

LM339

DATASHEET

Specification Revision History:

Version	Date	Description
V1.0	2019/04	New
V1.1	2021/04	Modify Ordering Information
V1.2	2025/02	Modify Ordering Information
V1.3	2025/03	Add application precautions and overall typesetting.

QUAD DIFFERENTIAL COMPARATOR

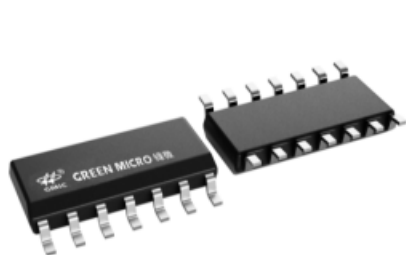
DESCRIPTION

The LM339 consists of four independent voltage comparators, designed specifically to operate from a single power supply over a wide voltage range.

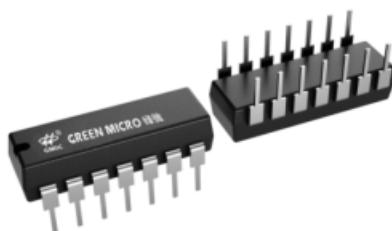
FEATURES

- *Signal or dual supply operation.
- *Wide operating supply range($V_{CC}=2V\sim 30V$).
- *Input common-mode voltage includes ground.
- *Low supply current drain $I_{CC}=0.8mA$ (Typical).
- *Open collector outputs for wired and connection.
- *Low input bias current $I_{bias}=25nA$ (Typical).
- *Low output saturation voltage.
- *Output compatible with TTL, DTL, and CMOS logic system.

The appearance of the product



SOP-14



DIP-14



TSSOP-14

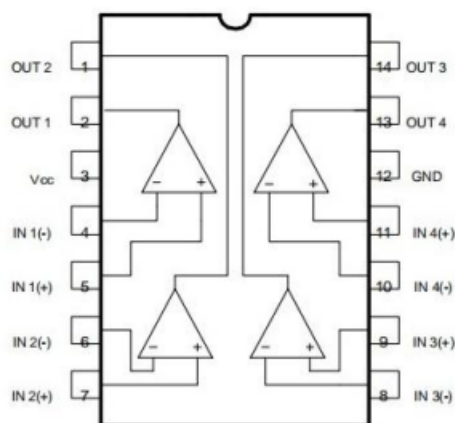


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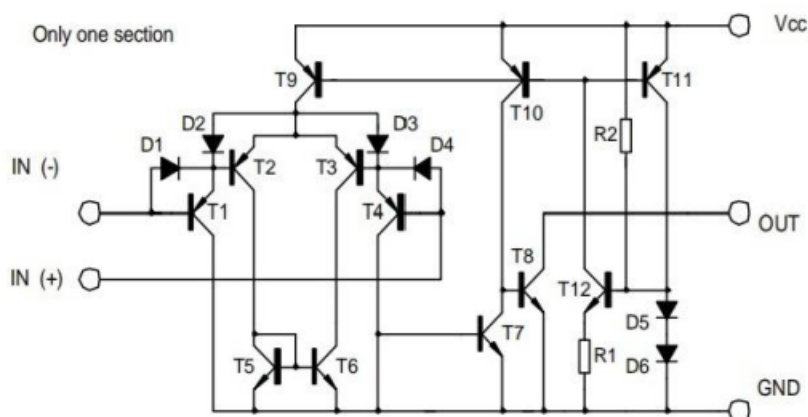
Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
LM339N235	DIP-14	LM339 235	TUBE	1000PCS/BOX
LM339DR235	SOP-14	LM339 235	REEL	2500PCS/REEL
LM339PWR235	TSSOP-14	LM339 235	REEL	2500PCS/REEL
LM339QT235	QFN-16-EP(3x3)	LM339 235	REEL	5000PCS/REEL
LM339	DIP-14	LM339 235	TUBE	1000PCS/BOX
LM339	SOP-14	LM339 235	REEL	2500PCS/REEL
LM339	TSSOP-14	LM339 235	REEL	2500PCS/REEL

PIN CONFIGURATIONS



BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

PARAMETER	SYMBOL	VALUE	UNIT
Supply Voltage	V_{CC}	+15 OR 30	V
Differential input Voltage	V_{IDIFF}	30	V
Input Voltage	V_I	-0.3~30V	V
Power Dissipation	P_d	570	mW
Operating Temperature	T_{opr}	0 to+70	°C
Storage Temperature	T_{stg}	-65 to 150	°C

ELECTRICAL CHARACTERISTICS

(Vcc=5.0V,Ta=25°C,All voltage referenced to GND unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Input Offset Voltage	V_{IO}	$V_{CM}=0$ to $V_{CC}-1.5$ $V_{O(p)}=1.4V, R_s=0$		+1.5	+5.0	mV
Input Offset Current	I_{IO}			+2.3	+50	nA
Input Bias Current	I_b			57	200	nA
Input Common-Mode Voltage Range	$V_{I(R)}$		0		$V_{CC}-1.5$	V
Supply Current	I_{CC}	$R_L=\infty$		1.1	2.0	mA
Large Signal Voltage Gain	G_V	$V_{CC}=15V, R_L>15k$	50	200		V/mV
Large Signal Response Time	tres	V_i =TTL logic wing $V_{ref}=1.4V, V_{RL}=5V, R_L=5.1k$		350		ns
Response Time	tres	$V_{RL}=5V, R_L=5.1k$		1400		ns
Output Sink Current	I_{sink}	$V_i(-)>1V, V_i(+)=0V, V_{O(p)}$	6	18		mA
Output Saturation Voltage	V_{sat}	$V_i(-)>1V, V_i(+)=0V, I_{sink}=4mA$		140	400	mV
Output Leakage Current	$I_{leakage}$	$V_i(+)=1V, V_i(-)=0$ $V_{O(p)}=5V$ $V_{O(p)}=30V$		0.1	1.0	nA μA
Differential Input Voltage	$V_I(diff)$				32	V

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 supply current

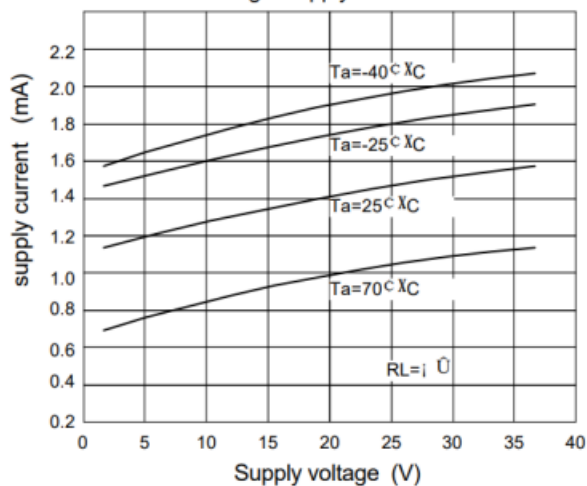


Fig.2 Input current

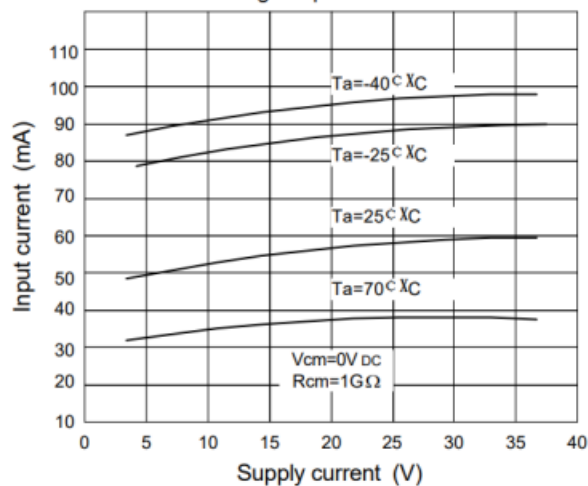


Fig.3 Output saturation voltage

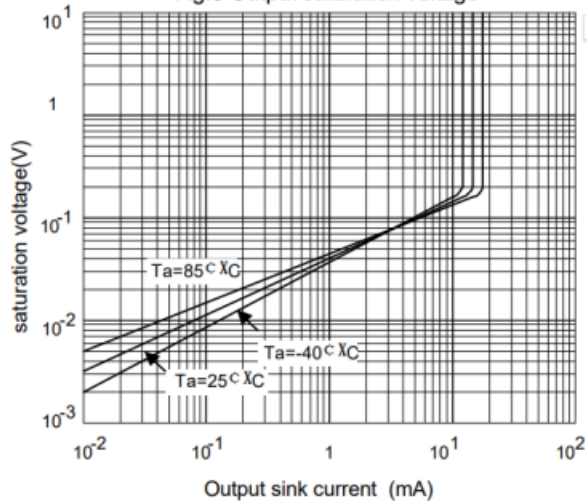


Fig.4 Reponse time for various input overdrive negative transition

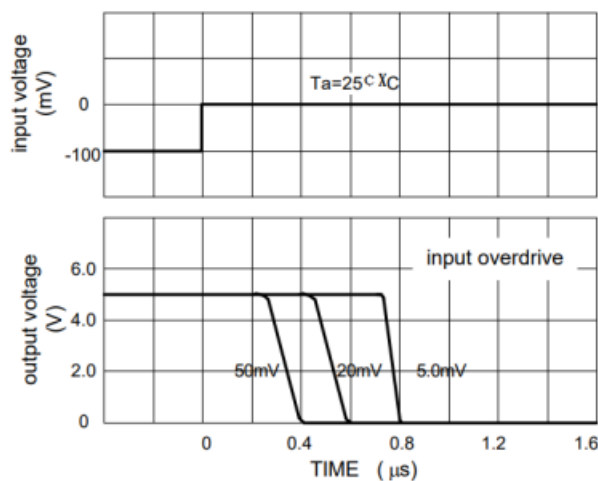


Fig.5 Reponse time for various input overdrive positive transition

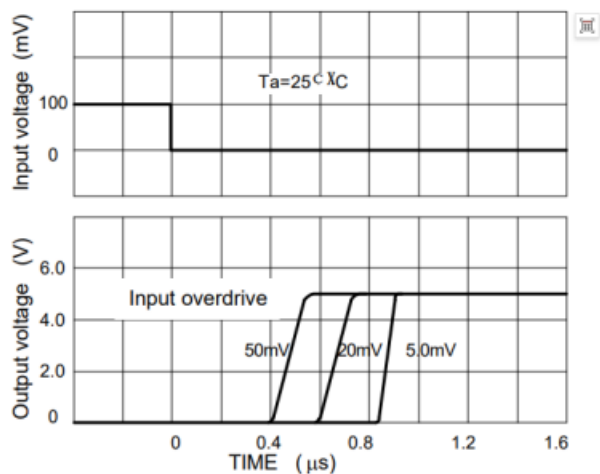


Fig.6

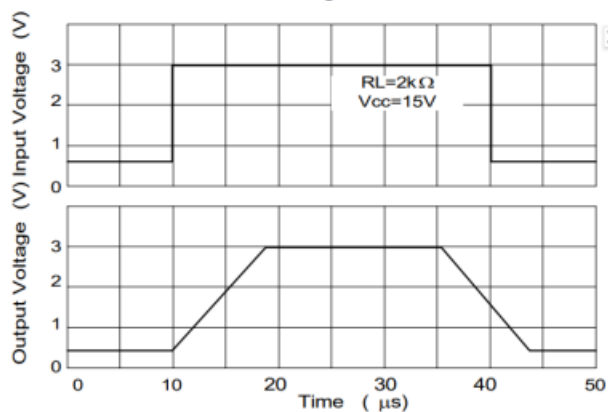


Fig.7 voltage Follower pulse response (small signal)

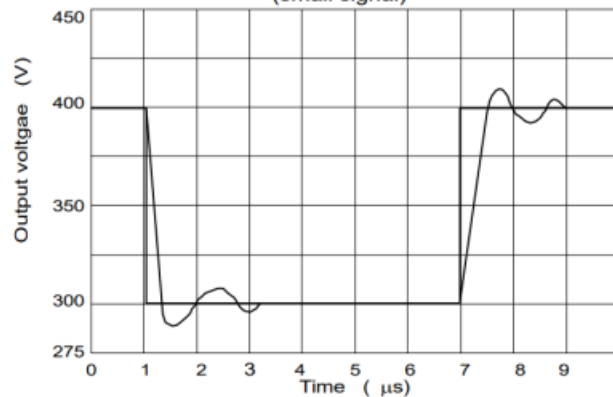


Fig.8 Large signal Frequency Response

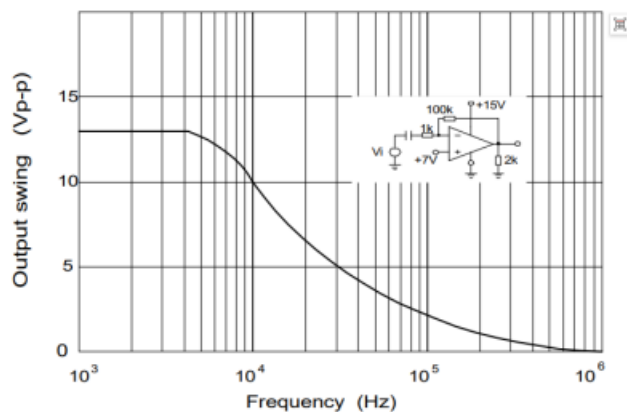


Fig.9 Output Characteristics current sourcing

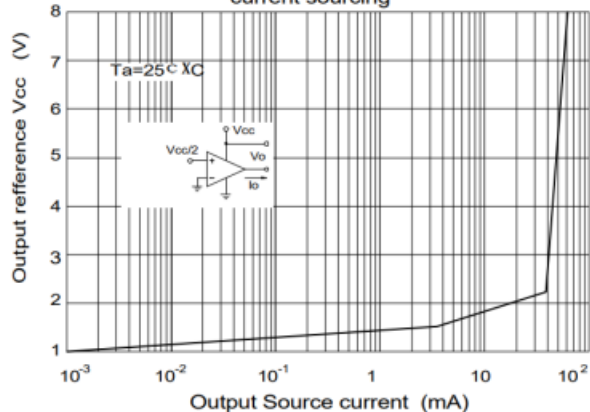


Fig.10 Output Characteristics Current sinking

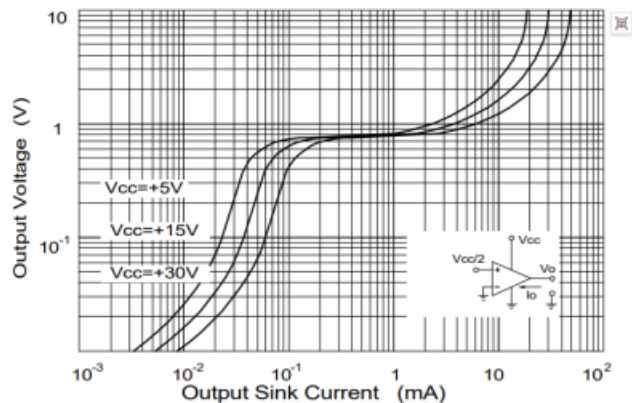
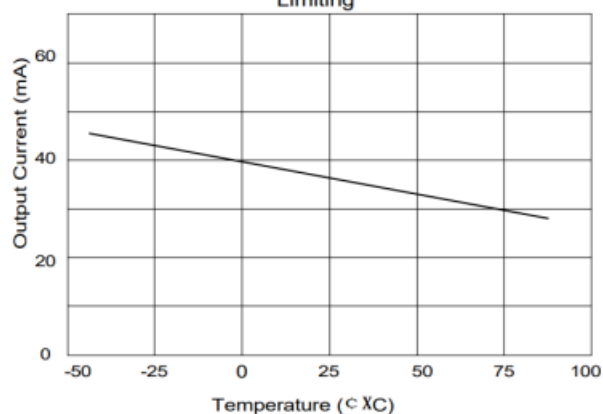


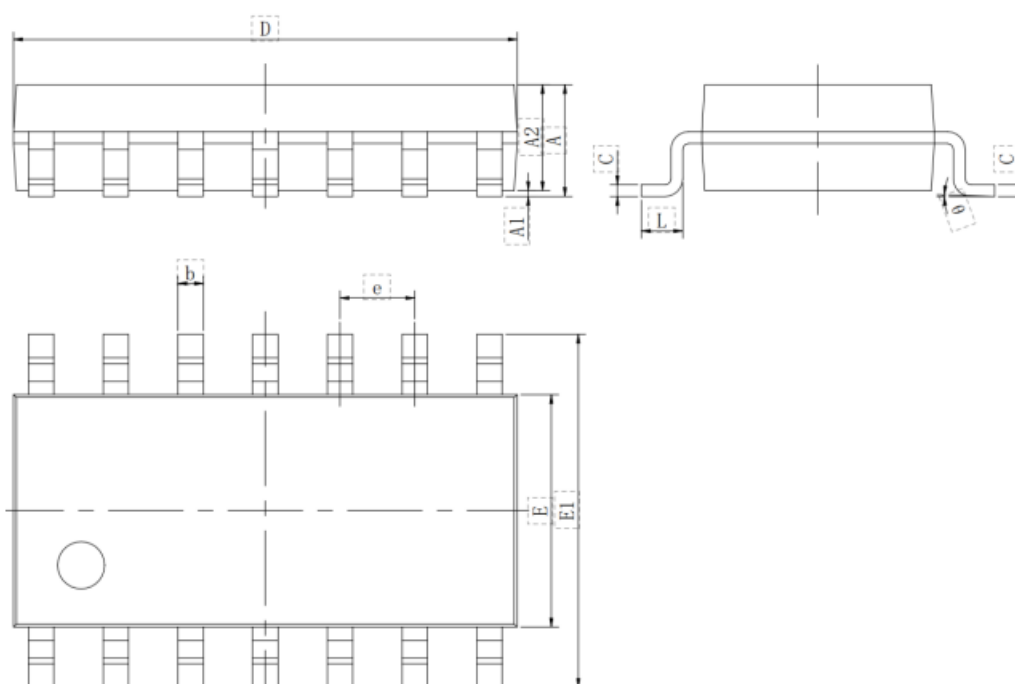
Fig.11 Current Limiting



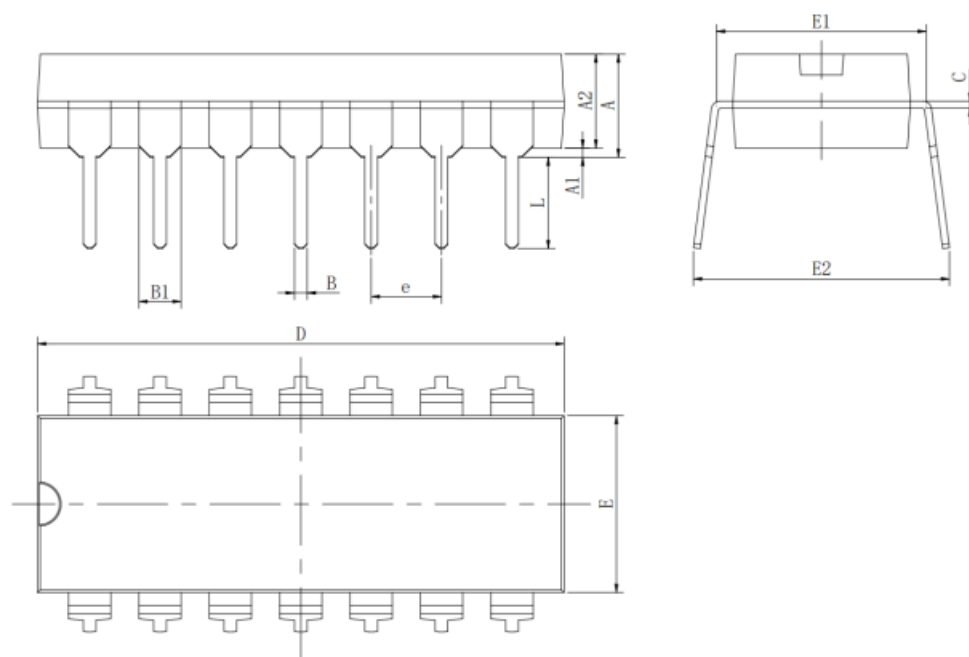
Outline Dimensions

SOP-14

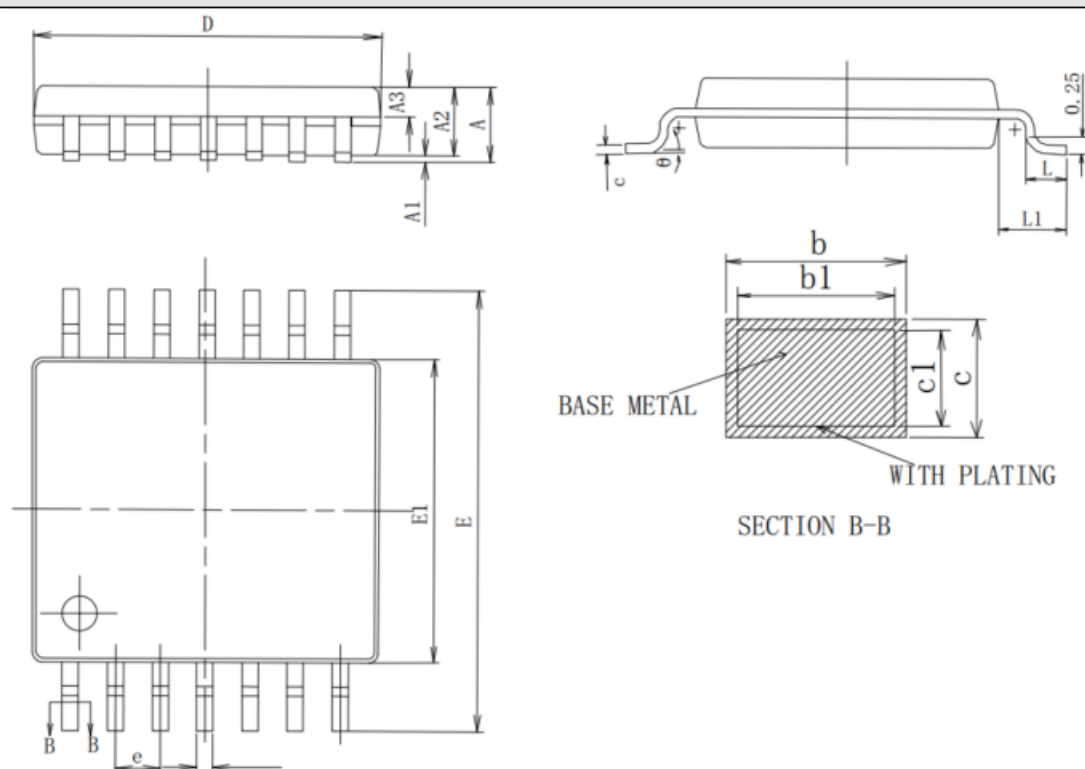
Unit : mm



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	8.360	8.760	0.329	0.345
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0 °	8 °	0 °	8 °

DIP-14
Unit:mm


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.710	4.310	0.146	0.170
A1	0.510		0.020	
A2	3.200	3.600	0.126	0.142
B	0.380	0.570	0.015	0.022
B1	1.524(BSC)		0.060(BSC)	
C	0.204	0.360	0.008	0.014
D	18.800	19.200	0.740	0.756
E	6.200	6.600	0.244	0.260
E1	7.320	7.920	0.288	0.312
e	2.540(BSC)		0.100(BSC)	
L	3.000	3.600	0.118	0.142
E2	8.400	9.000	0.331	0.354

TSSOP-14
Unit:mm


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.20
A1	0.05	—	0.15
A2	0.90	1.00	1.05
A3	0.39	0.44	0.49
b	0.20	—	0.28
b1	0.19	0.22	0.25
c	0.13	—	0.17
cl	0.12	0.13	0.14
D	4.90	5.00	5.10
E1	4.30	4.40	4.50
E	6.20	6.40	6.60
e	0.65BSC		
L	0.45	0.60	0.75
L1	1.00BSC		
θ	0	—	8°

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