

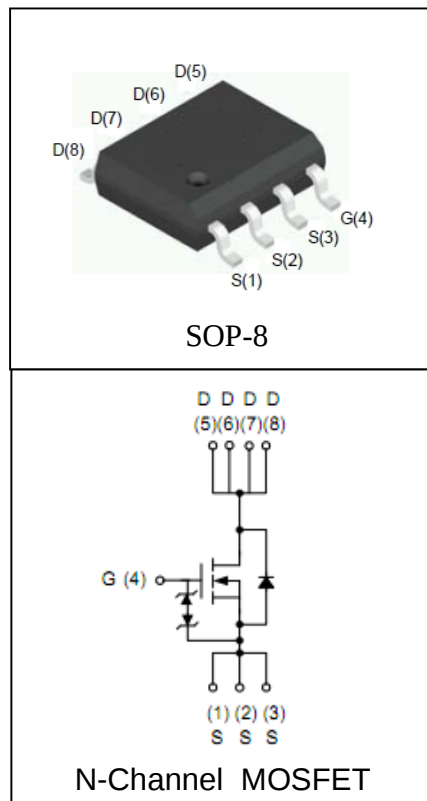
Features

- 100V/4A,
 $R_{DS(ON)} = 72m\Omega$ (Typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 80m\Omega$ (Typ.) @ $V_{GS}=4.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- ESD Protected
- Lead Free and Green Available

Applications

- Power Management
- Converters.

Pin Description



Absolute Maximum Ratings

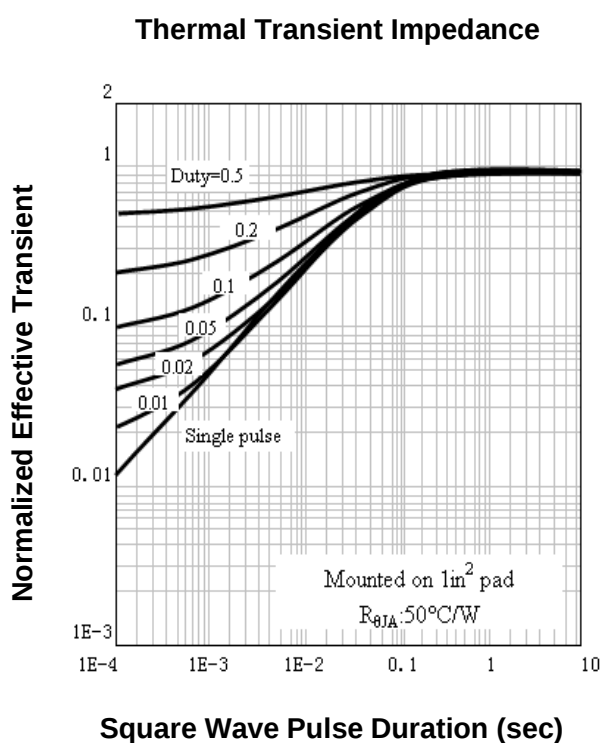
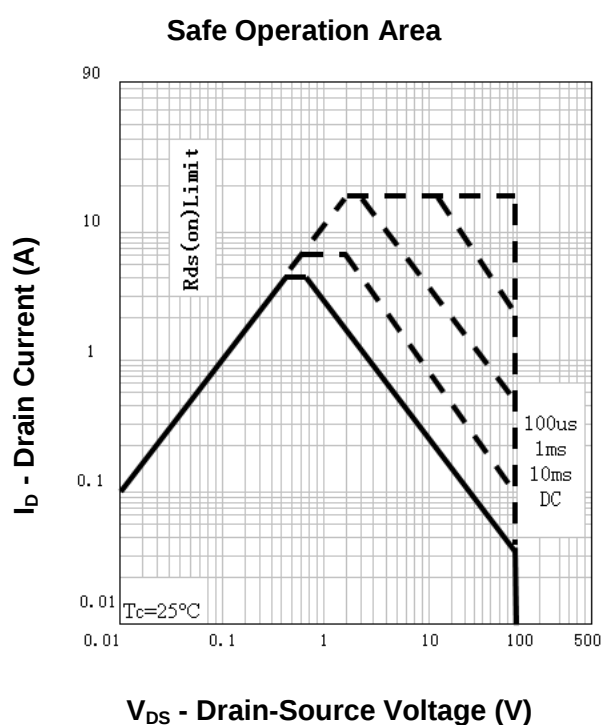
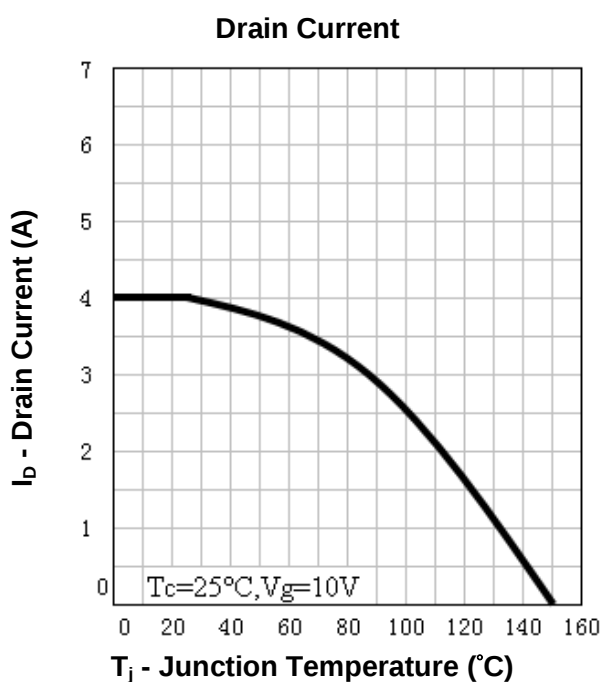
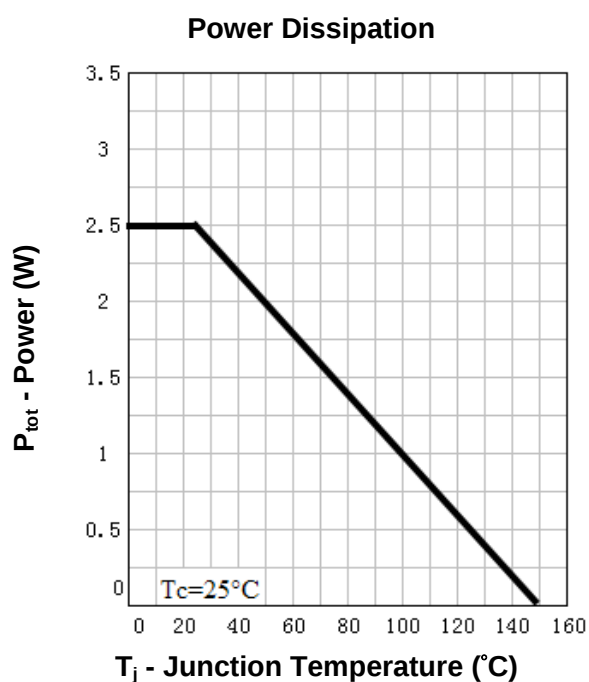
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		100	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	4	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	16 ^①	A
I _D	Continuous Drain Current(V _{GS} =10V)	T _A =25°C	4	A
		T _A =70°C	3.3	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJA} ^②	Thermal Resistance-Junction to Ambient		50	°C/W

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

Symbol	Parameter	Test Condition	RU1HE4H			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	100			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, 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			±10	μA
R _{DS(ON)} ③	Drain-Source On-state Resistance	V _{GS} = 10V, I _{DS} =3.5A		72	75	mΩ
		V _{GS} = 4.5V, I _{DS} =2A		80	85	mΩ
Diode Characteristics						
V _{SD} ③	Diode Forward Voltage	I _{SD} =3A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =3A, dI _{SD} /dt=100A/μs		42		ns
Q _{rr}	Reverse Recovery Charge			73		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} = 50V, Frequency=1.0MHz		840		pF
C _{oss}	Output Capacitance			70		
C _{rss}	Reverse Transfer Capacitance			40		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =50V, R _L =30Ω, I _{DS} =3A, V _{GEN} = 10V, R _G =6Ω		12		ns
t _r	Turn-on Rise Time			39		
t _{d(OFF)}	Turn-off Delay Time			34		
t _f	Turn-off Fall Time			13		
Gate Charge Characteristics ④						
Q _g	Total Gate Charge	V _{DS} =80V, V _{GS} = 10V, I _{DS} =3A		19		nC
Q _{gs}	Gate-Source Charge			4		
Q _{gd}	Gate-Drain Charge			9		

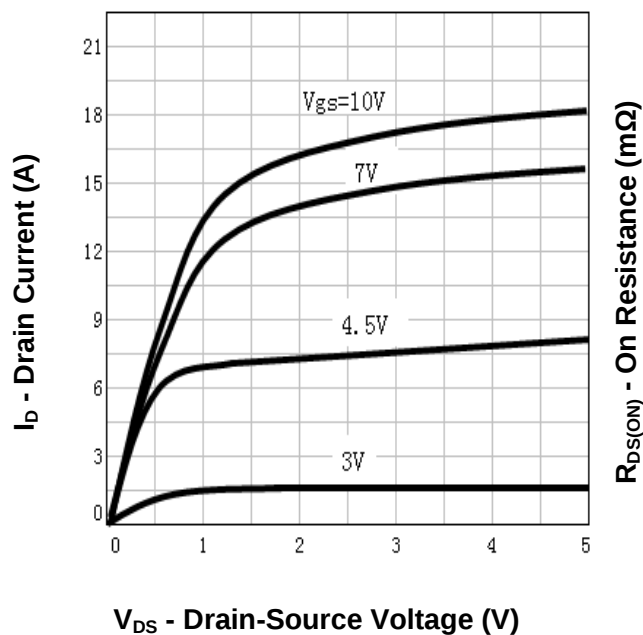
- Notes: ① Pulse width limited by safe operating area.
 ② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

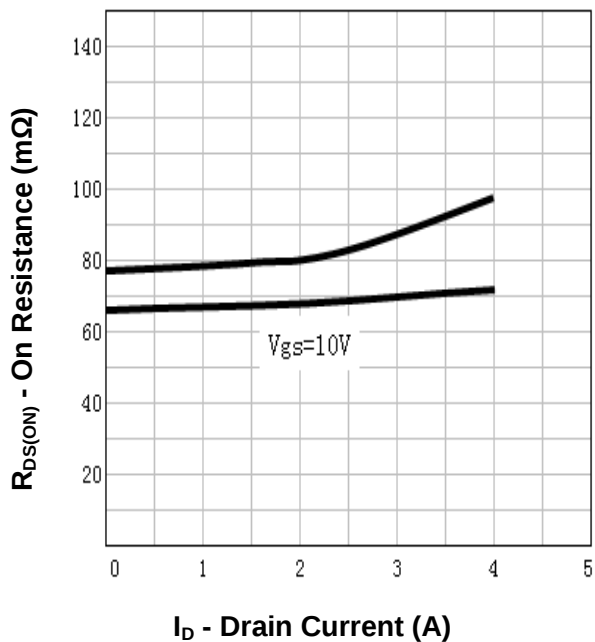


Typical Characteristics

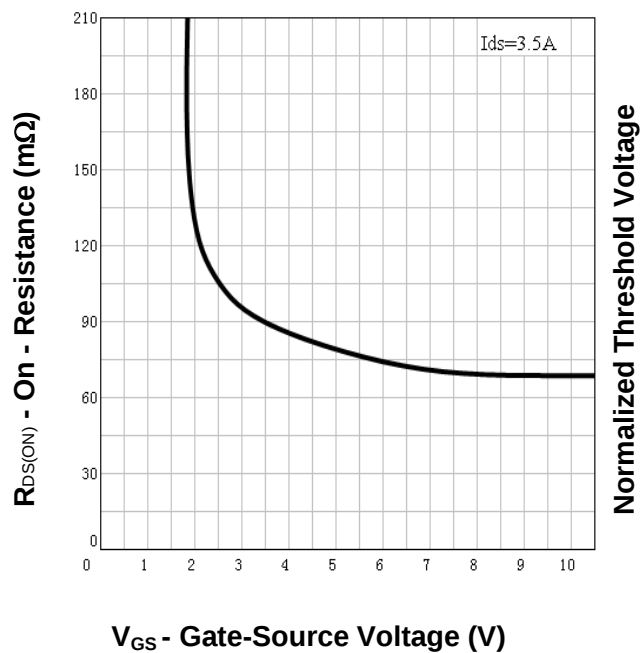
Output Characteristics



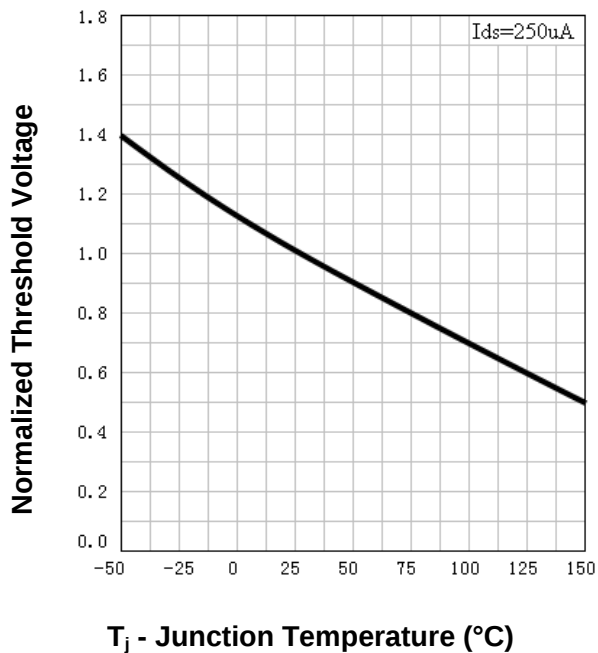
Drain-Source On Resistance



Drain-Source On Resistance

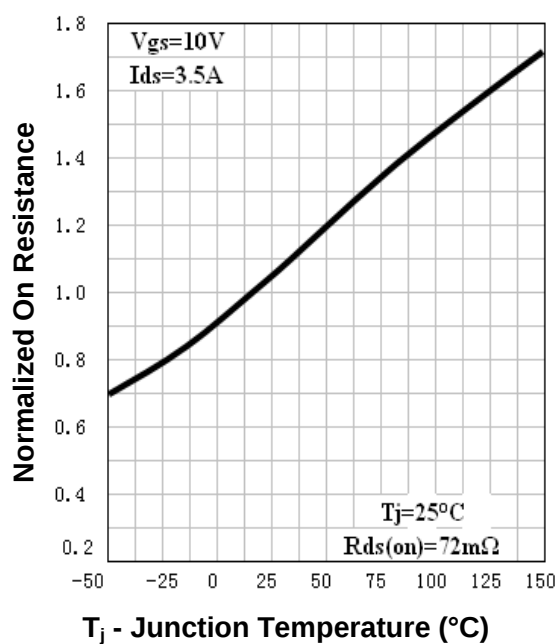


Gate Threshold Voltage

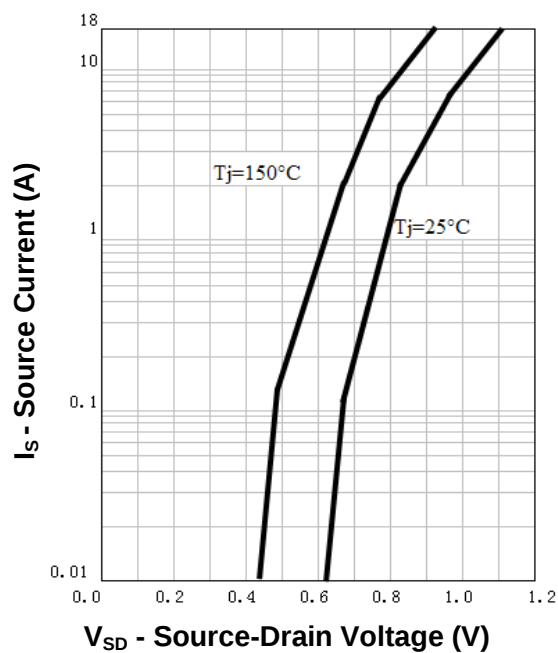


Typical Characteristics

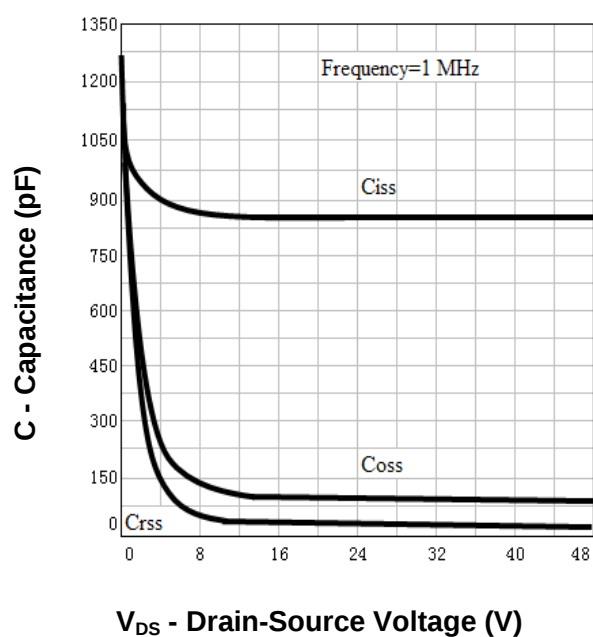
Drain-Source On Resistance



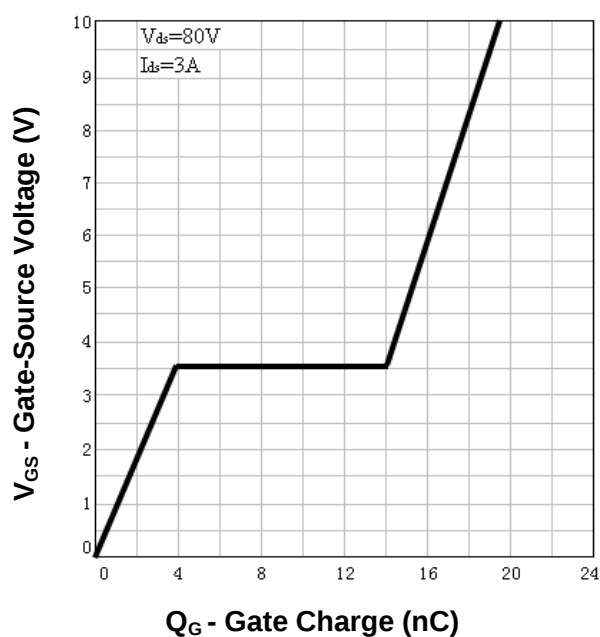
Source-Drain Diode Forward



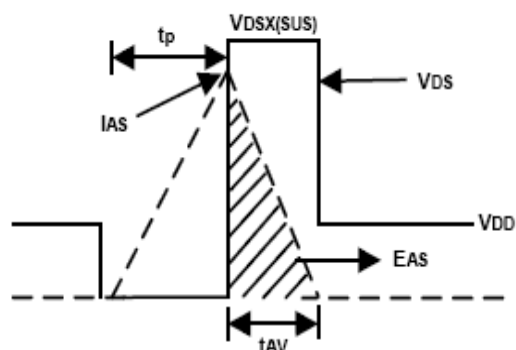
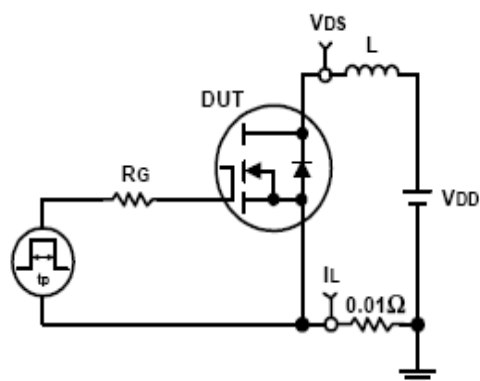
Capacitance



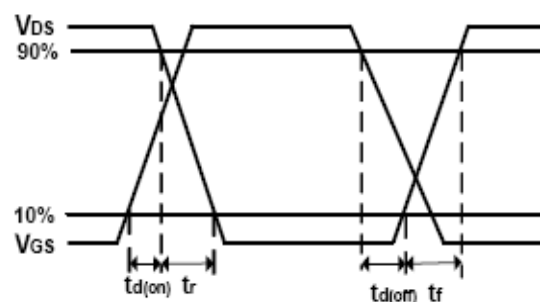
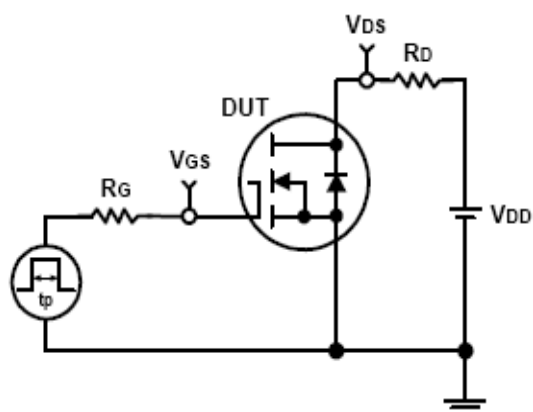
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

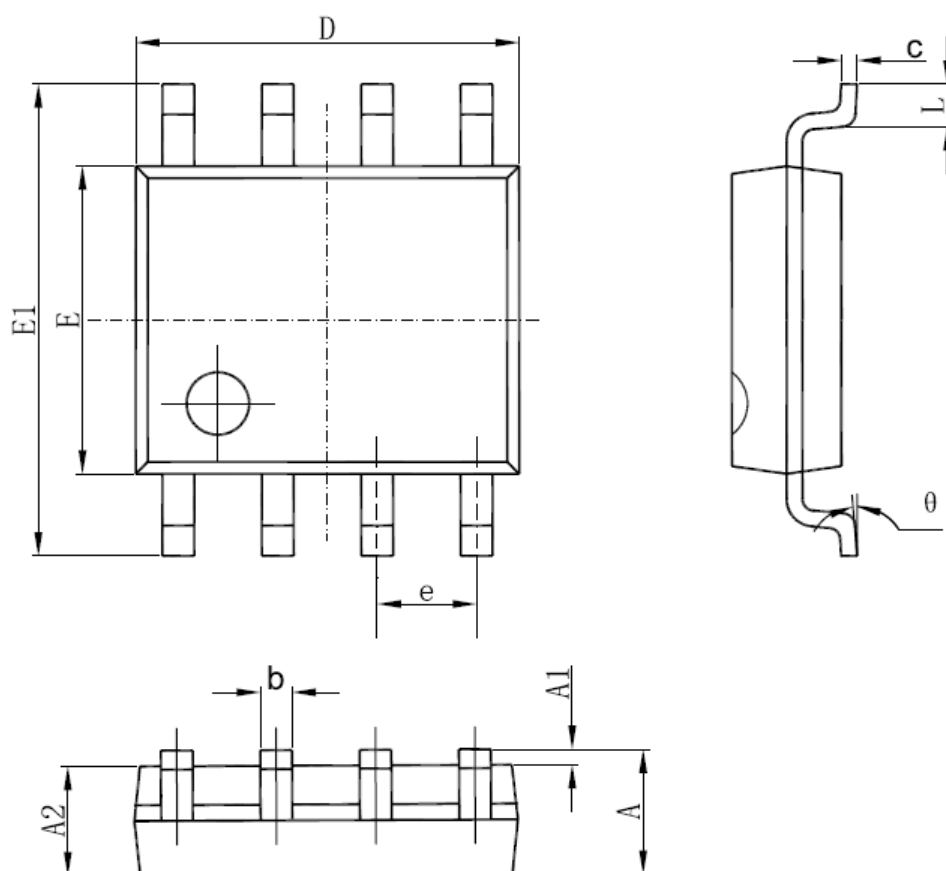


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU1HE4H	RU1HE4H	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	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

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