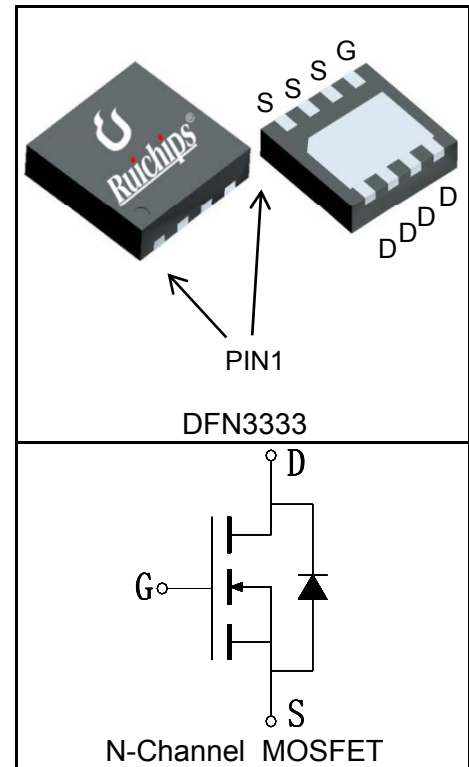


Features

- 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)

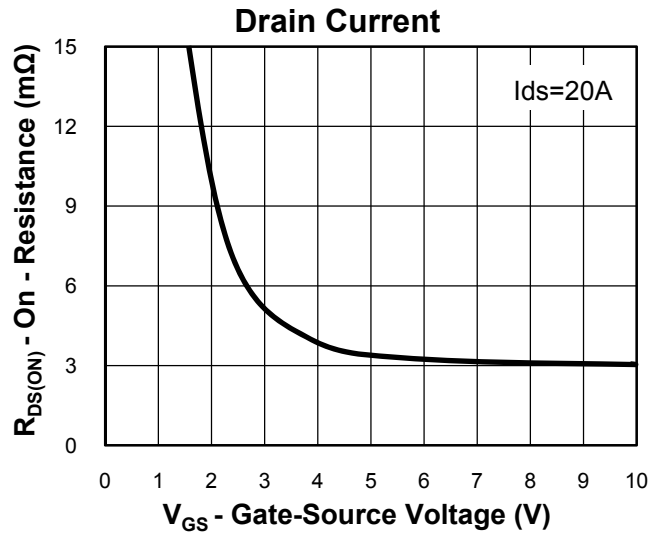
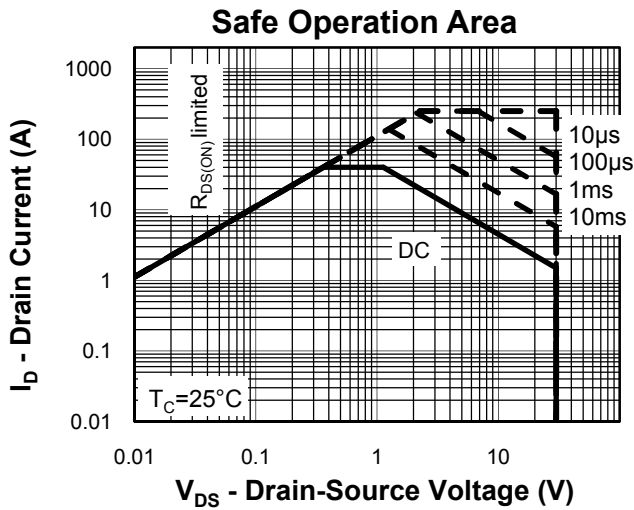
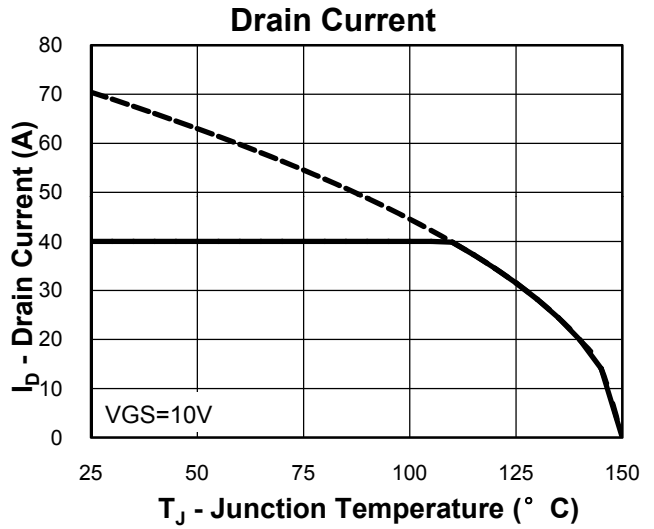
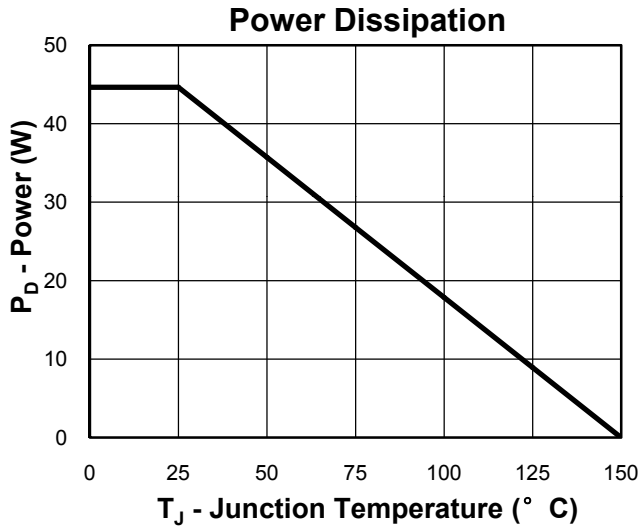
Symbol	Parameter	Test Condition	RU3070M3			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
		$T_J=125^{\circ}C$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	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.

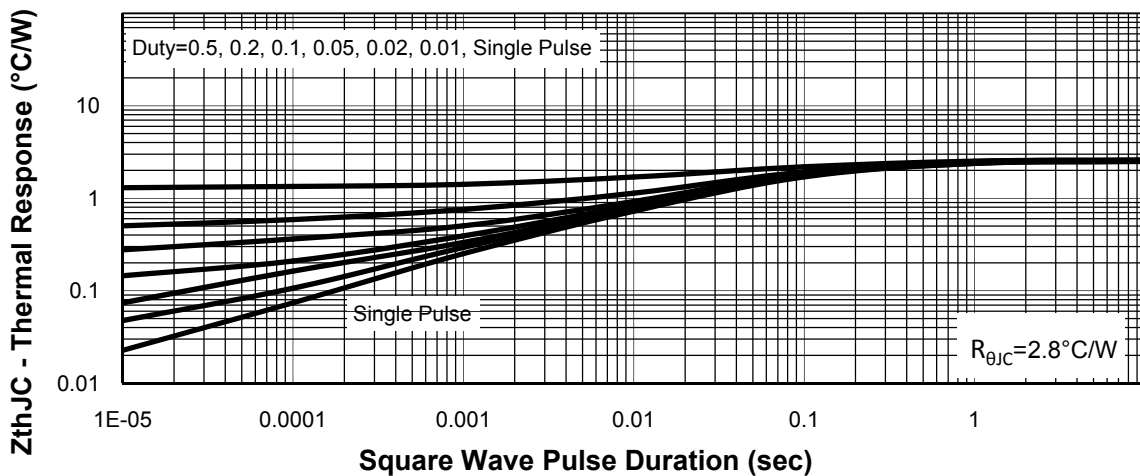
Ordering and Marking Information

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

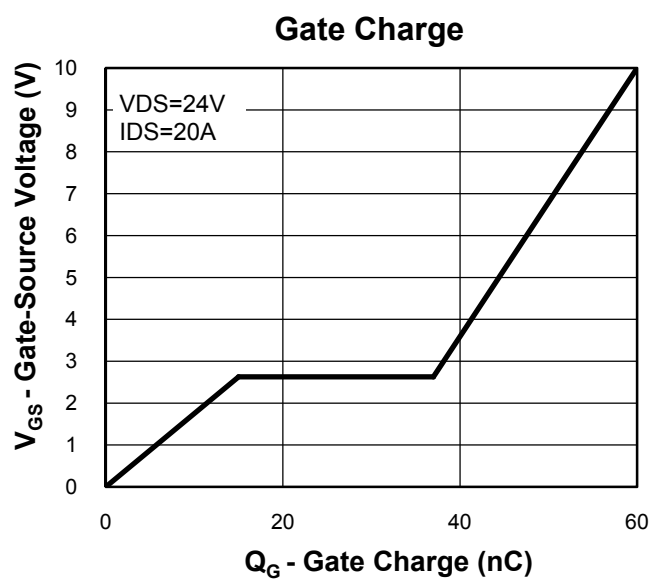
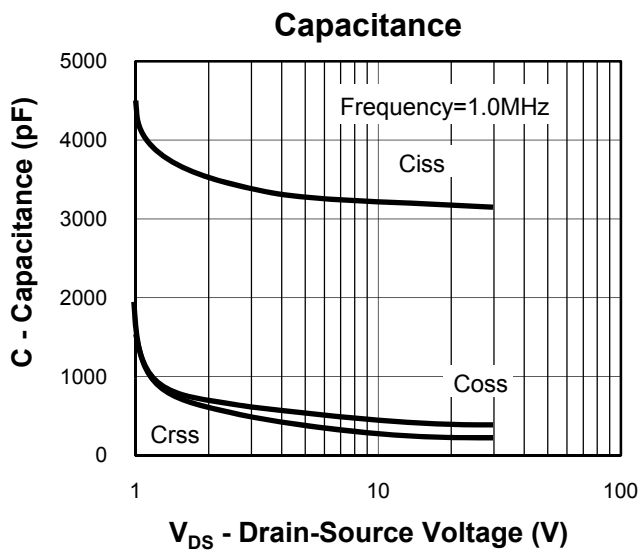
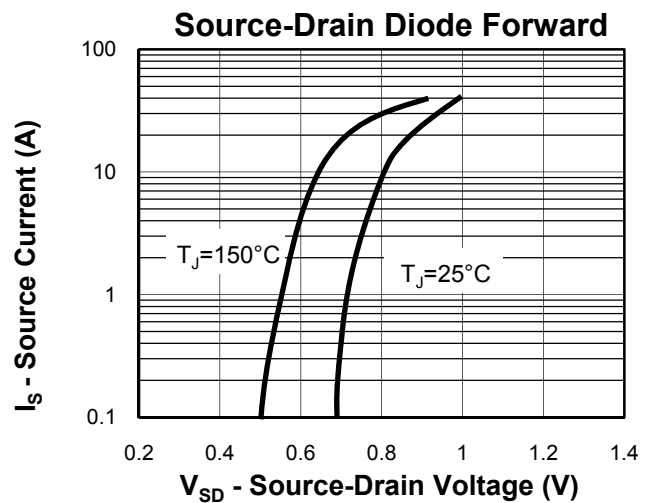
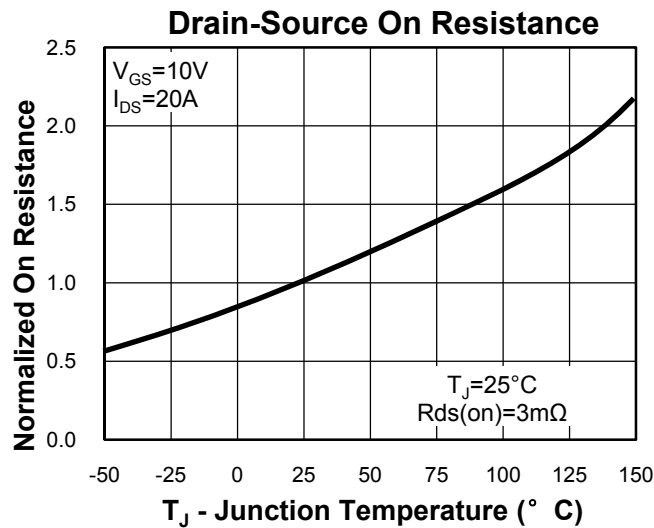
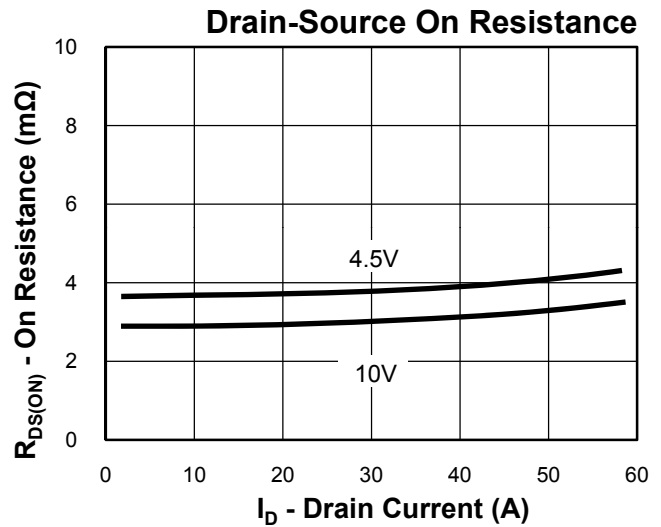
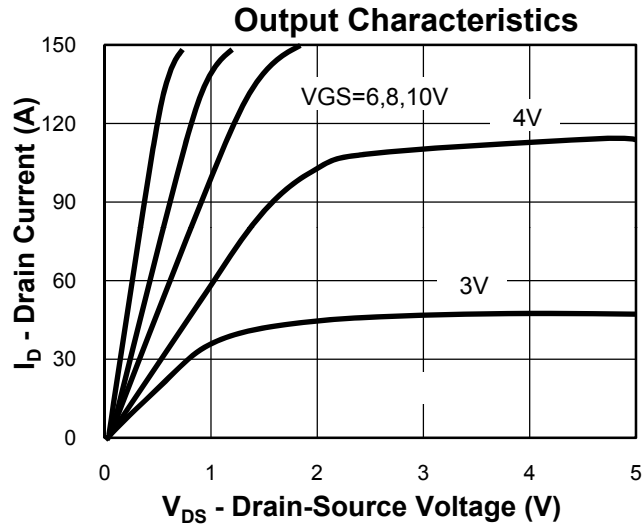
Typical Characteristics



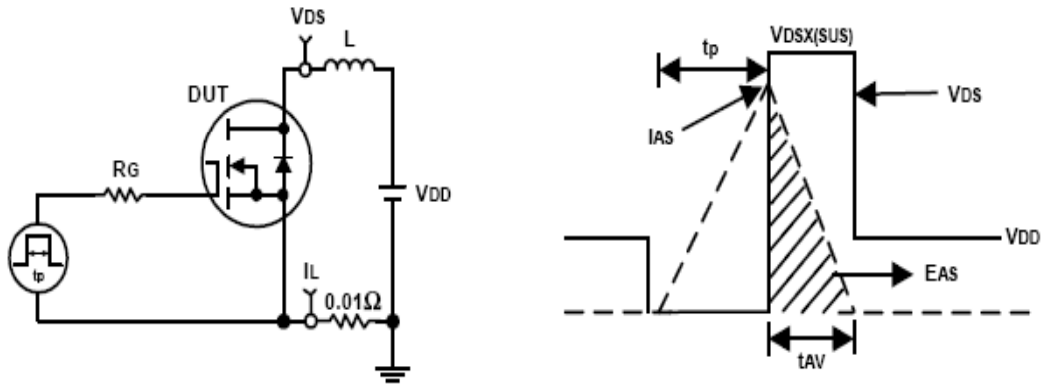
Thermal Transient Impedance



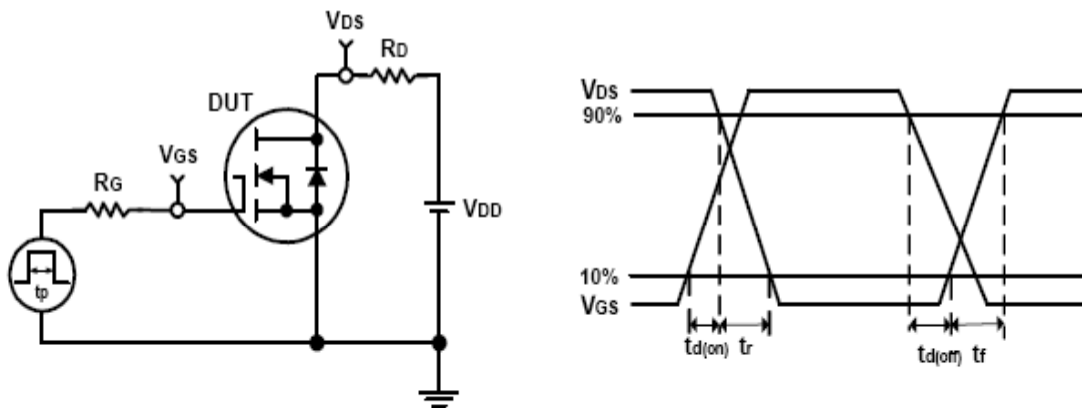
Typical Characteristics



Avalanche Test Circuit and Waveforms

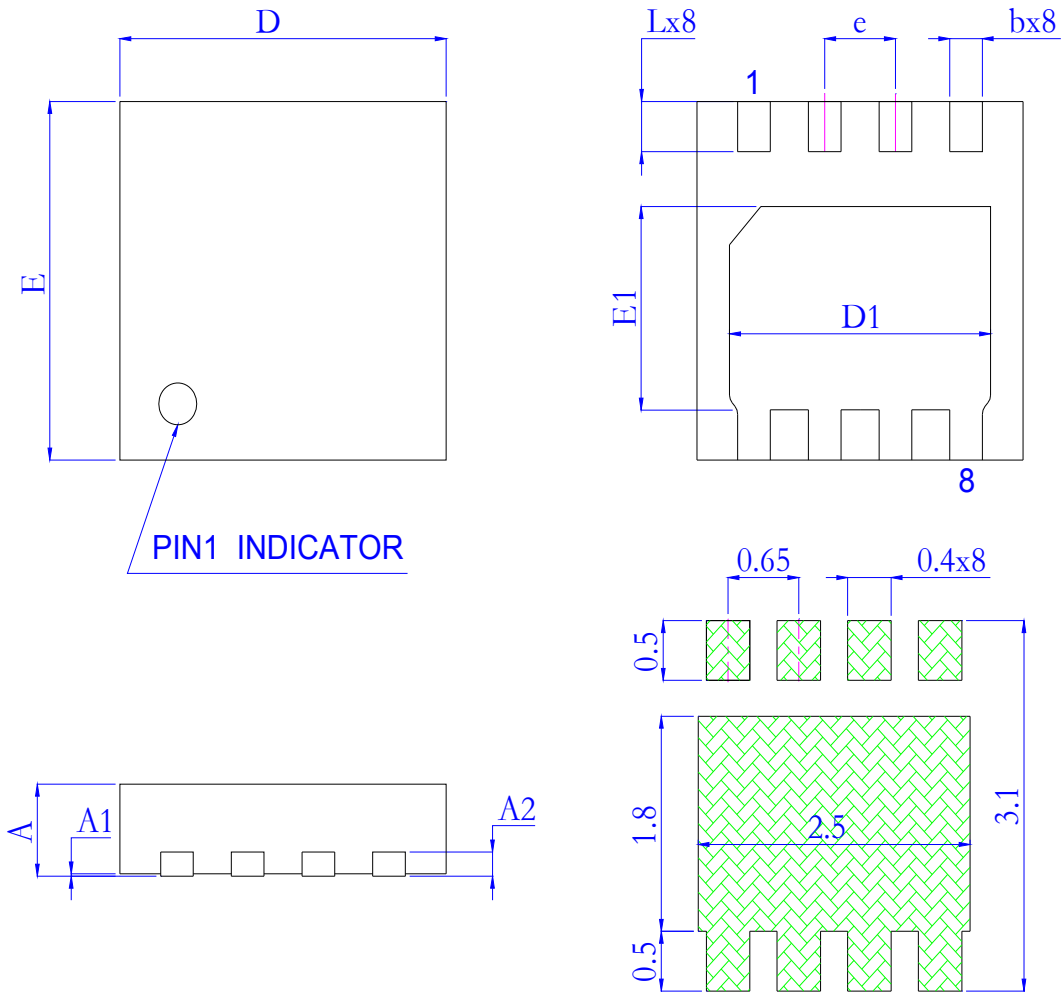


Switching Time Test Circuit and Waveforms



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