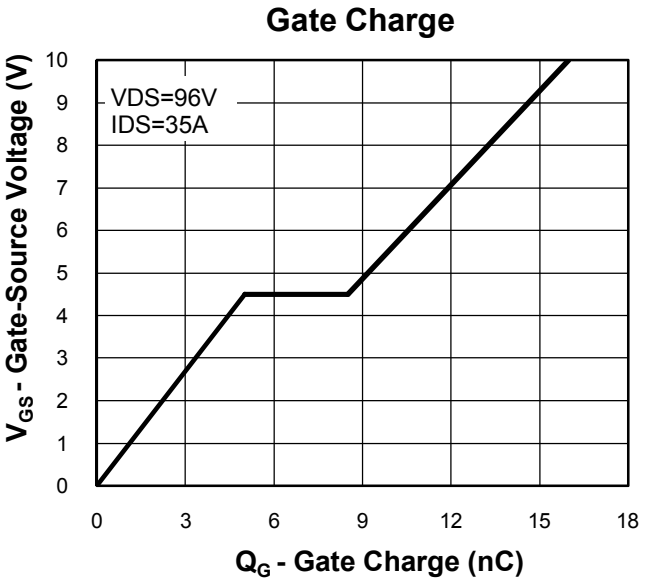




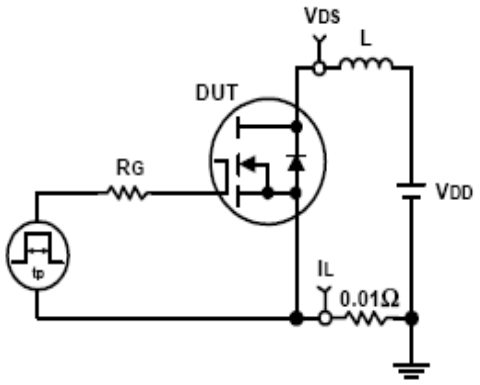


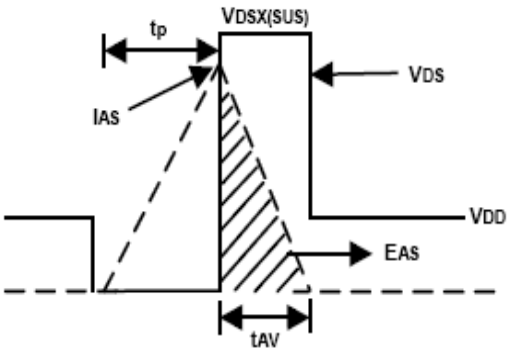




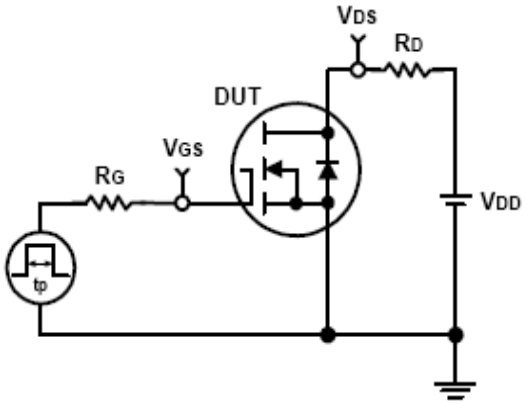


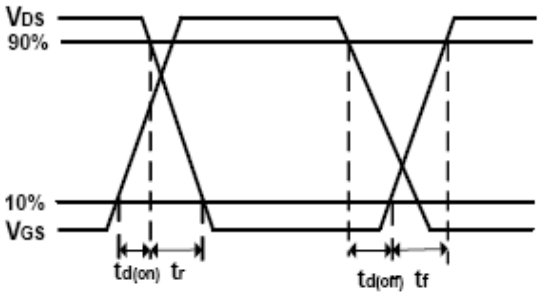
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms



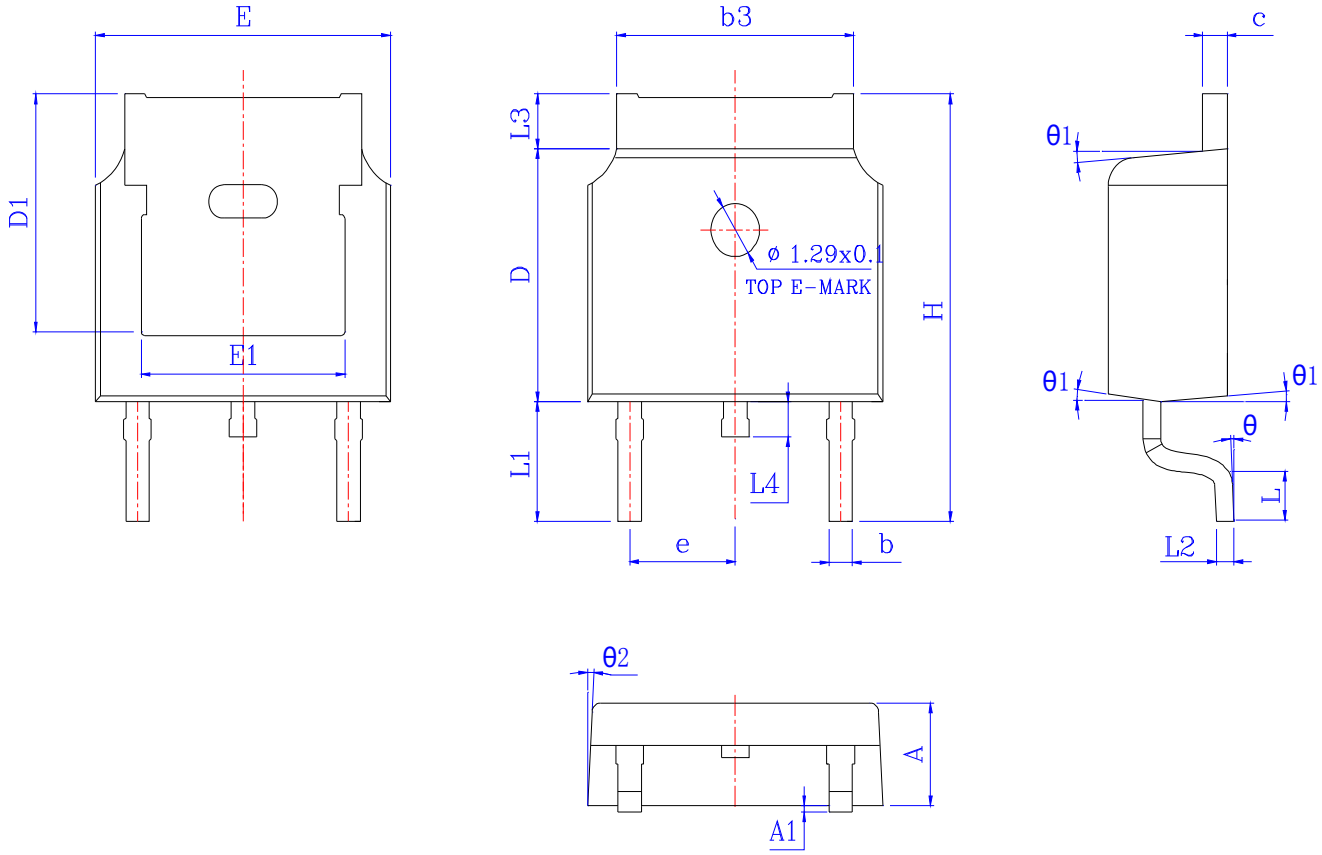


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RUH120N35L	RUH120N35L	TO252	Tape&Reel	2500	13"	16mm

Package Information

TO252



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.200	2.300	2.400	0.087	0.091	0.094
A1	*	*	0.100	*	*	0.004
b	0.660	0.760	0.860	0.026	0.030	0.034
b3	5.130	5.315	5.500	0.202	0.209	0.217
c	0.450	0.525	0.600	0.018	0.021	0.024
D	6.000	6.100	6.200	0.236	0.240	0.244
D1	5.30 REF			0.20 REF		
E	6.500	6.650	6.800	0.256	0.262	0.268
E1	4.700	4.810	4.920	0.185	0.189	0.194
e	2.28 REF			0.09 REF		
H	9.400	9.900	10.400	0.370	0.390	0.409
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°
θ1	5°	7°	9°	5°	7°	9°
θ2	5°	7°	9°	5°	7°	9°

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