

SK6018 300mA, Low Consumption, Low Dropout, CMOS LDO

GENERAL DESCRIPTION

The SK6018 series are low dropout linear regulators and optimized to provide a high performance solution for battery power system to delivery low quiescent current. The device offer a new level of cost effective performance in cellular phones, laptop and notebook computers, and other portable devices.

SK6018 can provide output value in the range of 1.2V~3.6V by every 0.1V step.

The SK6018 series are designed to make use of low cost ceramic capacitors which ensure the stability of the output current, and enhance the efficiency in order to prolong the battery life of those portable devices.

The SK6018 regulators are available in DFN1x1-4L packages. Standard products are Pb-free and Halogen-free.

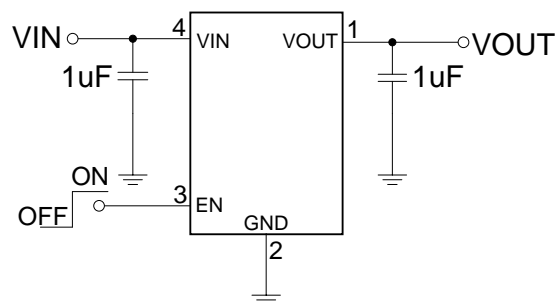
FEATURES

- Input voltage: 2.5V~6.5V
- Output range: 1.2V~3.6V (customized by every 0.1V step)
- Output current: 300mA @ $V_{IN}-V_{OUT}=0.5V$
- Dropout voltage: 100mV @ $I_{OUT}=100mA$
- Quiescent current : 1 μ A Typ.
- Recommend capacitor: 1 μ F

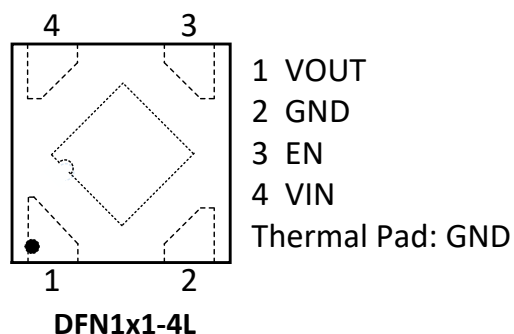
APPLICATIONS

- Reference voltage source
- Toys
- Bluetooth, wireless handsets
- Low Consumption Device
- Others portable electronic device

TYPICAL APPLICATION CIRCUIT



PIN ASSIGNMENT



ORDERING INFORMATION

PART NO	ACCURACY	PACAKGE	TEMPERATURE	TAPE & REEL
SK6018D4-XX	2%	DFN1x1-4L	-40 ~ +85°C	10000/REEL

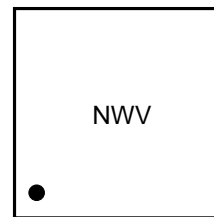
Note:XX indicates 1.2V~3.6V by 0.1V step. For example, 33 means product outputs 3.3V.

PART NUMBER RULES

SK6018^[1]-^[2]

Code	Description
[1]	Package: D4: DFN1x1-4L
[2]	Voltage version: XX: 1.2V~3.6V in 0.1V step Example: 33: 3.3V

MARKING DESCRIPTION:



"N": Product code, here use "U" stands for "SK6018".

"W": The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, "a" stands for week 27, "z" stands for week 52.

"V":Product version code.

PIN DESCRIPTION

PIN NO	SYMBOL	I/O	DESCRIPTION
DFN1x1-4L			
1	VOUT	O	Output
2	GND	GND	Ground
3	EN	I	Enable(Active high, not floating)
4	VIN	Power	Input

ABSOLUTE MAXIMUM RATINGS^(Note)

SYMBOL	ITEMS	VALUE	UNIT	
V _{IN}	Input Voltage	-0.3~8	V	
I _{OUT}	Output Current	350	mA	
P _{DMAX}	Power Dissipation	DFN1x1_4L	0.6	W
R _{θJA}	Thermal Resistance	DFN1x1_4L	250	°C/W
T _J	Junction Temperature	-40~125	°C	
T _A	Ambient Temperature	-40~85	°C	
T _{STG}	Storage Temperature	-55~150	°C	
T _{SOLDER}	Package Lead Soldering Temperature (10s)	260	°C	

Note: Exceed these limits to damage to the device. Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED OPERATING RANGE

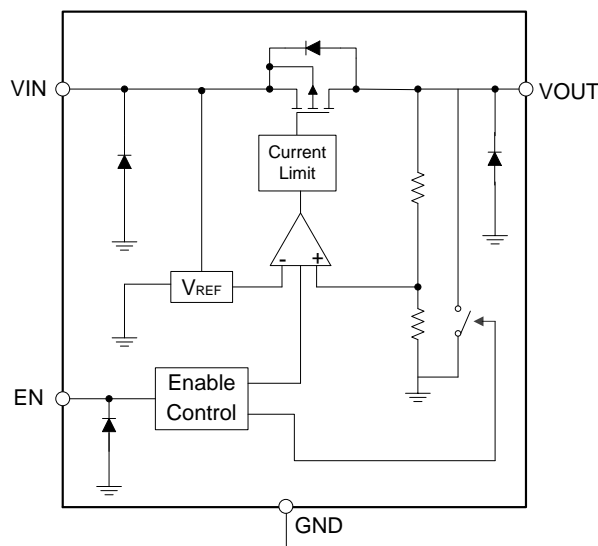
SYMBOL	ITEMS	VALUE	UNIT
V_{IN}	Supply Voltage	2.5 to 6.5	V
T_{OPT}	Operating Temperature	-40 to +85	°C

ELECTRICAL CHARACTERISTICS

The following specifications apply for $V_{OUT}=3.3V$, $T_A=25^{\circ}C$, unless otherwise noted.

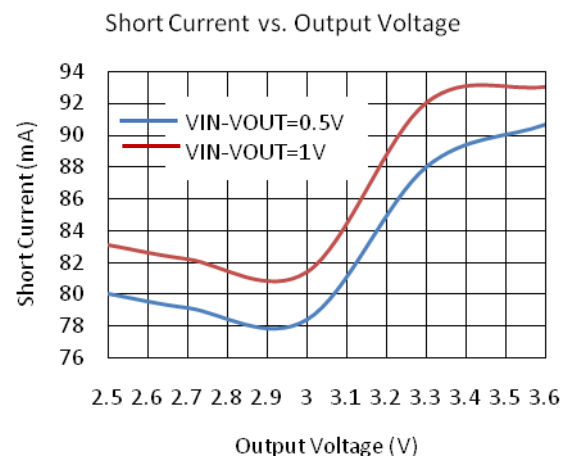
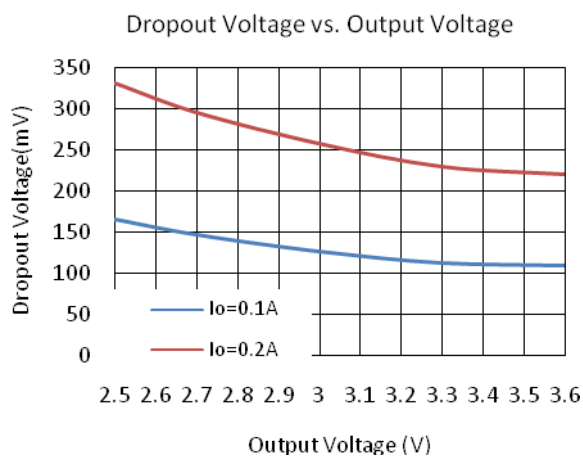
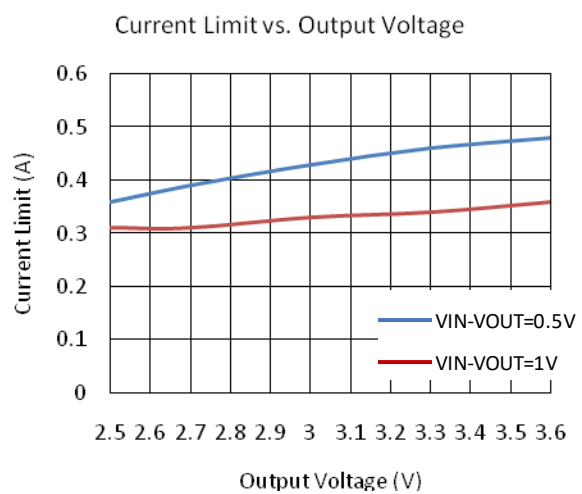
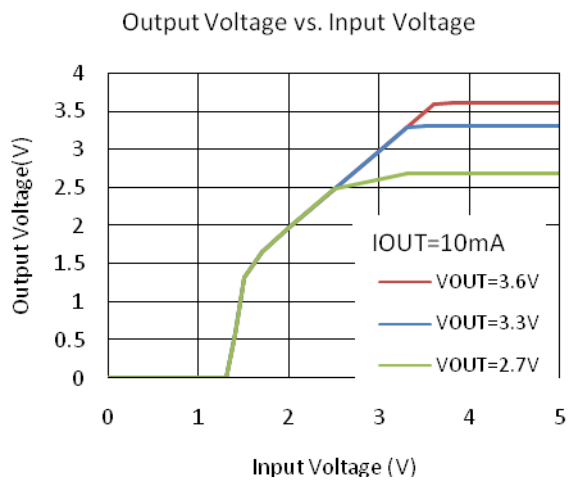
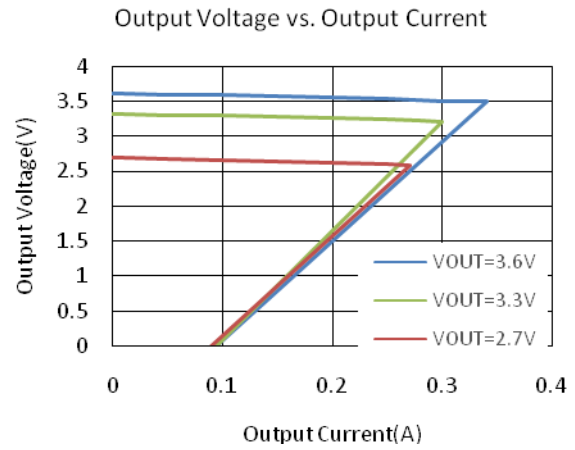
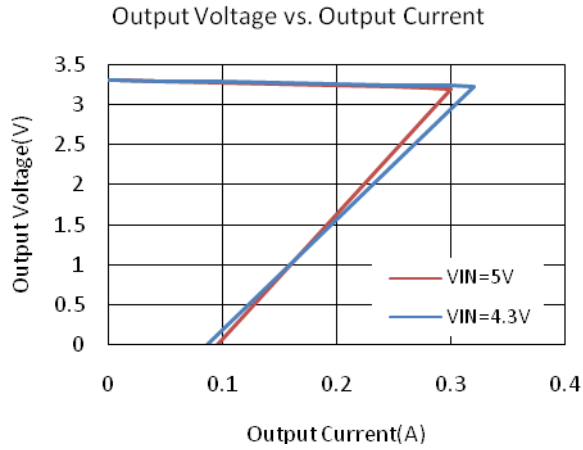
SYMBOL	ITEMS	CONDITIONS	MIN	TYP	MAX	UNIT
V_{IN}	Input Voltage				6.5	V
V_{OUT}	Output Voltage	$I_{OUT}=1mA$	-2	V_{OUT}	2	%
I_Q	Quiescent Current	$V_{OUT}=3.3V, I_{OUT}=0$		1	2	μA
I_{LIMIT}	Current Limit	$V_{IN}-V_{OUT}=0.5V$		350		mA
V_{DROP}	Dropout Voltage	$V_{OUT}=3.3V, I_{OUT}=100mA$		110		mV
		$V_{OUT}=3.3V, I_{OUT}=200mA$		230		
ΔV_{LINE}	Line Regulation	$V_{IN}=2.7\sim 5.5V, I_{OUT}=1mA$		0.01		%/V
ΔV_{LOAD}	Load Regulation	$V_{OUT}=3.3V, I_{OUT}=1\sim 300mA$		100		mV
$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	Output Voltage Temperature Characteristics	$I_{OUT}=10mA$ $-40^{\circ}C \leq T \leq +85^{\circ}C$		100		ppm
I_{SHORT}	Short Current	$V_{EN}=V_{IN}, V_{OUT}$ Short to GND with 1Ω		90		mA
I_{SHDN}	Shut-down Current	$V_{EN}=0V$		0.1	1	μA
PSRR	Power Supply Rejection Rate	$V_{IN}=5V_{DC}+0.5V_{P-P}, F=1KHz, I_{OUT}=10mA$		50		dB
V_{ENH}	EN Logic High Voltage	$V_{IN}=5.5V, I_{OUT}=1mA$	1.2		V_{IN}	V
V_{ENL}	EN Logic Low Voltage	$V_{IN}=5.5V, V_{OUT}=0V$			0.4	V
I_{EN}	EN Input Current	$V_{EN}=0$ to $5.5V$			1.0	μA
e_{NO}	Output Noise Voltage	10Hz to 100KHz, $C_{OUT}=1\mu F$		60		μV_{RMS}

SIMPLIFIED BLOCK DIAGRAM



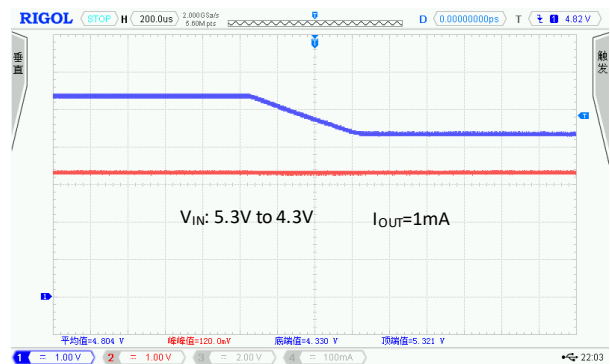
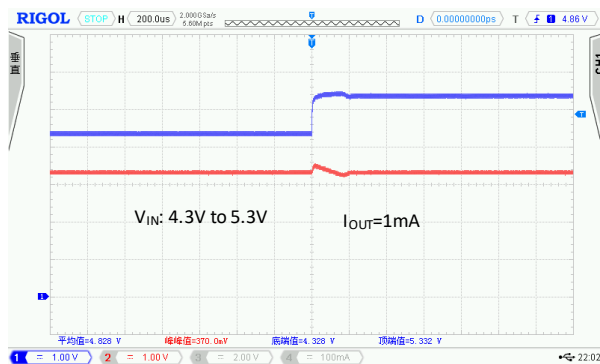
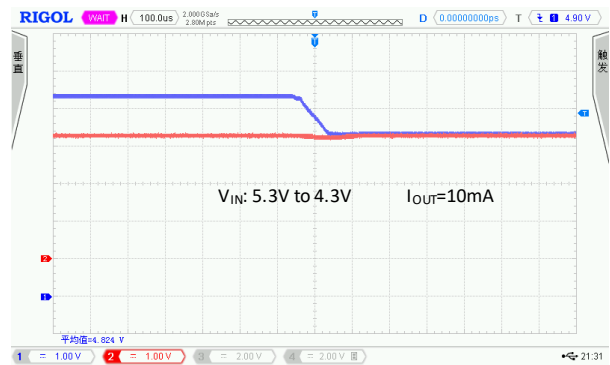
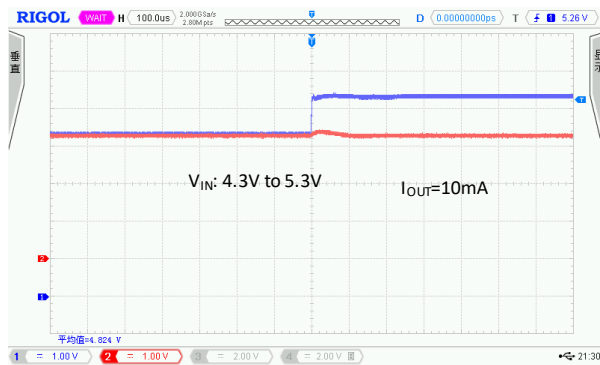
TYPICAL PERFORMANCE CHARACTERISTICS

$C_{IN}=1\mu F$, $C_{OUT}=1\mu F$, $T_{OPT}=25^{\circ}C$, $V_{IN}=5V$, $V_{OUT}=3.3V$, unless otherwise noted.



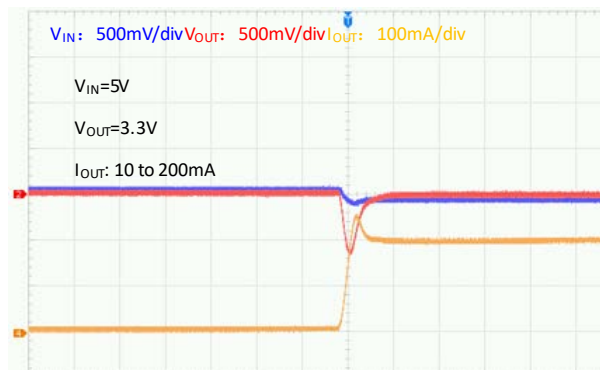
Line Transient Response

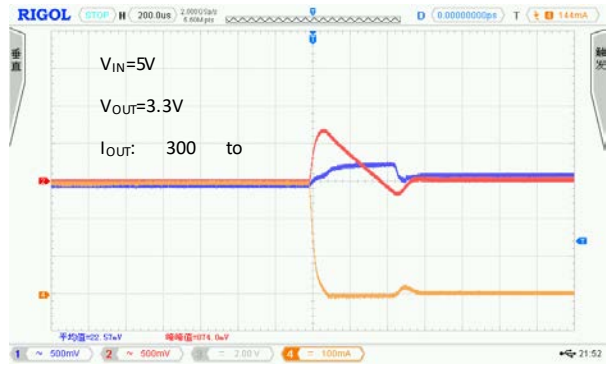
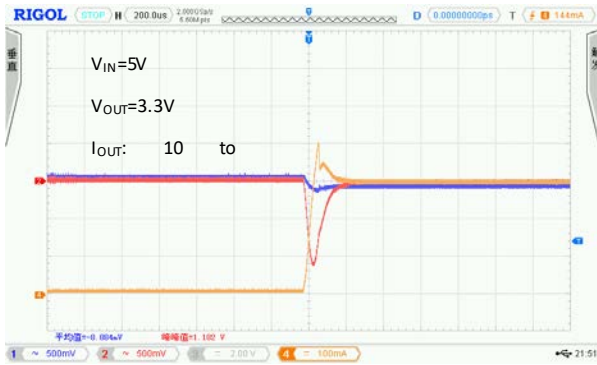
CH1:V_{IN} CH2:V_{OUT}



Load Transient Response

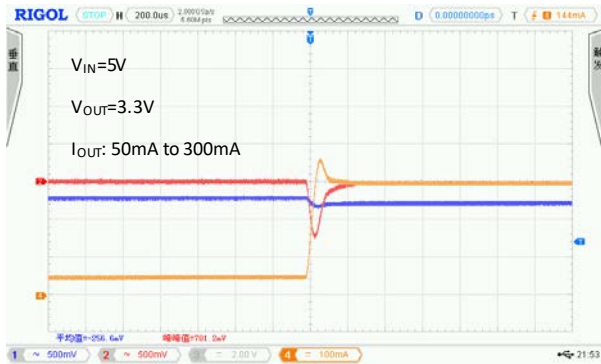
CH1:V_{IN}CH2:V_{OUT}CH3:I_{OUT}



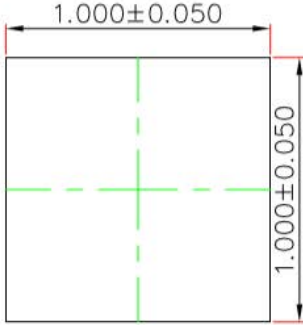
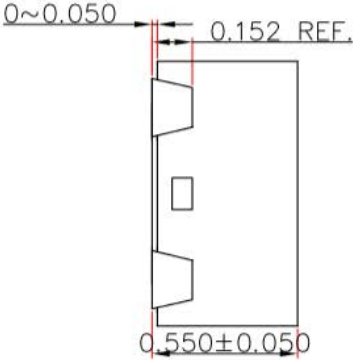
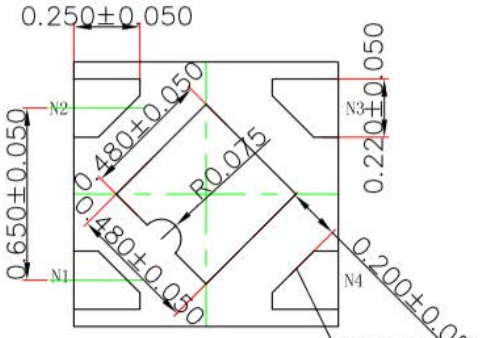


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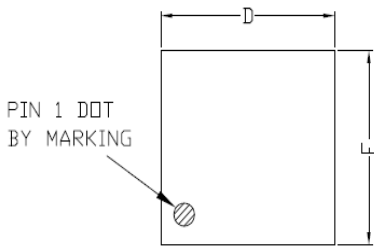
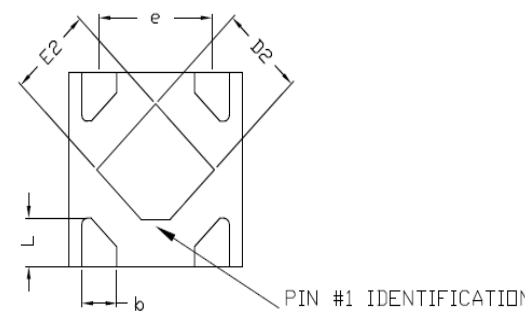
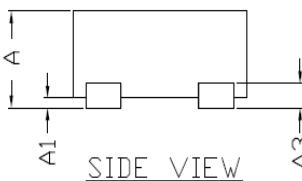
CH1: V_{IN} CH2: V_{OUT} CH3: I_{OUT}



PACKAGE OUTLINE

Package	DFN1x1-4L	Devices per reel	10000Pcs	Unit	mm
Package Dimension #1:					
 <p>1.000±0.050</p> <p>1.000±0.050</p>		 <p>0~0.050</p> <p>0.152 REF.</p> <p>0.550±0.050</p>			
<p>TOP VIEW [顶视图]</p>		<p>SIDE VIEW 侧视图</p>			
 <p>0.250±0.050</p> <p>0.650±0.050</p> <p>0.480±0.050</p> <p>R0.075</p> <p>0.220±0.050</p> <p>0.200±0.050</p> <p>C0.157</p>					
<p>BOTTOM VIEW 背视图</p>					

PACKAGE OUTLINE

Package	DFN1x1-4L	Devices per reel	10000Pcs	Unit	mm																																																				
Package Dimension #2:																																																									
 <p>PIN 1 DOT BY MARKING</p> <p>TOP VIEW</p>		 <p>PIN #1 IDENTIFICATION CHAFMER 0.12MM</p> <p>BOTTOM VIEW</p>																																																							
 <p>SIDE VIEW</p>		<table border="1"> <thead> <tr> <th colspan="4">COMMON DIMENSIONS(MM)</th> </tr> <tr> <th>PKG.</th> <th colspan="3">X1EXTREME THIN</th> </tr> <tr> <th>REF.</th> <th>MIN.</th> <th>NOM.</th> <th>MAX</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0.40</td> <td>-</td> <td>0.50</td> </tr> <tr> <td>A1</td> <td>0.00</td> <td>-</td> <td>0.05</td> </tr> <tr> <td>A3</td> <td colspan="3">0.125REF.</td> </tr> <tr> <td>D</td> <td>0.95</td> <td>1.00</td> <td>1.05</td> </tr> <tr> <td>E</td> <td>0.95</td> <td>1.00</td> <td>1.05</td> </tr> <tr> <td>b</td> <td>0.15</td> <td>0.20</td> <td>0.25</td> </tr> <tr> <td>L</td> <td>0.15</td> <td>0.25</td> <td>0.35</td> </tr> <tr> <td>D2</td> <td>0.38</td> <td>0.48</td> <td>0.58</td> </tr> <tr> <td>E2</td> <td>0.38</td> <td>0.48</td> <td>0.58</td> </tr> <tr> <td>e</td> <td colspan="3">0.65 BSC</td> </tr> </tbody> </table>				COMMON DIMENSIONS(MM)				PKG.	X1EXTREME THIN			REF.	MIN.	NOM.	MAX	A	0.40	-	0.50	A1	0.00	-	0.05	A3	0.125REF.			D	0.95	1.00	1.05	E	0.95	1.00	1.05	b	0.15	0.20	0.25	L	0.15	0.25	0.35	D2	0.38	0.48	0.58	E2	0.38	0.48	0.58	e	0.65 BSC		
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