Features

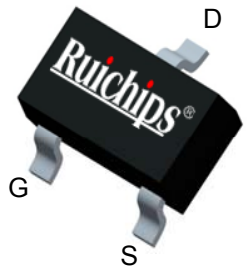
- -15V/-12A,
  $R_{DS\ (ON)}$ =16mΩ(Typ.)@V_{GS}=-4.5V
  $R_{DS\ (ON)}$ =25mΩ(Typ.)@V_{GS}=-2.5V
- Uses Ruichips advanced Trench™ technology
- Ultra Low On-Resistance
- Very Fast Switching
- Low Threshold Voltage
- Lead Free and Green Devices (RoHS Compliant)

Pb-Free RoHS Halogen-Free

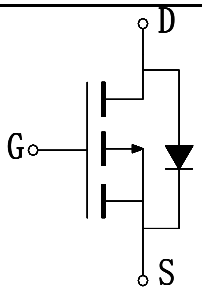
Applications

- Load Switch
- Power Management
- Battery Protection

Pin Description



SOT23-3



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		-15	V
V_{GSS}	Gate-Source Voltage		±10	
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	-12	A
Mounted on Large Heat Sink				
I_{DP} ①	300μs Pulse Drain Current Tested	T_A=25°C	-48	A
I_D ②	Continuous Drain Current(V_{GS}=-4.5V)	T_A=25°C	-12	A
		T_A=70°C	-9.5	
P_D	Maximum Power Dissipation	T_A=25°C	1.2	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		107	°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	RU15P12C			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-15			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-15V, V_{GS}=0V			-1	μA
		T_J=125°C			-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-0.4		-1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±8V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ⑤	Drain-Source On-state Resistance	V_{GS}=-4.5V, I_{DS}=-6A		16	20	mΩ
		V_{GS}=-2.5V, I_{DS}=-5A		25	30	mΩ
Diode Characteristics						
V_{SD} ⑤	Diode Forward Voltage	I_{SD}=-1A, V_{GS}=0V			-1.2	V
t_{rr}	Reverse Recovery Time	I_{SD}=-12A, dI_{SD}/dt=100A/μs		21	30	ns
Q_{rr}	Reverse Recovery Charge			2.9	5	nC
Dynamic Characteristics ⑥						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		3.2	5	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=-8V, Frequency=1.0MHz		1800	2400	pF
C_{oss}	Output Capacitance			315	600	
C_{rss}	Reverse Transfer Capacitance			305	500	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-8V, R_L=3.8Ω, I_{DS}=-12A, V_{GEN}=-4.5V, R_G=6Ω		8.2	15	ns
t_r	Turn-on Rise Time			31	50	
$t_{d(OFF)}$	Turn-off Delay Time			39	60	
t_f	Turn-off Fall Time			30	50	
Gate Charge Characteristics ⑥						
Q_g	Total Gate Charge	V_{DS}=-12V, V_{GS}=-4.5V, I_{DS}=-12A		21	35	nC
Q_{gs}	Gate-Source Charge			3	6	
Q_{gd}	Gate-Drain Charge			10	18	

Notes:
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.The package limitation current is 5A
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.

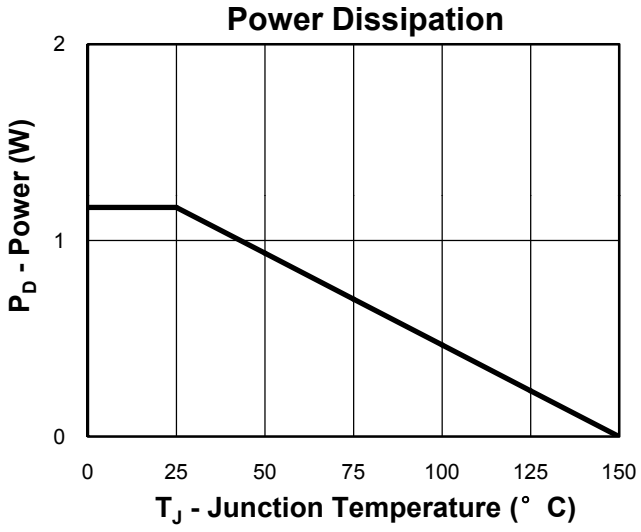
Ordering and Marking Information

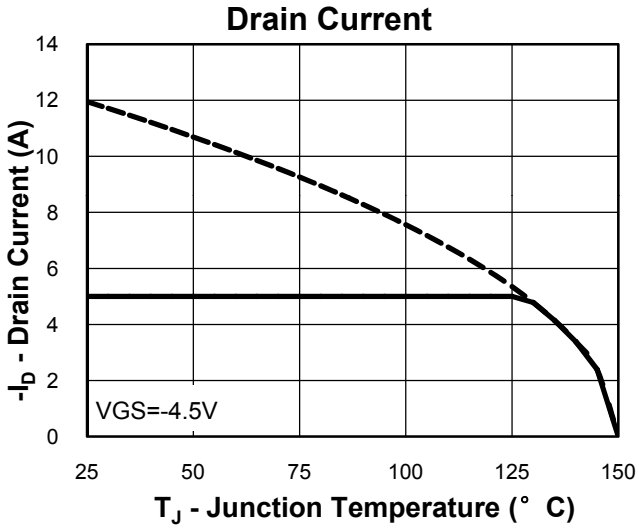
Device	Marking①	Package	Packaging	Quantity	Reel Size	Tape width
RU15P12C	XAYWW	SOT23-3	Tape&Reel	3000	7''	8mm

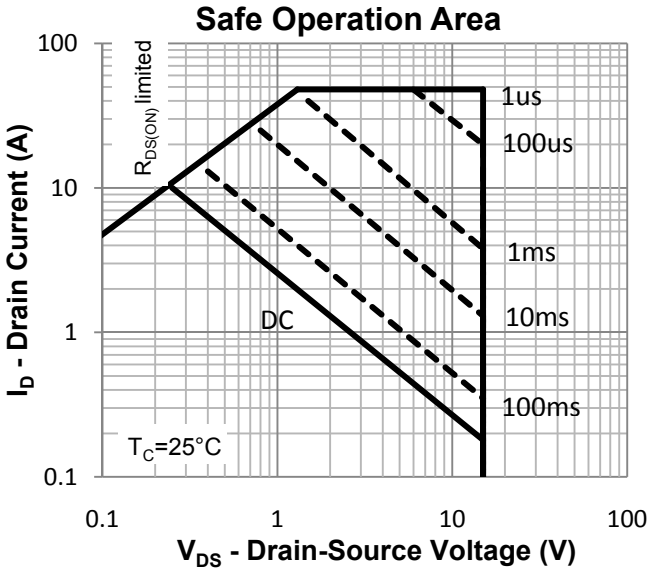
① The following characters could be different and means:

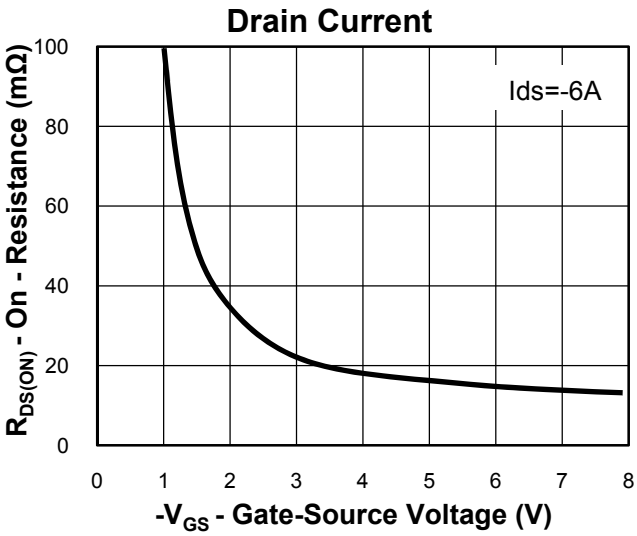
A =Assembly site code
Y =Year
WW =Work Week

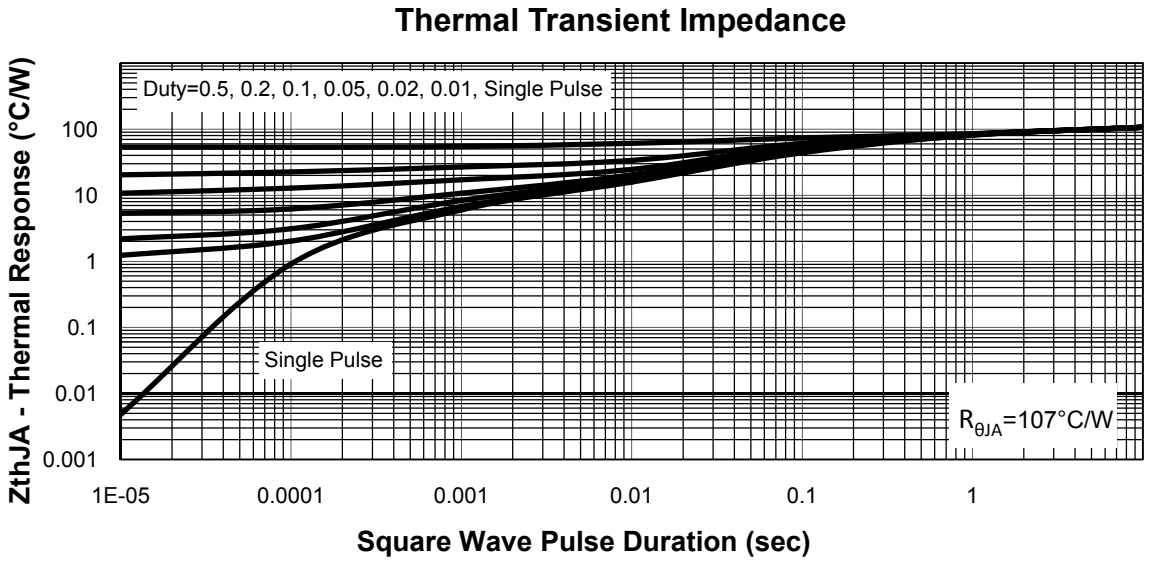
Typical Characteristics





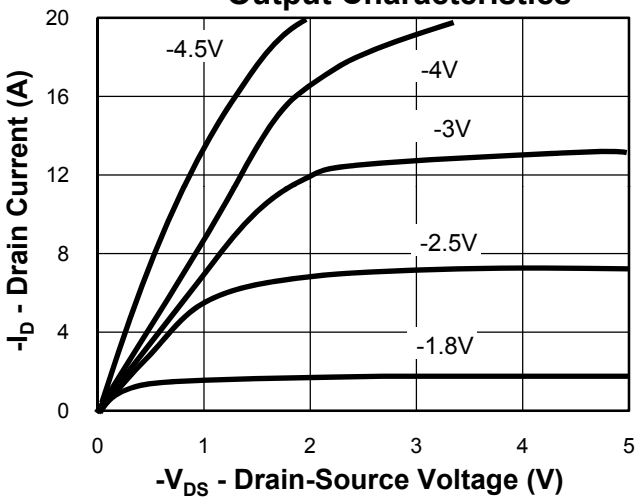




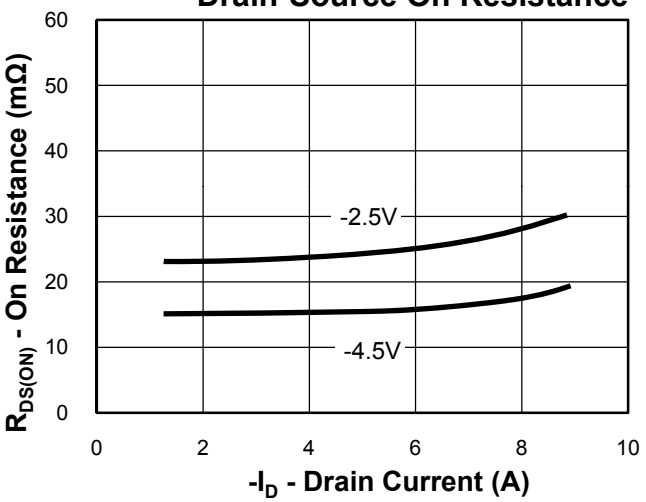


Typical Characteristics

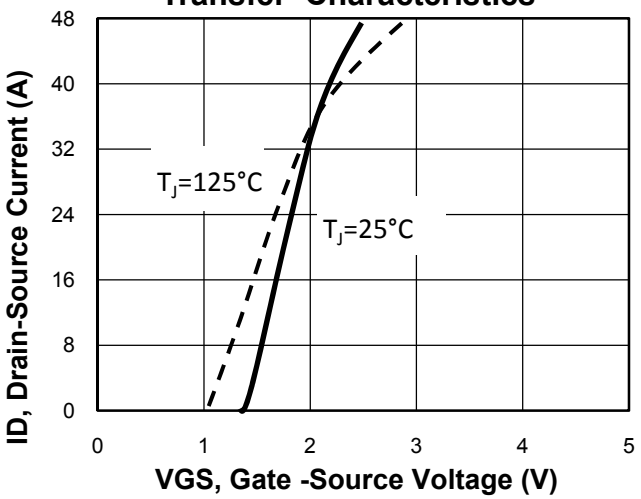
Output Characteristics



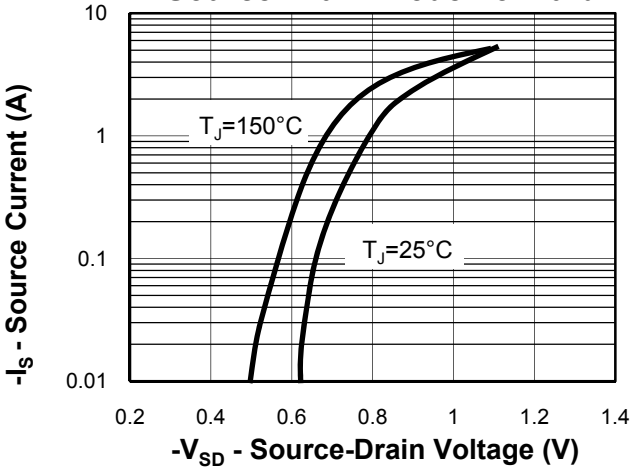
Drain-Source On Resistance



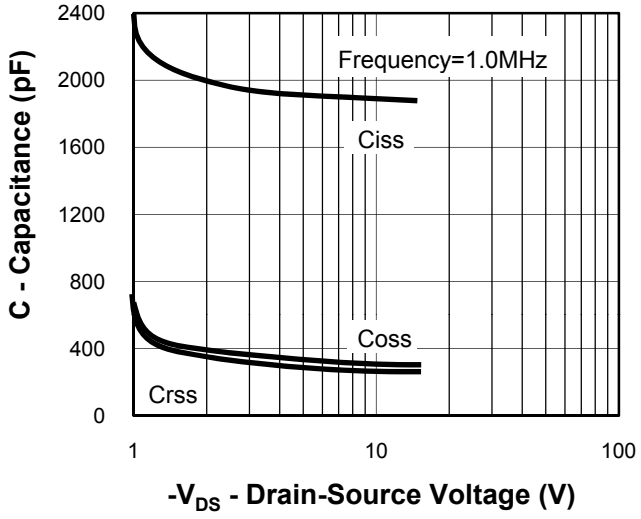
Transfer Characteristics



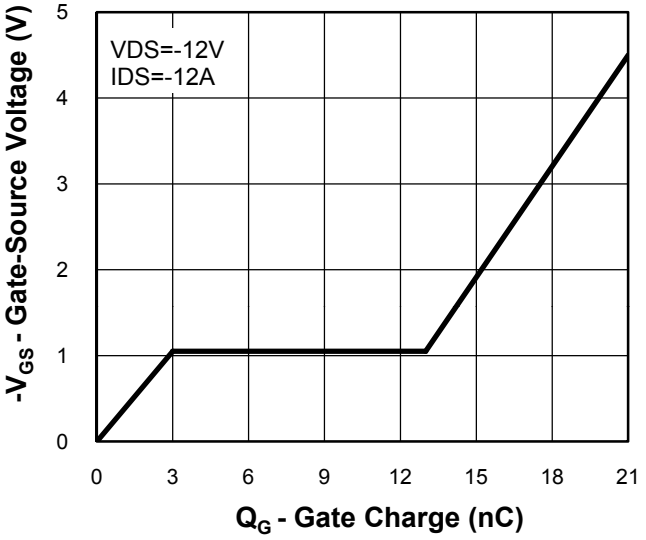
Source-Drain Diode Forward



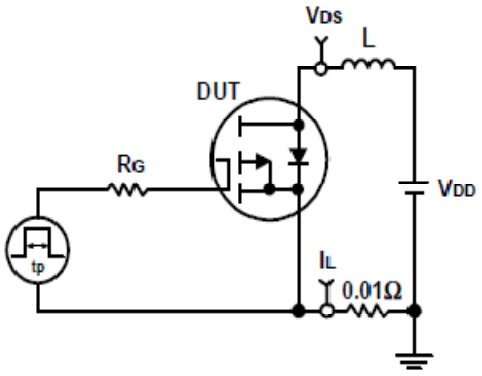
Capacitance

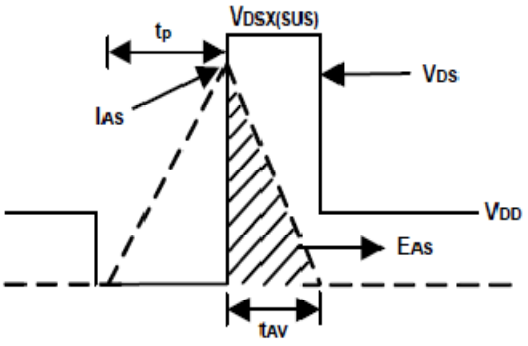


Gate Charge

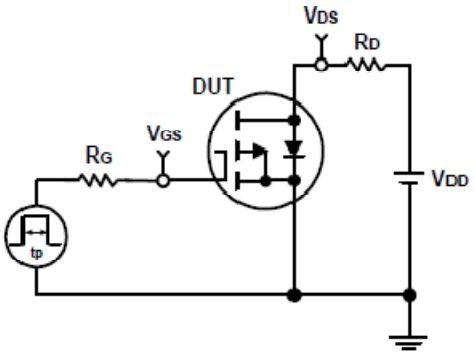


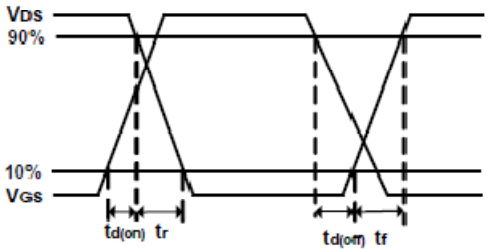
Avalanche Test Circuit and Waveforms





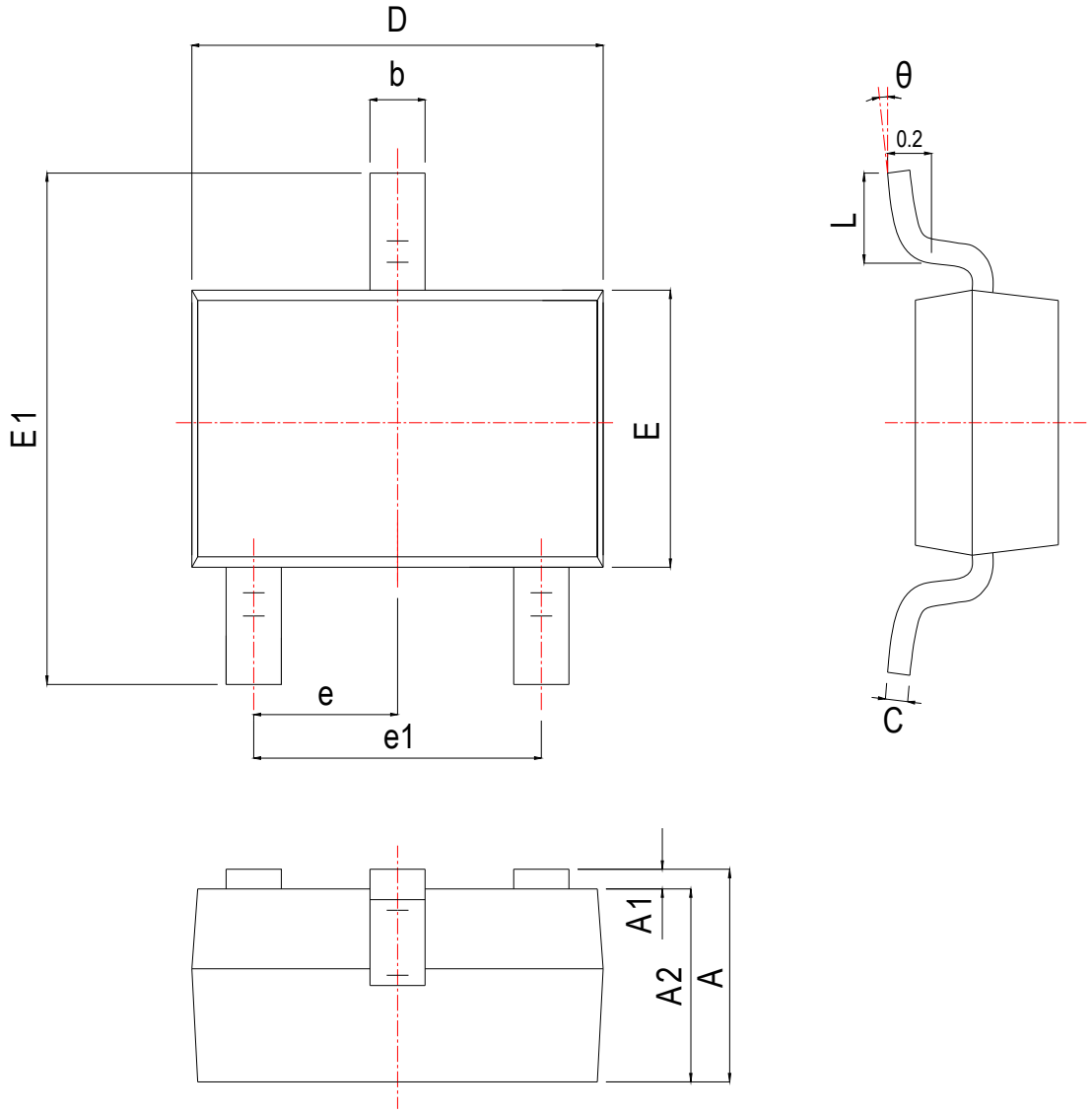
Switching Time Test Circuit and Waveforms





Package Information

SOT23-3



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.050	1.150	1.250	0.041	0.045	0.049
A1	0.000	0.050	0.100	0.000	0.002	0.004
A2	1.050	1.100	1.150	0.041	0.043	0.045
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.100	0.150	0.200	0.004	0.006	0.008
D	2.820	2.920	3.020	0.111	0.115	0.119
E	1.500	1.600	1.700	0.059	0.063	0.067
E1	2.650	2.800	2.950	0.104	0.110	0.116
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°