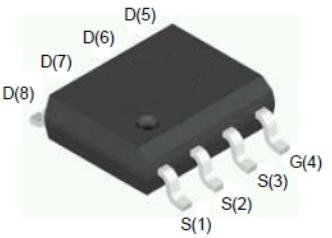
RU3013H

N-Channel Advanced Power MOSFET

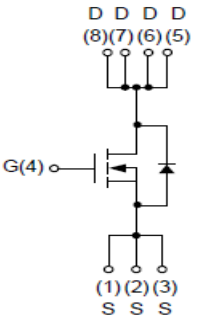
Features

- 30V/11A,
  $R_{DS(ON)}$ =16mΩ (Typ.) @ V_{GS}=10V
  $R_{DS(ON)}$ =24mΩ (Typ.) @ V_{GS}=4.5V
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

Pin Description



SOP-8



N-Channel MOSFET

Applications

- SMPS

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		±20	
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	4	A
Mounted on Large Heat Sink				
I_{DP}	300μs Pulse Drain Current Tested	T_A=25°C	40①	A
I_D	Continuous Drain Current	T_A=25°C	11	A
		T_A=70°C	8	
P_D	Maximum Power Dissipation	T_A=25°C	3.1	W
		T_A=70°C	2	
$R_{\theta JA}$②	Thermal Resistance-Junction to Ambient		40	°C/W

Copyright© Ruichips Semiconductor Co., Ltd

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

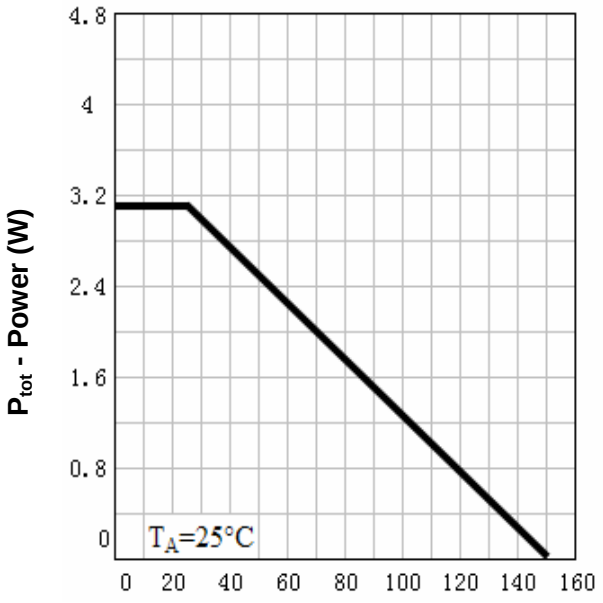
Symbol	Parameter	Test Condition	RU3013H			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 30V, V_{GS}=0V			1	μA
		T_J=85°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	1.5	2	2.7	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$ ③	Drain-Source On-state Resistance	V_{GS}= 10V, I_{DS}=11A		16	18	mΩ
		V_{GS}= 4.5V, I_{DS}=10A		24	27	mΩ
Diode Characteristics						
V_{SD} ③	Diode Forward Voltage	I_{SD}=1A, V_{GS}=0V			1	V
t_{rr}	Reverse Recovery Time	I_{SD}=11A, dI_{SD}/dt=100A/μs		7		ns
Q_{rr}	Reverse Recovery Charge			9		nC
Dynamic Characteristics ④						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz		1.2		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		680		pF
C_{oss}	Output Capacitance			140		
C_{rss}	Reverse Transfer Capacitance			80		
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=15V, R_L=1.3Ω, I_{DS}=11A, V_{GEN}=10V, R_G=6Ω		4		ns
t_r	Turn-on Rise Time			10		
$t_{d(OFF)}$	Turn-off Delay Time			16		
t_f	Turn-off Fall Time			7		
Gate Charge Characteristics ④						
Q_g	Total Gate Charge	V_{DS}=24V, V_{GS}=10V, I_{DS}=11A		14	18	nC
Q_{gs}	Gate-Source Charge			2		
Q_{gd}	Gate-Drain Charge			4		

Notes: ①Pulse width limited by safe operating area.
②When mounted on 1 inch square copper board, t ≤10sec.
③Pulse test ; Pulse width≤300μs, duty cycle≤2%.
④Guaranteed by design, not subject to production testing.

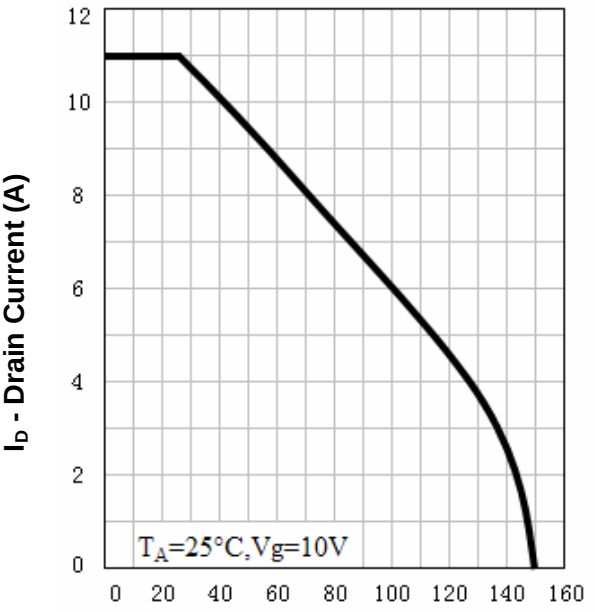
Copyright© Ruichips Semiconductor Co., Ltd

Typical Characteristics

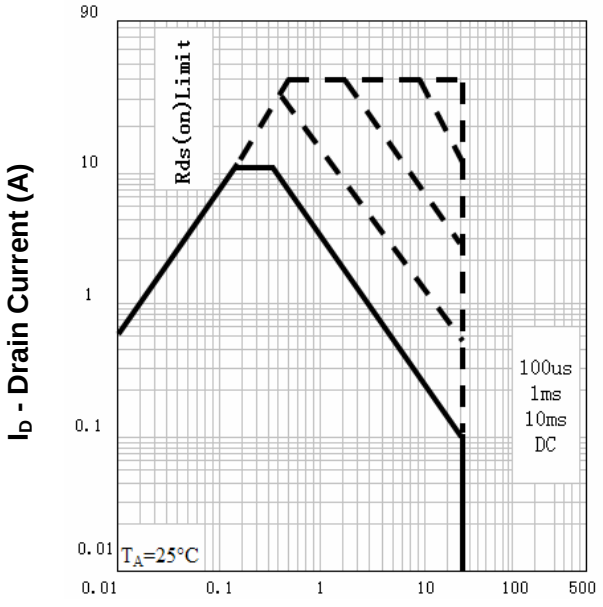
Power Dissipation



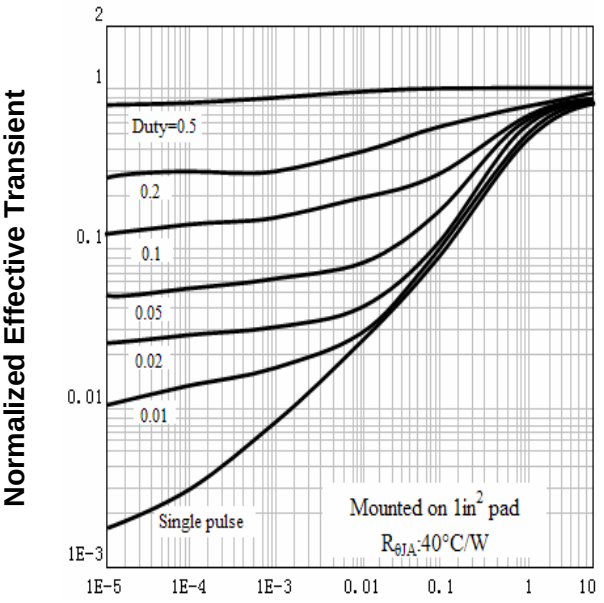
Drain Current



Safe Operation Area

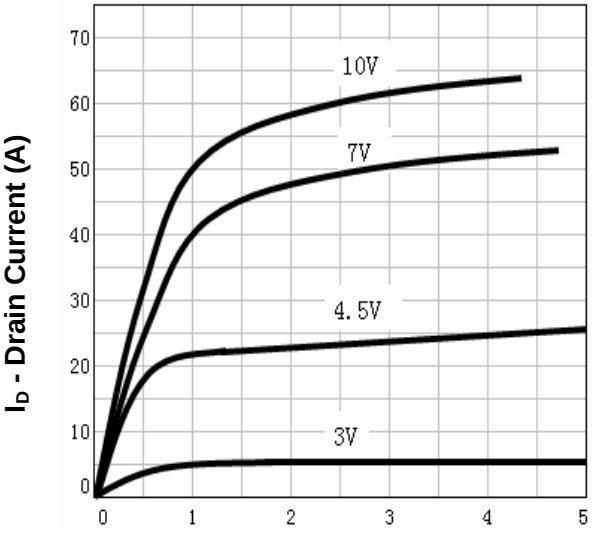


Thermal Transient Impedance

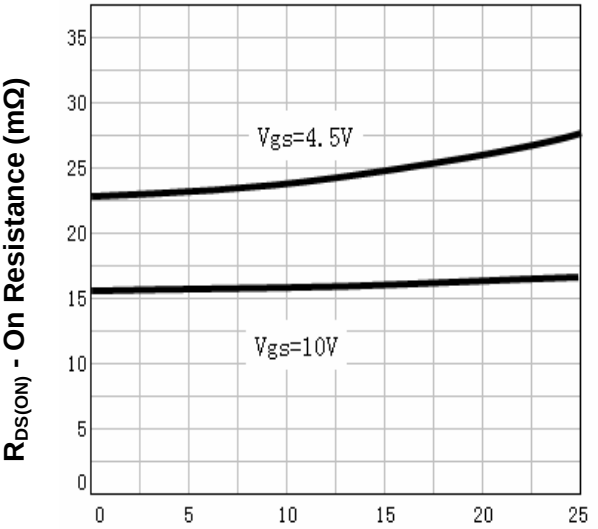


Typical Characteristics

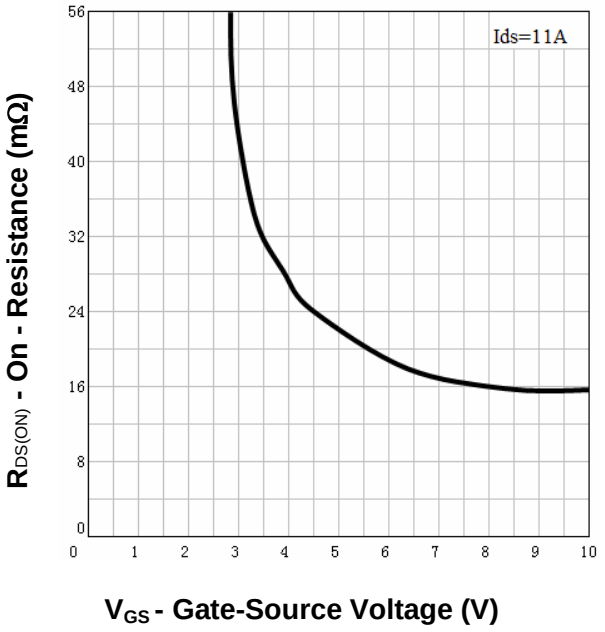
Output Characteristics



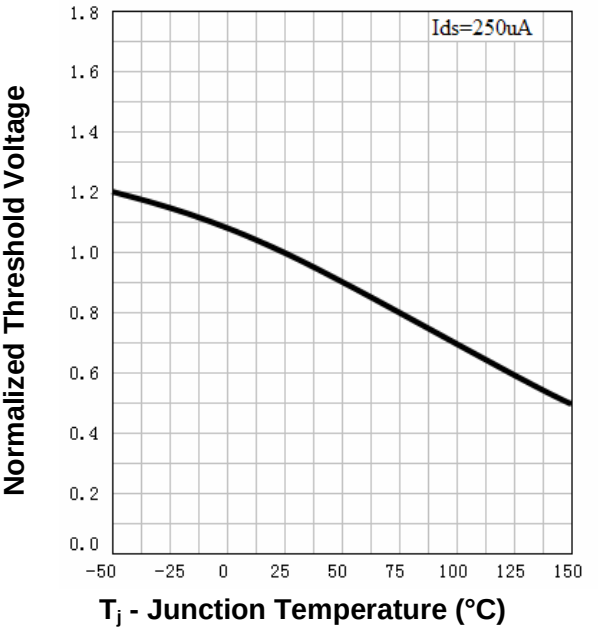
Drain-Source On Resistance



Drain-Source On Resistance



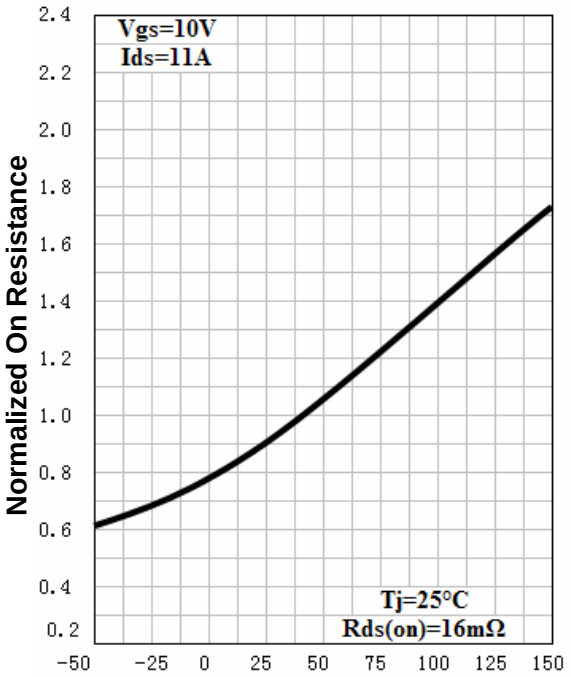
Gate Threshold Voltage



Copyright© Ruichips Semiconductor Co., Ltd

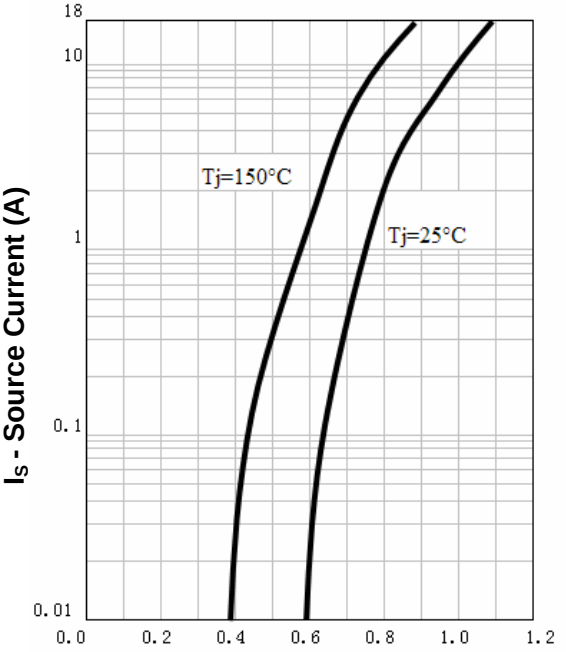
Typical Characteristics

Drain-Source On Resistance



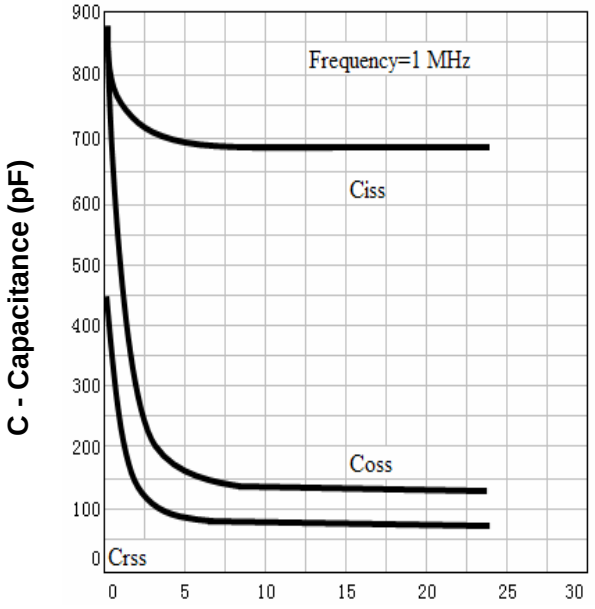
T_j - Junction Temperature (°C)

Source-Drain Diode Forward



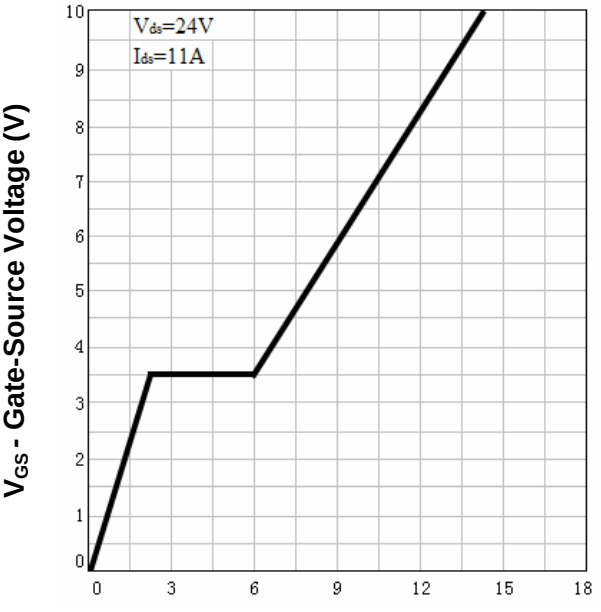
V_{SD} - Source-Drain Voltage (V)

Capacitance



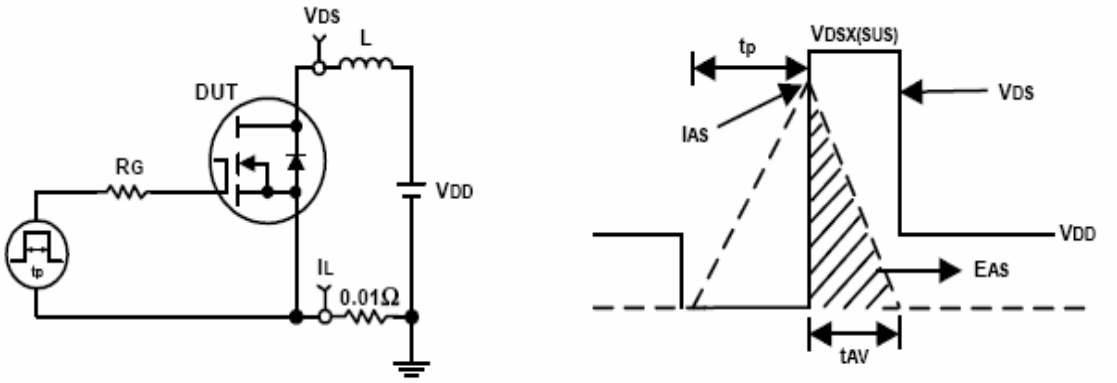
V_{DS} - Drain-Source Voltage (V)

Gate Charge

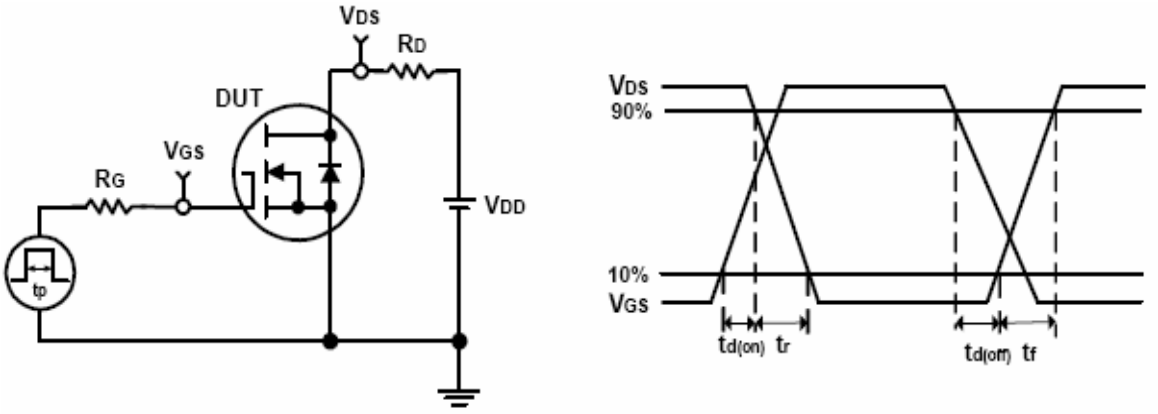


Q_G - Gate Charge (nC)

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Ordering and Marking Information

RU3013

Package (Available)

H : SOP-8

Operating Temperature Range

C : -55 to 150 ºC

Assembly Material

G : Green & Lead Free

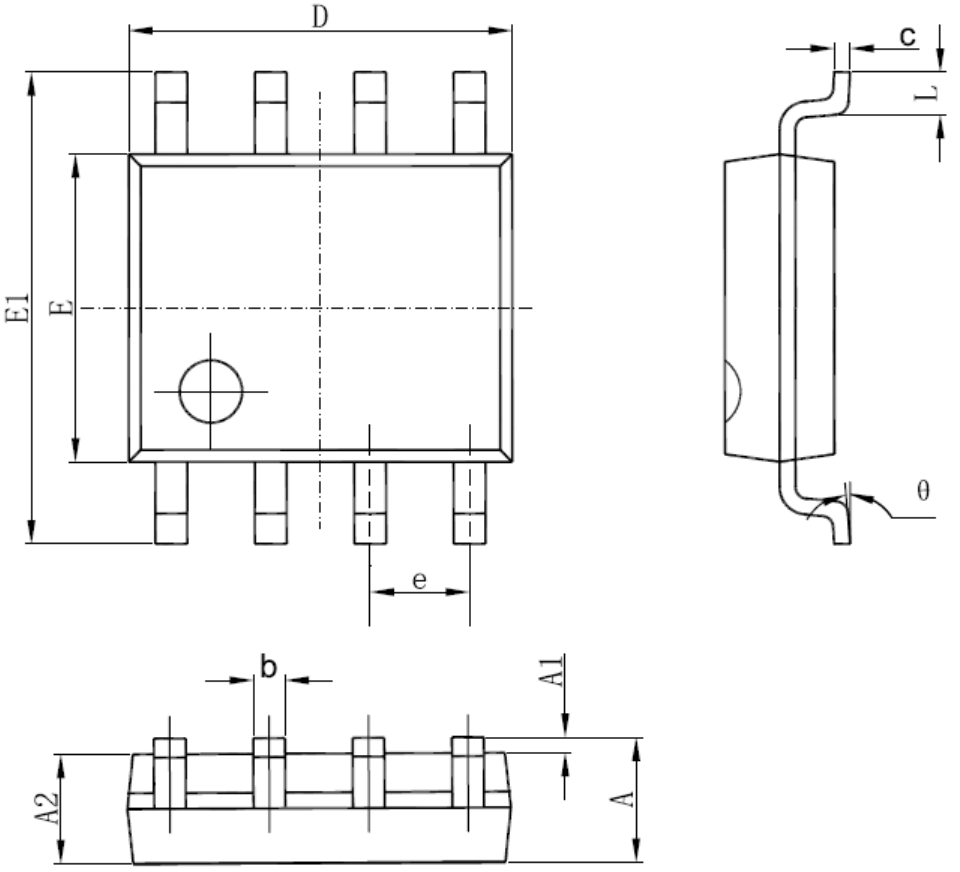
Packaging

T : TUBE

TR : Tape & Reel

Package Information

SOP-8



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	1.350	1.750	0.053	0.069	E	3.800	4.000	0.150	0.157
A1	0.100	0.250	0.004	0.010	E1	5.800	6.200	0.228	0.244
A2	1.350	1.550	0.053	0.061	e	1.270 (BSC)		0.050 (BSC)	
b	0.330	0.510	0.013	0.020	L	0.400	1.270	0.016	0.050
c	0.170	0.250	0.006	0.010	θ	0°	8°	0°	8°
D	4.700	5.100	0.185	0.200					

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

Copyright© Ruichips Semiconductor Co., Ltd

Customer Service

Worldwide Sales and Service:
Sales@ruichips.com

Technical Support:
Technical@ruichips.com

Investor Relations Contacts:
Investor@ruichips.com

Marcom Contact:
Marcom@ruichips.com

Editorial Contact:
Editorial@ruichips.com

HR Contact:
HR@ruichips.com

Legal Contact:
Legal@ruichips.com

Shen Zhen RUICHIPS Semiconductor CO., LTD
Room 501, the 5floor An Tong Industrial Building,
NO.207 Mei Hua Road Fu Tian Area Shen Zhen City, CHINA

TEL: (86-755) 8311-5334
FAX: (86-755) 8311-4278
E-mail: Sales-SZ@ruichips.com