Features

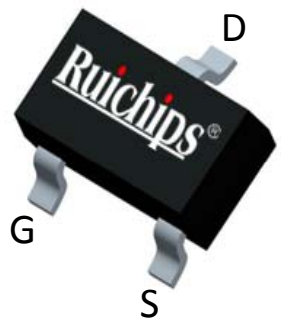
- 30V/6A,
  $R_{DS\ (ON)}$ =18mΩ(Typ.)@V_{GS}=10V
  $R_{DS\ (ON)}$ =28mΩ(Typ.)@V_{GS}=4.5V
- Low $R_{DS\ (ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pb-Free RoHS Halogen-Free

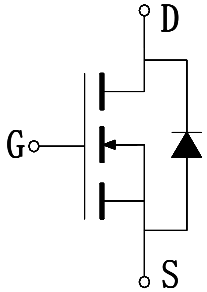
Applications

- Load Switch
- Power Management
- Battery Protection

Pin Description



SOT23-3



N-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	T_A=25°C	1	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_A=25°C	24	A
I_D ②	Continuous Drain Current(V_{GS}=10V)	T_A=25°C	6	A
		T_A=70°C	4.5	
P_D	Maximum Power Dissipation	T_A=25°C	1.25	W
		T_A=70°C	0.75	
$R_{\theta JC}$	Thermal Resistance-Junction to Case		-	°C/W
$R_{\theta JA}$ ③	Thermal Resistance-Junction to Ambient		100	°C/W
Drain-Source Avalanche Ratings				
E_{AS} ④	Avalanche Energy, Single Pulsed		TBD	mJ

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

Symbol	Parameter	Test Condition	RU307C			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V, V_{GS}=0V			1	μA
		T_J=125°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.7	1	1.8	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=6A		18	25	mΩ
		V_{GS}=4.5V, I_{DS}=5A		28	35	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V			1	V
t_{rr}	Reverse Recovery Time	I_{SD}=1A, dI_{SD}/dt=100A/μs		17		ns
Q_{rr}	Reverse Recovery Charge			8		nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.5		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		610		pF
C_{oss}	Output Capacitance			130		
C_{rss}	Reverse Transfer Capacitance			90		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, I_{DS}=6A, V_{GEN}=10V,R_G=4.7Ω		9		ns
t_r	Turn-on Rise Time			16		
$t_{d(OFF)}$	Turn-off Delay Time			34		
t_f	Turn-off Fall Time			13		
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=24V, V_{GS}=10V, I_{DS}=6A		12		nC
Q_{gs}	Gate-Source Charge			1.9		
Q_{gd}	Gate-Drain Charge			3.7		

Notes:

①Pulse width limited by safe operating area.

②Calculated continuous current based on maximum allowable junction temperature.

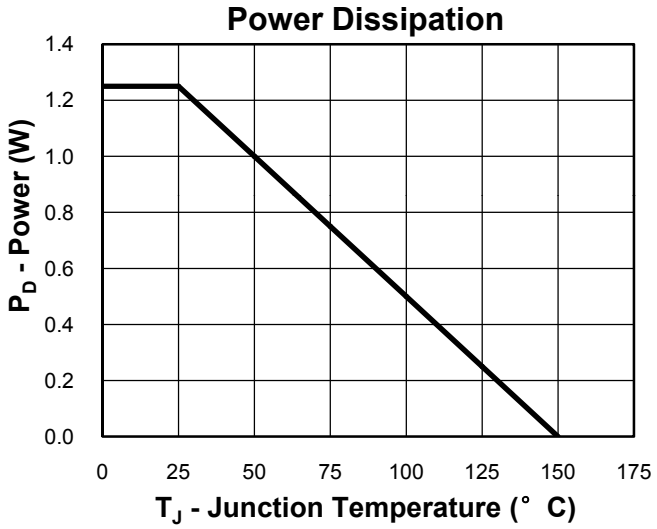
③When mounted on 1 inch square copper board, t≤10sec. The value in any given application depends on the user's specific board design.

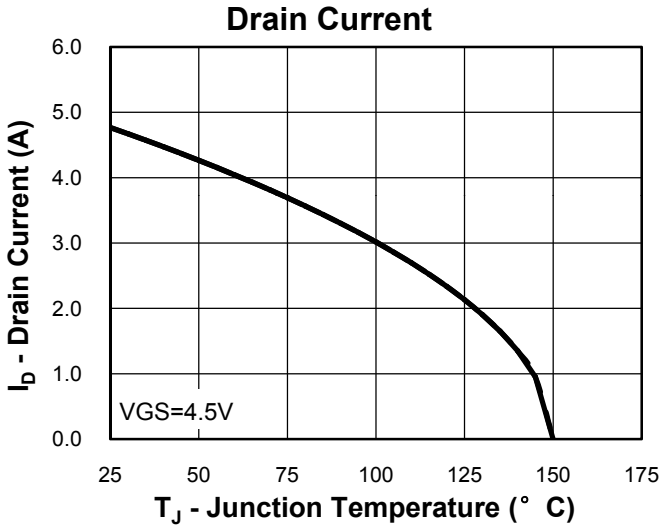
④Limited by $T_{Jmax.}$ Starting T_J = 25°C.

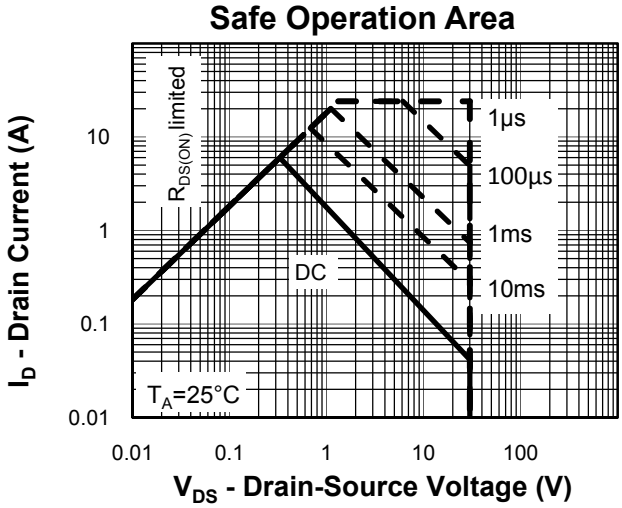
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.

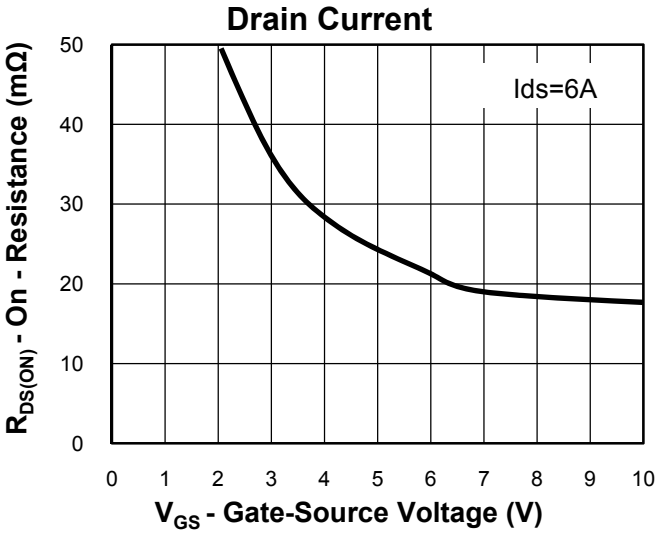
⑥Guaranteed by design, not subject to production testing.

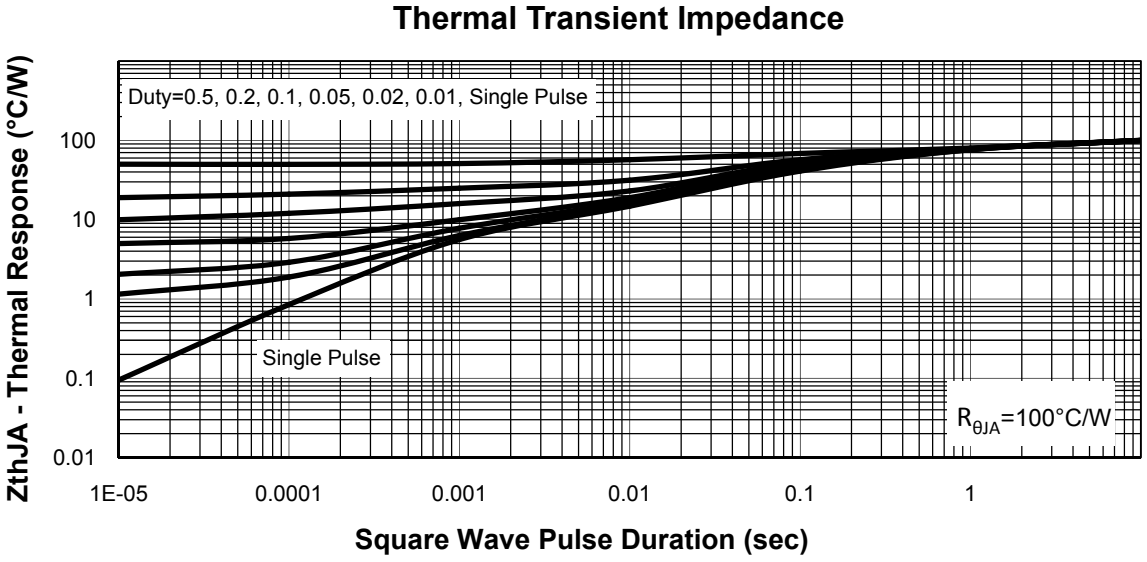
Typical Characteristics



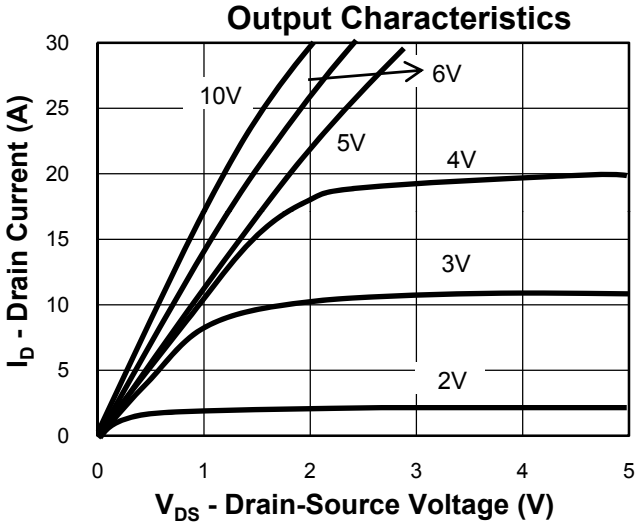


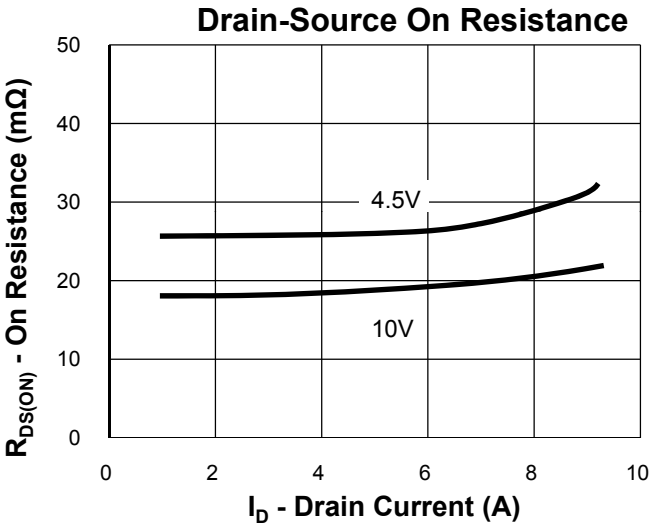


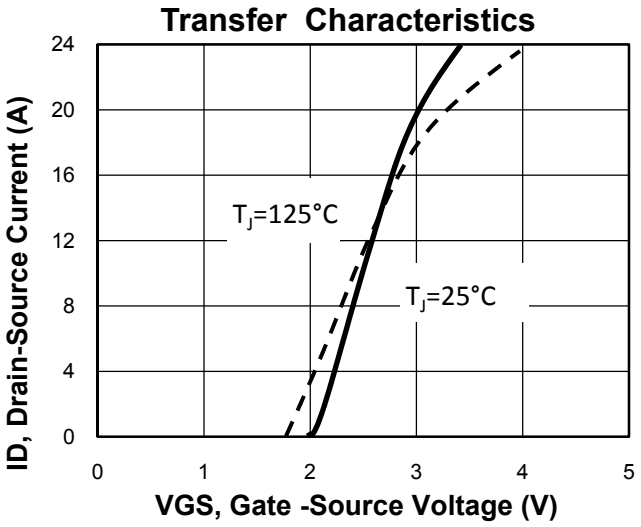


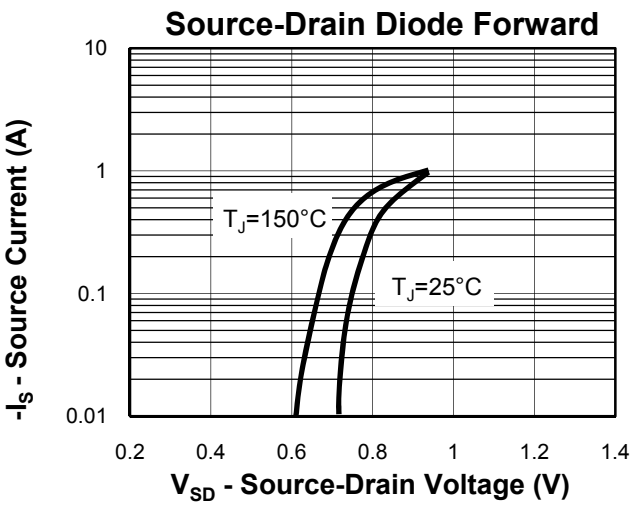


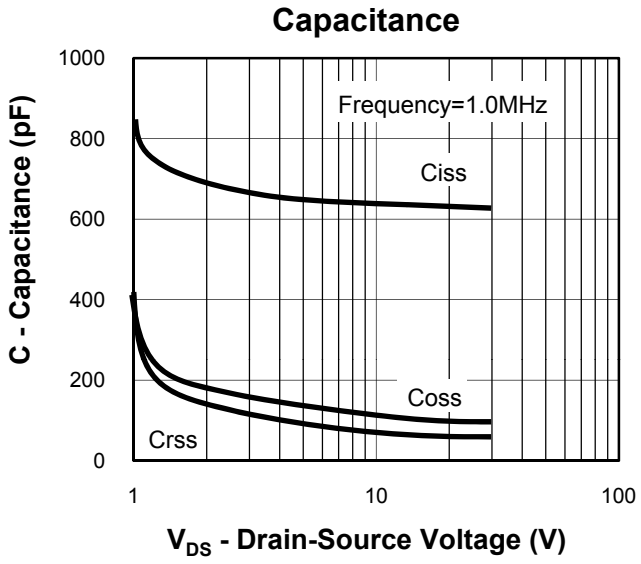
Typical Characteristics

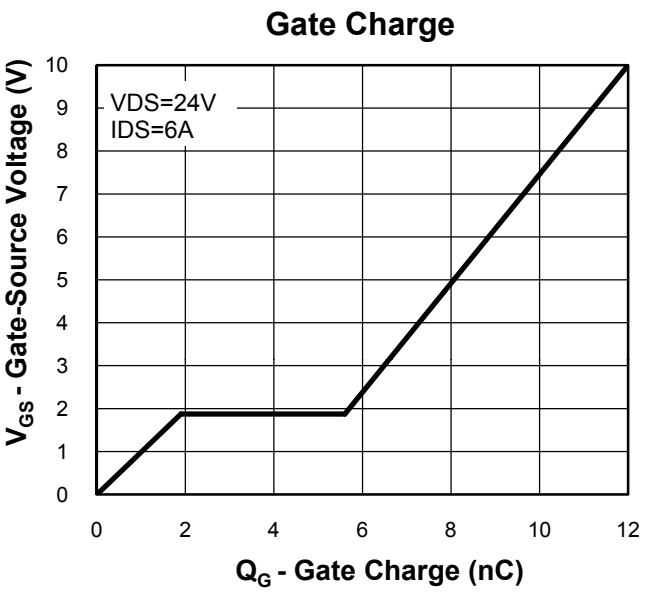




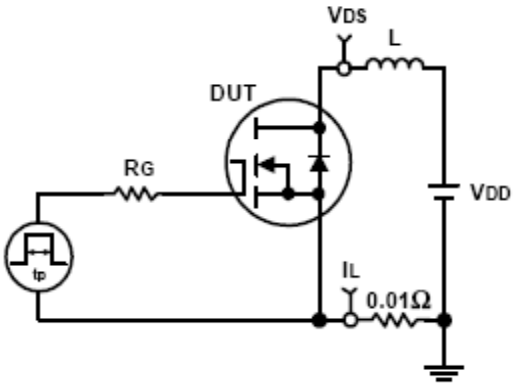


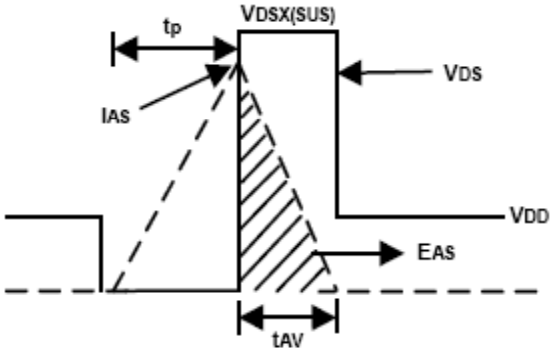




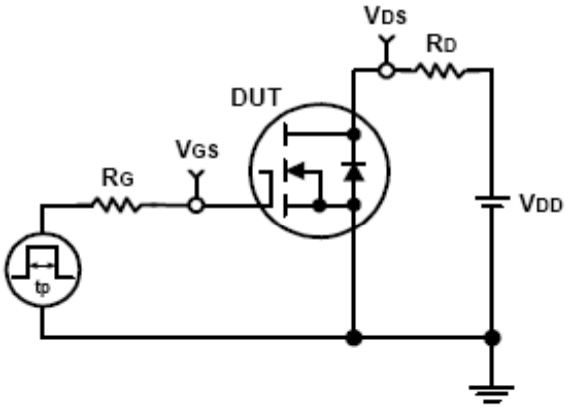


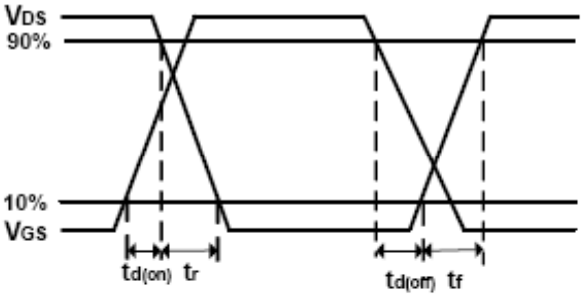
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms



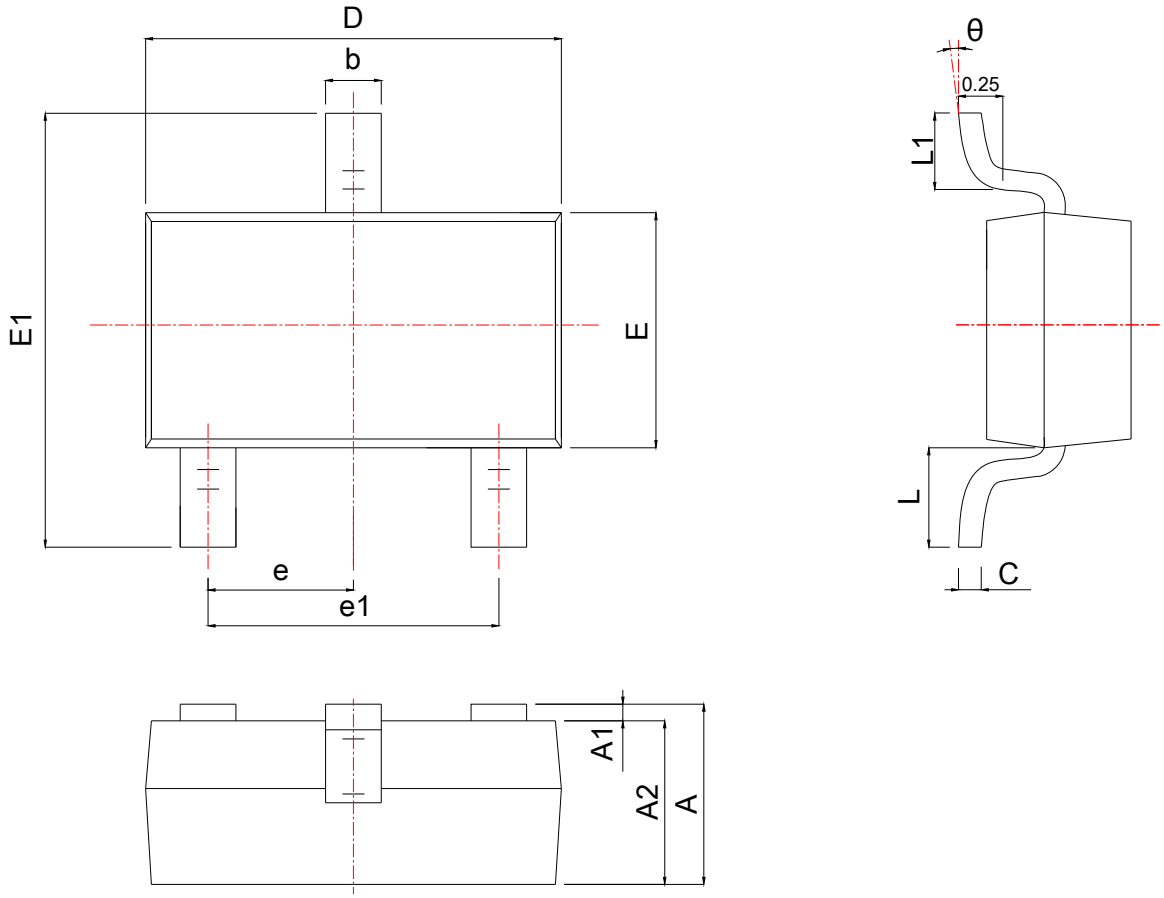


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU307C	RU307	SOT23-3	Tape&Reel	3000	7''	8mm

Package Information

SOT23-3



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.950	1.150	1.450	0.037	0.045	0.057
A1	0.000	*	0.150	0.000	*	0.006
A2	0.900	1.100	1.300	0.035	0.043	0.051
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.080	0.150	0.200	0.003	0.006	0.008
D	2.800	2.925	3.050	0.110	0.115	0.120
E	1.500	1.600	1.750	0.059	0.063	0.069
E1	2.650	2.800	3.000	0.104	0.110	0.118
e	0.950 BSC			0.037 BSC		
e1	1.800	1.900	2.000	0.071	0.075	0.079
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°

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