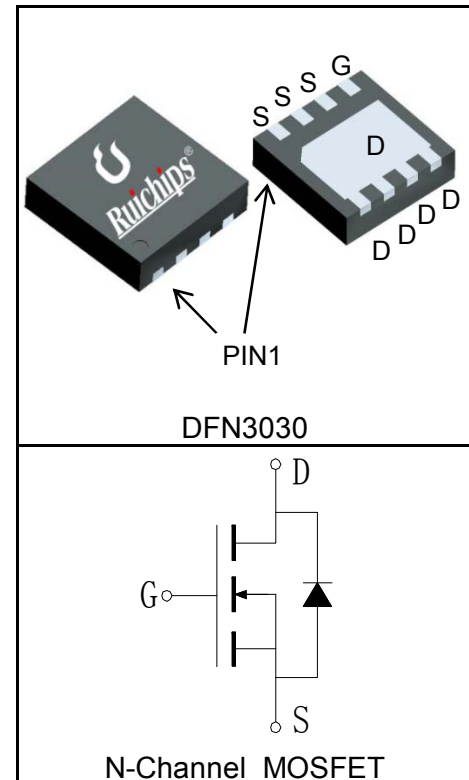


Features

- 60V/35A,
 $R_{DS(ON)} = 18m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 20m\Omega(Typ.)@V_{GS}=4.5V$
- Uses Ruichips advanced Trench™ technology
- Excellent $Q_g \times R_{DS(on)}$ product(FOM)
- Reliable and Rugged
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description

Applications

- DC/DC Converters
- Switching Application Systems
- Li-battery protection
- Synchronous rectification

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	65	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	$T_C=25^\circ C$ 35	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_C=25^\circ C$ 120	A
$I_D^{②}$	Continuous Drain Current@ $T_C(V_{GS}=10V)$	$T_C=25^\circ C$ 35	A
		$T_C=100^\circ C$ 22	
	Continuous Drain Current@ $T_A(V_{GS}=10V)^{③}$	$T_A=25^\circ C$ 14	
		$T_A=70^\circ C$ 10	
P_D	Maximum Power Dissipation@ T_C	$T_C=25^\circ C$ 32	W
		$T_C=100^\circ C$ 13	
	Maximum Power Dissipation@ $T_A^{③}$	$T_A=25^\circ C$ 2.5	
		$T_A=70^\circ C$ 1.6	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	4	°C/W
$R_{\theta JA}^{(3)}$	Thermal Resistance-Junction to Ambient	50	°C/W
Drain-Source Avalanche Ratings			
$E_{AS}^{(4)}$	Avalanche Energy, Single Pulsed	80	mJ

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

Symbol	Parameter	Test Condition	RU6035M3			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	60			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$			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	$V_{GS}=\pm 20V, V_{DS}=0V$			± 1	μA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=4.5V, I_{DS}=20A$		20	25	$m\Omega$
		$V_{GS}=10V, I_{DS}=30A$		18	22	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=30A, V_{GS}=0V$			1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=30A, di_{SD}/dt=100A/\mu s$		14		ns
Q_{rr}	Reverse Recovery Charge			9		nC
Dynamic Characteristics ⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1MHz$		1.2		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=30V,$ Frequency=1.0MHz		1350		pF
C_{oss}	Output Capacitance			115		
C_{rss}	Reverse Transfer Capacitance			65		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=30V, I_{DS}=30A,$ $V_{GEN}=10V, R_G=4.7\Omega$		9		ns
t_r	Turn-on Rise Time			41		
$t_{d(OFF)}$	Turn-off Delay Time			21		
t_f	Turn-off Fall Time			16		
Gate Charge Characteristics ⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=48V, V_{GS}=10V,$ $I_{DS}=30A$		19		nC
Q_{gs}	Gate-Source Charge			5.5		
Q_{gd}	Gate-Drain Charge			7		

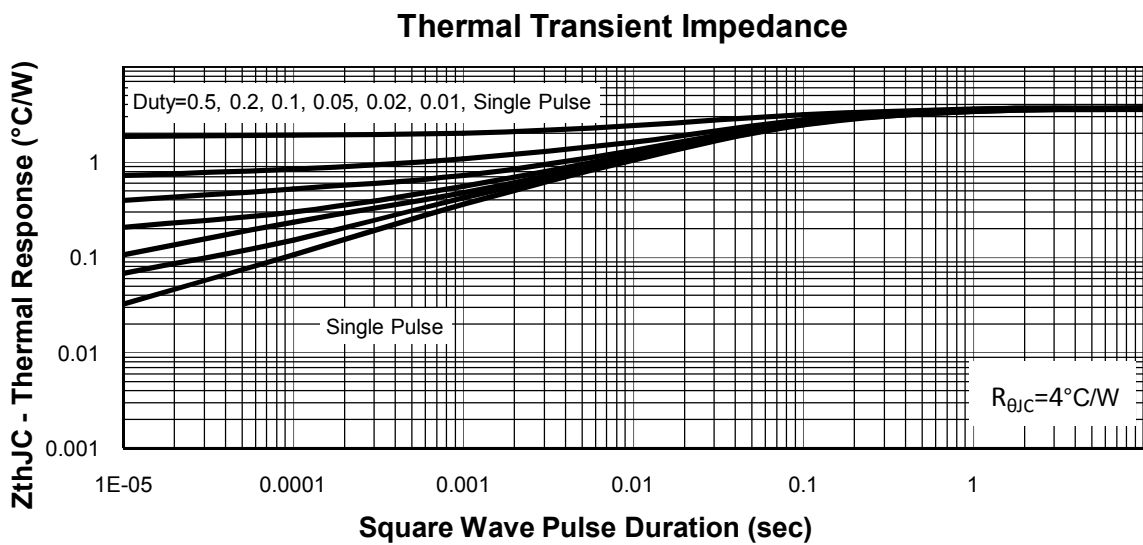
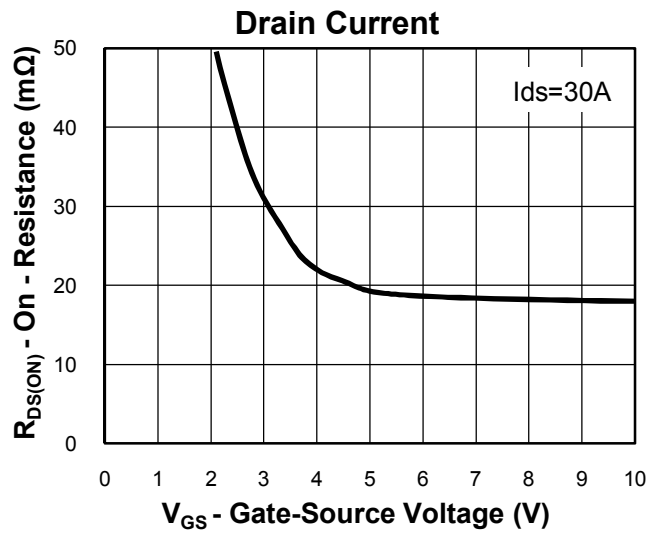
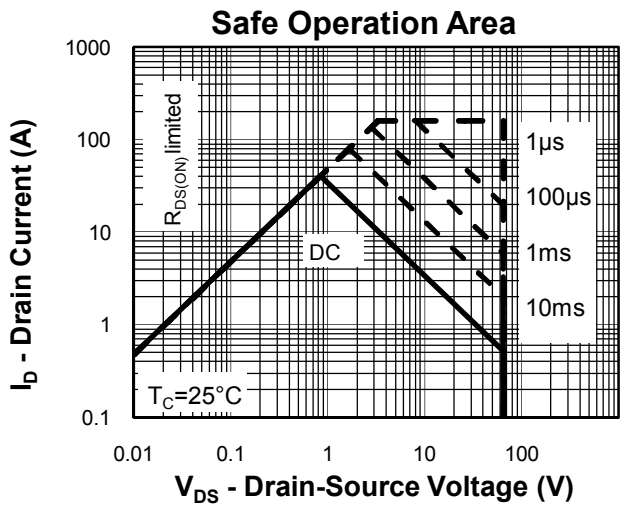
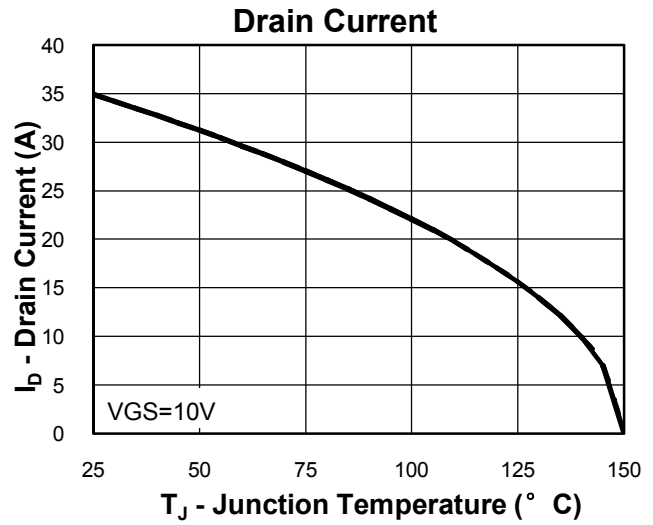
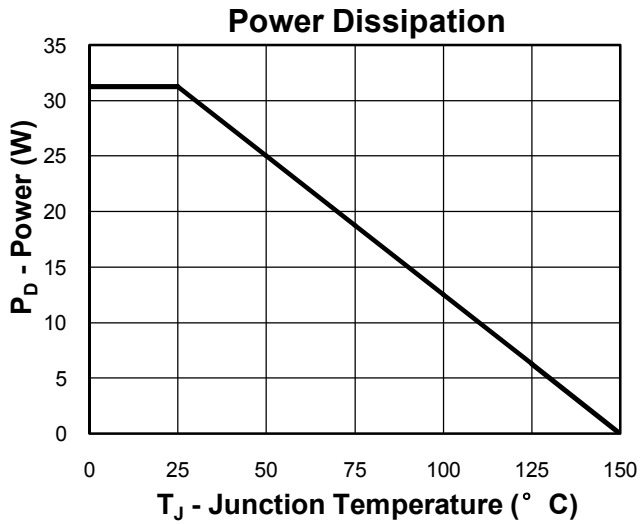
Notes:

- 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, $t \leq 10$ sec.
- ④ Limited by T_{Jmax} , $I_{AS} = 18A$, $V_{DD} = 48V$, $R_G = 50 \Omega$, Starting $T_J = 25^\circ C$.
- ⑤ Pulse test ; Pulse width 300s, duty cycle 2%.
- ⑥ Guaranteed by design, not subject to production testing.

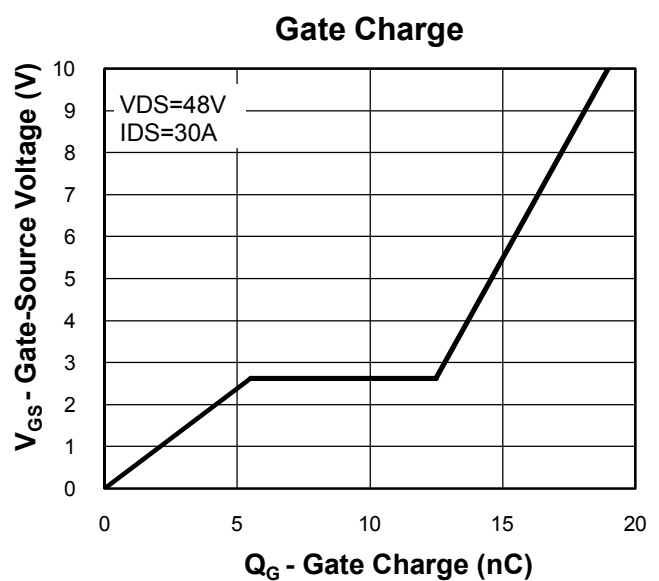
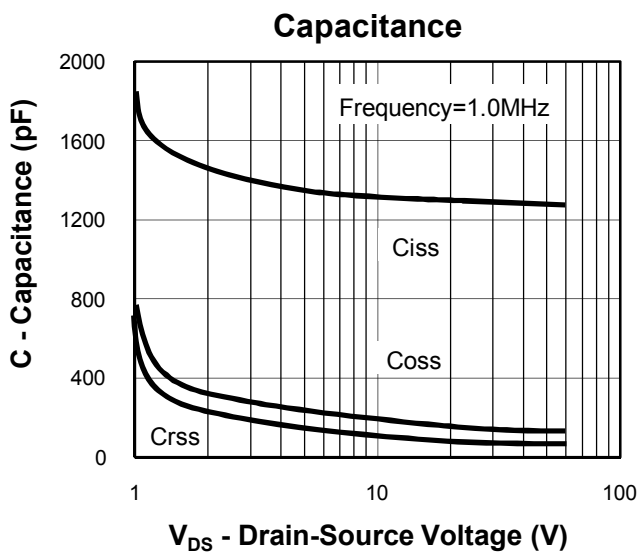
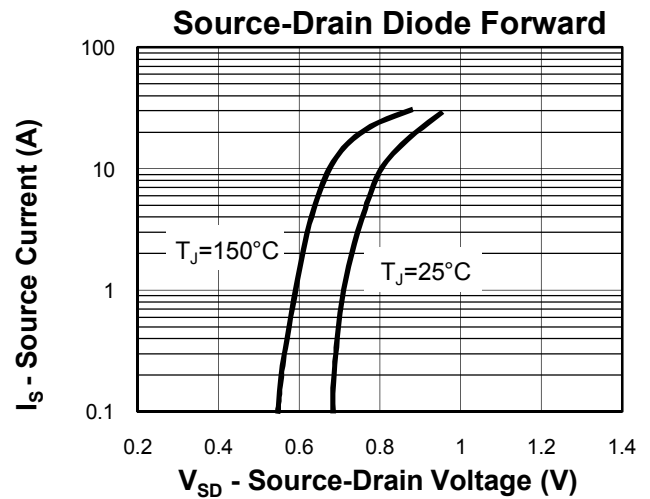
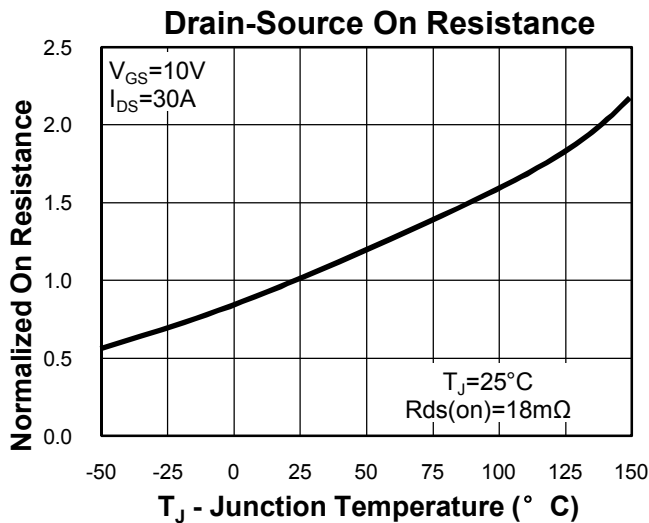
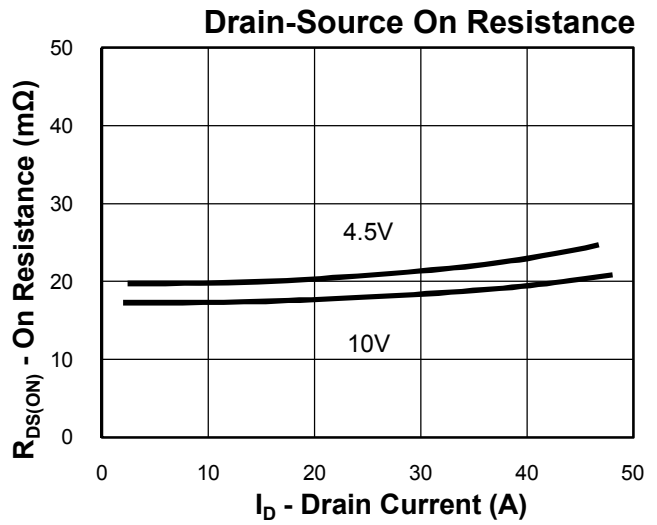
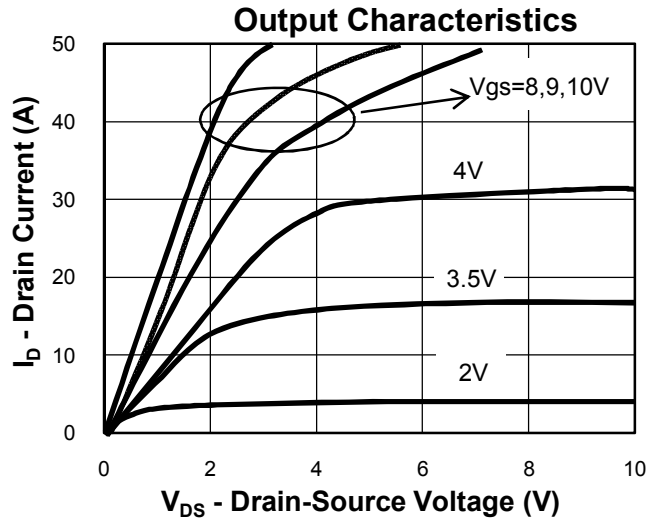
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU6035M3	RU6035	DFN3030	Tape&Reel	5000	13"	12mm

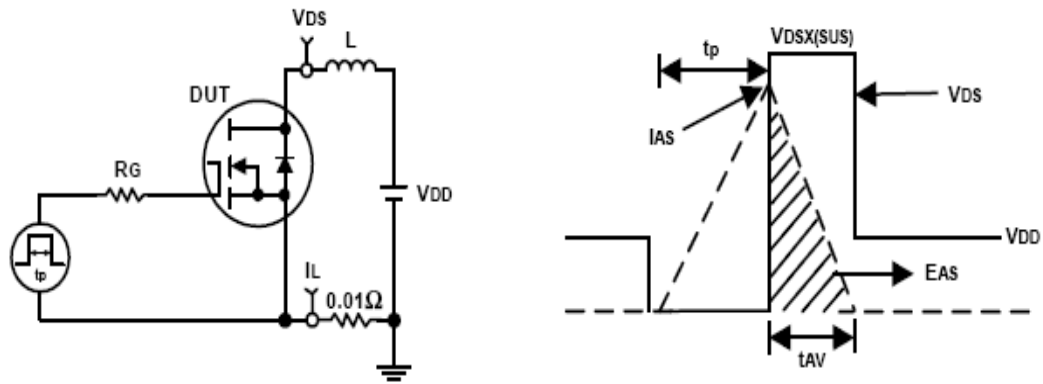
Typical Characteristics



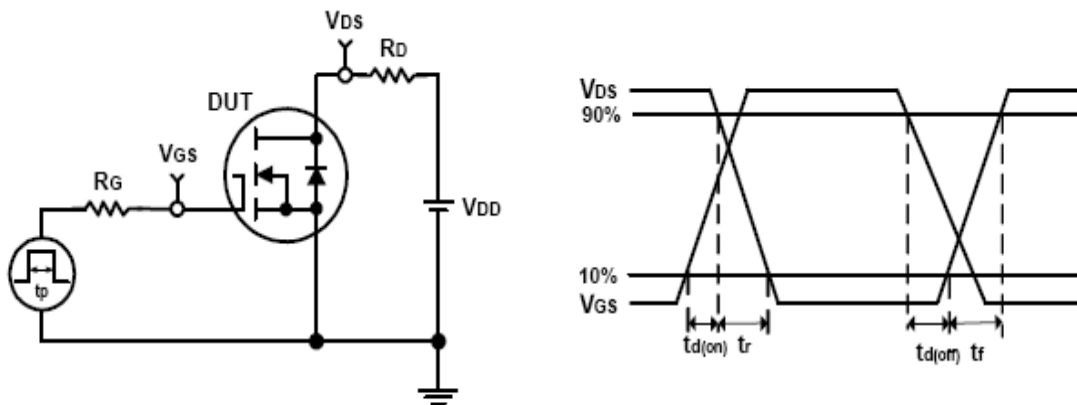
Typical Characteristics



Avalanche Test Circuit and Waveforms

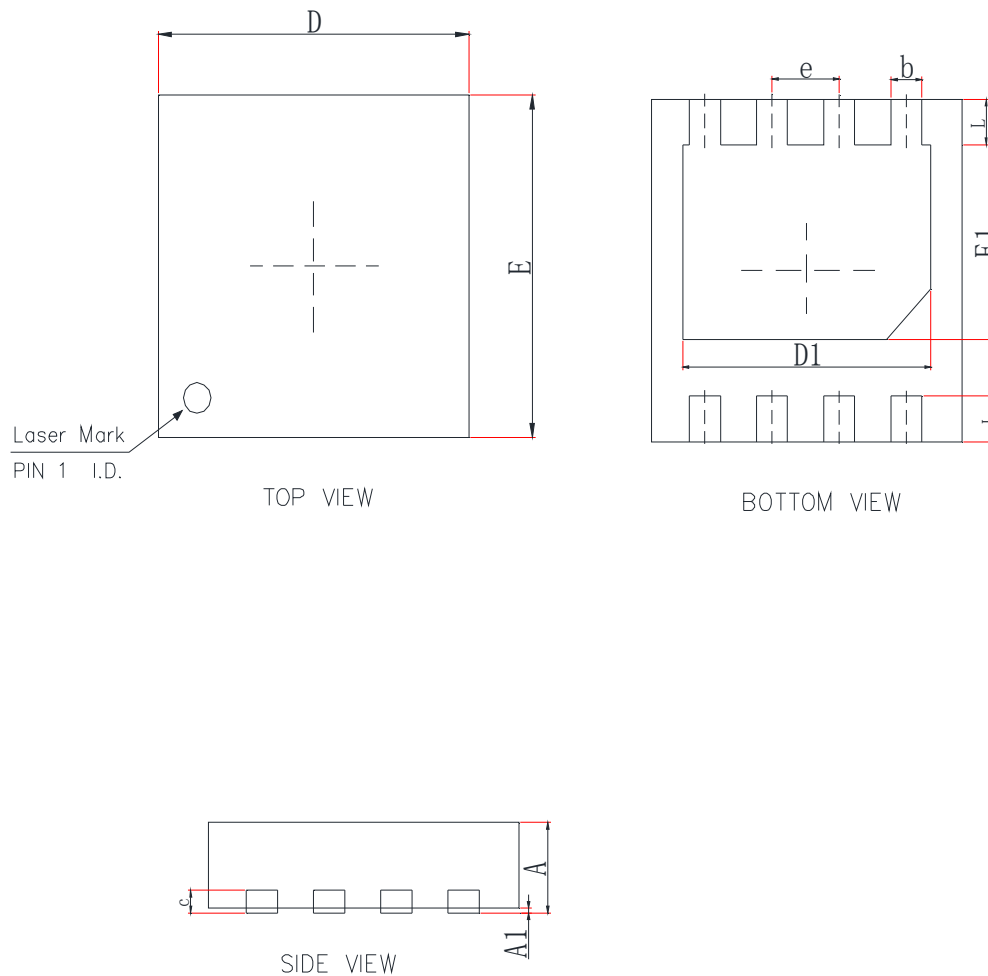


Switching Time Test Circuit and Waveforms



Package Information

DFN3030



NOTE:

- 1: ALL UNITS ARE IN MILLIMETER.
- 2: EJECTOR PIN MARK POSITION MAY VARY FROM DIFFERENT MOLD.
- 3: ALL DIMENSIONS REFER TO JEDEC.DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS.

SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1			0.05			0.002
b	0.25	0.30	0.35	0.010	0.012	0.014
c	0.18	0.20	0.30	0.007	0.008	0.012
D	2.95	3.00	3.15	0.116	0.118	0.124
E	2.95	3.00	3.15	0.116	0.118	0.124
D1	2.30	2.40	2.50	0.091	0.094	0.098
E1	1.70	1.80	1.90	0.067	0.071	0.075
L	0.30	0.40	0.50	0.012	0.016	0.020
e	0.65 BSC			0.026 BSC		