

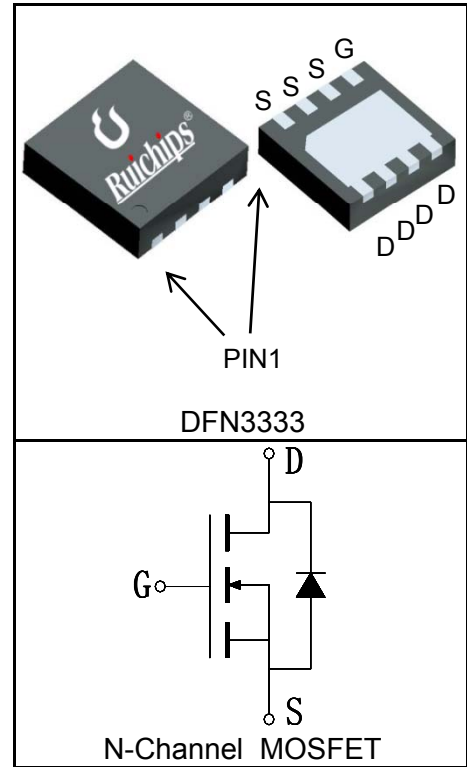
Features

- 30V/70A
- $R_{DS(ON)} = 3m\Omega(Typ.)@V_{GS}=10V$
- $R_{DS(ON)} = 3.6m\Omega(Typ.)@V_{GS}=4.5V$
- Uses Ruichips advanced Trench™ technology
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- 100% avalanche tested
- Qualified according to JEDEC criteria
- Lead Free and Green Device Available (RoHS Compliant)

Applications

- Switching Application Systems
- On Board power for server
- DC/DC Converters

Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage	30	V	
V_{GSS}	Gate-Source Voltage	± 20		
T_J	Maximum Junction Temperature	150	$^\circ C$	
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$	
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$	20	A
Mounted on Large Heat Sink				
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$	250	A
$I_D^{②}$	Continuous Drain Current@ $T_C(V_{GS}=10V)$	$T_C=25^\circ C$	70	A
		$T_C=100^\circ C$	45	
	Continuous Drain Current@ $T_A(V_{GS}=10V)^{③}$	$T_A=25^\circ C$	20	
		$T_A=70^\circ C$	16	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^\circ C$	45	W
		$T_C=100^\circ C$	18	
	Maximum Power Dissipation@ $T_A^{③}$	$T_A=25^\circ C$	3.6	
		$T_A=70^\circ C$	2.3	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	2.8	$^{\circ}C/W$
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	35	$^{\circ}C/W$
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	156	mJ

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

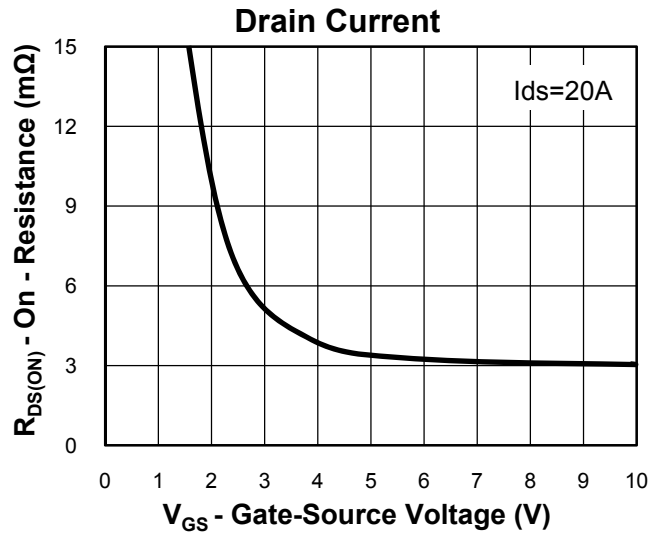
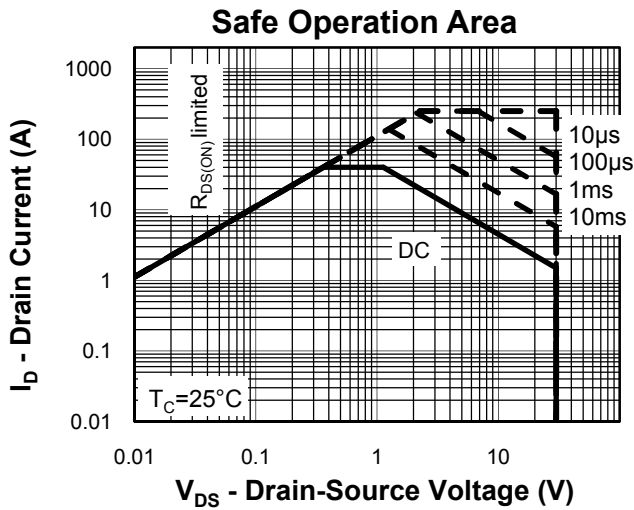
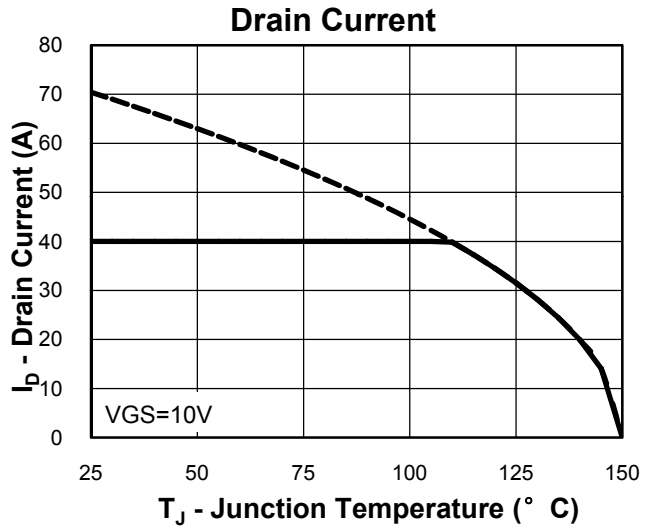
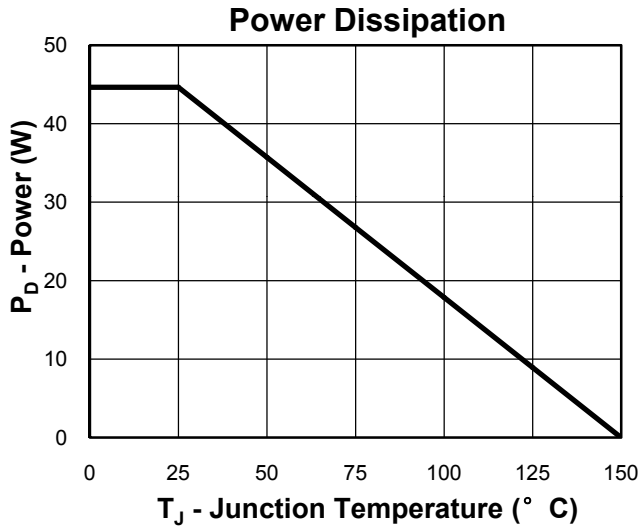
Symbol	Parameter	Test Condition	RU3070M3			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
		$T_J=125^{\circ}C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1		2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=20A$		3	3.6	$m\Omega$
		$V_{GS}=4.5V, I_{DS}=16A$		3.6	4.2	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=20A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=20A, dI_{SD}/dt=100A/\mu s$		30		ns
Q_{rr}	Reverse Recovery Charge			34		nC
Dynamic Characteristics ⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1.8		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=15V,$ Frequency=1.0MHz		3270		pF
C_{oss}	Output Capacitance			580		
C_{rss}	Reverse Transfer Capacitance			285		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=15V, I_{DS}=20A,$ $V_{GEN}=10V, R_G=3\Omega$		8		ns
t_r	Turn-on Rise Time			12		
$t_{d(OFF)}$	Turn-off Delay Time			35		
t_f	Turn-off Fall Time			9		
Gate Charge Characteristics ⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=24V, V_{GS}=10V,$ $I_{DS}=20A$		60		nC
Q_{gs}	Gate-Source Charge			15		
Q_{gd}	Gate-Drain Charge			22		

- Notes:
- ①Pulse width limited by safe operating area.
 - ②Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 40A.
 - ③When mounted on 1 inch square copper board, $t \leq 10\text{sec}$.
 - ④Limited by $T_{J\text{max}}$, $I_{AS} = 25\text{A}$, $V_{DD} = 24\text{V}$, $R_G = 50\ \Omega$, 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.

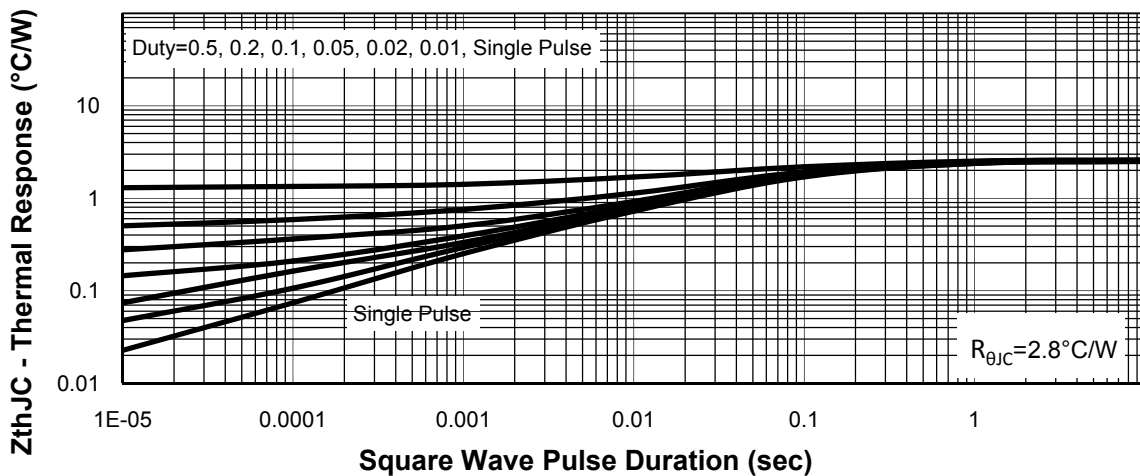
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU3070M3	RU3070	DFN3333	Tape&Reel	5000	13"	12mm

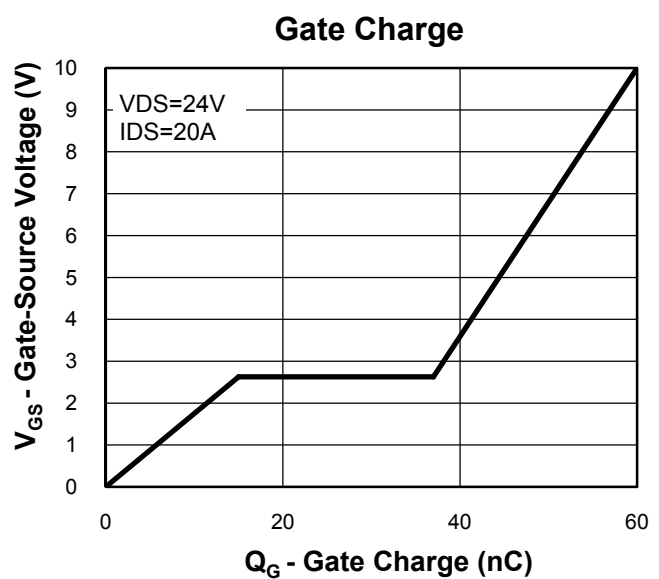
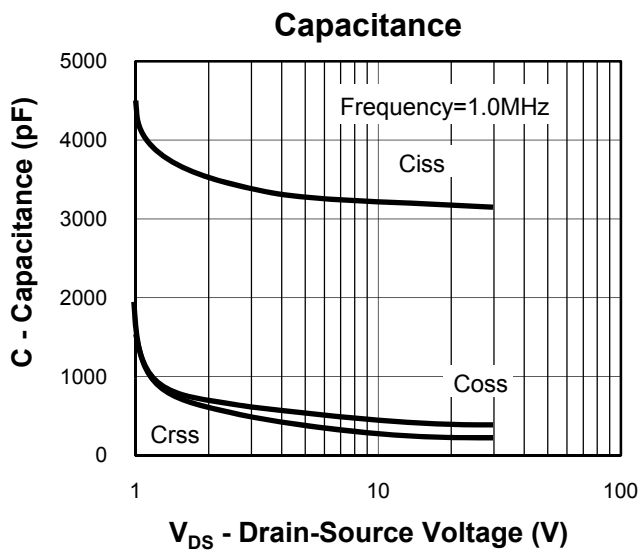
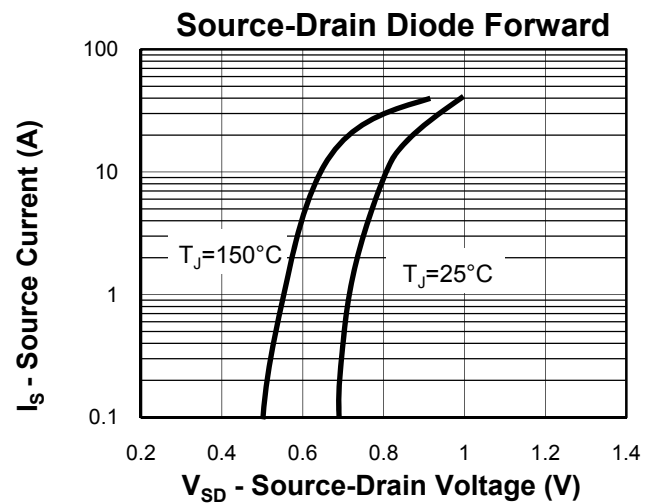
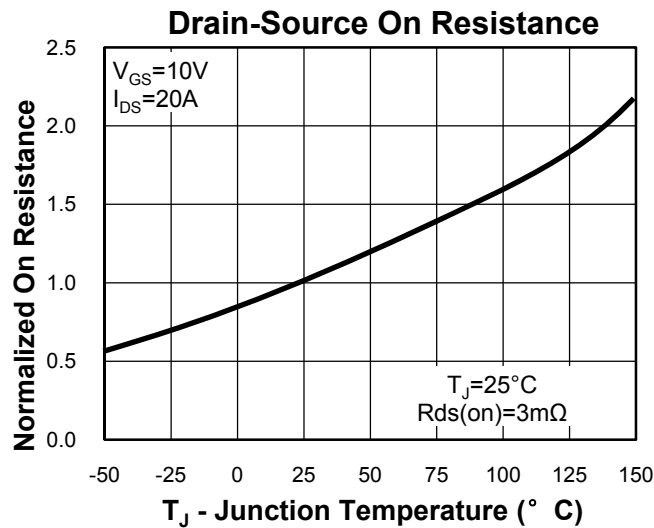
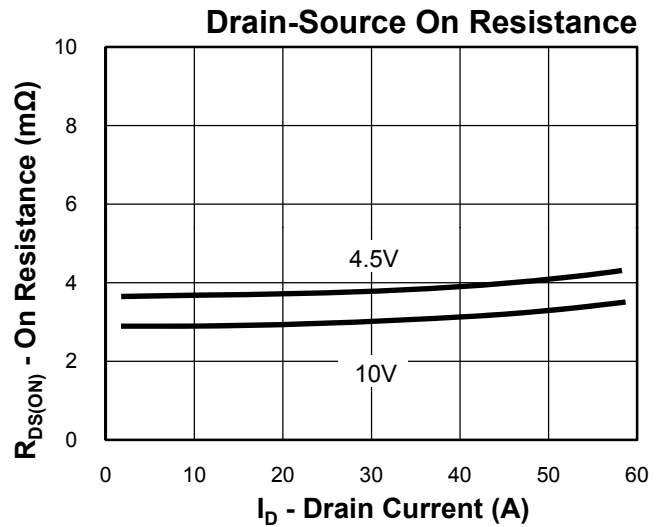
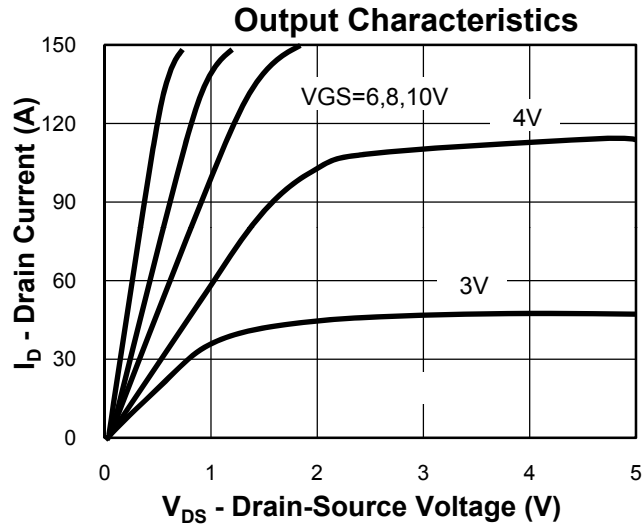
Typical Characteristics



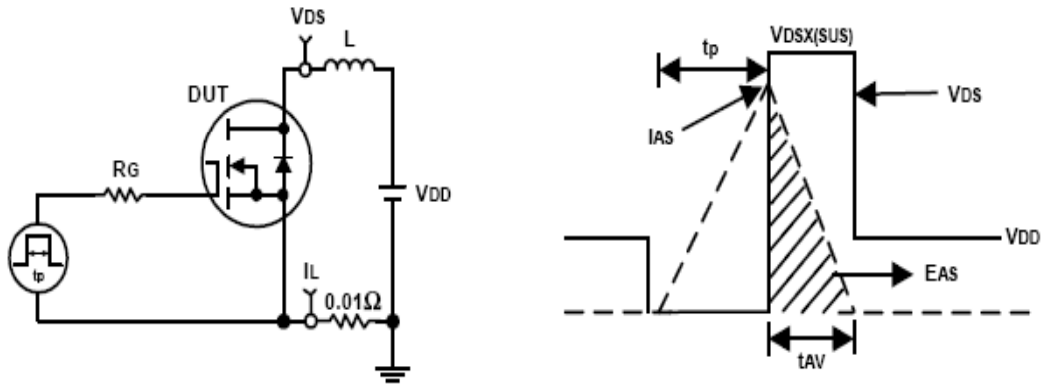
Thermal Transient Impedance



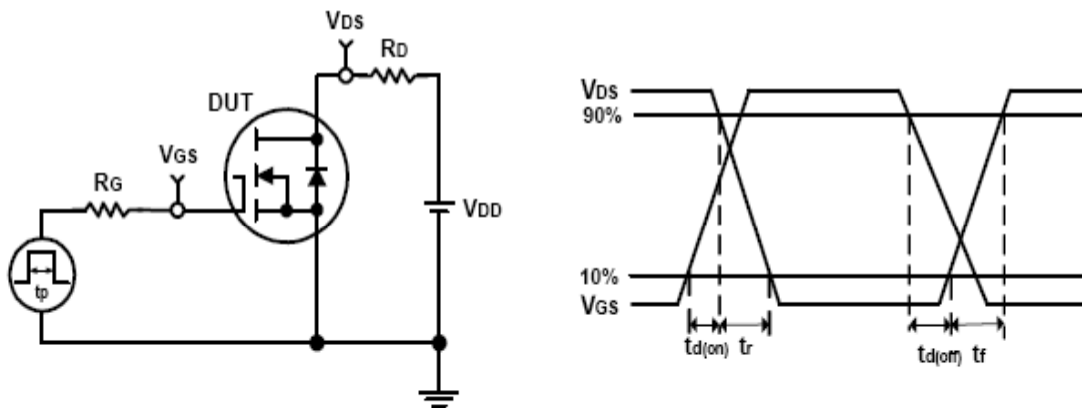
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Avalanche Test Circuit and Waveforms

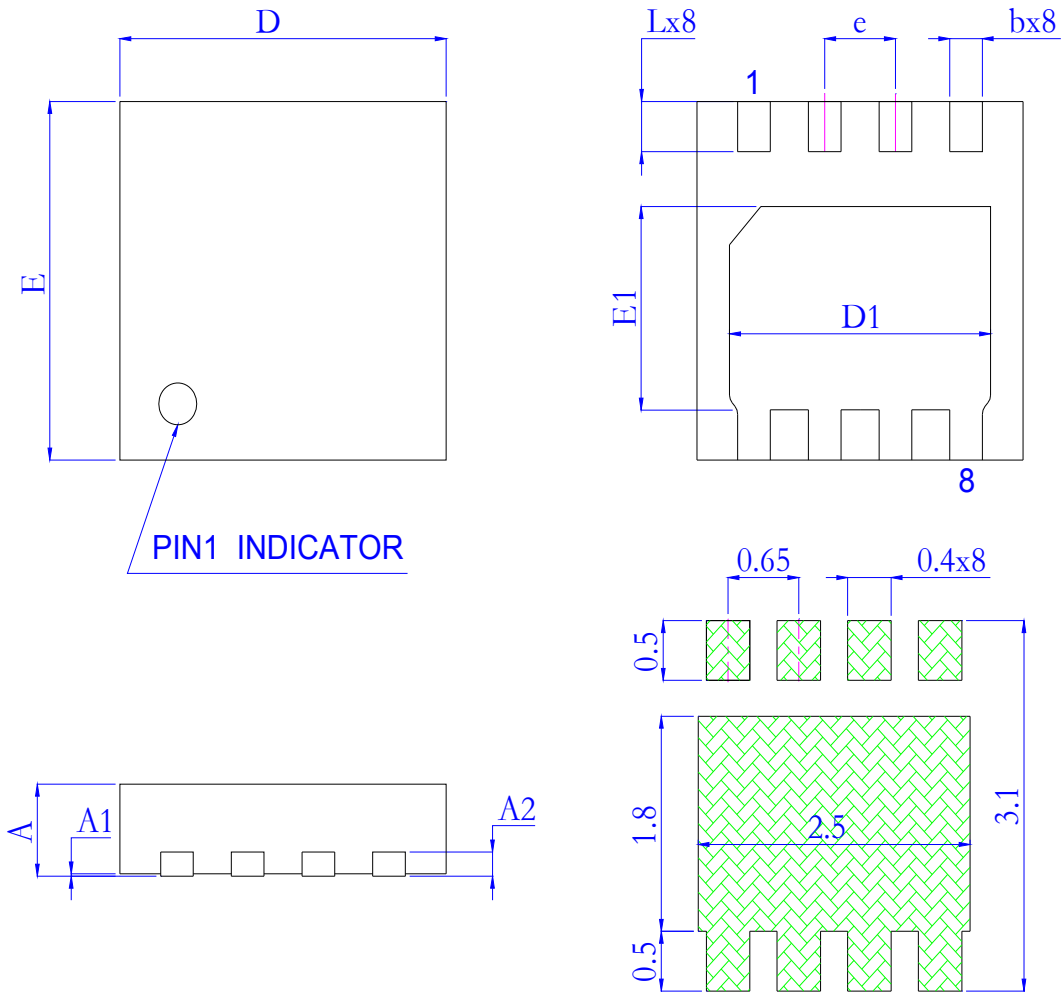


Switching Time Test Circuit and Waveforms



Package Information

DFN3333



Land Pattern
(Only for Reference)

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.700	0.750	0.800	0.028	0.030	0.031
A1	0.000	0.020	0.050	0.000	0.001	0.002
A2	0.203 REF.			0.008 REF.		
b	0.250	0.300	0.350	0.010	0.012	0.014
D	3.000	3.150	3.300	0.118	0.124	0.130
D1	2.350	2.400	2.450	0.093	0.094	0.096
E	3.000	3.150	3.300	0.118	0.124	0.130
E1	1.650	1.700	1.750	0.065	0.067	0.069
e	0.650BSC			0.026BSC		
L	0.370	0.420	0.470	0.015	0.017	0.019

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