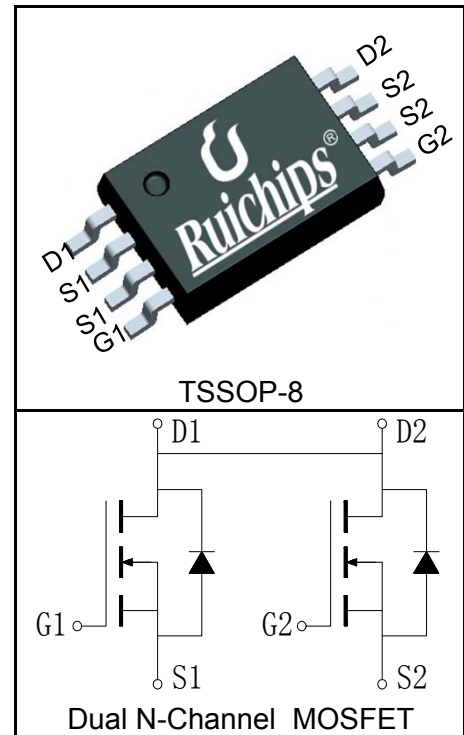


Features

- 20V/6A,
 $R_{DS(ON)} = 16m\Omega(Typ.)@V_{GS}=4.5V$
 $R_{DS(ON)} = 18m\Omega(Typ.)@V_{GS}=2.5V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description

Applications

- Power Management

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_A=25^\circ C$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage	20	V	
V_{GSS}	Gate-Source Voltage	± 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
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_A=25^\circ C$	24	A
$I_D^{②}$	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	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	-	$^\circ C/W$	
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	83.5	$^\circ C/W$	
Drain-Source Avalanche Ratings				
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	TBD	mJ	

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

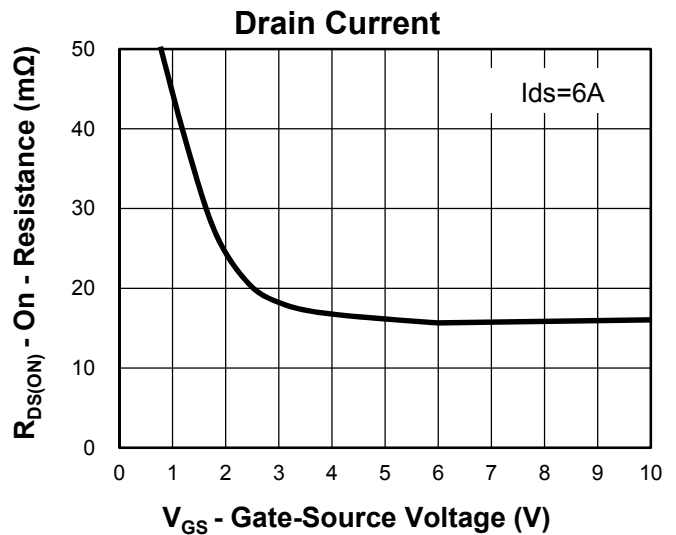
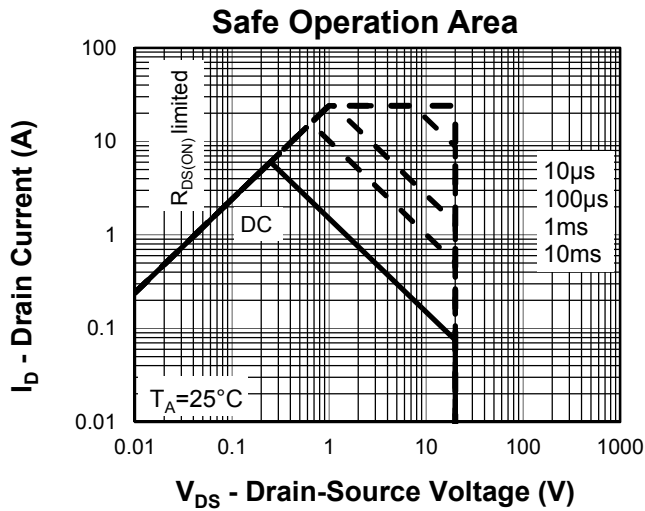
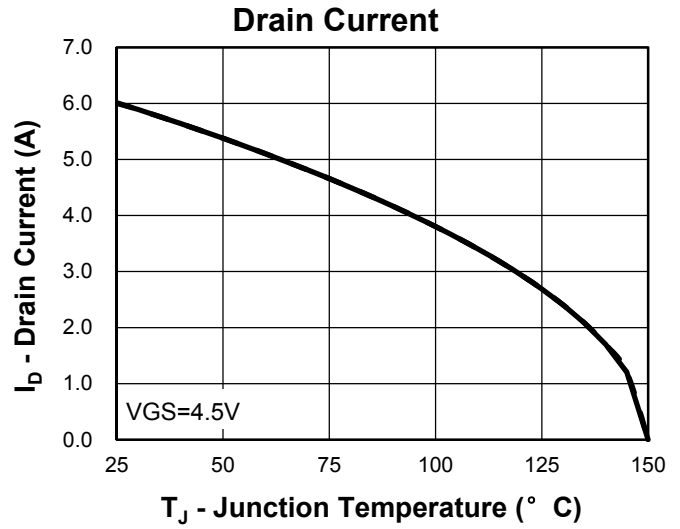
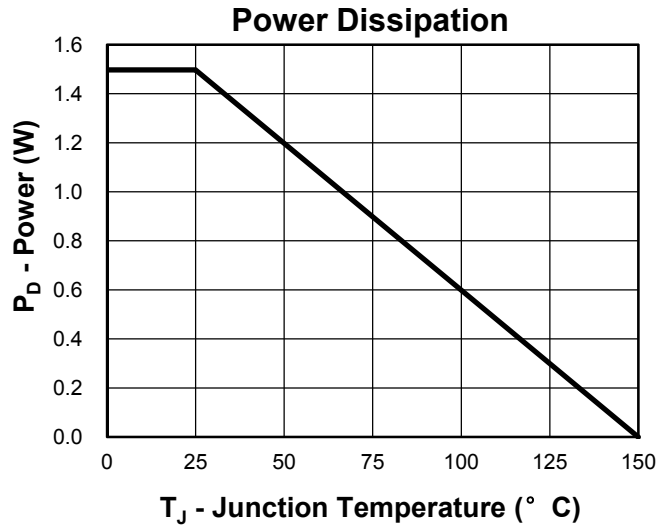
Symbol	Parameter	Test Condition	RU8205BG			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			1	μA
		$T_J=125^{\circ}\text{C}$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	0.5	0.7	1.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 10V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=6A$		16	18	$m\Omega$
		$V_{GS}=2.5V, I_{DS}=5A$		18	22	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=1A, V_{GS}=0V$			1	V
t_{rr}	Reverse Recovery Time	$I_{SD}=1A, di_{SD}/dt=100A/\mu s$		19		ns
Q_{rr}	Reverse Recovery Charge			11		nC
Dynamic Characteristics ⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		1.2		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	$V_{DD}=10V, I_{DS}=6A,$ $V_{GEN}=4.5V, R_G=6\Omega$		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	$V_{DS}=16V, V_{GS}=4.5V,$ $I_{DS}=6A$		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.

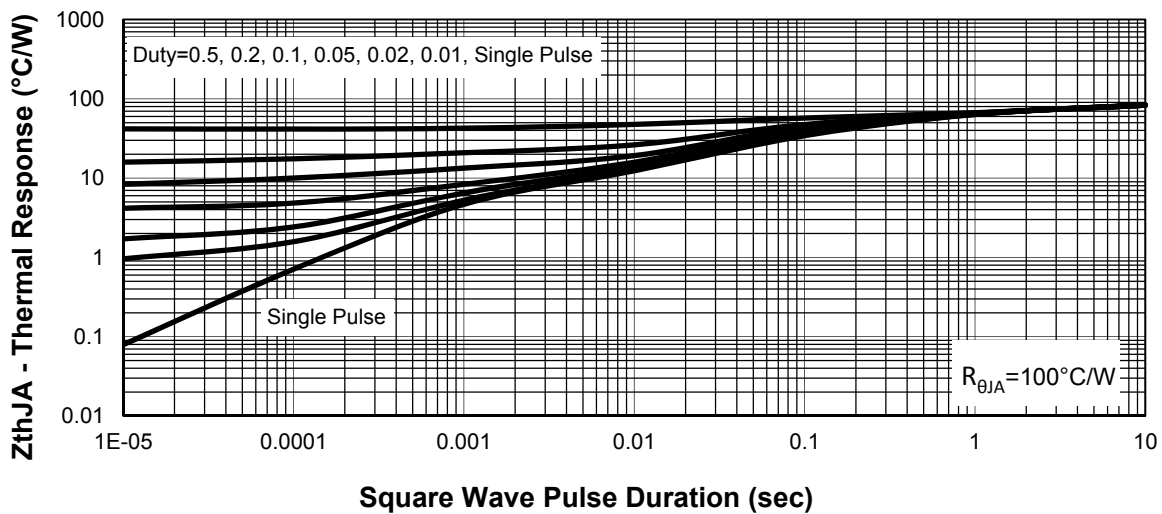
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU8205BG	RU8205BG	TSSOP8	Tape&Reel	3000	13"	12mm

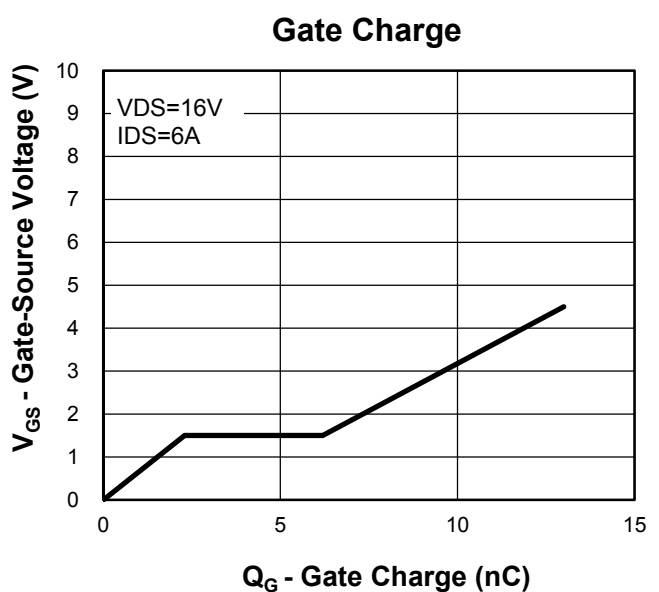
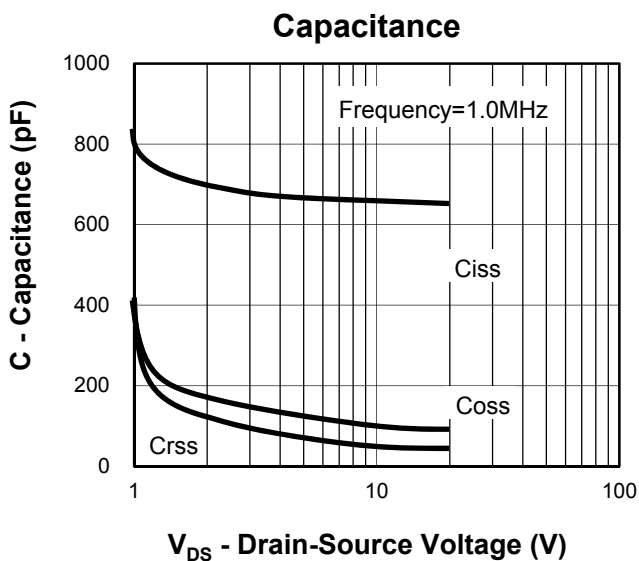
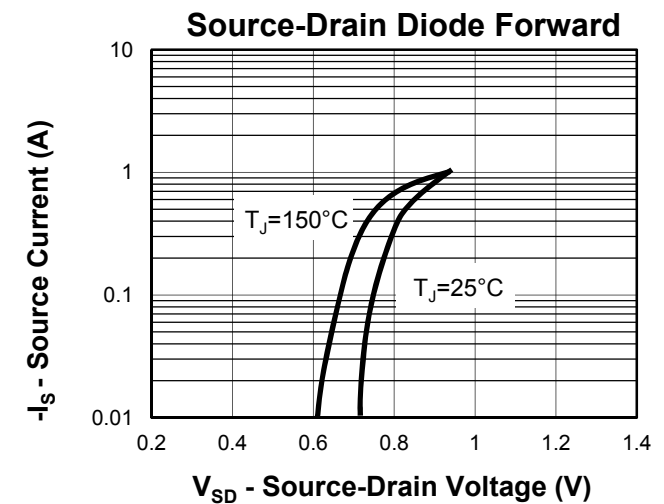
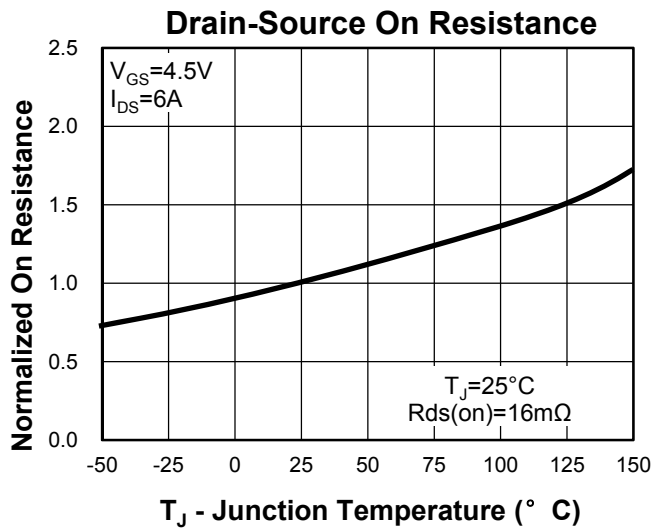
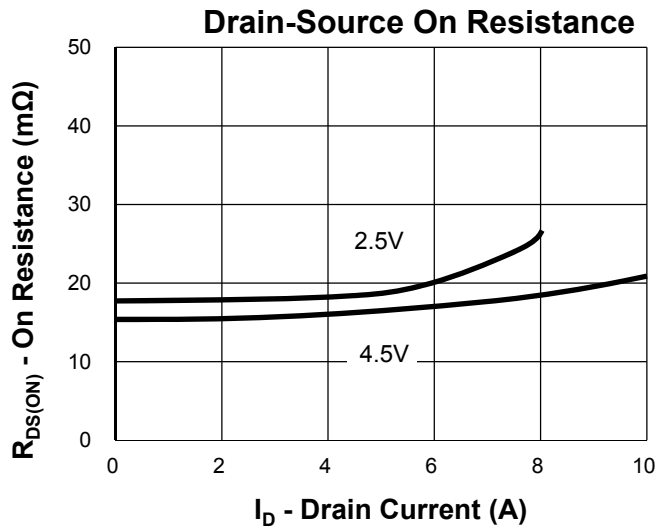
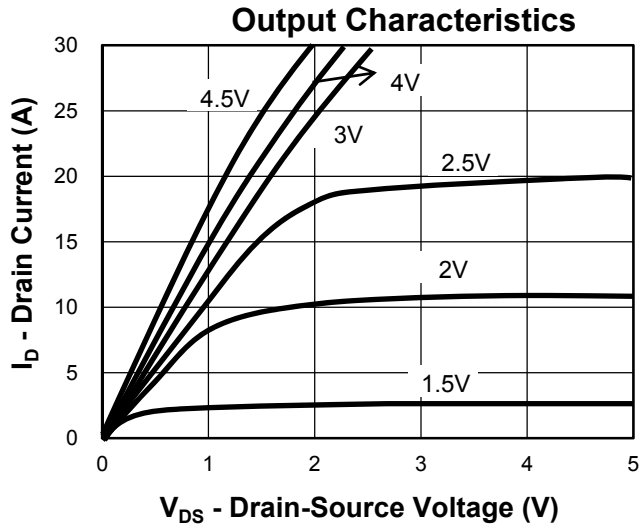
Typical Characteristics



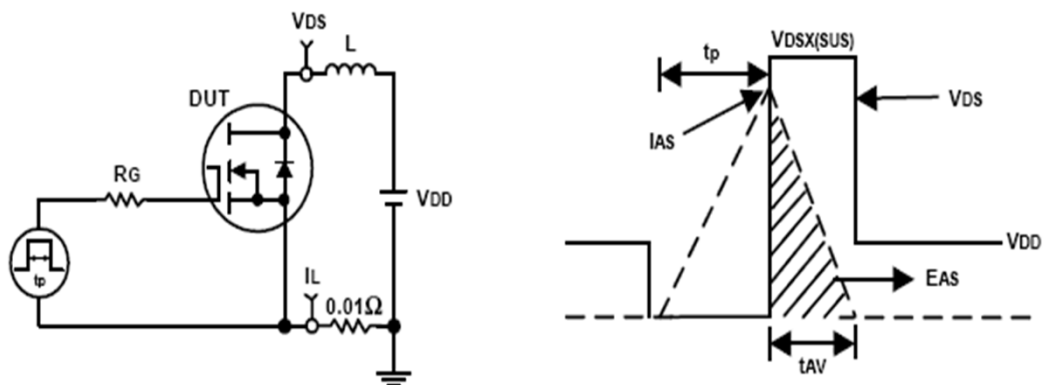
Thermal Transient Impedance



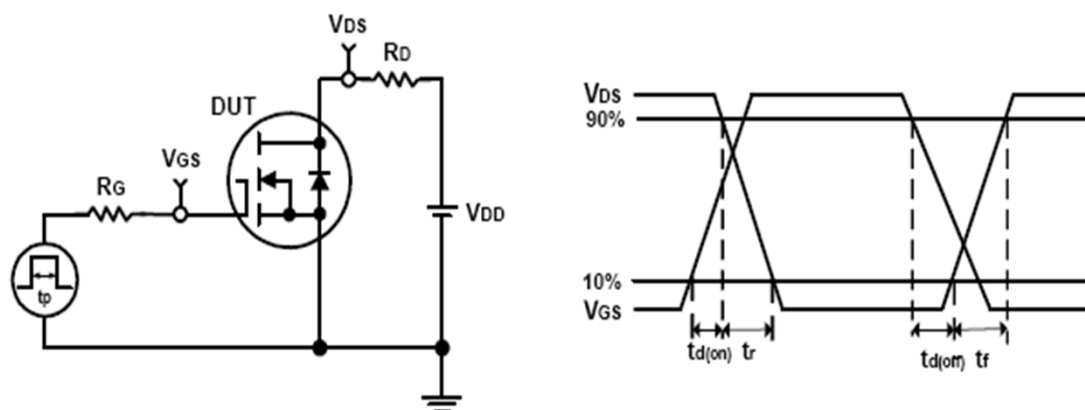
Typical Characteristics



Avalanche Test Circuit and Waveforms

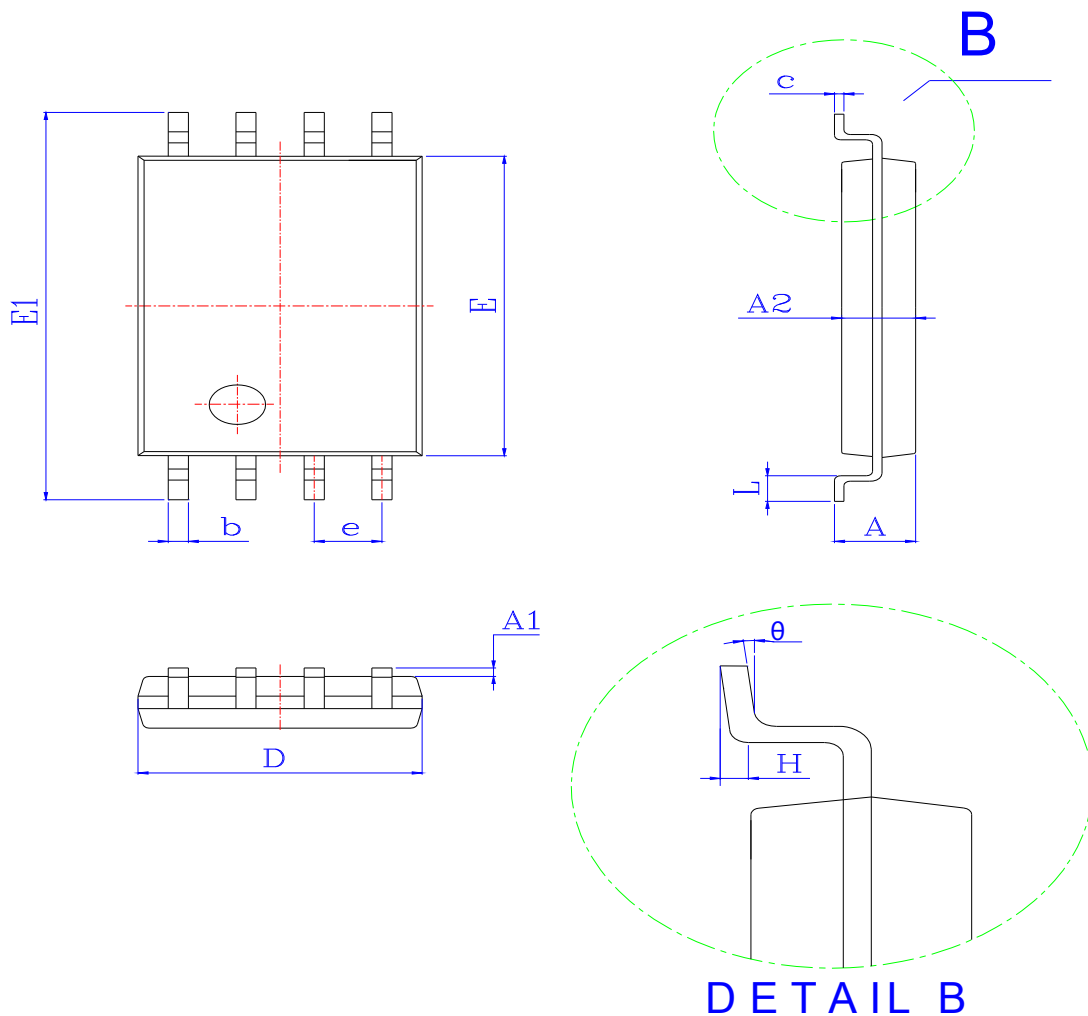


Switching Time Test Circuit and Waveforms



Package Information

TSSOP-8



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
D	2.87	3.00	3.10	0.113	0.118	0.122
E	4.30	4.40	4.50	0.169	0.173	0.177
b	0.17	0.25	0.30	0.007	0.010	0.012
c	0.09	0.15	0.20	0.004	0.006	0.008
E1	6.20	6.40	6.60	0.244	0.252	0.260
A	1.00	1.10	1.20	0.039	0.043	0.047
A1	0.05	0.10	0.18	0.002	0.004	0.007
A2	0.80	1.00	1.10	0.031	0.039	0.043
e	0.65 (BSC)			0.026 (BSC)		
L	0.40	0.60	0.80	0.016	0.024	0.031
H	0.25 (TYP)			0.01 (TYP)		
θ	0°	4°	8°	0°	4°	8°

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