

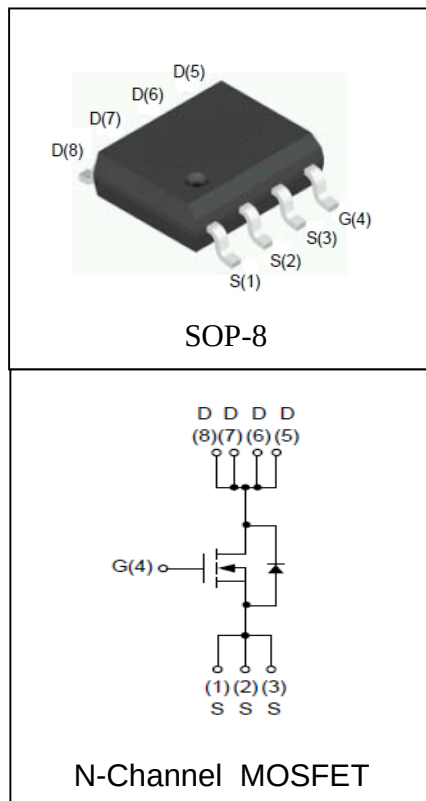
Features

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

Applications

- SMPS

Pin Description



Absolute Maximum Ratings

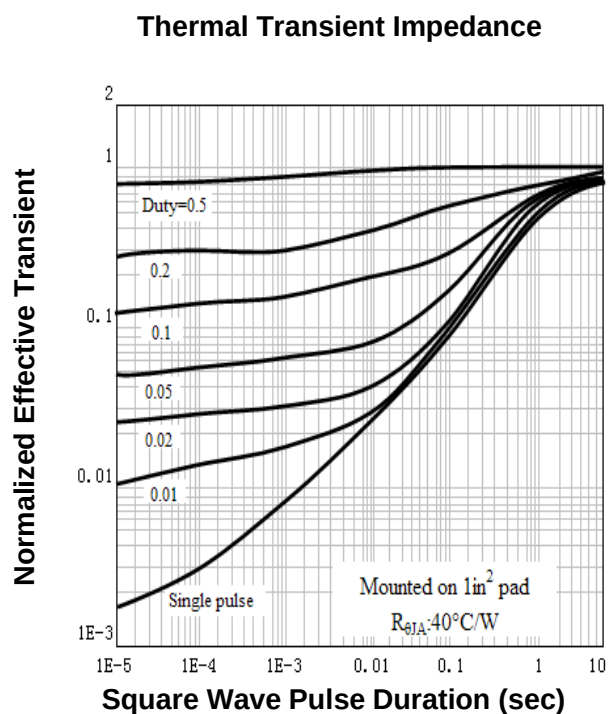
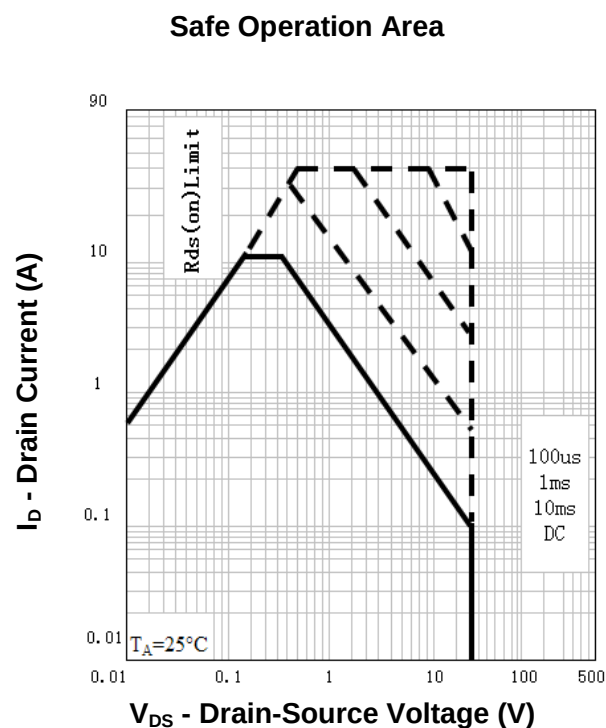
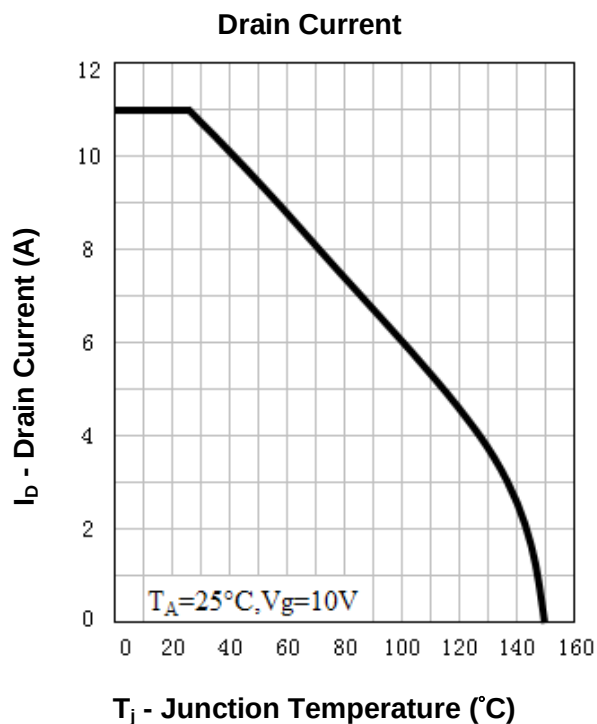
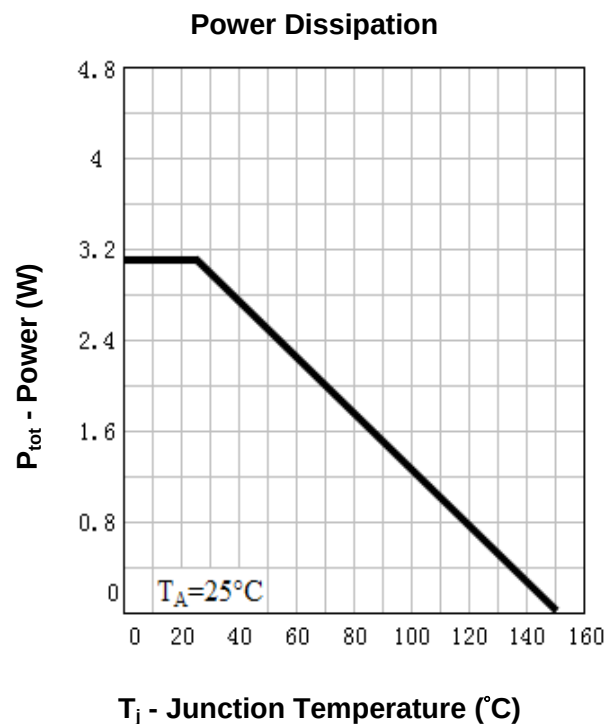
Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		30	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	4	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	40 ^①	A
I _D	Continuous Drain Current(V _{GS} =10V)	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 _{θJA} ^②	Thermal Resistance-Junction to Ambient		40	°C/W

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ 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		

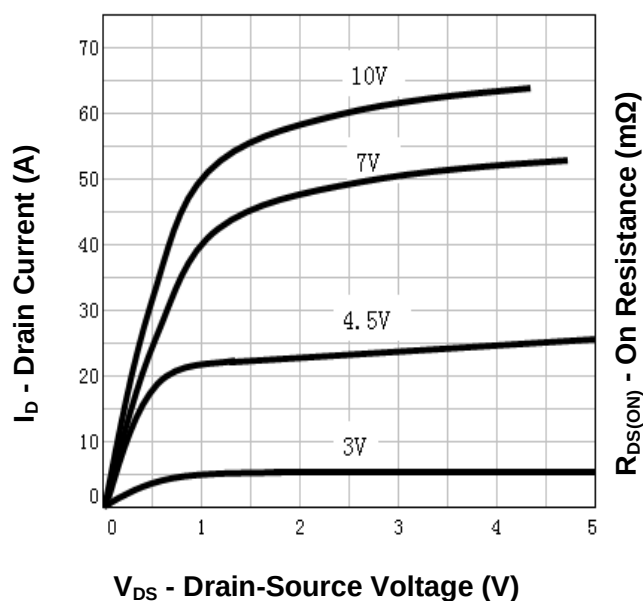
- Notes: ① Pulse width limited by safe operating area.
 ② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 ③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 ④ Guaranteed by design, not subject to production testing.

Typical Characteristics

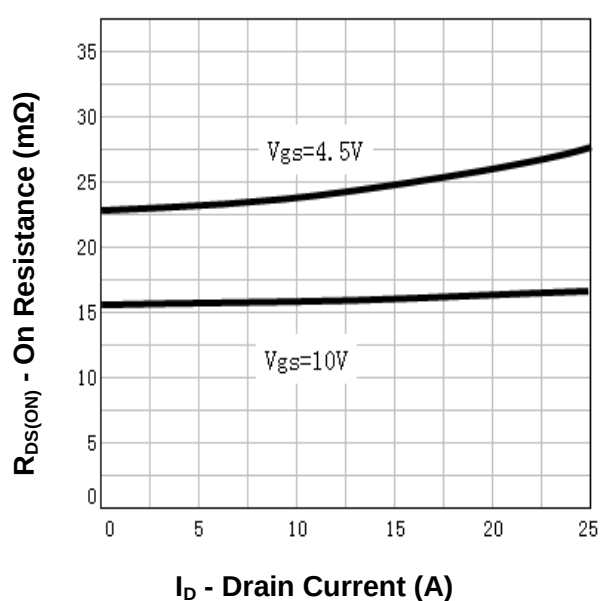


Typical Characteristics

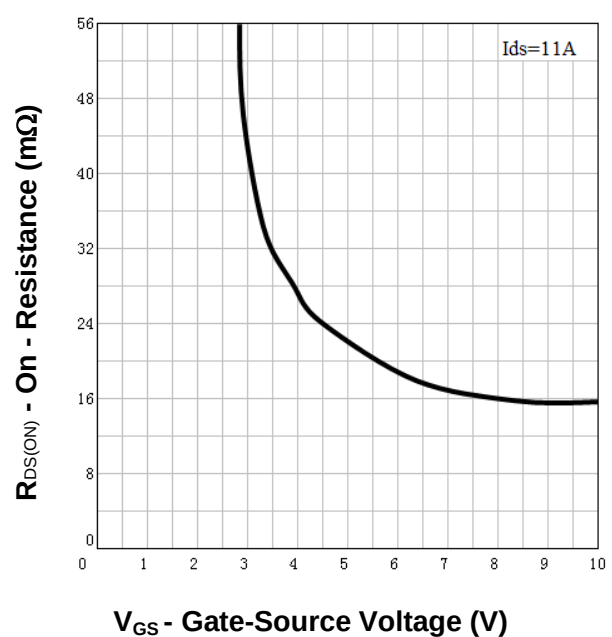
Output Characteristics



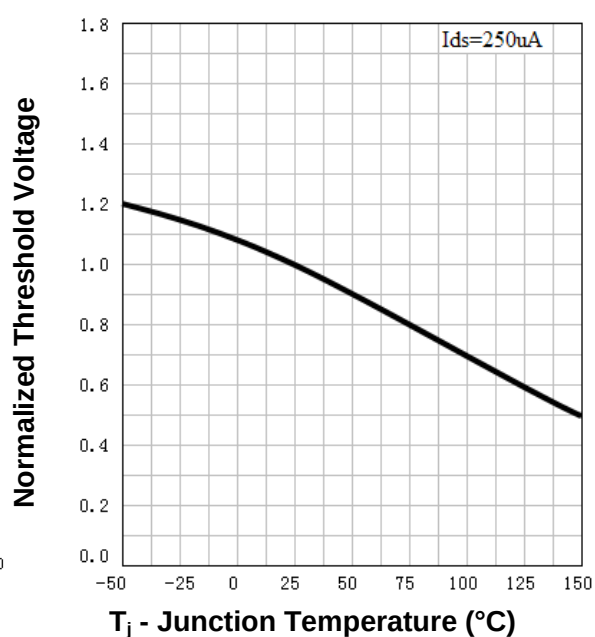
Drain-Source On Resistance



Drain-Source On Resistance

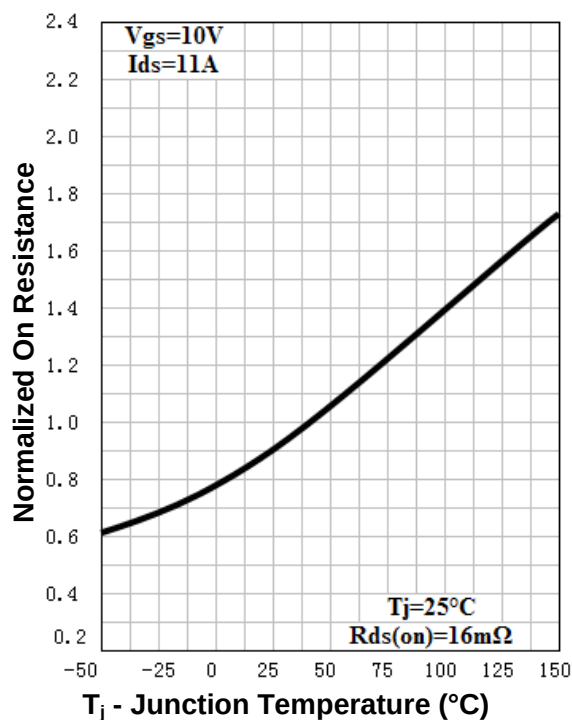


Gate Threshold Voltage

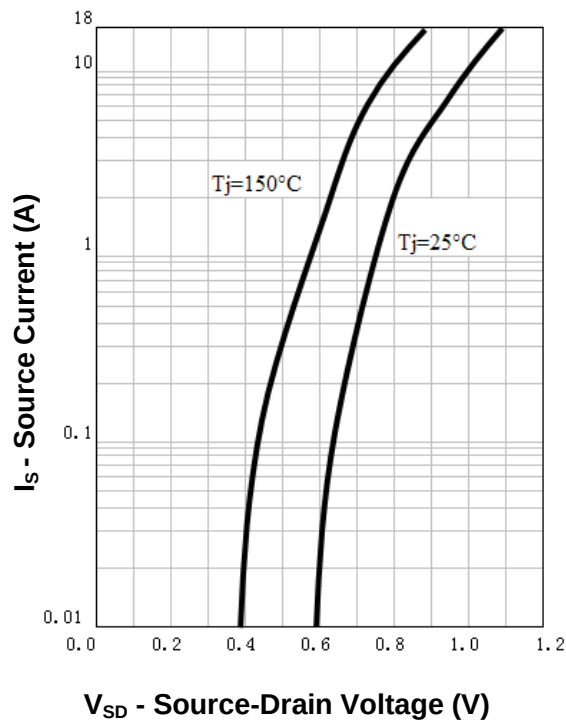


Typical Characteristics

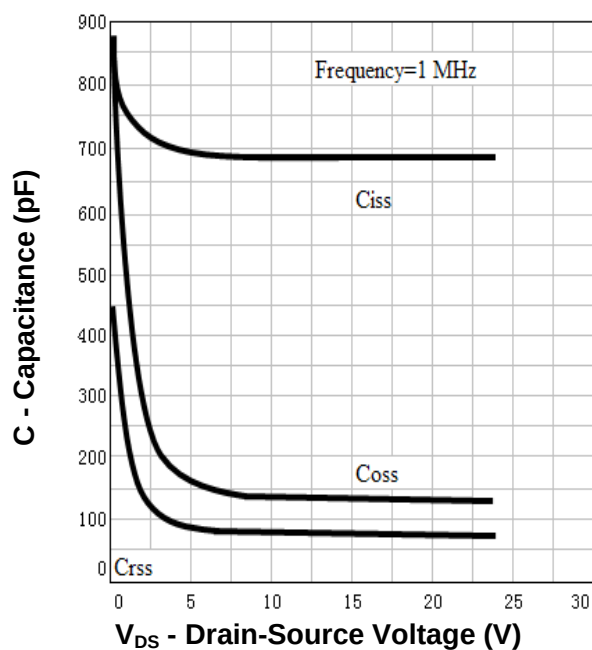
Drain-Source On Resistance



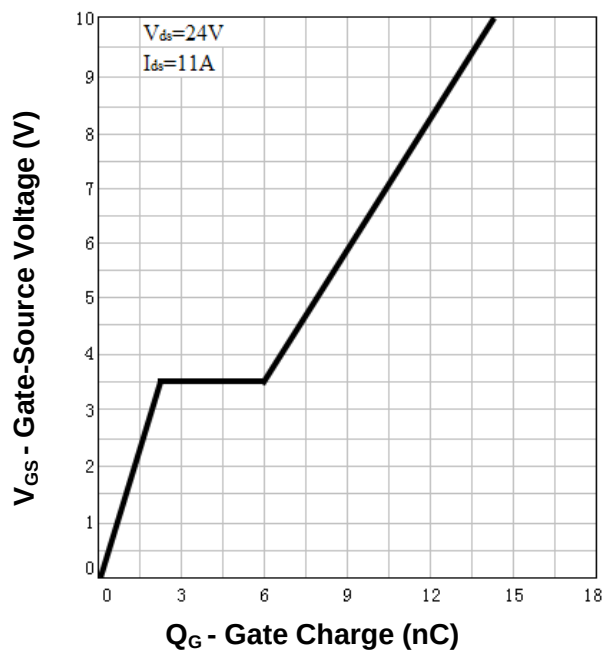
Source-Drain Diode Forward



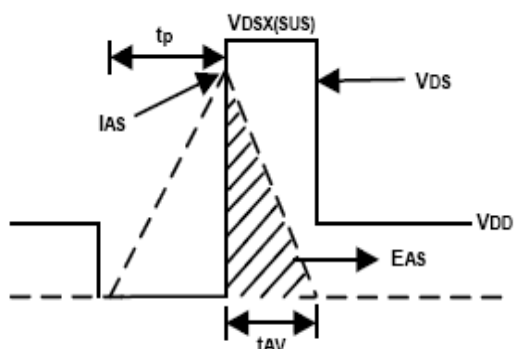
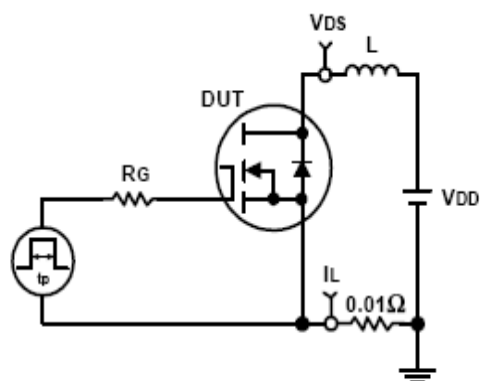
Capacitance



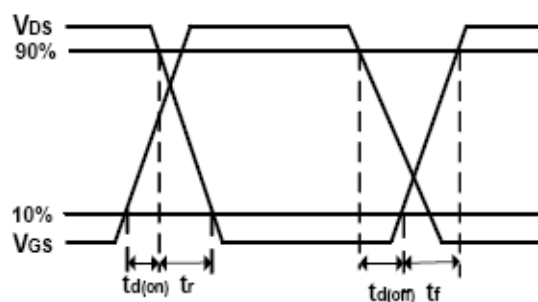
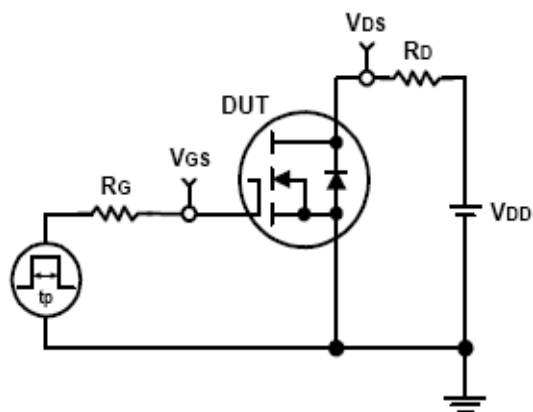
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms

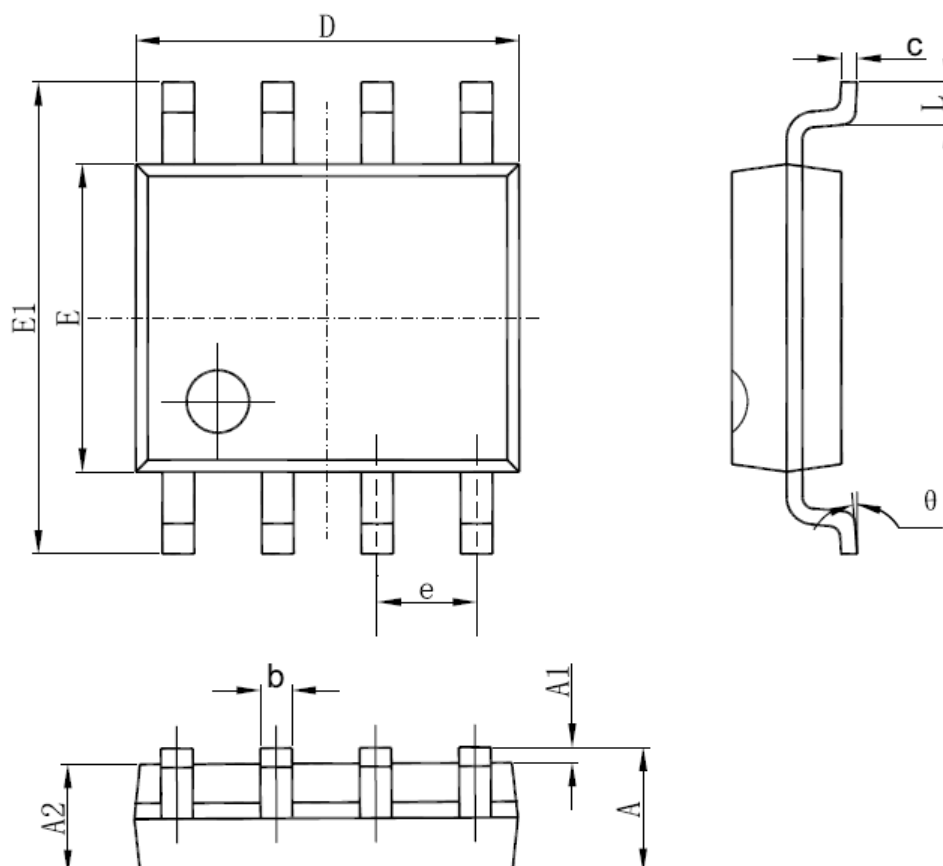


Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU3013H	RU3013H	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

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