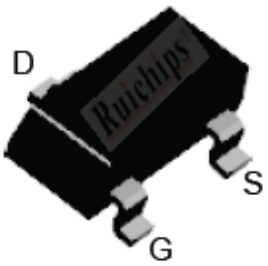
RU306C

N-Channel Advanced Power MOSFET

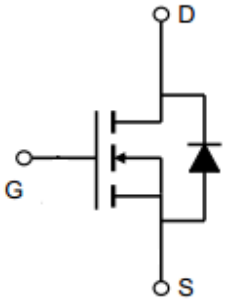
Features

- 30V/5A,
  $R_{DS(ON)}$=30mΩ (Typ.) @ V_{GS}=10V
  $R_{DS(ON)}$=38mΩ (Typ.) @ V_{GS}=4.5V
  $R_{DS(ON)}$=110mΩ (Typ.) @ V_{GS}=2.5V
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

Pin Description



SOT23-3



N-Channel MOSFET

Applications

- DC/DC Converter
- Load Switch

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	1.3	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_A=25°C	20①	A
I_D	Continuous Drain Current(V_{GS}=10V)	T_A=25°C	5	A
		T_A=70°C	3.8	
P_D	Maximum Power Dissipation	T_A=25°C	1.25	W
		T_A=70°C	0.8	
$R_{\theta JA}$②	Thermal Resistance-Junction to Ambient		100	°C/W

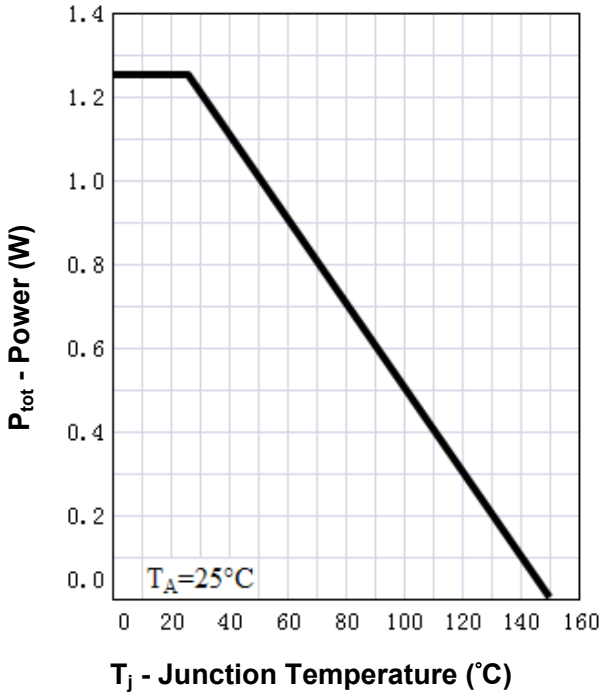
Electrical Characteristics (T_A=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU306C			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=85°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.6	1	1.5	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ③	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=6A		30	35	mΩ
		V_{GS}=4.5V, I_{DS}=5A		38	42	
		V_{GS}=2.5V, I_{DS}=4A		110	150	
Diode Characteristics						
V_{SD} ③	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V			1	V
t_{rr}	Reverse Recovery Time	I_{SD}=1A, dI_{SD}/dt=100A/μs		13		ns
Q_{rr}	Reverse Recovery Charge			10		nC
Dynamic Characteristics ④						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		3		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		295		pF
C_{oss}	Output Capacitance			66		
C_{rss}	Reverse Transfer Capacitance			24		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=15Ω, I_{DS}=1A, V_{GEN}=10V, R_G=1Ω		8		ns
t_r	Turn-on Rise Time			12		
$t_{d(OFF)}$	Turn-off Delay Time			19		
t_f	Turn-off Fall Time			7		
Gate Charge Characteristics ④						
Q_g	Total Gate Charge	V_{DS}=24V, V_{GS}=10V, I_{DS}=1A		6.8		nC
Q_{gs}	Gate-Source Charge			1.2		
Q_{gd}	Gate-Drain Charge			2.4		

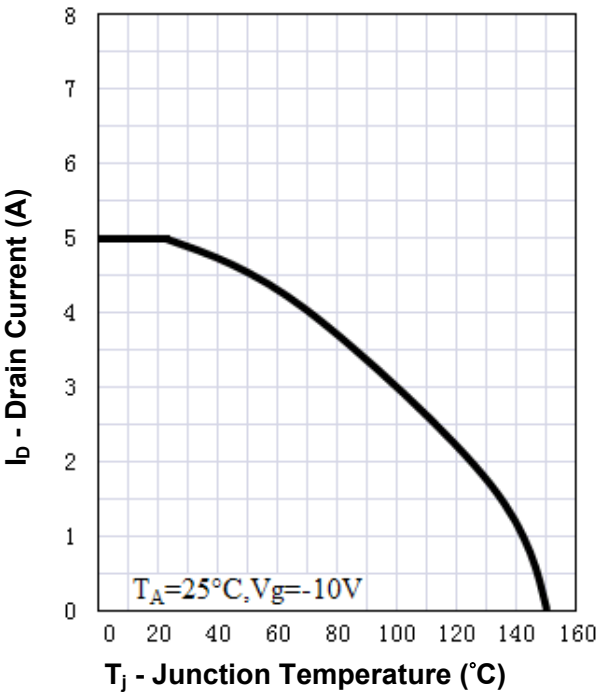
Notes: ①Pulse width limited by safe operating area.
②When mounted on 1 inch square copper board, t ≤10sec. The value in any given application depends on the user's specific board design.
③Pulse test ; Pulse width≤300μs, duty cycle≤2%.
④Guaranteed by design, not subject to production testing.

Typical Characteristics

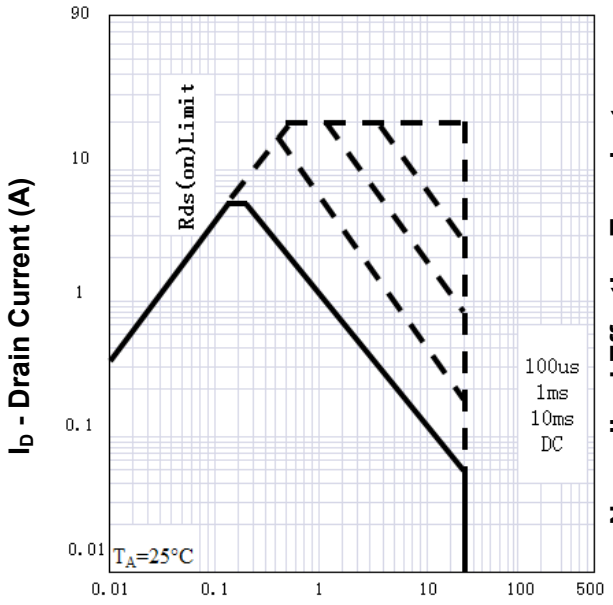
Power Dissipation



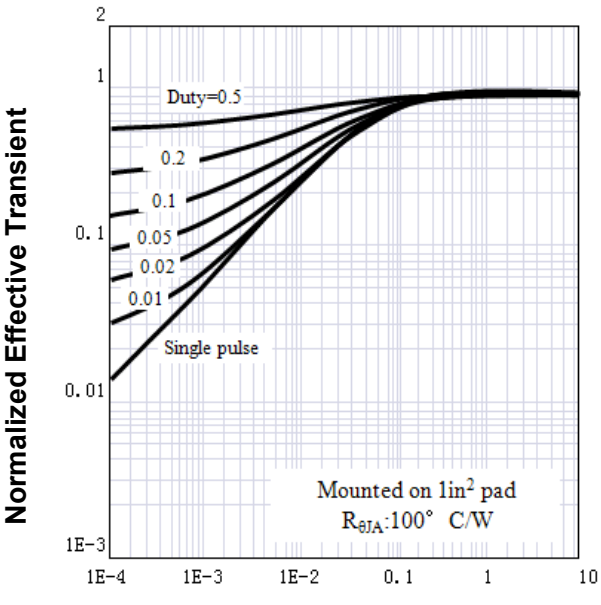
Drain Current



Safe Operation Area

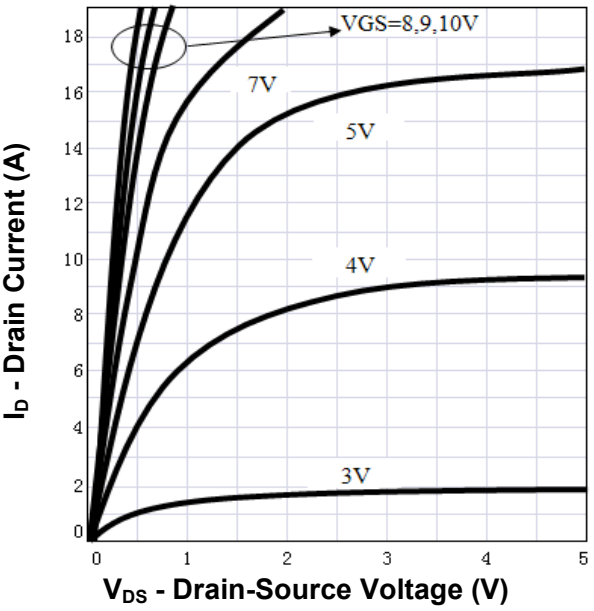


Thermal Transient Impedance

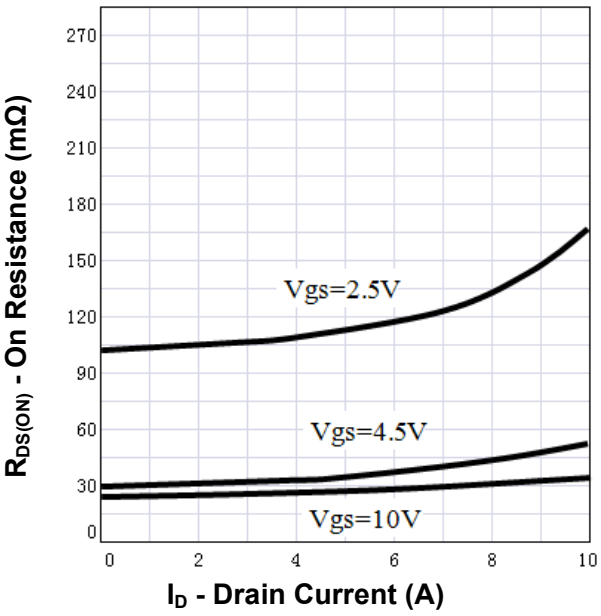


Typical Characteristics

Output Characteristics



Drain-Source On Resistance



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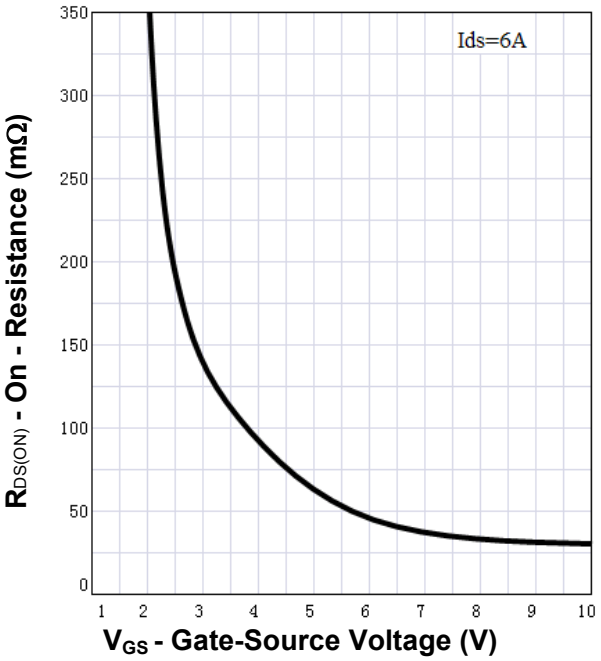
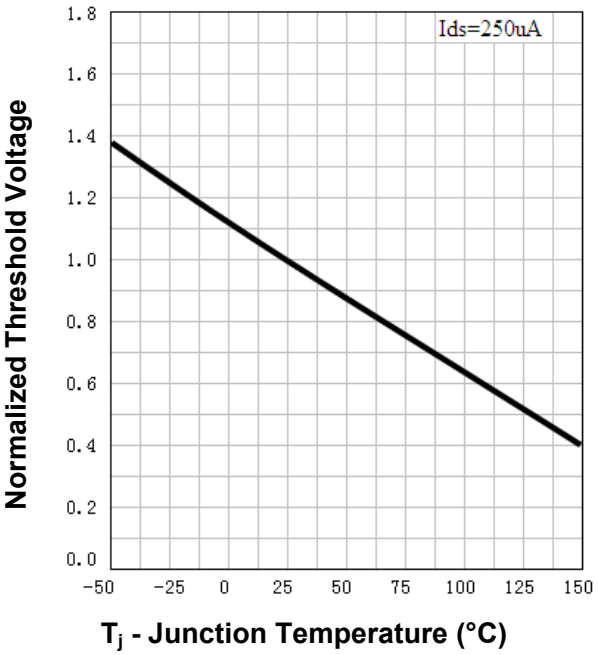
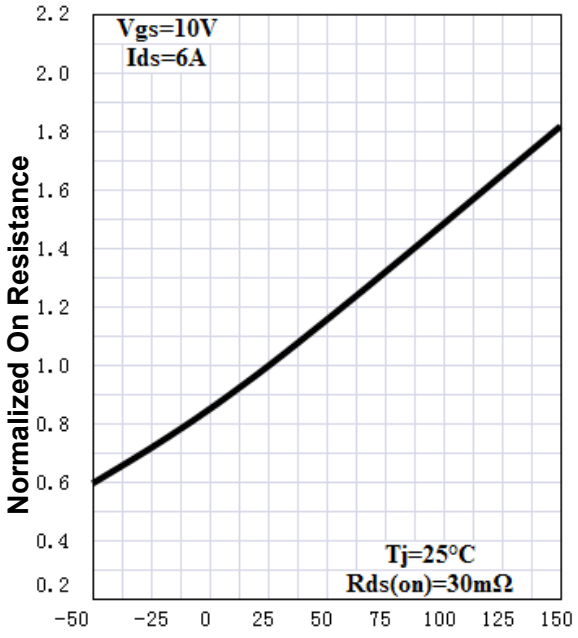


Gate Threshold Voltage



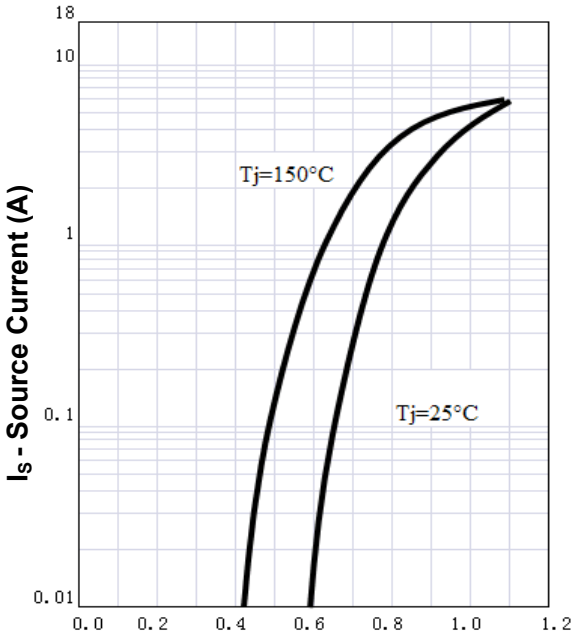
Typical Characteristics

Drain-Source On Resistance



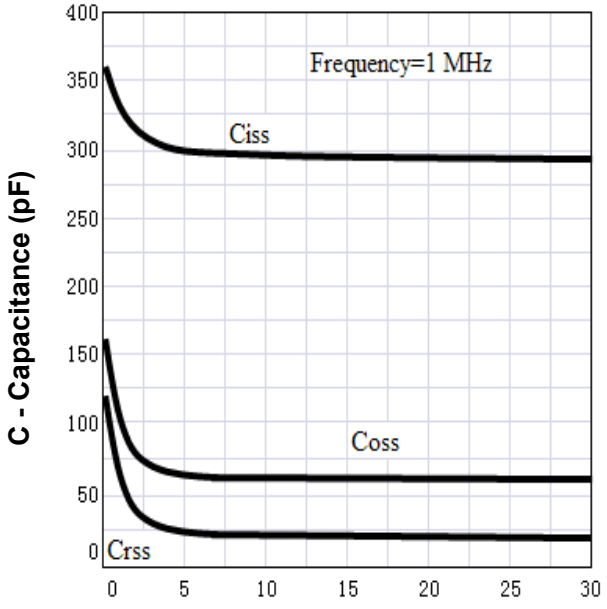
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



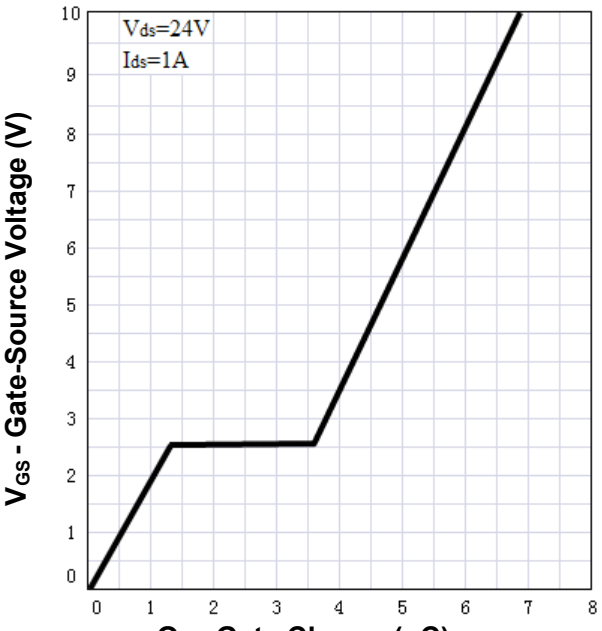
V_{SD} - Source-Drain Voltage (V)

Capacitance



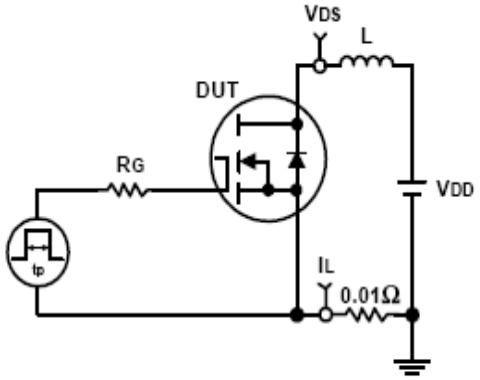
V_{DS} - Drain-Source Voltage (V)

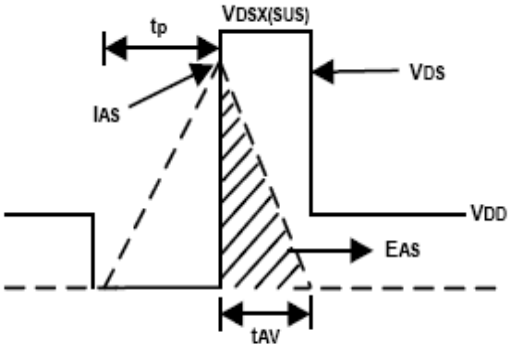
Gate Charge



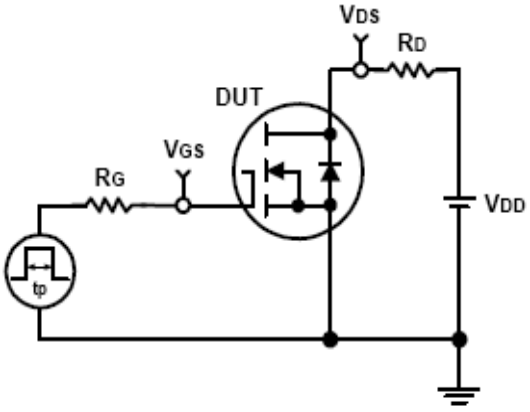
Q_G - Gate Charge (nC)

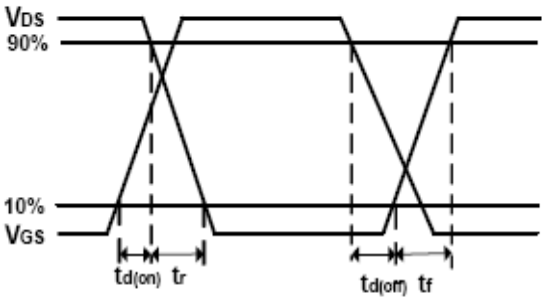
Avalanche Test Circuit and Waveforms





Switching Time Test Circuit and Waveforms





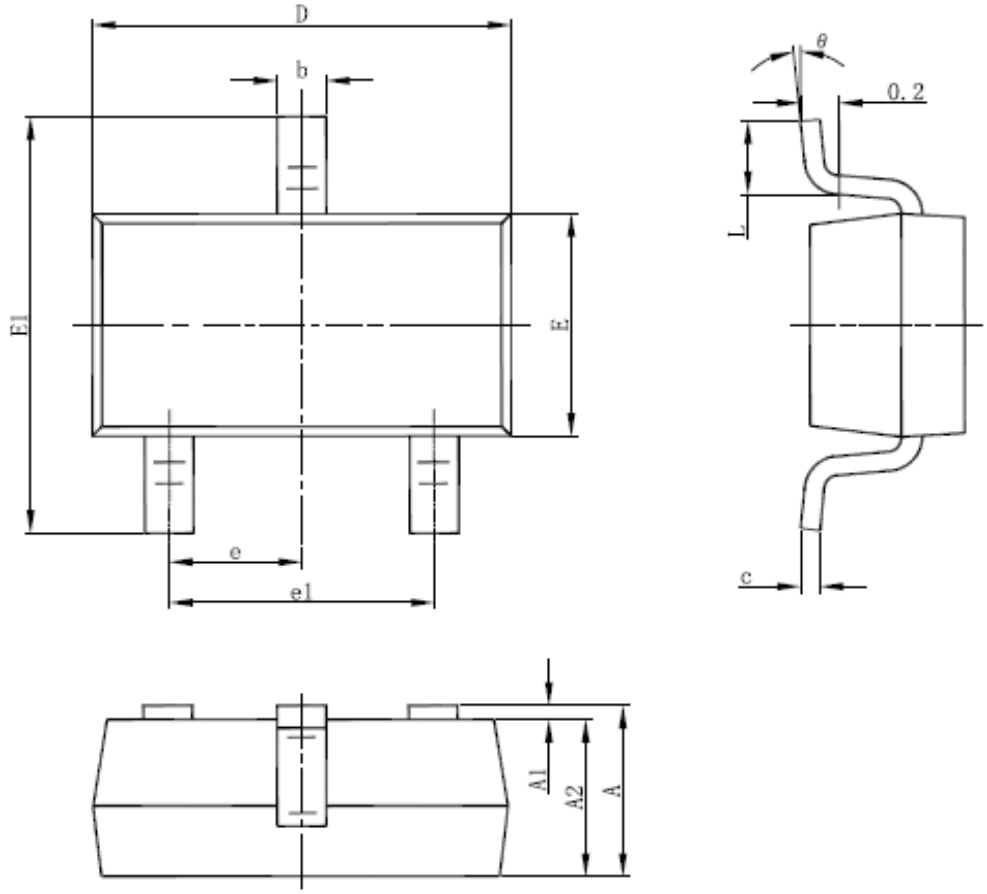
Ordering and Marking Information

Device	Marking①	Package	Packaging	Quantity	Reel Size	Tape width
RU306C	7XYWW	SOT23-3	Tape&Reel	3000	7''	8mm

① The following characters could be different and means:
X =Assembly site code
Y =Year
WW =Work Week

Package Information

SOT23-3



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049	E	1.500	1.700	0.059	0.067
A1	0.0000	0.100	0.000	0.004	E1	2.650	2.950	0.104	0.116
A2	1.050	1.150	0.041	0.045	e	0.950(BSC)		0.037(BSC)	
b	0.300	0.500	0.012	0.020	e1	1.800	2.000	0.071	0.079
c	0.100	0.200	0.004	0.008	L	0.300	0.600	0.012	0.024
D	2.820	3.020	0.111	0.119	θ	0°	8°	0°	8°

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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