

### Features

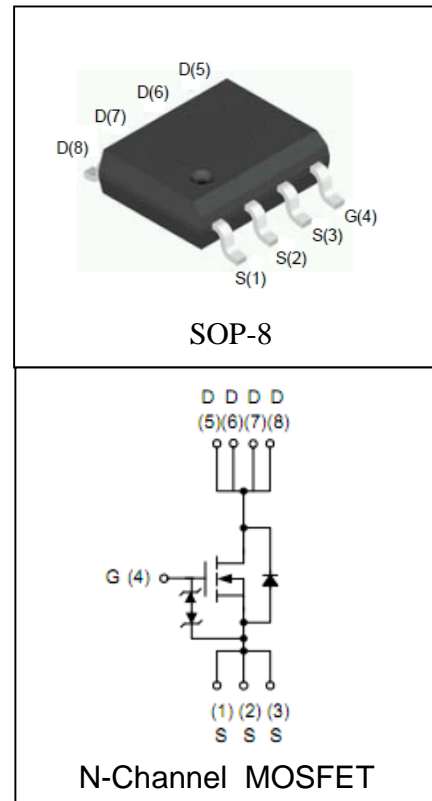
- 60V/6A,  
 $R_{DS(ON)} = 31m\Omega$  (Type) @  $V_{GS} = 10V$   
 $R_{DS(ON)} = 37m\Omega$  (Type) @  $V_{GS} = 4.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Available

### Applications

- Power Management.
- Switch Applications.

### Absolute Maximum Ratings

### Pin Description



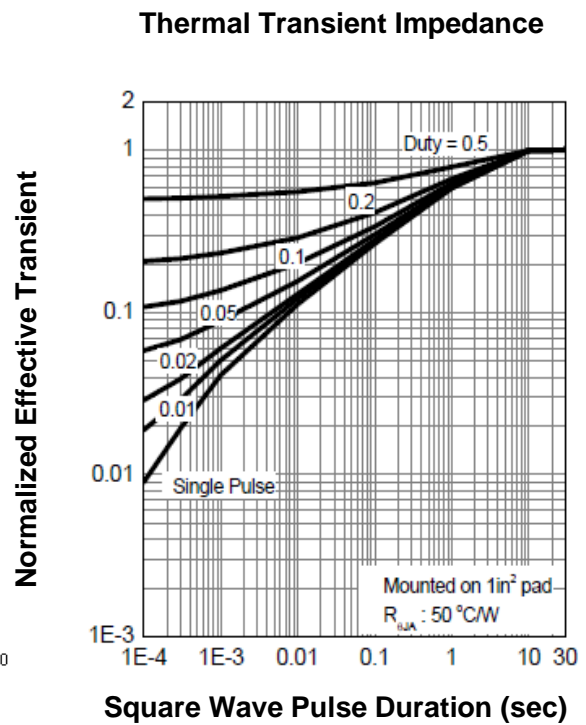
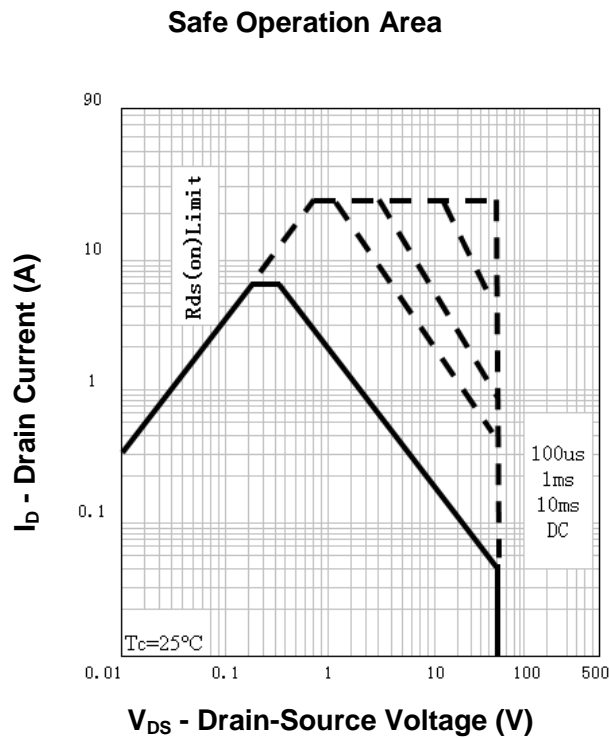
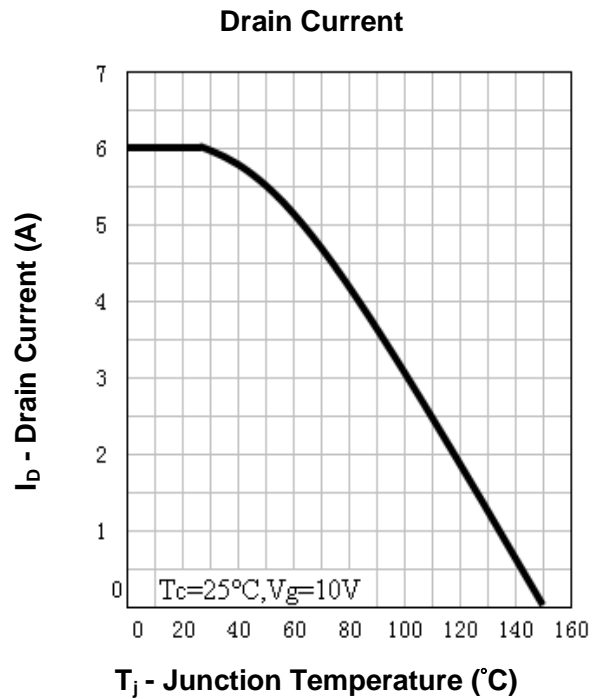
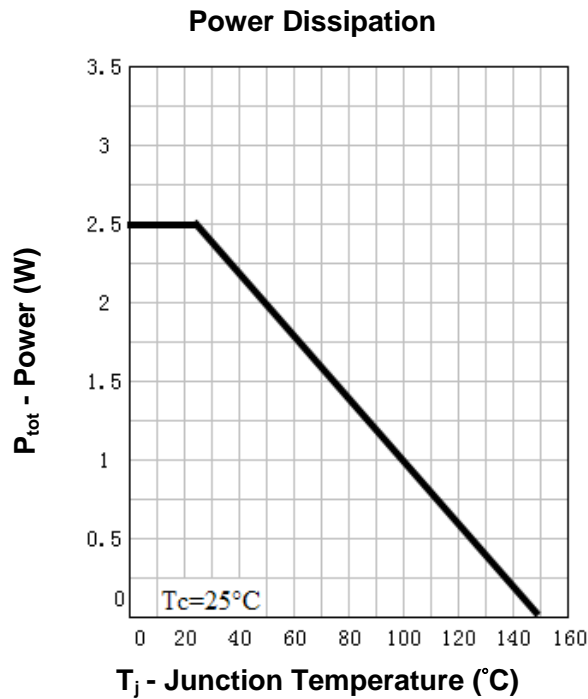
Symbol	Parameter	Rating	Unit
<b>Common Ratings</b> ( $T_A = 25^\circ C$ Unless Otherwise Noted)			
$V_{DSS}$	Drain-Source Voltage	60	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	
$T_J$	Maximum Junction Temperature	150	$^\circ C$
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ C$
$I_S$	Diode Continuous Forward Current	$T_C = 25^\circ C$ 6	A
<b>Mounted on Large Heat Sink</b>			
$I_{DP}$	300 $\mu s$ Pulse Drain Current Tested	$T_C = 25^\circ C$ 24 <sup>①</sup>	A
$I_D$	Continuous Drain Current ( $V_{GS} = 10V$ )	$T_C = 25^\circ C$ 6	A
		$T_C = 70^\circ C$ 4.6	
$P_D$	Maximum Power Dissipation	$T_C = 25^\circ C$ 2.5	W
		$T_C = 70^\circ C$ 1.6	
$R_{\theta JA}$ <sup>②</sup>	Thermal Resistance-Junction to Ambient	50	$^\circ C/W$

**Electrical Characteristics** (T<sub>A</sub>=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU60E6H			Unit
			Min.	Typ.	Max.	
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	60			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = 60V, V <sub>GS</sub> =0V			1	μA
		T <sub>J</sub> =85°C			30	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	1.5	2	2.7	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±10	μA
R <sub>DSON</sub> <sup>③</sup>	Drain-Source On-state Resistance	V <sub>GS</sub> = 10V, I <sub>DS</sub> =6A		31	35	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>DS</sub> =4A		37	45	mΩ
<b>Diode Characteristics</b>						
V <sub>SD</sub> <sup>③</sup>	Diode Forward Voltage	I <sub>SD</sub> =6A, V <sub>GS</sub> =0V			1.2	V
t <sub>rr</sub>	Reverse Recovery Time	I <sub>SD</sub> =6A, dI <sub>SD</sub> /dt=100A/μs		42		ns
Q <sub>rr</sub>	Reverse Recovery Charge			73		nC
<b>Dynamic Characteristics</b> <sup>④</sup>						
R <sub>G</sub>	Gate Resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz		1.2		Ω
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> = 30V, Frequency=1.0MHz		1620		pF
C <sub>oss</sub>	Output Capacitance			300		
C <sub>rss</sub>	Reverse Transfer Capacitance			105		
t <sub>d(ON)</sub>	Turn-on Delay Time	V <sub>DD</sub> =30V, R <sub>L</sub> =30Ω, I <sub>DS</sub> =6A, V <sub>GEN</sub> = 10V, R <sub>G</sub> =6Ω		12		ns
t <sub>r</sub>	Turn-on Rise Time			39		
t <sub>d(OFF)</sub>	Turn-off Delay Time			34		
t <sub>f</sub>	Turn-off Fall Time			13		
<b>Gate Charge Characteristics</b> <sup>④</sup>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =48V, V <sub>GS</sub> = 10V, I <sub>DS</sub> =6A		19		nC
Q <sub>gs</sub>	Gate-Source Charge			4		
Q <sub>gd</sub>	Gate-Drain Charge			9		

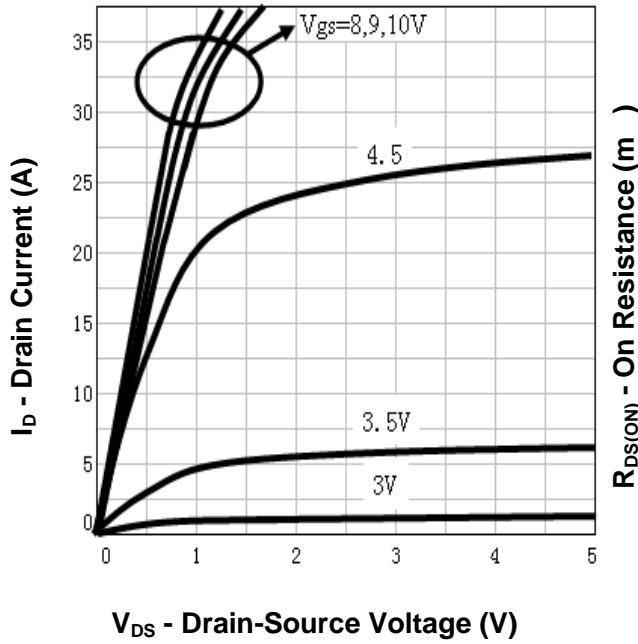
- Notes: ① Pulse width limited by safe operating area.  
 ② When mounted on 1 inch square copper board, t ≤ 10sec.  
 ③ Pulse test ; Pulse width ≤ 300μs, duty cycle ≤ 2%.  
 ④ Guaranteed by design, not subject to production testing.

**Typical Characteristics**

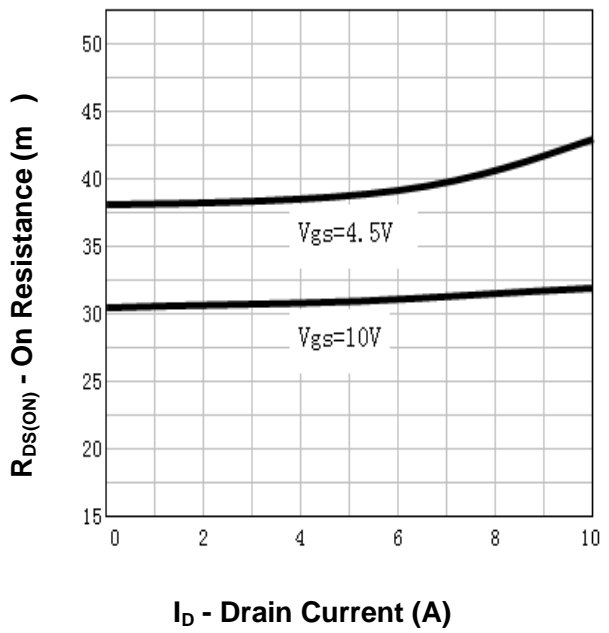


**Typical Characteristics**

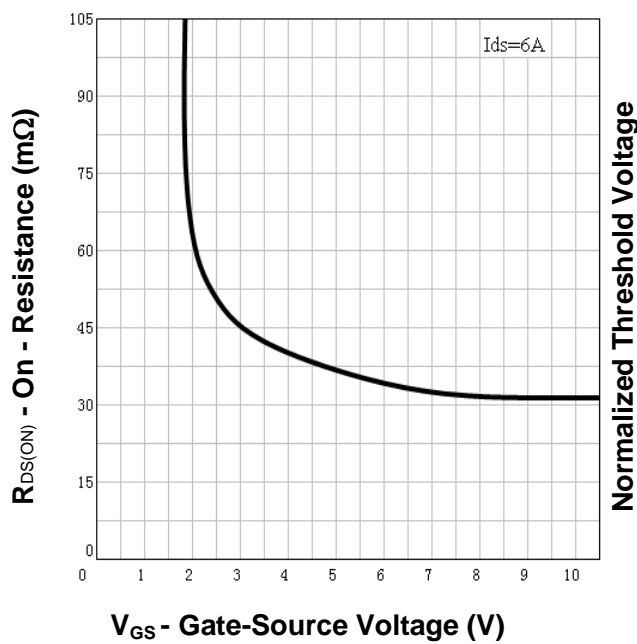
**Output Characteristics**



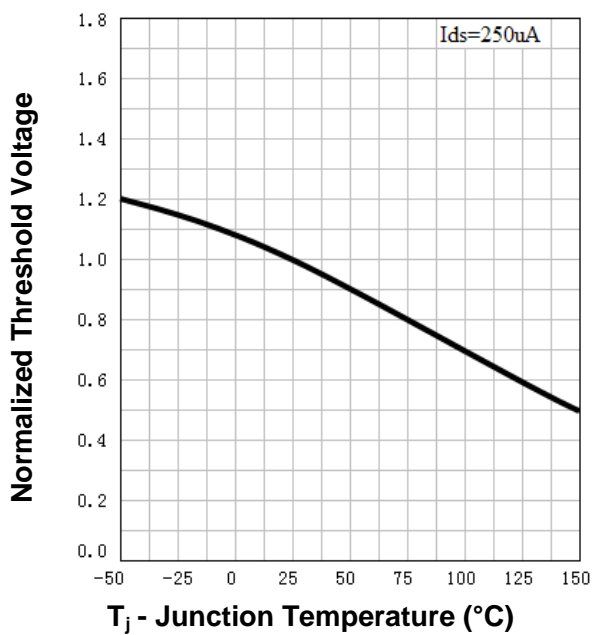
**Drain-Source On Resistance**



**Drain-Source On Resistance**

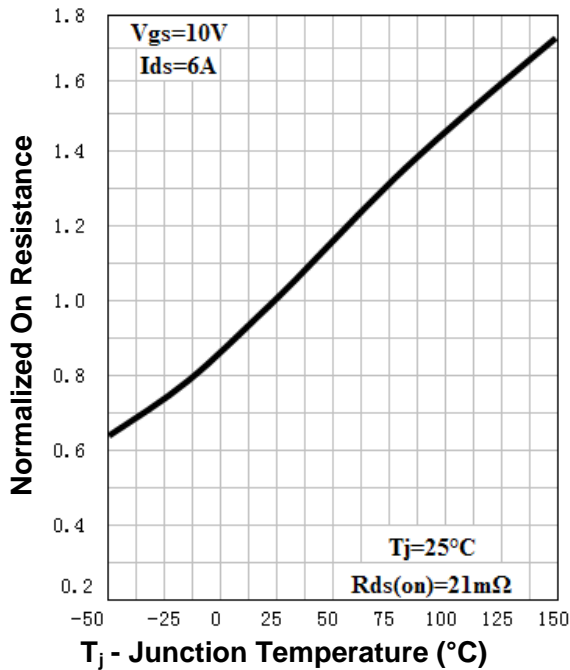


**Gate Threshold Voltage**

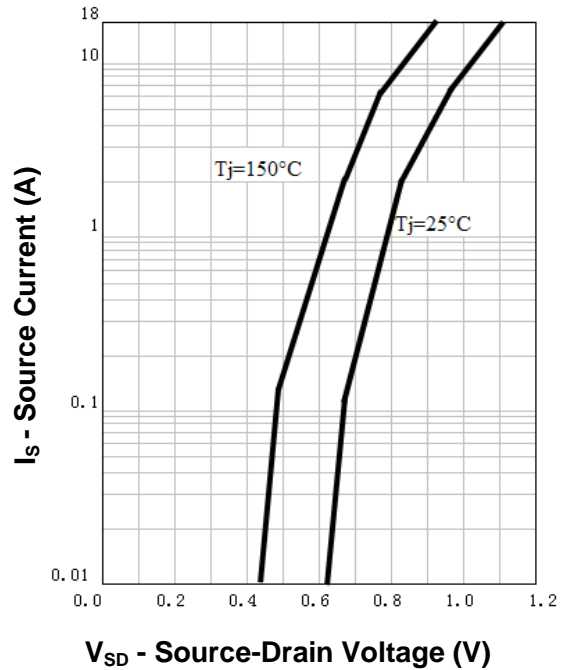


**Typical Characteristics**

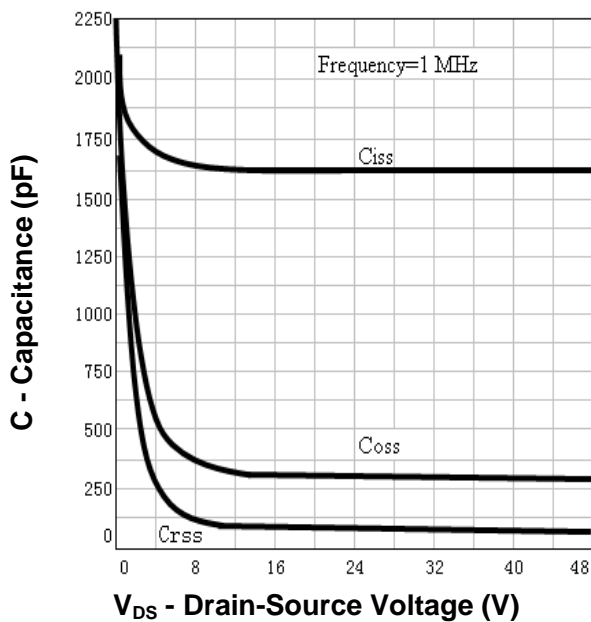
**Drain-Source On Resistance**



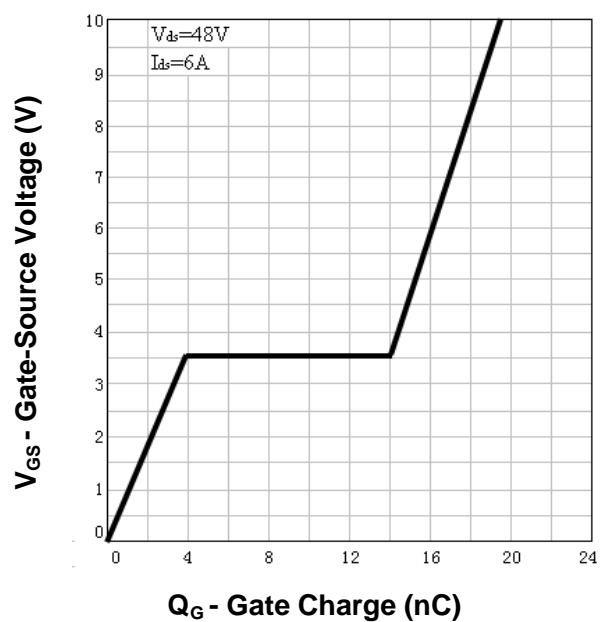
**Source-Drain Diode Forward**



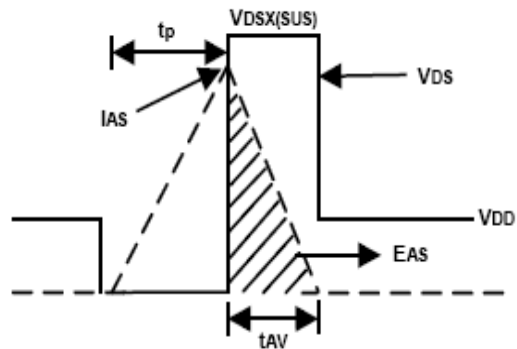
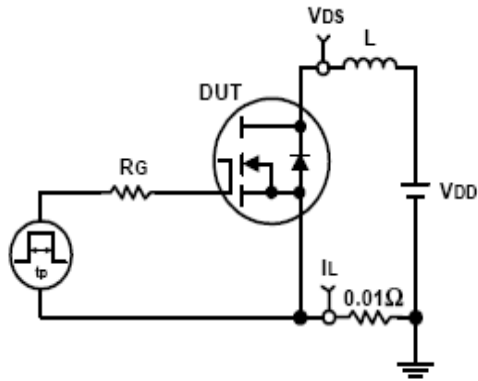
**Capacitance**



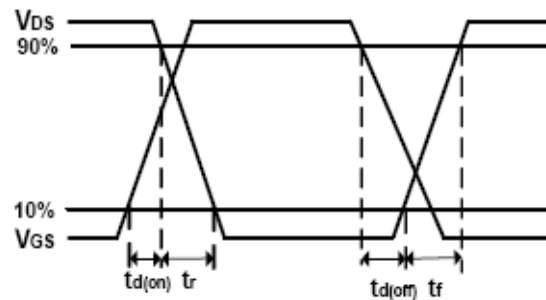
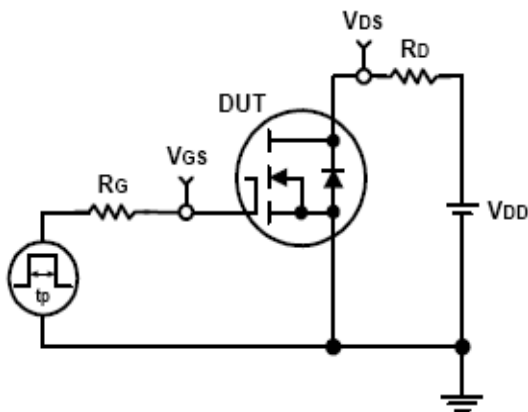
**Gate Charge**



**Avalanche Test Circuit and Waveforms**



**Switching Time Test Circuit and Waveforms**

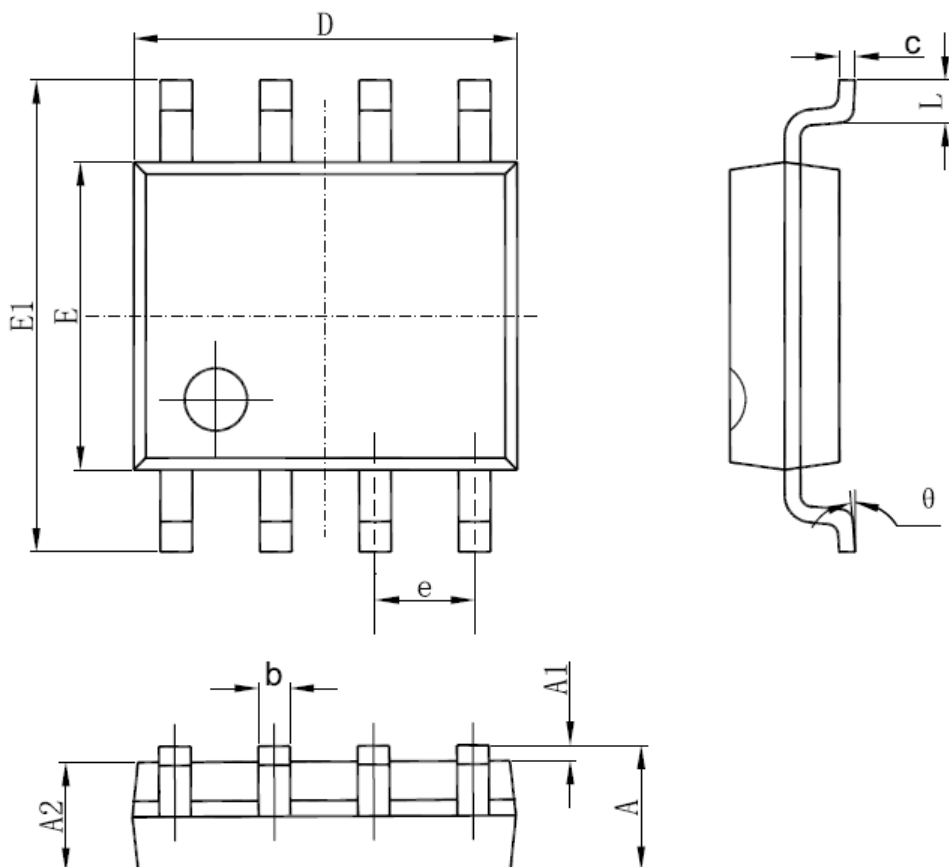


**Ordering and Marking Information**

<b>Device</b>	<b>Marking</b>	<b>Package</b>	<b>Packaging</b>	<b>Quantity</b>	<b>Reel Size</b>	<b>Tape width</b>
RU60E6H	RU60E6H	SOP-8	Tape&Reel	2500	13''	12mm

**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	theta	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



## **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