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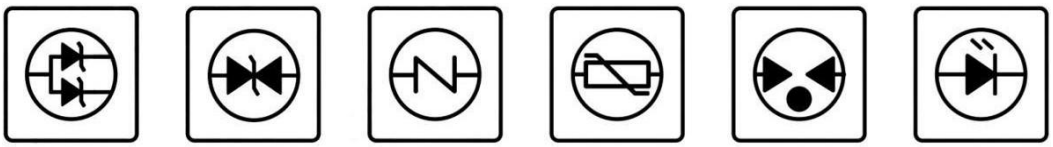
SEMICONDUCTOR



HT75XX-2-MS/HT75XX-2(MS)

Product specification

GENERAL DESCRIPTION

HT75XX-2-MS/HT75XX-2(MS) series are a set of Low Dropout Linear RegulatorICs implemented inCMOS tec hnology.They can withstand voltage 30V.And they areavailable with lowvoltage drop and low quiescentcurr ent,widely used in audio,video and communication appliances.

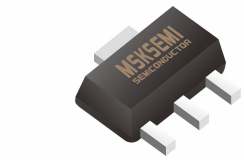
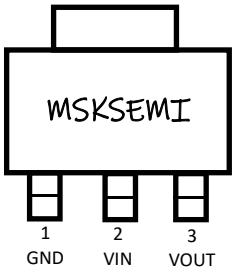
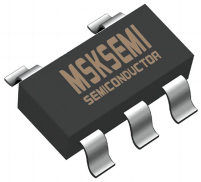
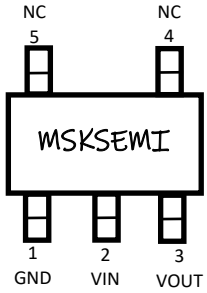
FEATURES

- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 30V
- Quiescent Current 1.5μA
- Output Voltage Accuracy:tolerance±1%
- High output current:100mA

TYPICAL APPLICATIONS

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments

Reference News and Marking

SOT-89-3		SOT-23-5	
			

HT7528-2-MS	HT7530-2-MS	HT7533-2-MS	HT7536-2-MS	HT7540-2-MS	HT7544-2-MS	HT7550-2-MS
MSKSEMI HT7528-2	MSKSEMI HT7530-2	MSKSEMI HT7533-2	MSKSEMI HT7536-2	MSKSEMI HT7540-2	MSKSEMI HT7544-2	MSKSEMI HT7550-2
HT7528-2(MS)	HT7530-2(MS)	HT7533-2(MS)	HT7536-2(MS)	HT7540-2(MS)	HT7544-2(MS)	HT7550-2(MS)
7528-2 MSK	7530-2 MSK	7533-2 MSK	7536-2 MSK	7540-2 MSK	7544-2 MSK	7550-2 MSK

NOTE:HT75XX-2-MS is SOT-89-3, HT75XX-2 (MS) is SOT-23-5.

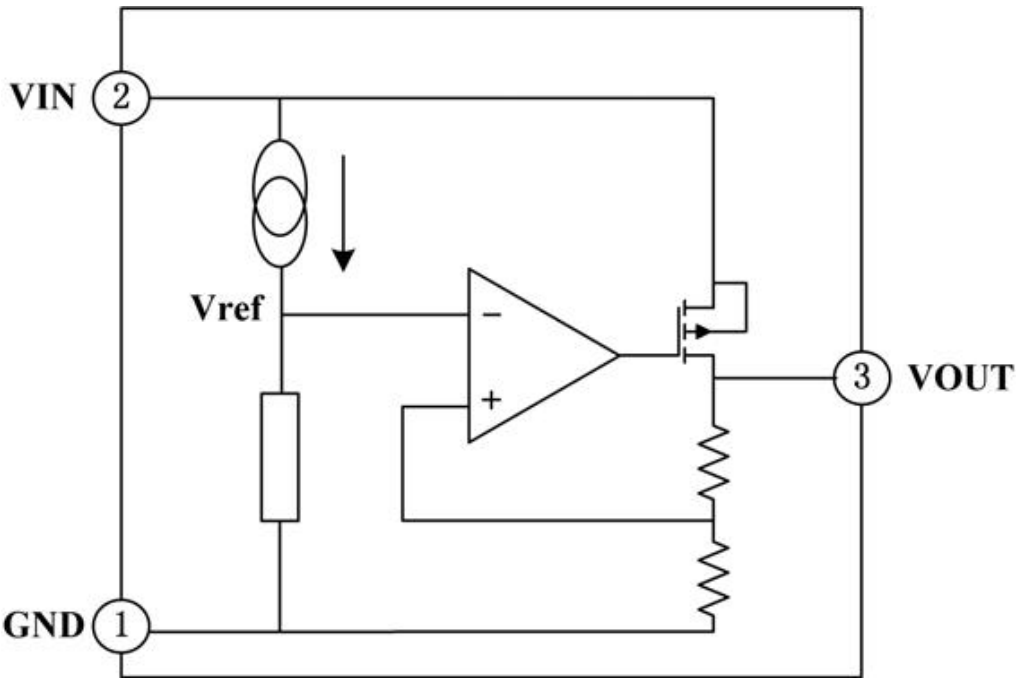
PIN DESCRIPTION

PIN No.		Name	Functions Description
SOT23-5	SOT89-3		
1	1	GND	ground
2	2	Vin	input
3	3	Vout	output
4		NC	No Connect
5		NC	No Connect

Order information

Series	Output	Package	QTY	Series	Output	Package	QTY
HT7528-2-MS	2.8V	SOT-89-3	1000	HT7528-2(MS)	2.8V	SOT-23-5	3000
HT7530-2-MS	3.0V			HT7530-2(MS)	3.0V		
HT7533-2-MS	3.3V			HT7533-2(MS)	3.3V		
HT7536-2-MS	3.6V			HT7536-2(MS)	3.6V		
HT7540-2-MS	4.0V			HT7540-2(MS)	4.0V		
HT7544-2-MS	4.4V			HT7544-2(MS)	4.4V		
HT7550-2-MS	5.0V			HT7550-2(MS)	5.0V		

FUNCTIONAL BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Description	Symbol	Value range	Unit
Limit Power Voltage	V_{IN}	−0.3～+33	V
Storage Temperature Range	T_{STG}	−50～+125	℃
Operating Free-air Temperature Range	T_A	−40～+85	℃

Note : Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "Recommended Operating Conditions" is not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

HEAT DISSIPATION

Description	Symbol	Package	Value range	Unit
Thermal resistance	θ_{JA}	SOT89	200	℃/W
		SOT23-5	500	℃/W
Power dissipation	P_W	SOT89	500	mW
		SOT23-5	200	mW

DC CHARACTERISTICS (unless otherwise noted T_A =+25°C)

Series HT7528-2-MS/HT7528-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.772	2.80	2.828	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA\leq I_{OUT}\leq 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$, $\triangle V_{OUT}=2\%$	—	30	100	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V\leq V_{IN}\leq 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40°C\leq T_A\leq 85°C$	—	100	—	ppm/°C

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7530-2-MS/HT7530-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.97	3.00	3.03	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$, $\triangle V_{OUT}=2\%$	—	30	100	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7533-2-MS/HT7533-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.267	3.30	3.333	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$, $\triangle V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7536-2-MS/HT7536-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ， $I_{OUT}=10mA$	3.564	3.60	3.636	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 30V$， $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$， $I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7540-2-MS/HT7540-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$， $I_{OUT}=10mA$	3.96	4.0	4.04	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 30V$， $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$， $I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7544-2-MS/HT7544-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ， $I_{OUT}=10mA$	4.356	4.4	4.444	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 50mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0V \leqslant V_{IN} \leqslant 30V$， $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$， $I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

Series HT7550-2-MS/HT7550-2(MS)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$ ， $I_{OUT}=10mA$	4.95	5.0	5.05	V
Output Current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	100	150	—	mA
Load Regulation	$\triangle V_{OUT}$	$V_{IN}=V_{OUT}+2.0V$ $1mA \leqslant I_{OUT} \leqslant 70mA$	—	25	60	mV
Voltage Drop	V_{DIF}	$I_{OUT}=1mA$，$\triangle V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	1.5	3.0	μA
Line Regulation	$\triangle V_{OUT}/ V_{OUT}* \triangle V_{IN}$	$V_{OUT}+1.0\ V \leqslant V_{IN} \leqslant 30V$， $I_{OUT}=1mA$	—	—	0.2	%/V
Input Voltage	V_{IN}	—	—	—	30	V
Temperature Coefficient	$\triangle V_{OUT}/ \triangle T_A*V_{OUT}$	$V_{IN}= V_{OUT}+2.0V$， $I_{OUT}=10mA$， $-40℃ \leqslant T_A \leqslant 85℃$	—	100	—	ppm/℃

Note : When $V_{IN}=V_{OUT}+2.0V$, as the output voltage declined 2%, the $V_{DIF}=V_{IN}-V_{OUT}$.

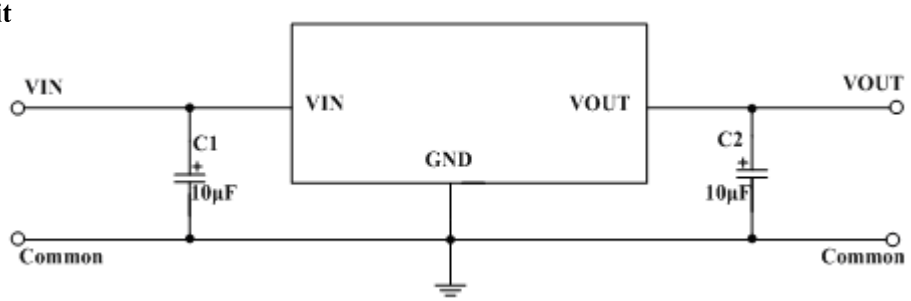
FUNCTIONAL DESCRIPTION

HT75XX-2-MS/HT75XX-2(MS) series are linear voltage regulator ICs withstanding 30V voltage.The series ICconsists of a voltage reference,an error amplifier,a current limiter and a phase compensationcircuit plus a driver transistor.The output stabilization capacitor is also compatible with low ESR ceramic capacitors.

The over current protection circuit and the over voltage protection circuit are built-in.The protection circuit will operate when the output current or input voltage reaches limit level.

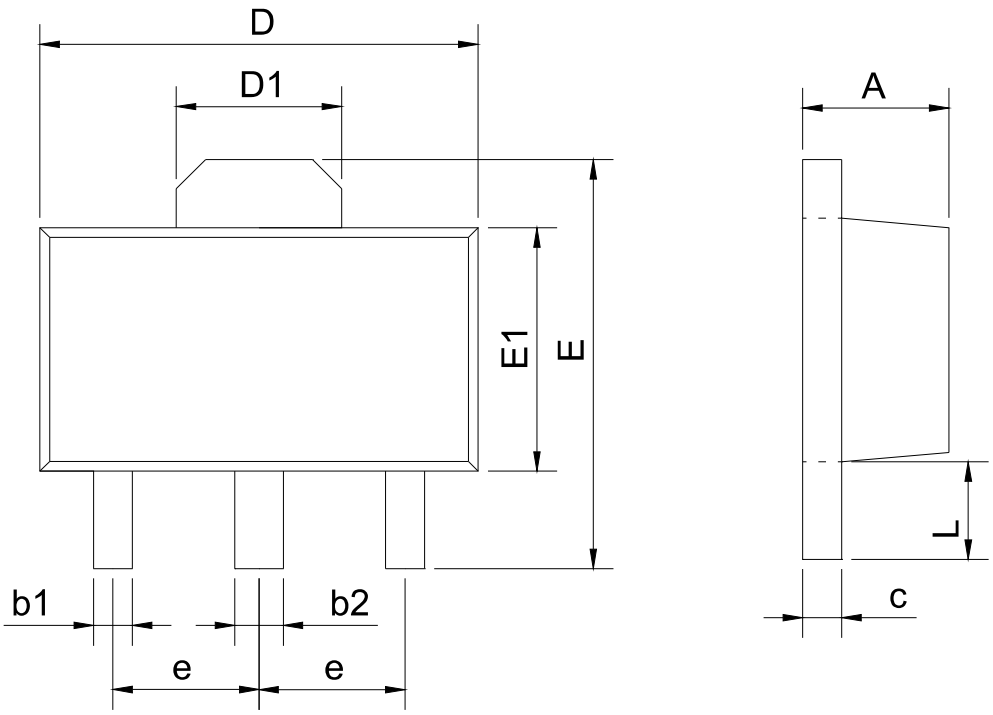
TYPICALAPPLICATION CIRCUIT

Basic Circuit



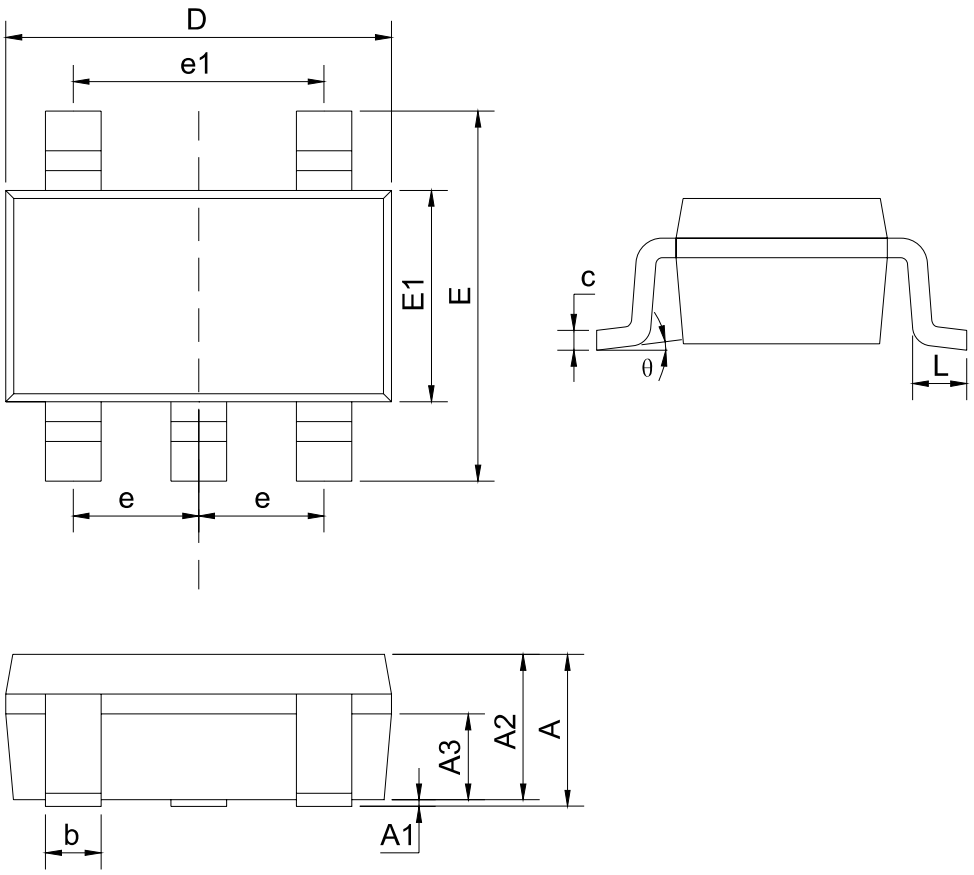
PACKAGE INFORMATION

SOT89



SYMBOL	mm	
	min	max
A	1.40	1.60
b1	0.35	0.50
b2	0.45	0.60
c	0.36	0.46
D	4.30	4.70
D1	1.40	1.80
E	4.00	4.40
E1	2.30	2.70
e	1.50BSC	
L	0.80	1.20

SOT23-5



SYMBOL	mm	
	min	max
A		1.35
A1	0.04	0.15
A2	1.00	1.20
A3	0.55	0.75
b	0.38	0.48
c	0.10	0.25
D	2.72	3.12
E	2.60	3.00
E1	1.40	1.80
e	0.95BSC	
e1	1.90BSC	
L	0.30	0.60
θ	0	8°

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