



# SPP1021

## Dual P-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPP1021 is the Dual P-Channel enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. This high density process is especially tailored to minimize on-state resistance and provide superior switching performance. These devices are particularly suited for low voltage applications such as notebook computer power management and other battery powered circuits where high-side switching , low in-line power loss, and resistance to transients are needed.

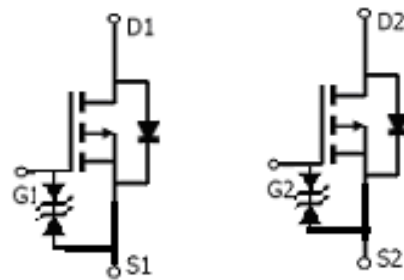
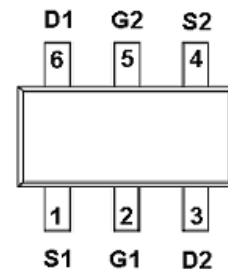
### APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

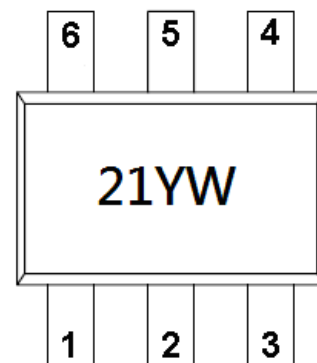
### FEATURES

- ◆ P-Channel
  - 20V/0.45A,  $R_{DS(ON)}=520m\Omega@V_{GS}=-4.5V$
  - 20V/0.35A,  $R_{DS(ON)}=700m\Omega@V_{GS}=-2.5V$
  - 20V/0.25A,  $R_{DS(ON)}=1500m\Omega@V_{GS}=-1.8V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-563 (SC-89-6L) package design

### PIN CONFIGURATION(SOT-563/SC-89-6L)



### PART MARKING





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### PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	D2	Drain 2
4	S2	Source 2
5	G2	Gate 2
6	D1	Drain1

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPP1021S56RGB	SOT-563	21

※ Week Code : A ~ Z( 1 ~ 26 ) ; a ~ z( 27 ~ 52 )

※ SPP1021S56RGB : Tape Reel ; Pb – Free ; Halogen – Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-20	V
Gate –Source Voltage	V <sub>GSS</sub>	±12	V
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	-0.45
		T <sub>A</sub> =80°C	-0.35
Pulsed Drain Current	I <sub>DM</sub>	-1.0	A
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	-0.3	A
Power Dissipation	P <sub>D</sub>	T <sub>A</sub> =25°C	0.35
		T <sub>A</sub> =70°C	0.19
Operating Junction Temperature	T <sub>J</sub>	-55/150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C



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### ELECTRICAL CHARACTERISTICS

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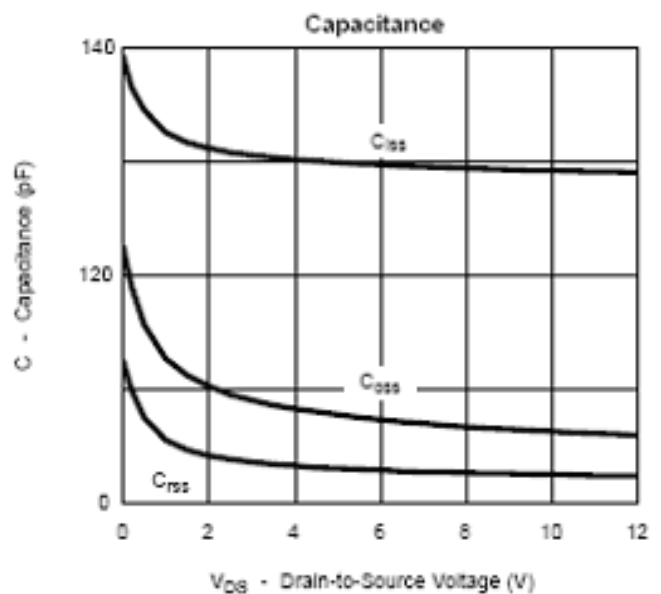
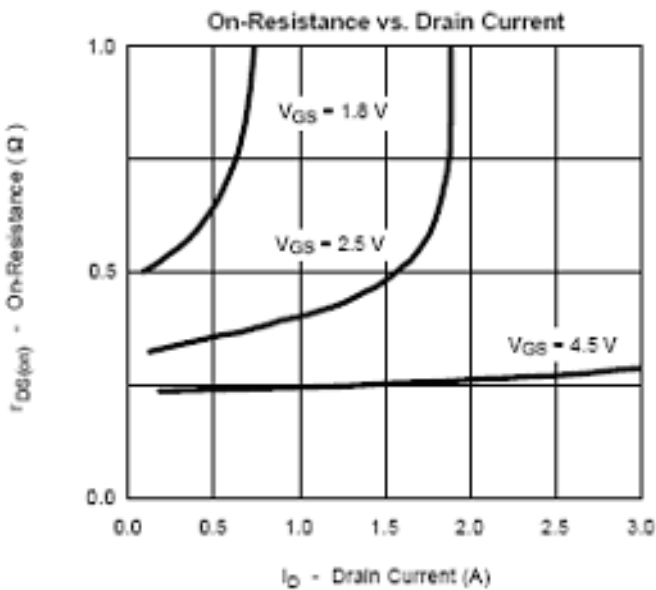
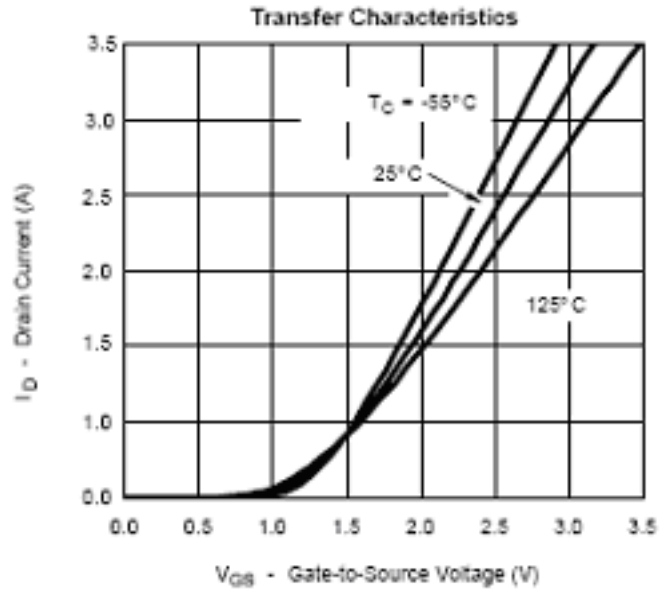
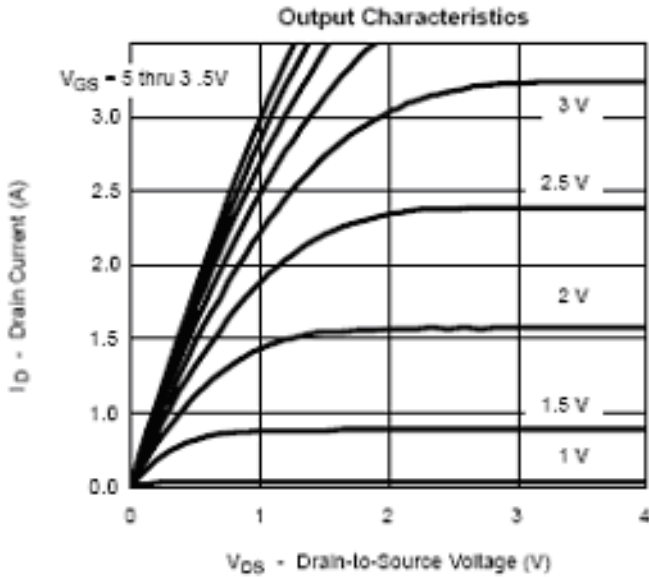
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.35		-1.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 30$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	$\mu A$
		$V_{DS}=-20V, V_{GS}=0V$ $T_J=55^\circ C$			-5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\leq -4.5V, V_{GS}=-5V$	-0.7			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-0.45A$		0.42	0.52	$\Omega$
		$V_{GS}=-2.5V, I_D=-0.35A$		0.58	0.70	
		$V_{GS}=-1.8V, I_D=-0.25A$		0.95	1.5	
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-0.25A$		0.4		S
Diode Forward Voltage	$V_{SD}$	$I_S=-0.15A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-0.6A$		1.5	2.0	nC
Gate-Source Charge	$Q_{gs}$			0.3		
Gate-Drain Charge	$Q_{gd}$			0.35		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-10V, R_L=10\Omega, I_D=-0.4A$ $V_{GEN}=-4.5V, R_G=6\Omega$		5	10	ns
	$t_r$			15	25	
Turn-Off Time	$t_{d(off)}$			8	15	
	$t_f$			1.4	1.8	



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### TYPICAL CHARACTERISTICS

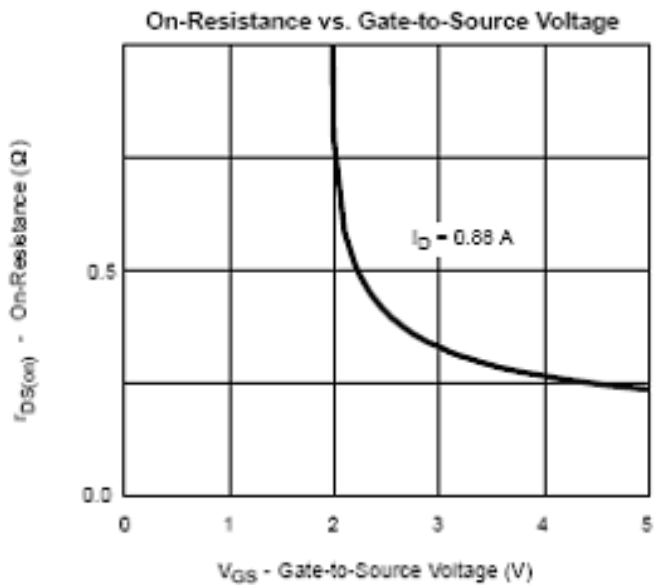
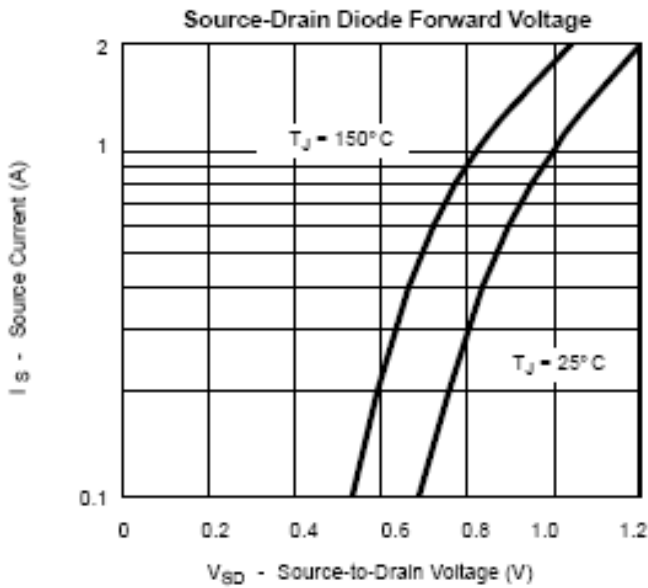
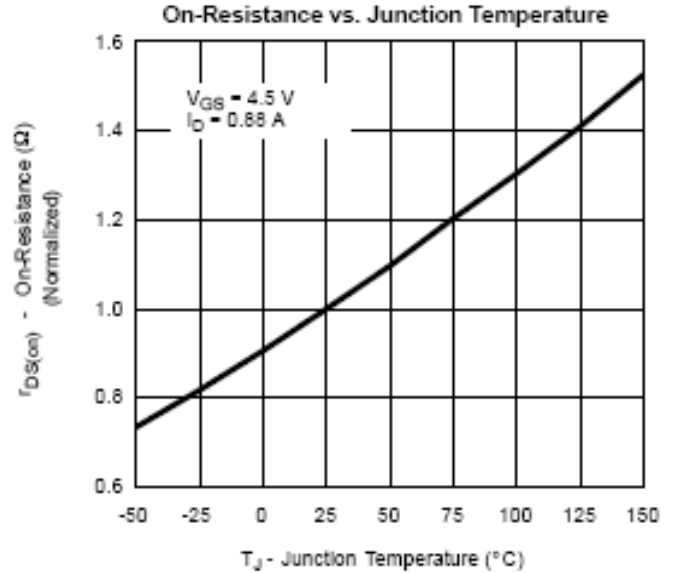
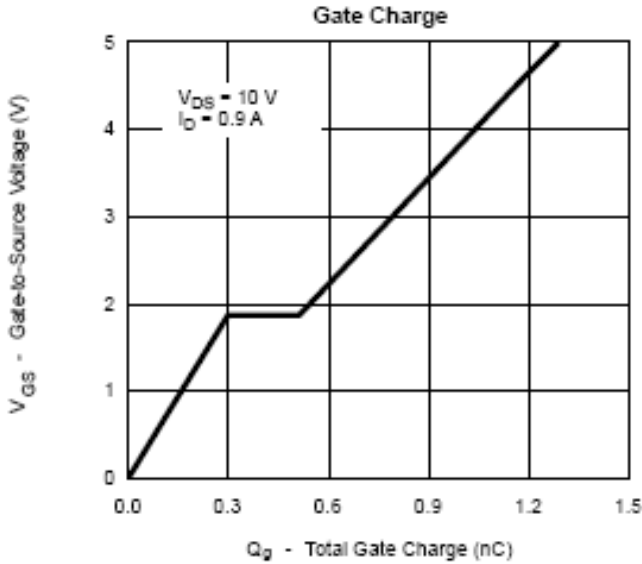




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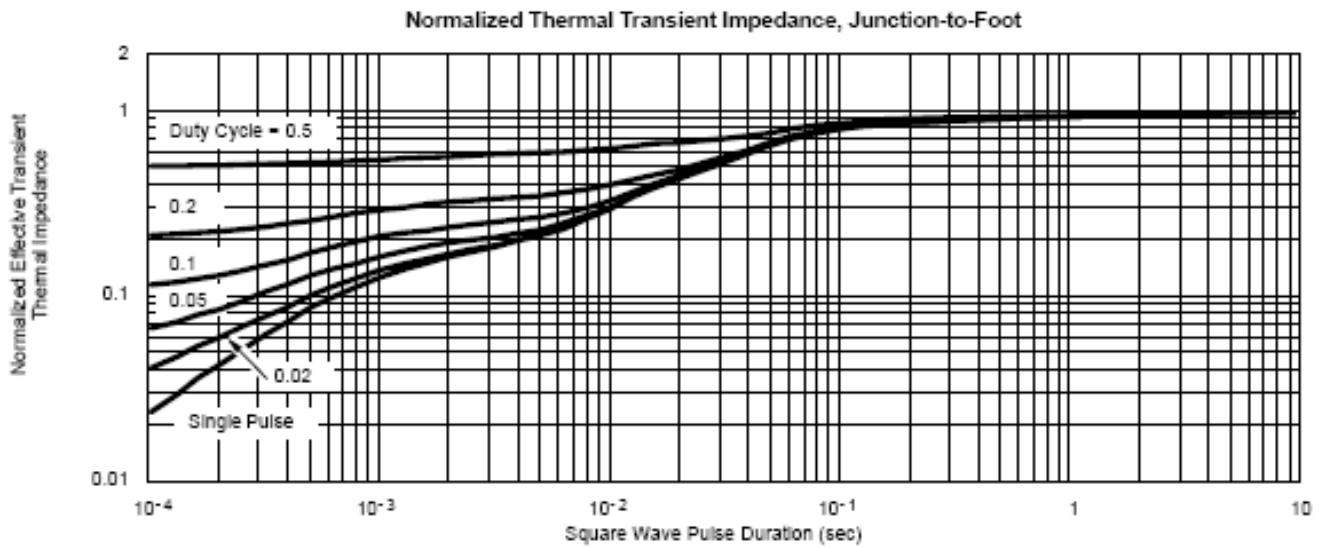
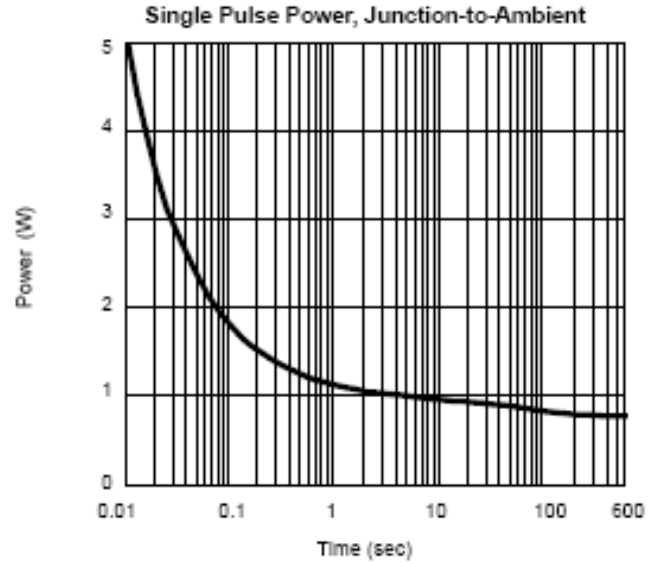
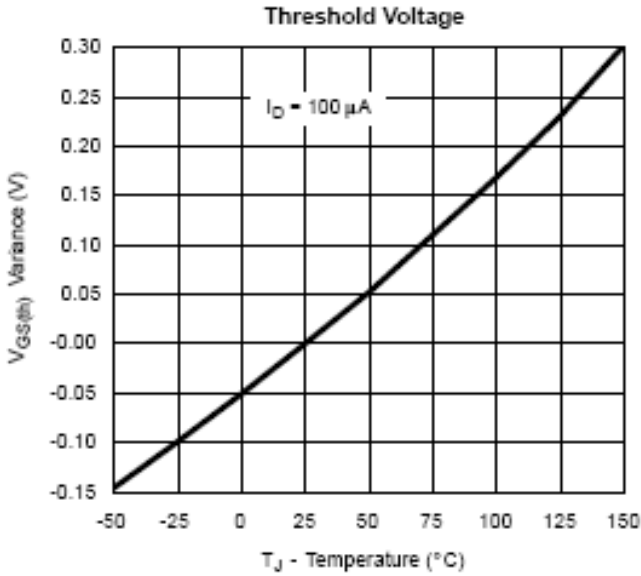




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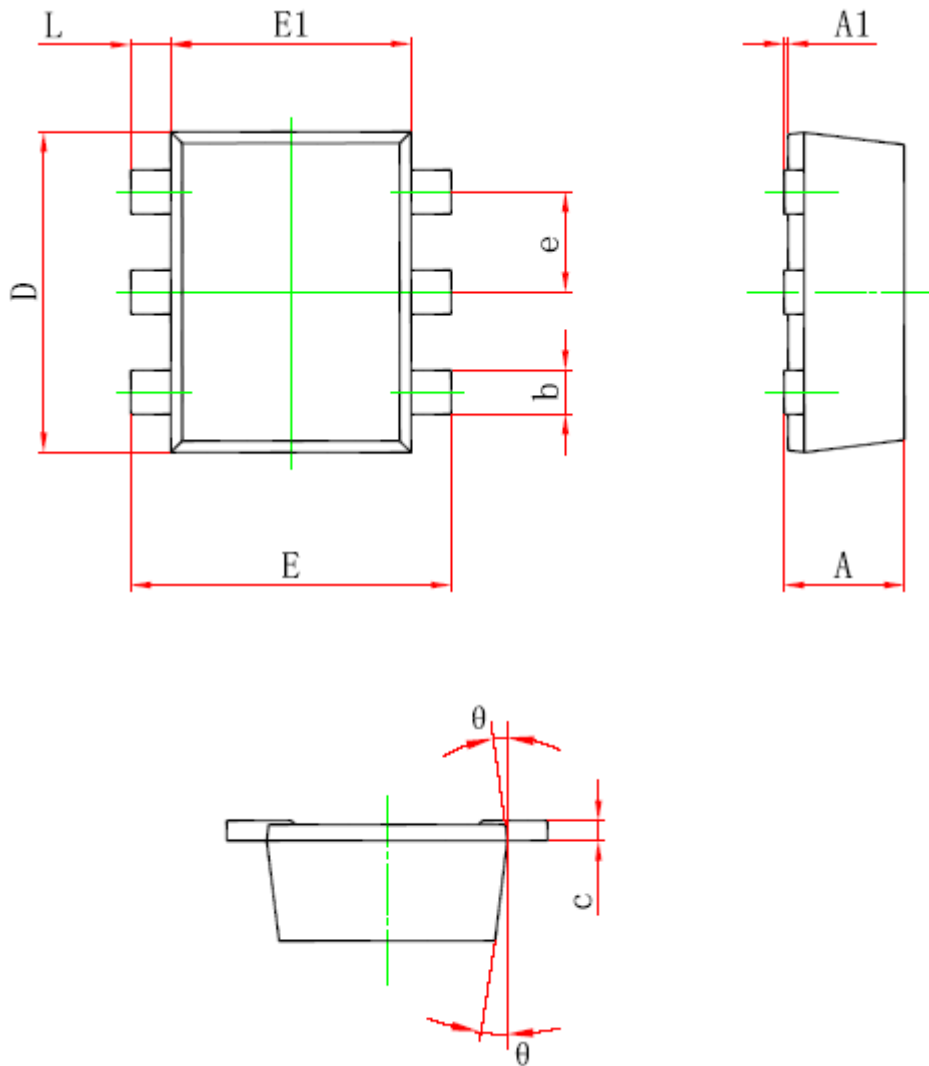




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### SOT-563 PACKAGE OUTLINE



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min.	Max.	Min.	Max.
A	0.525	0.600	0.021	0.024
A1	0.000	0.050	0.000	0.002
e	0.450	0.550	0.018	0.022
c	0.090	0.160	0.004	0.006
D	1.500	1.700	0.059	0.067
b	0.170	0.270	0.007	0.011
E1	1.100	1.300	0.043	0.051
E	1.500	1.700	0.059	0.067
L	0.100	0.300	0.004	0.012
θ	7° REF.		7° REF.	



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