

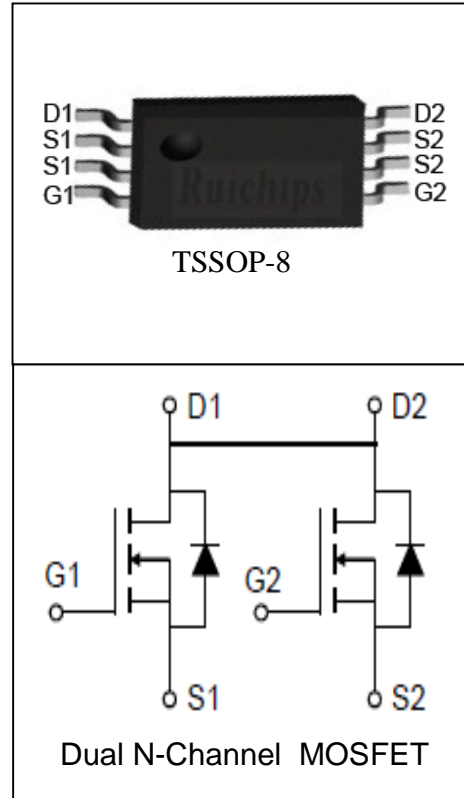
### Features

- 20V/6A,  
 $R_{DS(ON)} = 21m\Omega$  (Typ.) @  $V_{GS} = 4.5V$   
 $R_{DS(ON)} = 30m\Omega$  (Typ.) @  $V_{GS} = 2.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

### Applications

- Power Management

### Pin Description



### Absolute Maximum Ratings

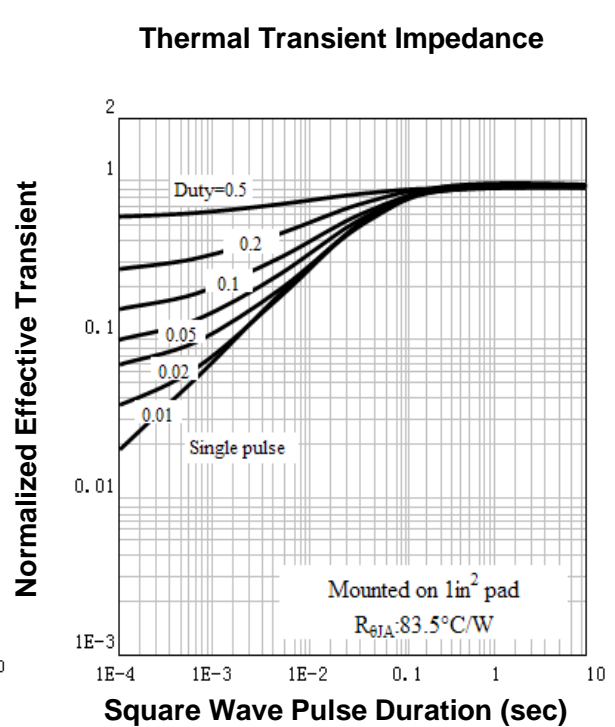
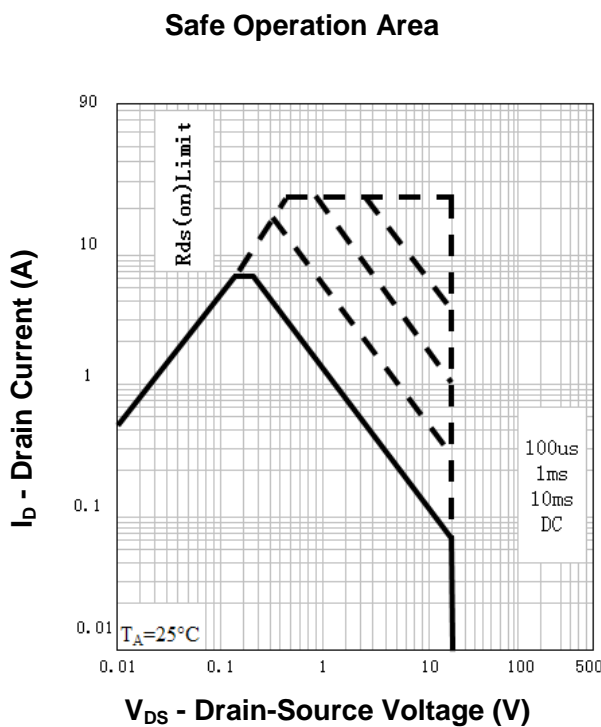
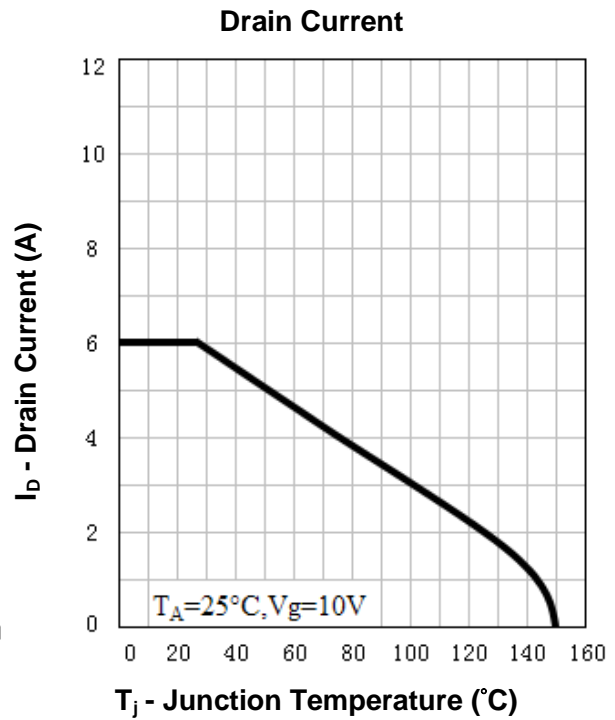
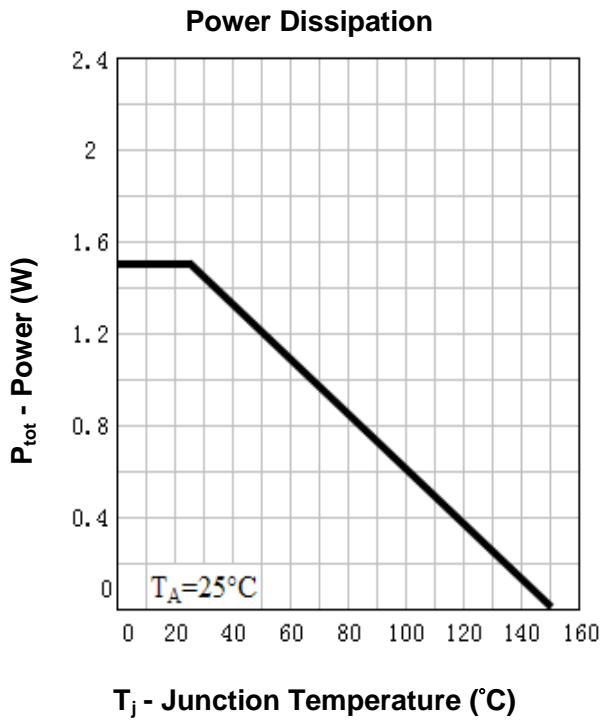
Symbol	Parameter	Rating	Unit
<b>Common Ratings</b> ( $T_A = 25^\circ C$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	20	V
$V_{GSS}$	Gate-Source Voltage	$\pm 12$	
$T_J$	Maximum Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$I_S$	Diode Continuous Forward Current	$T_A = 25^\circ C$ 1.7	A
<b>Mounted on Large Heat Sink</b>			
$I_{DP}$	300 $\mu s$ Pulse Drain Current Tested	$T_A = 25^\circ C$ 24 <sup>①</sup>	A
$I_D$	Continuous Drain Current ( $V_{GS} = 4.5V$ )	$T_A = 25^\circ C$ 6	A
		$T_A = 70^\circ C$ 4.5	
$P_D$	Maximum Power Dissipation	$T_A = 25^\circ C$ 1.5	W
		$T_A = 70^\circ C$ 0.96	
$R_{\theta JA}$ <sup>②</sup>	Thermal Resistance-Junction to Ambient	83.5	$^\circ C/W$

**Electrical Characteristics** ( $T_A=25^\circ\text{C}$  Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU8205G			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	20			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	0.7	1.5	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$			$\pm 100$	nA
$R_{DS(ON)}^{(3)}$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=6A$		21	24	$m\Omega$
		$V_{GS}=2.5V, I_{DS}=5A$		30	40	$m\Omega$
<b>Diode Characteristics</b>						
$V_{SD}^{(3)}$	Diode Forward Voltage	$I_{SD}=1A, V_{GS}=0V$			1	V
<b>Dynamic Characteristics</b> <sup>(4)</sup>						
$R_G$	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.8		$\Omega$
$C_{iss}$	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=10V,$ Frequency=1.0MHz		580		$\mu F$
$C_{oss}$	Output Capacitance			120		
$C_{rss}$	Reverse Transfer Capacitance			95		
$t_{d(ON)}$	Turn-on Delay Time			5		
$t_r$	Turn-on Rise Time	$V_{DD}=10V, R_L=1.7\Omega,$ $I_{DS}=6A, V_{GEN}=4.5V,$ $R_G=6\Omega$		11		ns
$t_{d(OFF)}$	Turn-off Delay Time			38		
$t_f$	Turn-off Fall Time			13		
<b>Gate Charge Characteristics</b> <sup>(4)</sup>						
$Q_g$	Total Gate Charge	$V_{DS}=16V, V_{GS}=4.5V,$ $I_{DS}=6A$		10	14	nC
$Q_{gs}$	Gate-Source Charge			1.5		
$Q_{gd}$	Gate-Drain Charge			3.4		

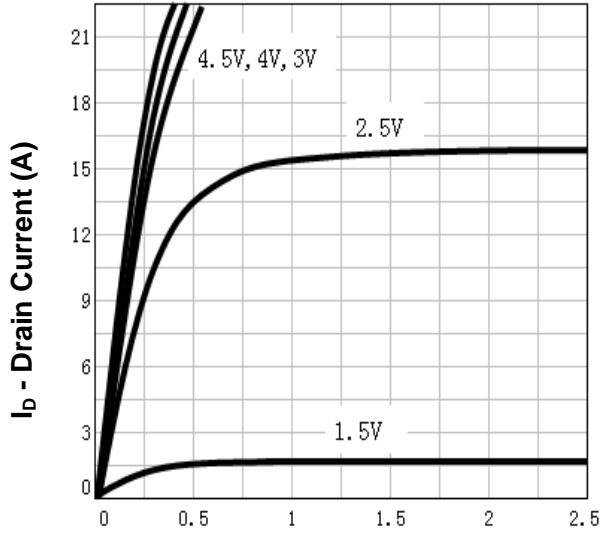
- Notes: ① Pulse width limited by safe operating area.  
 ② When mounted on 1 inch square copper board,  $t \leq 10\text{sec}$ .  
 ③ Pulse test ; Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .  
 ④ Guaranteed by design, not subject to production testing.

**Typical Characteristics**



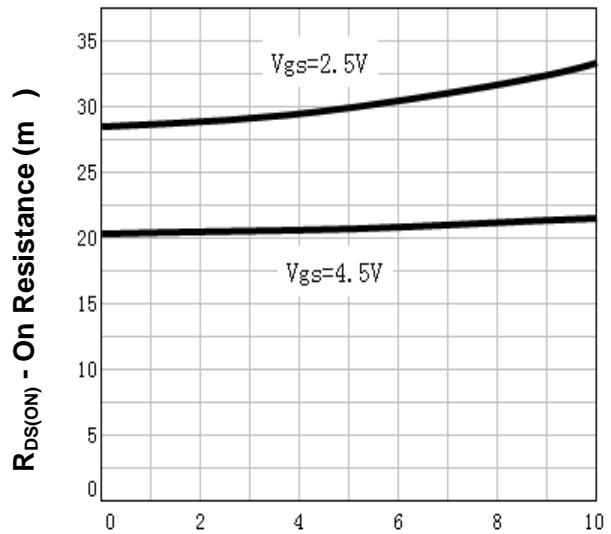
**Typical Characteristics**

**Output Characteristics**



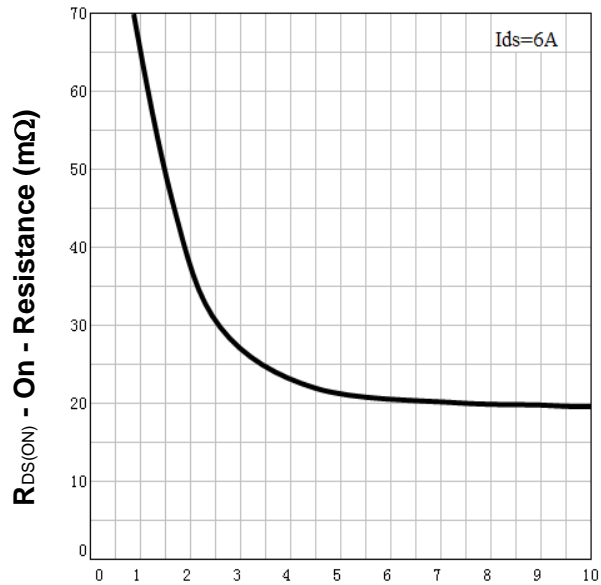
**$V_{DS}$  - Drain-Source Voltage (V)**

**Drain-Source On Resistance**



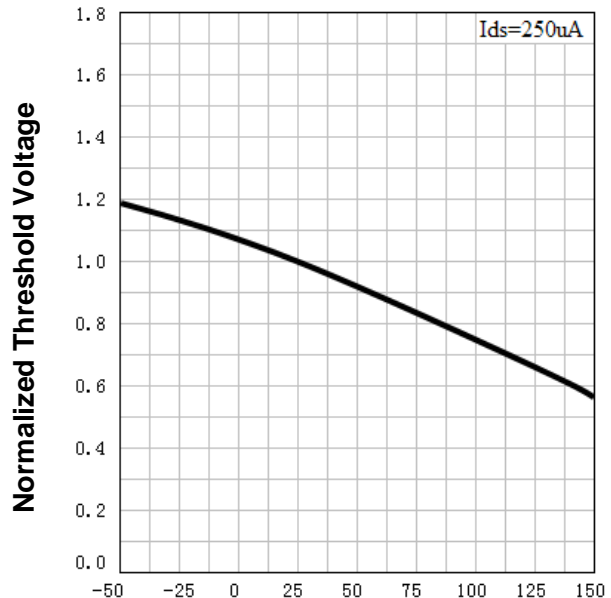
**$I_D$  - Drain Current (A)**

**Drain-Source On Resistance**



**$V_{GS}$  - Gate-Source Voltage (V)**

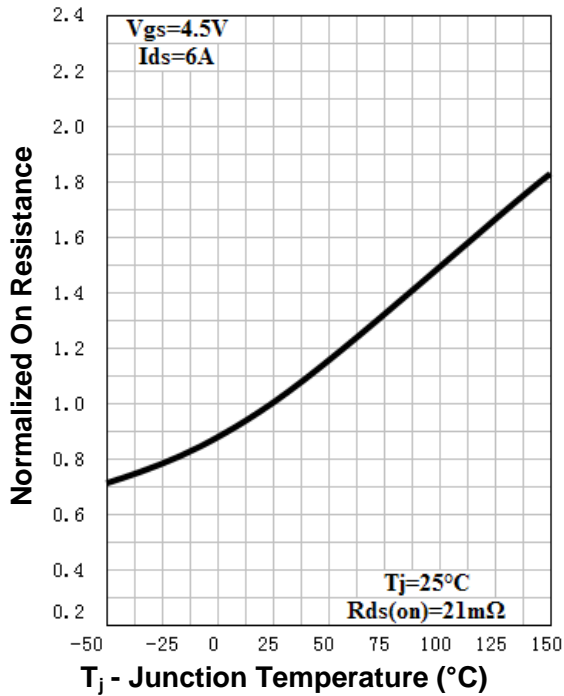
**Gate Threshold Voltage**



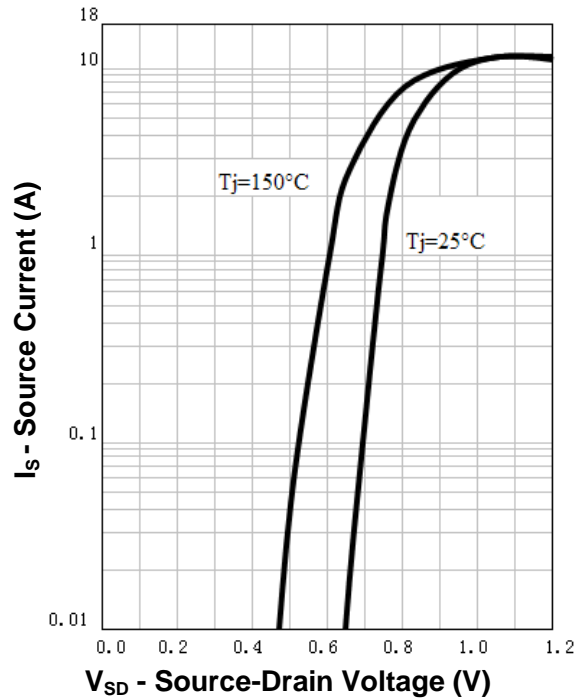
**$T_J$  - Junction Temperature (°C)**

**Typical Characteristics**

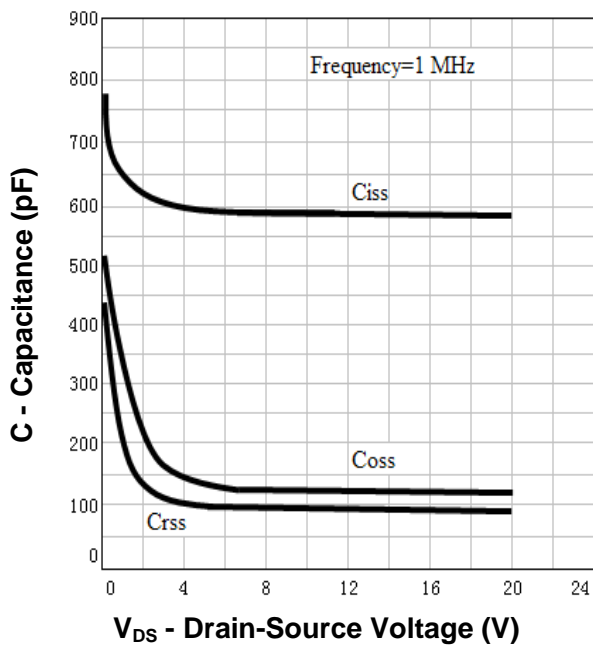
**Drain-Source On Resistance**



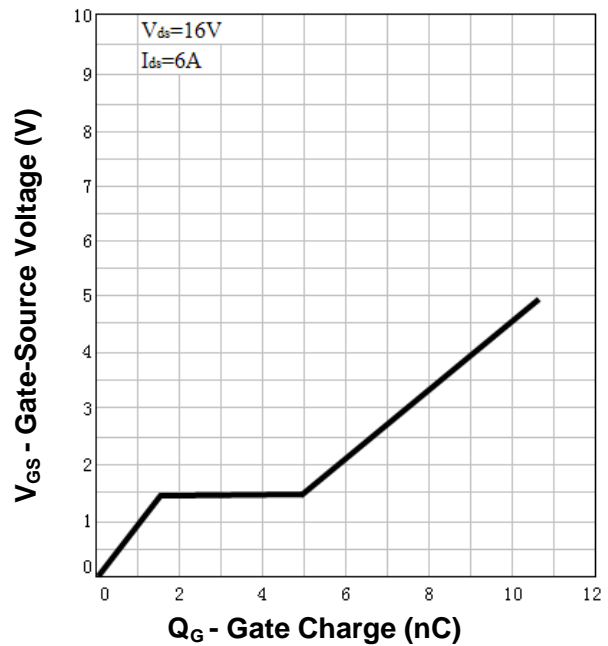
**Source-Drain Diode Forward**



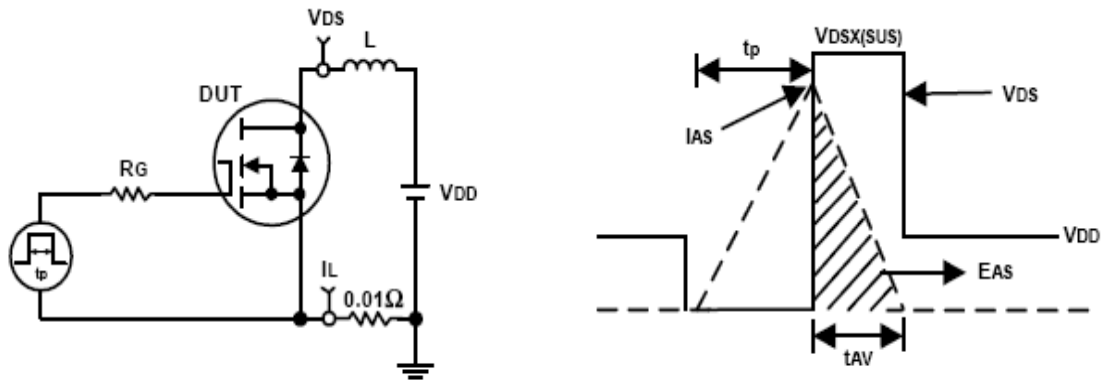
**Capacitance**



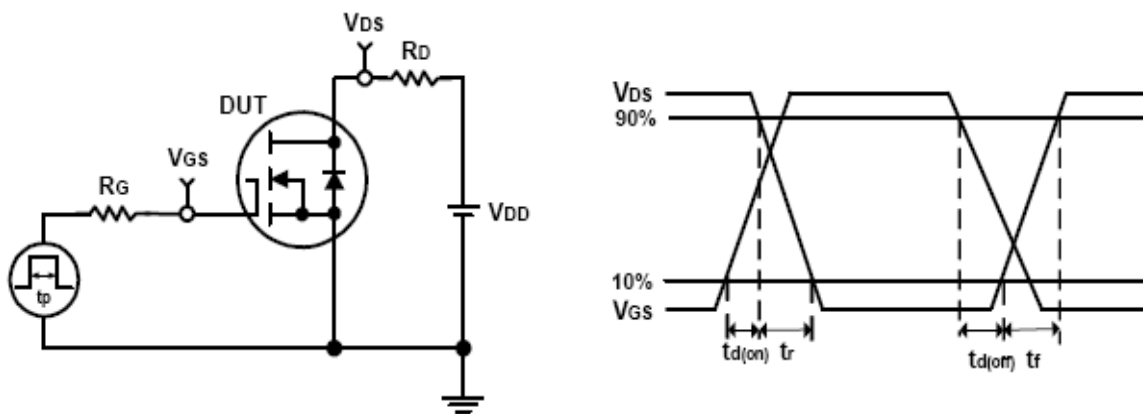
**Gate Charge**



**Avalanche Test Circuit and Waveforms**



**Switching Time Test Circuit and Waveforms**

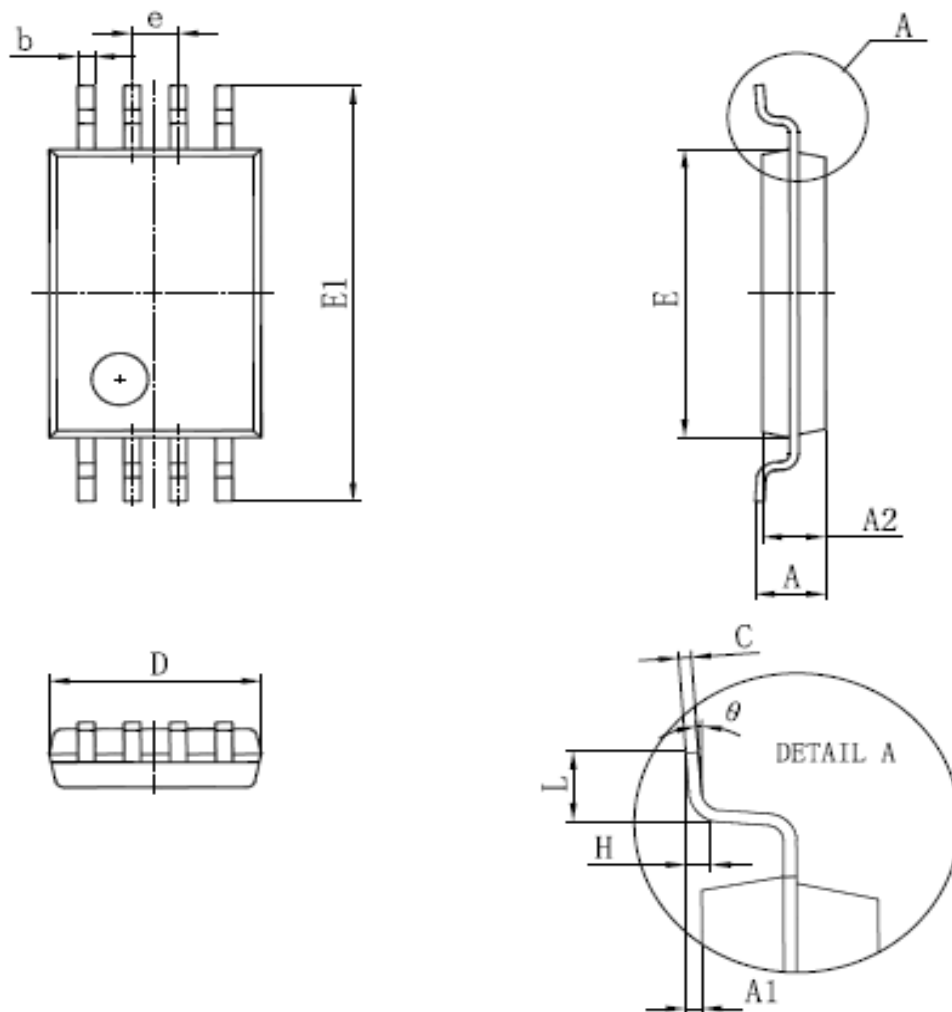


**Ordering and Marking Information**

<b>Device</b>	<b>Marking</b>	<b>Package</b>	<b>Packaging</b>	<b>Quantity</b>	<b>Reel Size</b>	<b>Tape width</b>
RU8205G	RU8205G	TSSOP8	Tape&Reel	3000	13''	12mm

**Package Information**

**TSSOP-8**



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
D	2.900	3.100	0.114	0.122	A2	0.800	1.050	0.031	0.041
E	4.300	4.500	0.169	0.177	A1	0.050	0.150	0.002	0.006
b	0.190	0.300	0.007	0.012	e	0.65 (BSC)		0.026 (BSC)	
c	0.090	0.200	0.004	0.008	L	0.500	0.700	0.020	0.028
E1	6.250	6.550	0.246	0.258	H	0.25(TYP)		0.01(TYP)	
A		1.200		0.047	$\theta$	0°	8°	0°	8°

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



## **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