

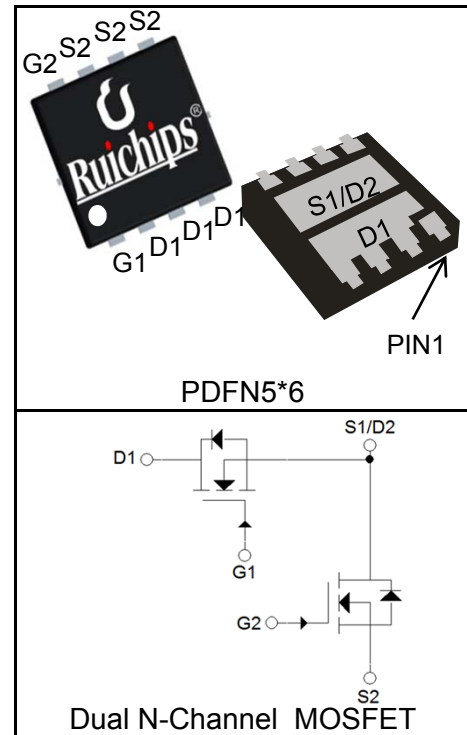
Features

- 30V/30A,
 $R_{DS(ON)} = 7m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 10m\Omega(Typ.)@V_{GS}=4.5V$
- Fast Switching Speed
- Low gate Charge
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Switching Application Systems
- DC/DC Converters

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =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 _C =25°C	20	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	120	A
I _D ^②	Continuous Drain Current@T _C (V _{GS} =10V)	T _C =25°C	30	A
		T _C =100°C	19	
	Continuous Drain Current@T _A (V _{GS} =10V) ^③	T _A =25°C	10.8	
		T _A =70°C	8.7	
P _D	Maximum Power Dissipation@T _C	T _C =25°C	29	W
		T _C =100°C	12	
	Maximum Power Dissipation@T _A ^③	T _A =25°C	3.5	
		T _A =70°C	2.3	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4.2	°C/W
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	35	°C/W
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	49	mJ

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

Symbol	Parameter	Test Condition	RU30J30M2			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 =125°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.2		2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A		7	9	mΩ
		V _{GS} =4.5V, I _{DS} =16A		10	14	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V			1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs		15		ns
Q _{rr}	Reverse Recovery Charge			8		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} =15V, Frequency=1.0MHz		670		pF
C _{oss}	Output Capacitance			180		
C _{rss}	Reverse Transfer Capacitance			75		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =0.75Ω, I _{DS} =20A, V _{GEN} =10V, R _G =3Ω		5		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			15		
t _f	Turn-off Fall Time			4		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =24V, V _{GS} =10V, I _{DS} =20A		12		nC
Q _{gs}	Gate-Source Charge			3		
Q _{gd}	Gate-Drain Charge			4		

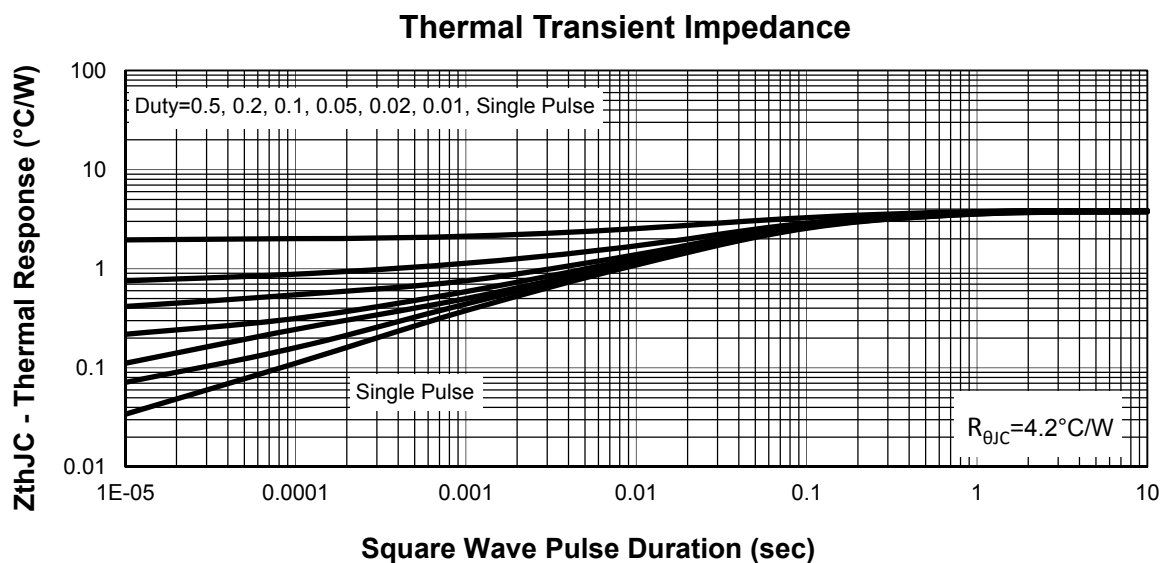
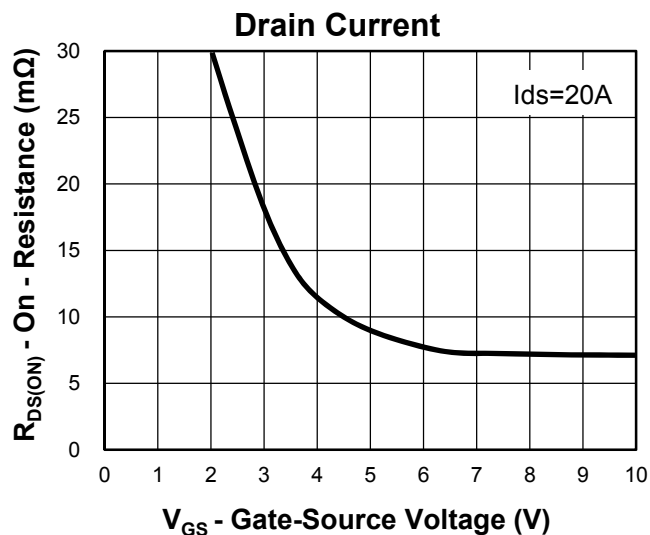
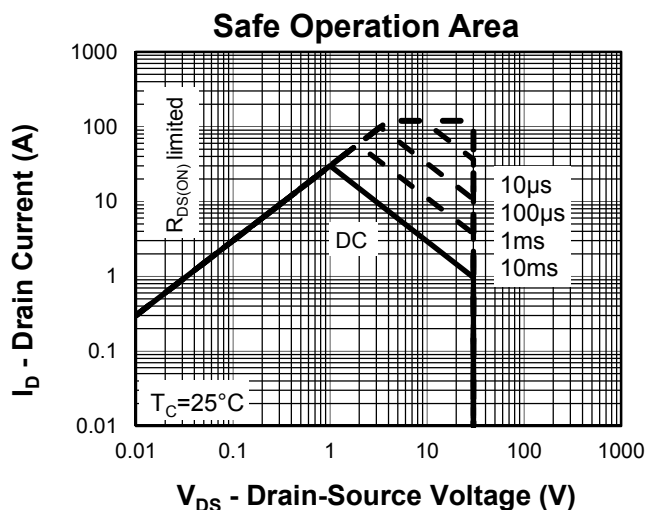
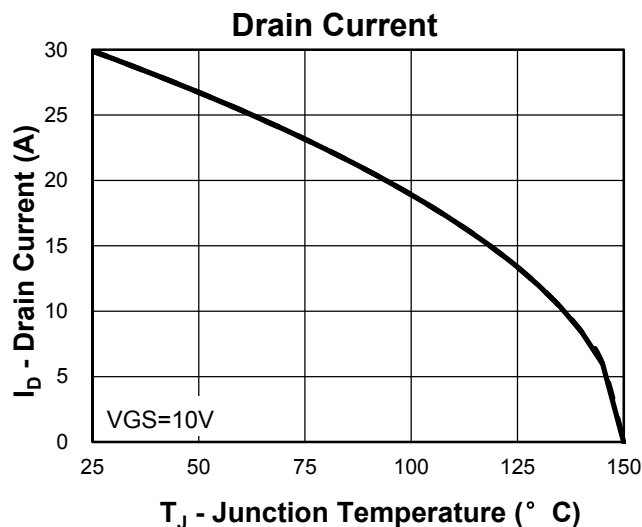
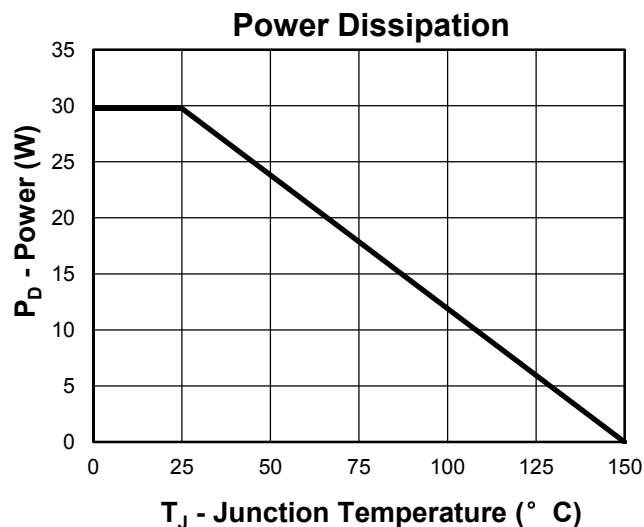
Notes:

- ①Pulse width limited by safe operating area.
- ②Calculated continuous current based on maximum allowable junction temperature.
- ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
- ④Limited by $T_{J\max}$, $I_{AS} = 14\text{A}$, $V_{DD} = 24\text{V}$, $R_G = 50\Omega$, Starting $T_J = 25^\circ\text{C}$.
- ⑤Pulse test;Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- ⑥Guaranteed by design, not subject to production testing.

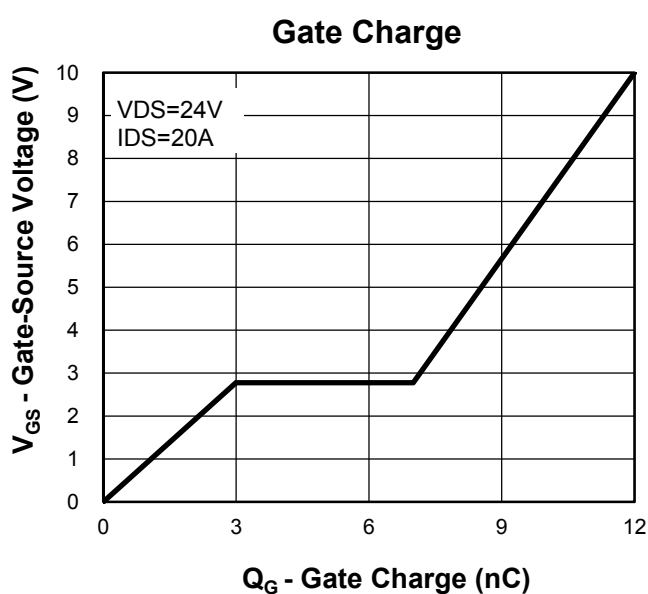
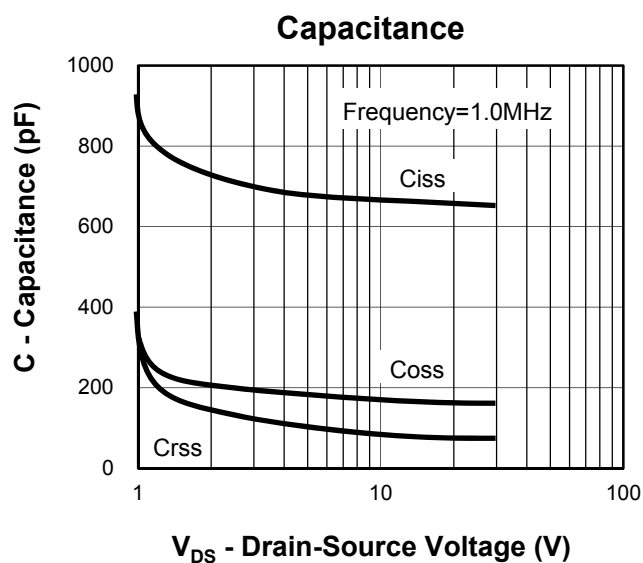
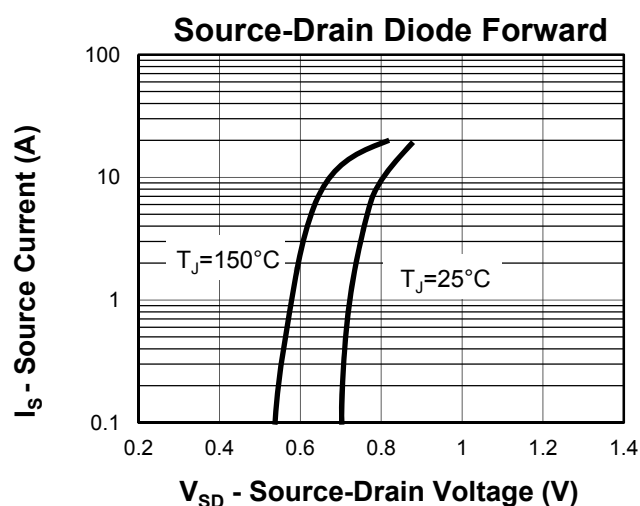
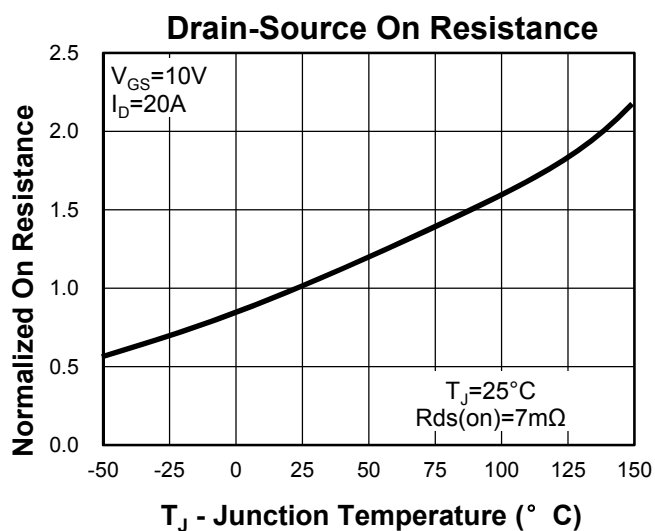
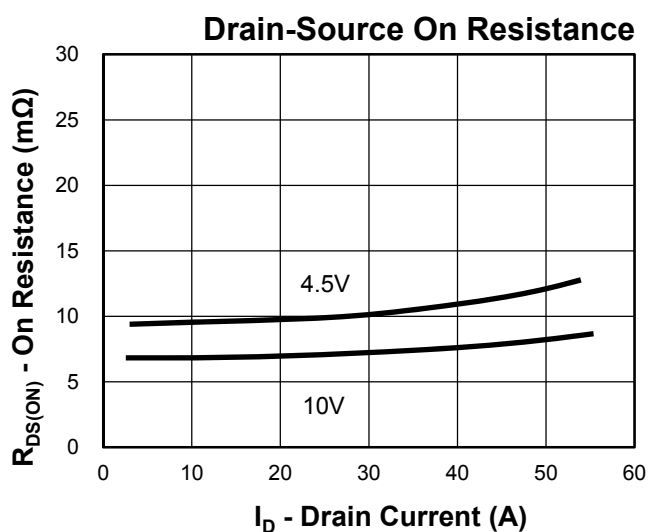
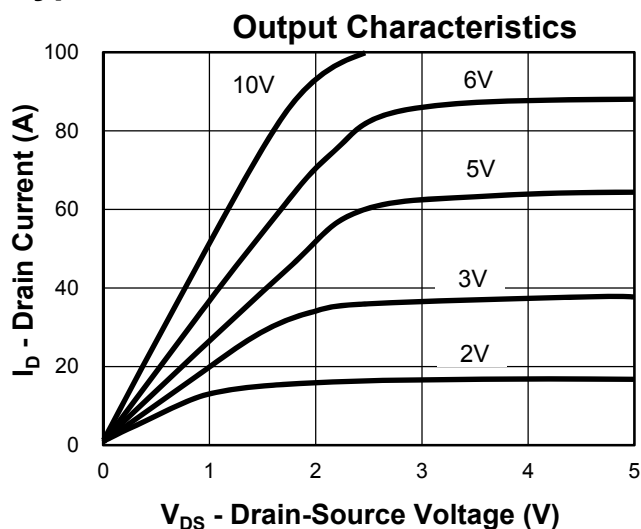
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU30J30M	RU30J30	PDFN3333	Tape&Reel	5000	13"	12mm

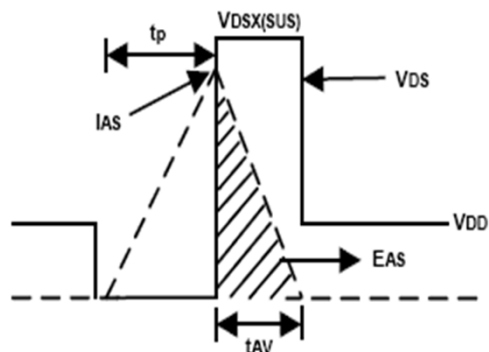
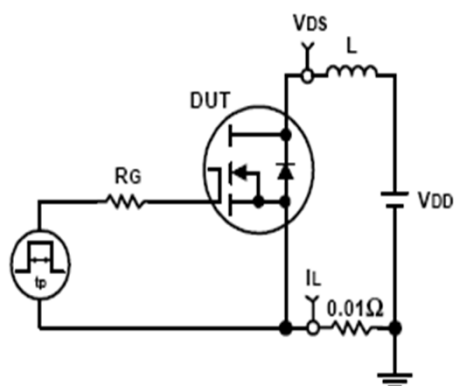
Typical Characteristics



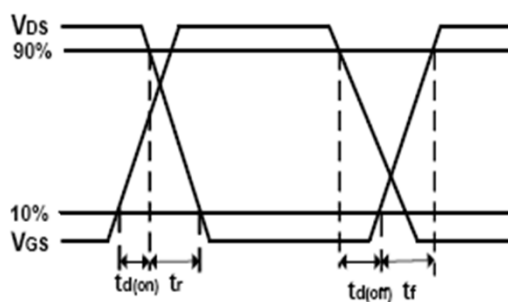
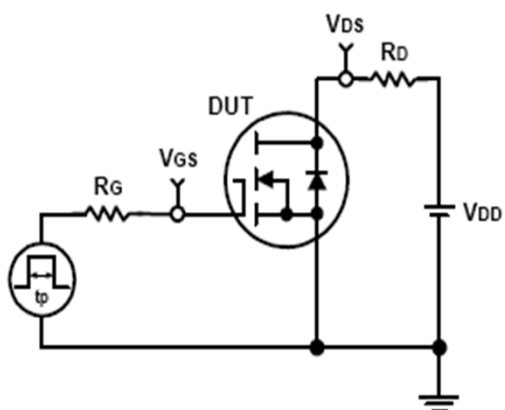
Typical Characteristics



Avalanche Test Circuit and Waveforms

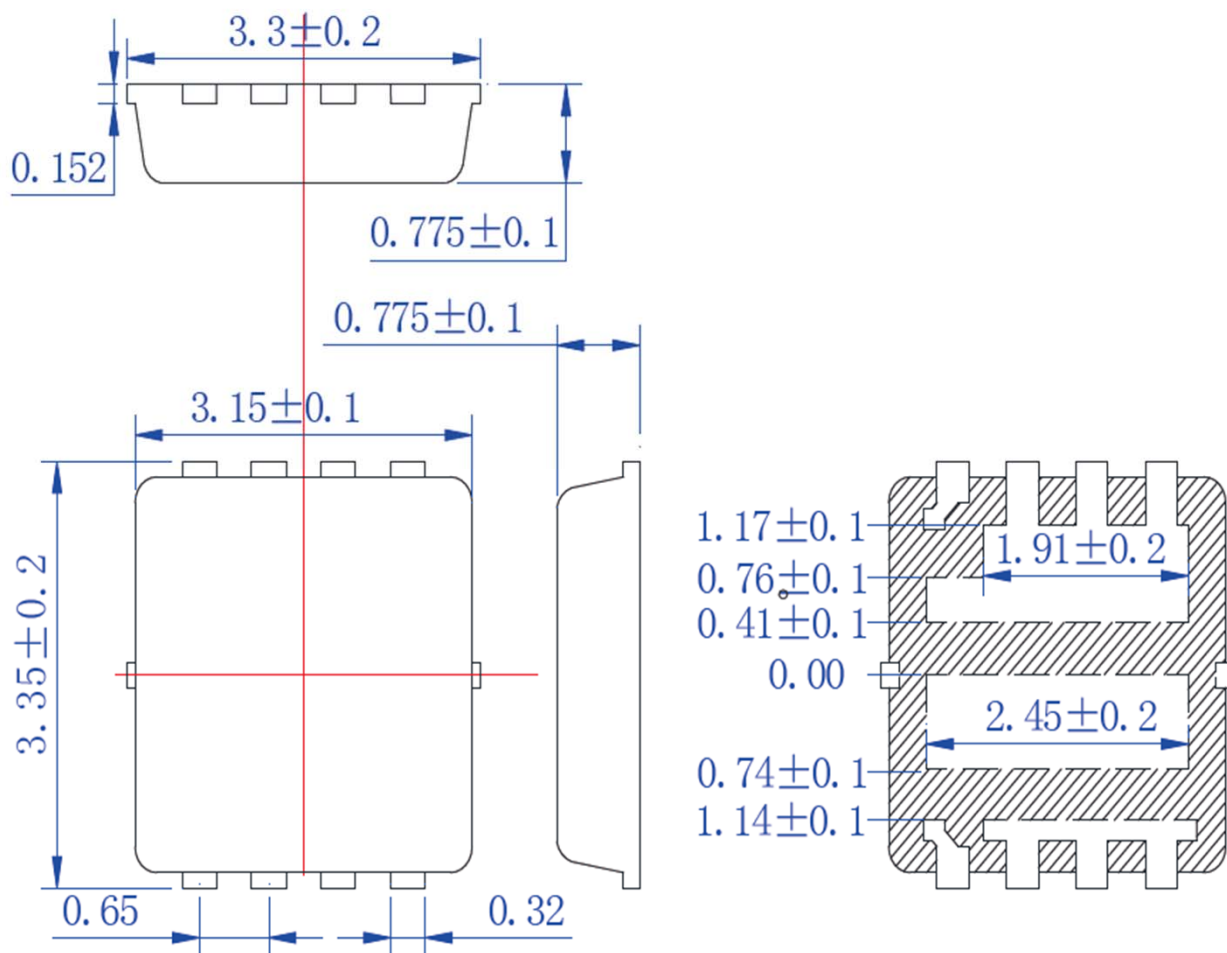


Switching Time Test Circuit and Waveforms



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PDFN3333



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