

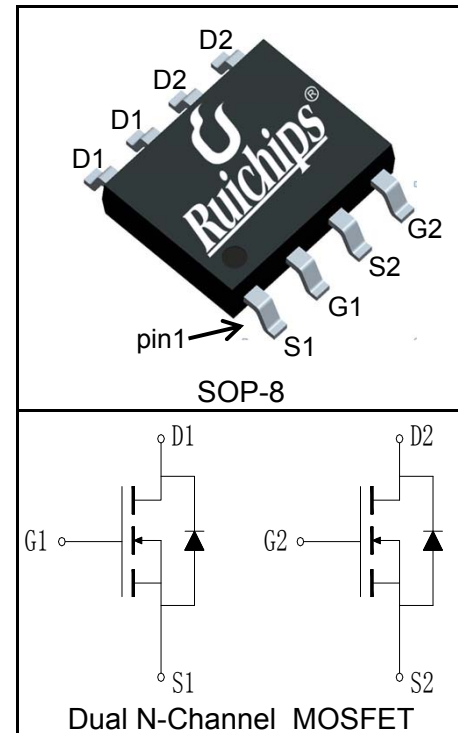
Features

- 20V/7A,
 $R_{DS(ON)} = 13m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)} = 16m\Omega(Typ.)@V_{GS}=2.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Power Management

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		20	V
V _{GSS}	Gate-Source Voltage		±12	
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	7	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _A =25°C	28	A
I _D ^②	Continuous Drain Current(V _{GS} =4.5V)	T _A =25°C	7	A
		T _A =70°C	5.6	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJC}	Thermal Resistance-Junction to Case		-	°C/W
R _{θJA} ^③	Thermal Resistance-Junction to Ambient		50	°C/W
Drain-Source Avalanche Ratings				
E _{AS} ^④	Avalanche Energy, Single Pulsed		-	mJ

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

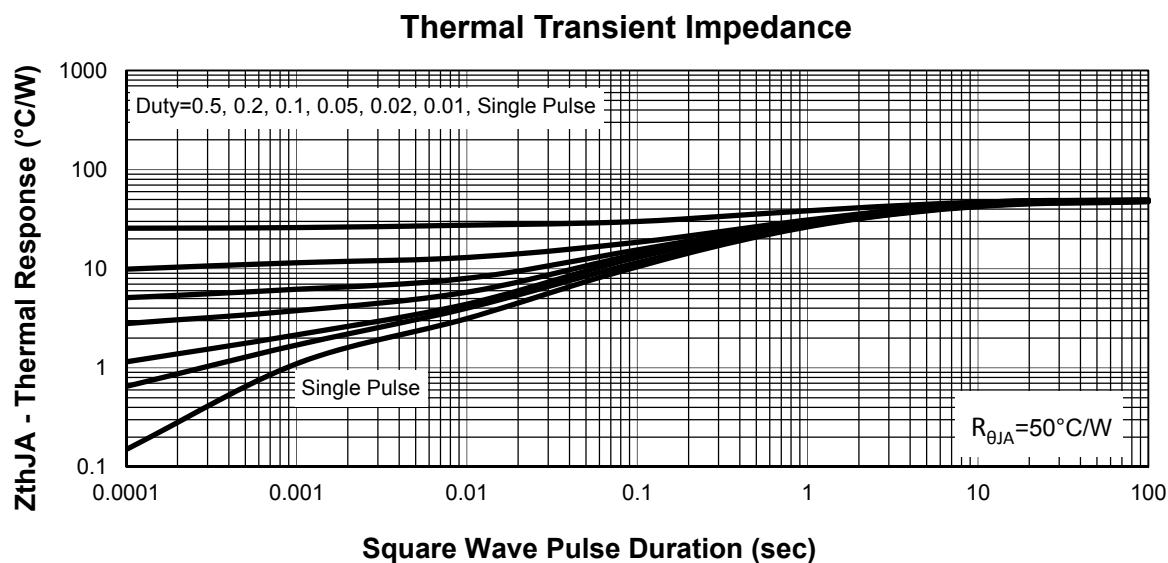
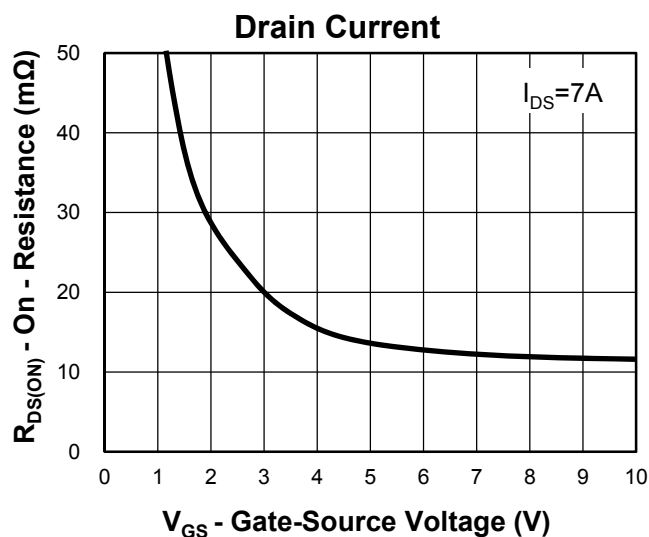
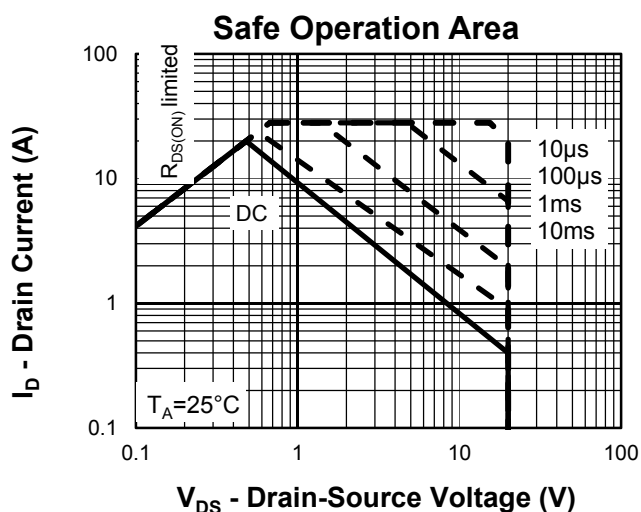
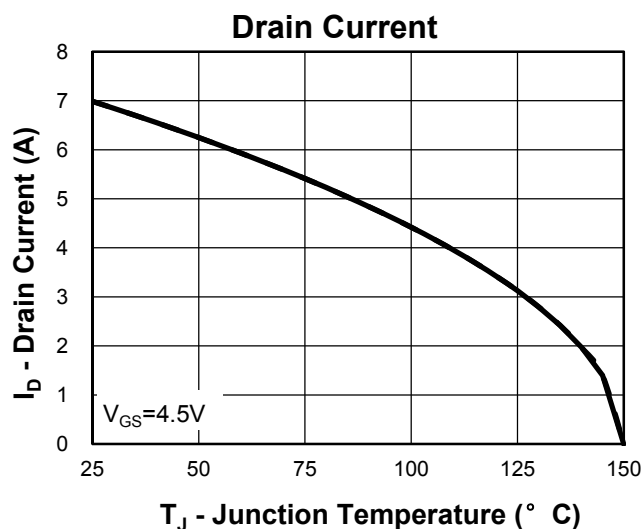
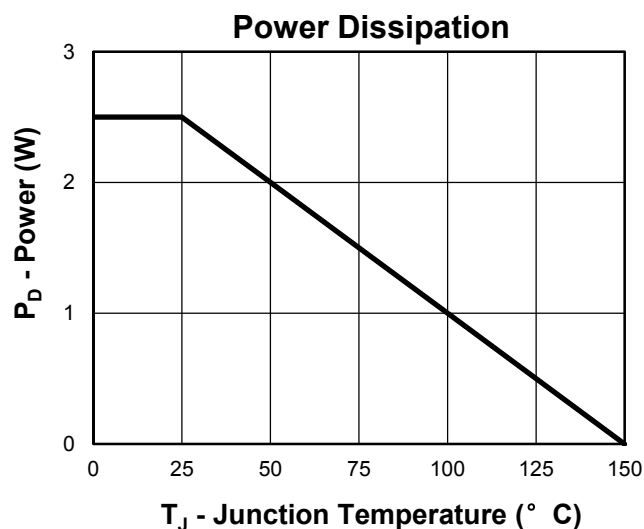
Symbol	Parameter	Test Condition	RU20D7H			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V			1	μA
		T _J =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	0.4		1.1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =7A		13	16	mΩ
		V _{GS} =2.5V, I _{DS} =5A		16	20	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V			1	V
t _{rr}	Reverse Recovery Time	I _{SD} =7A, dI _{SD} /dt=100A/μs		19		ns
Q _{rr}	Reverse Recovery Charge			9		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =10V, Frequency=1.0MHz		670		pF
C _{oss}	Output Capacitance			135		
C _{rss}	Reverse Transfer Capacitance			65		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =10V, I _{DS} =7A, V _{GEN} =4.5V, R _G =4.7Ω		9		ns
t _r	Turn-on Rise Time			16		
t _{d(OFF)}	Turn-off Delay Time			45		
t _f	Turn-off Fall Time			21		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =16V, V _{GS} =4.5V, I _{DS} =7A		13		nC
Q _{gs}	Gate-Source Charge			2.3		
Q _{gd}	Gate-Drain Charge			3.9		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} . Starting $T_J = 25^{\circ}\text{C}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

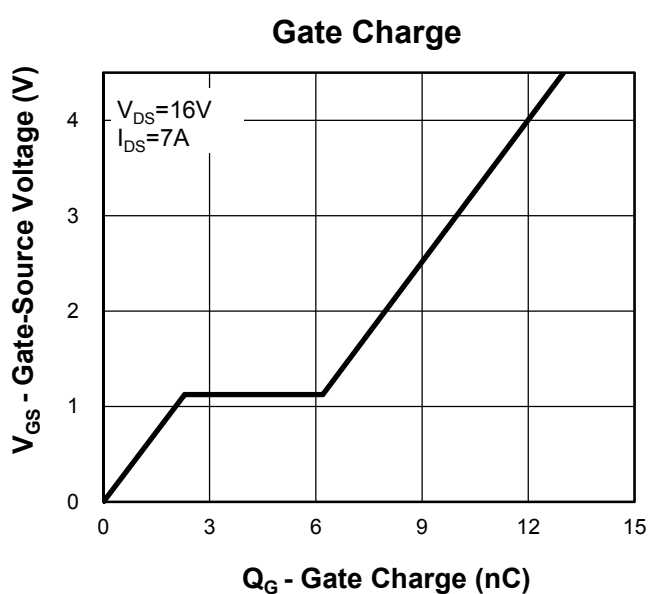
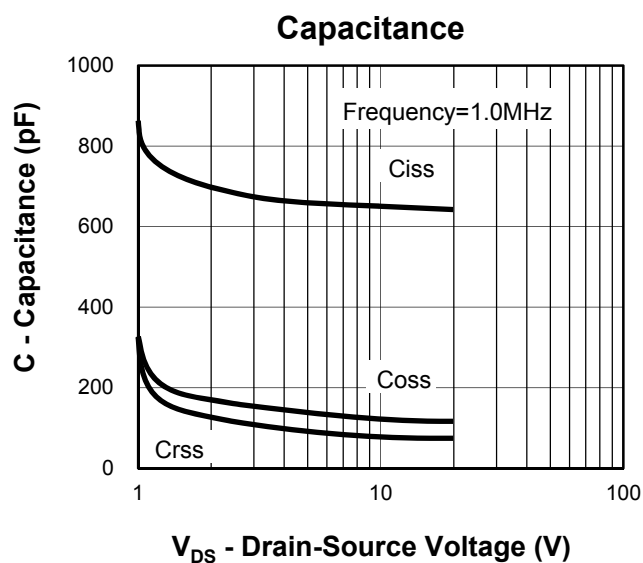
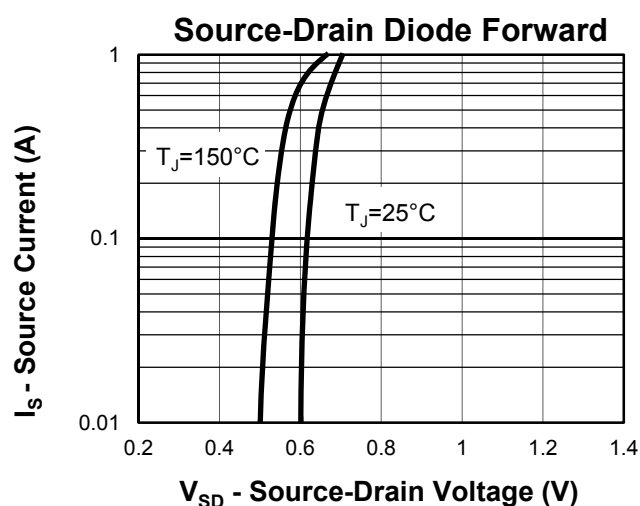
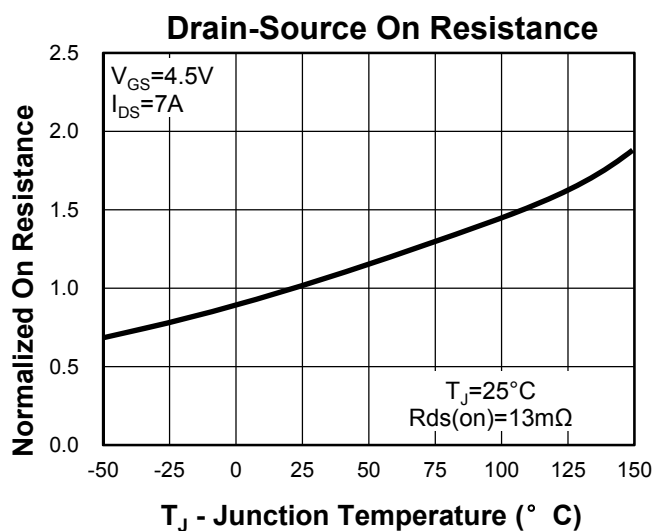
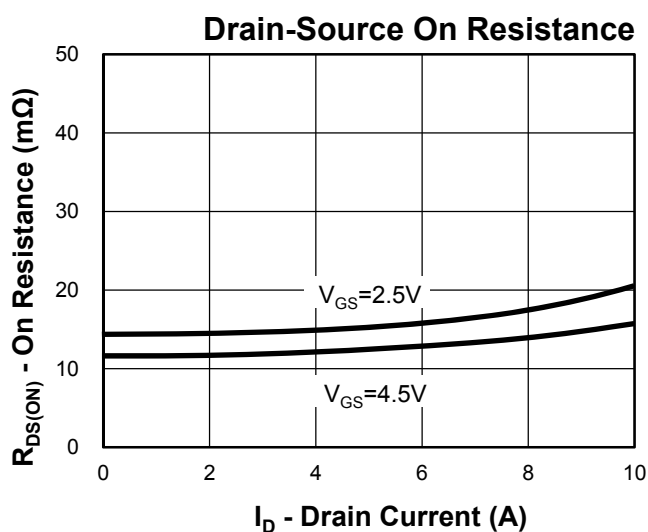
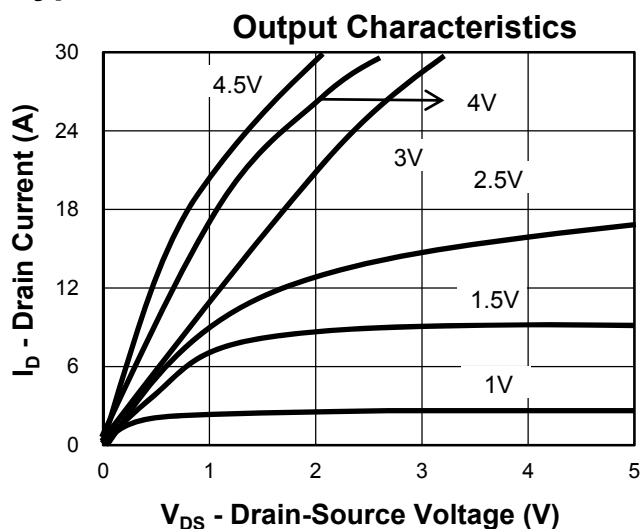
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU20D7H	RU20D7H	SOP-8	Tape&Reel	2500	13"	12mm

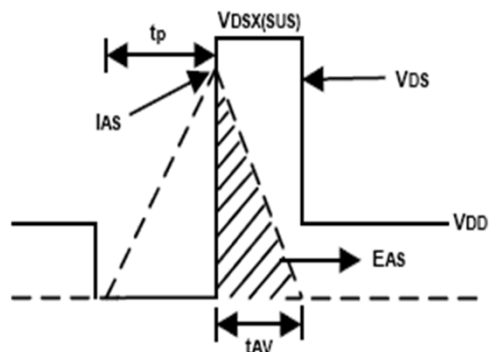
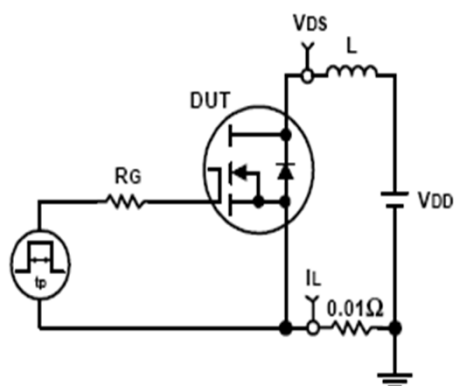
Typical Characteristics



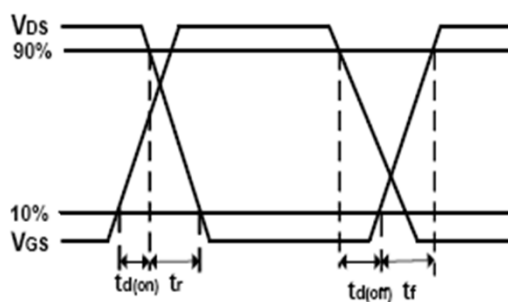
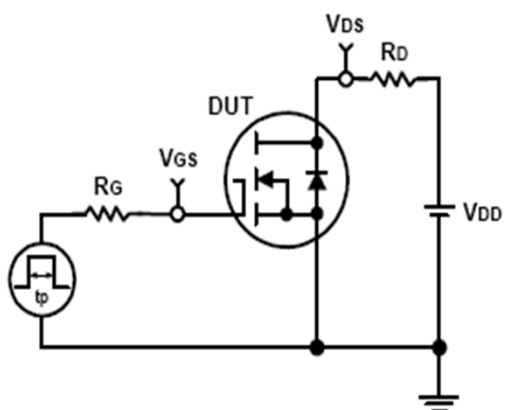
Typical Characteristics



Avalanche Test Circuit and Waveforms

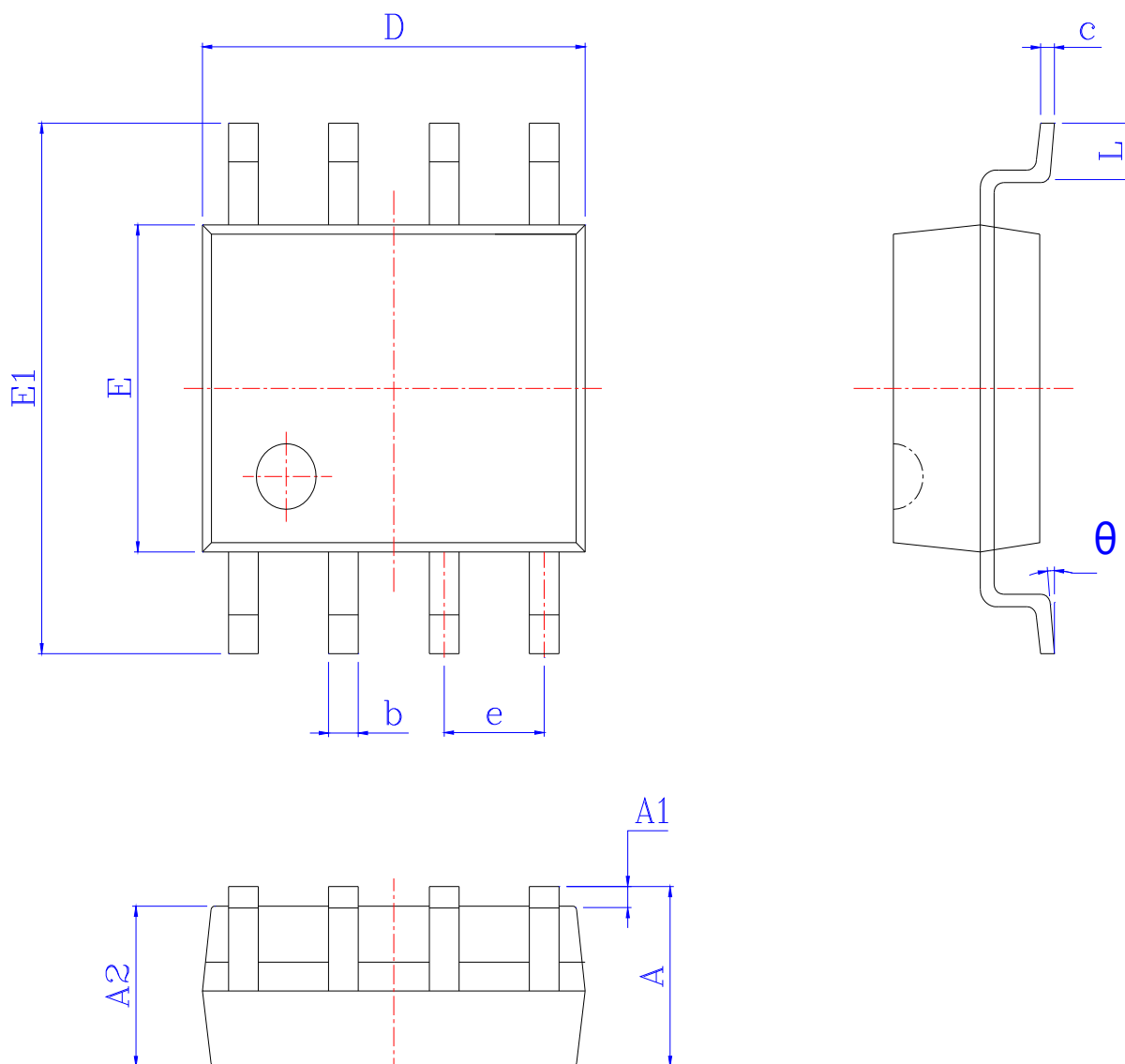


Switching Time Test Circuit and Waveforms



Package Information

SOP-8



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.300	1.525	1.750	0.051	0.060	0.069
A1	0.050	0.150	0.250	0.002	0.006	0.010
A2	1.300	1.450	1.550	0.051	0.057	0.061
b	0.330	0.420	0.510	0.013	0.017	0.020
c	0.170	*	0.260	0.007	*	0.010
D	4.700	4.900	5.100	0.185	0.193	0.201
E	3.700	3.900	4.100	0.146	0.154	0.161
E1	5.800	6.000	6.200	0.228	0.236	0.244
e	1.270 BSC			0.050 BSC		
L	0.400	0.835	1.270	0.016	0.033	0.050
θ	0°	*	8°	0°	*	8°

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