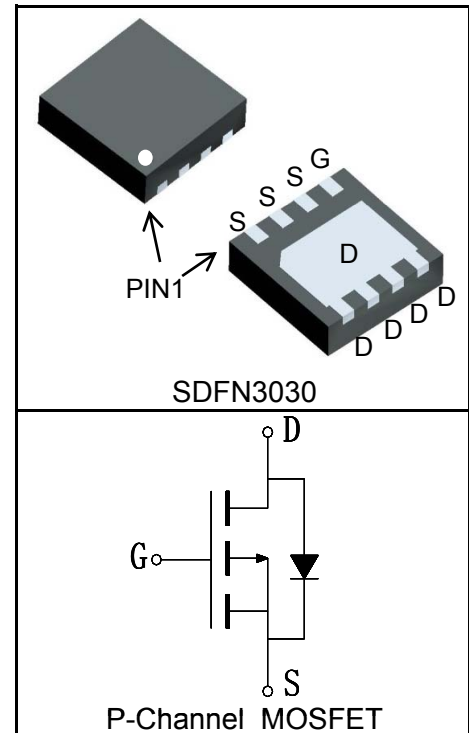


Features

- -30V/-30A,
 $R_{DS(ON)} = 12m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)} = 20m\Omega(Typ.)@V_{GS}=-4.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- 100% Avalanche Tested
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



Applications

- Power Management
- Load Switching

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	-30	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	-96	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	-9.3	
		T _A =70°C	-7.5	
P _D	Maximum Power Dissipation@T _C	T _C =25°C	33	W
		T _C =100°C	13	
	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	3.8	°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	42	mJ

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

Symbol	Parameter	Test Condition	RU30L30M3			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		-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±10	μa
R _{DS(ON)} ⑤	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-20A		12	17	mΩ
		V _{GS} =-4.5V, I _{DS} =-16A		20	26	mΩ
Diode Characteristics						
V _{SD} ⑤	Diode Forward Voltage	I _{SD} =-20A, V _{GS} =0V			-1.5	V
t _{rr}	Reverse Recovery Time	I _{SD} =-20A, dI _{SD} /dt=100A/μs		45		ns
Q _{rr}	Reverse Recovery Charge			26		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		2300		pF
C _{oss}	Output Capacitance			250		
C _{rss}	Reverse Transfer Capacitance			160		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, I _{DS} =-20A, V _{GEN} =-10V, R _G =6Ω		17		ns
t _r	Turn-on Rise Time			32		
t _{d(OFF)}	Turn-off Delay Time			37		
t _f	Turn-off Fall Time			15		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =-24V, V _{GS} =-10V, I _{DS} =-20A		42		nC
Q _{gs}	Gate-Source Charge			9		
Q _{gd}	Gate-Drain Charge			13		

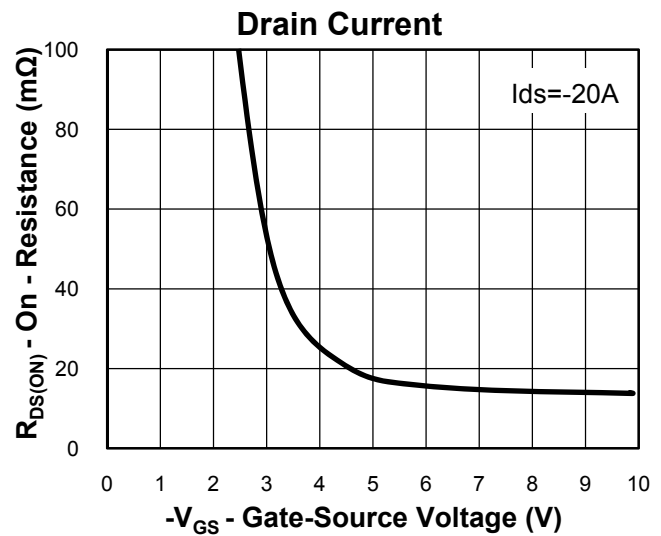
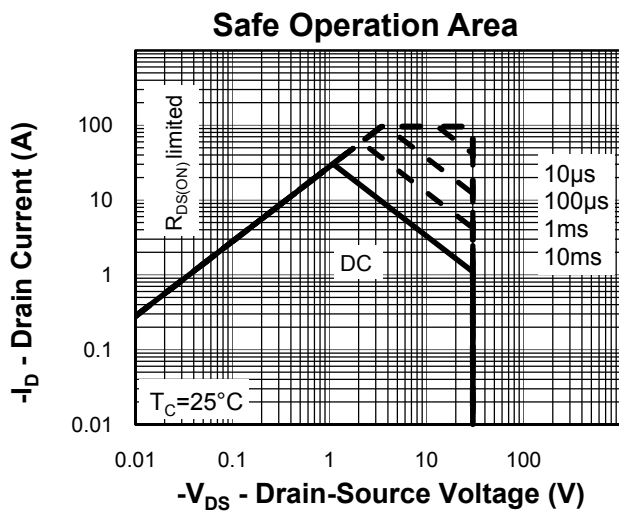
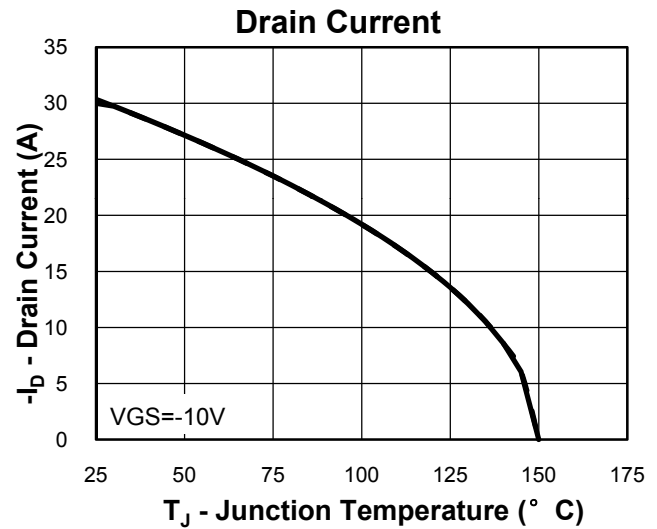
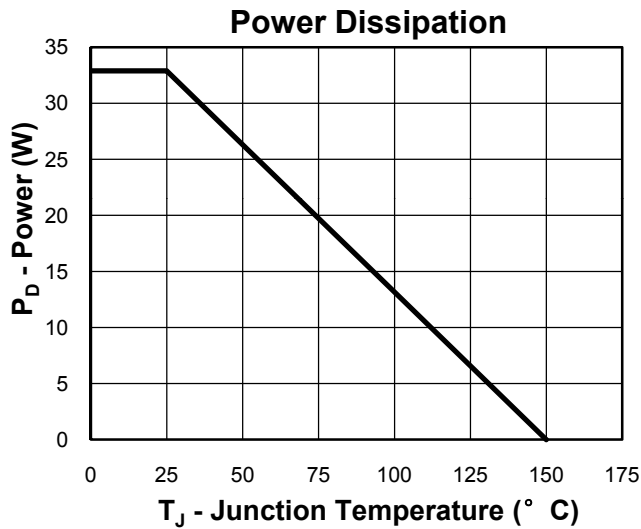
Notes:

- 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 $T_{J\max}$, $I_{AS} = -12\text{A}$, $V_{DD} = -24\text{V}$, $R_G = 50\Omega$, 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.

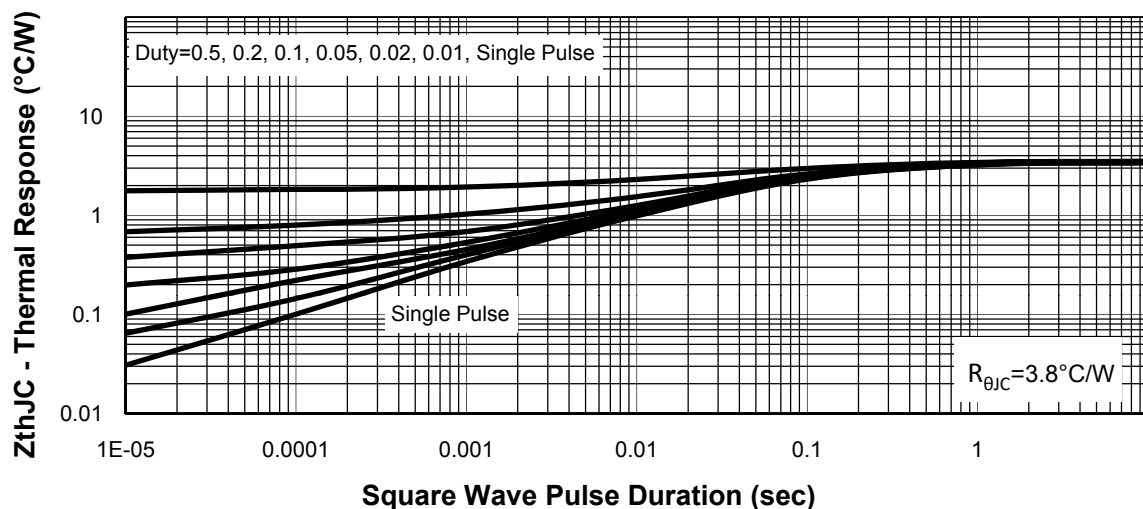
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU30L30M3	30L30	SDFN3030	Tape&Reel	3000	7"	8mm

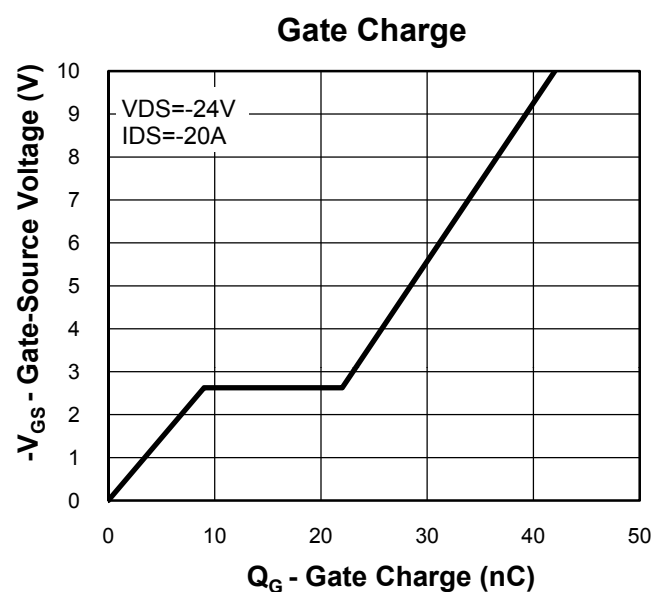
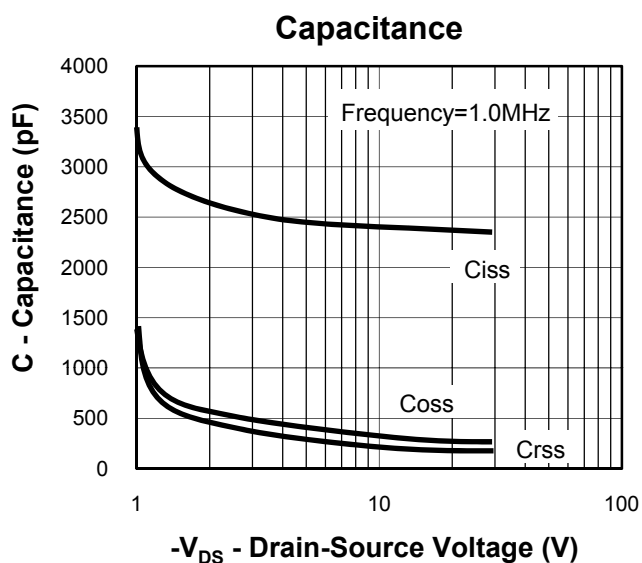
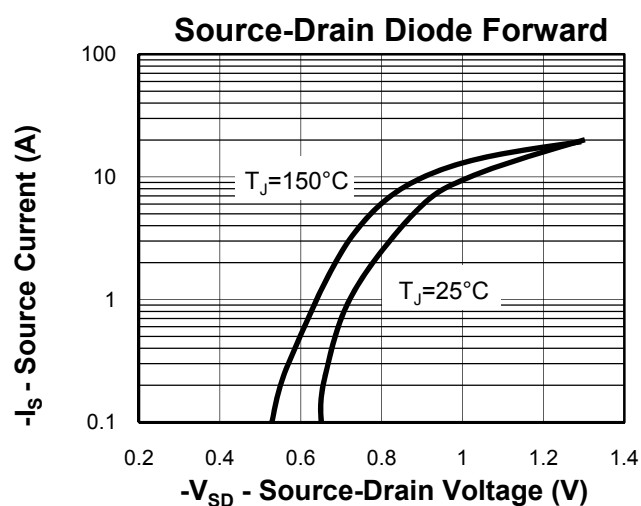
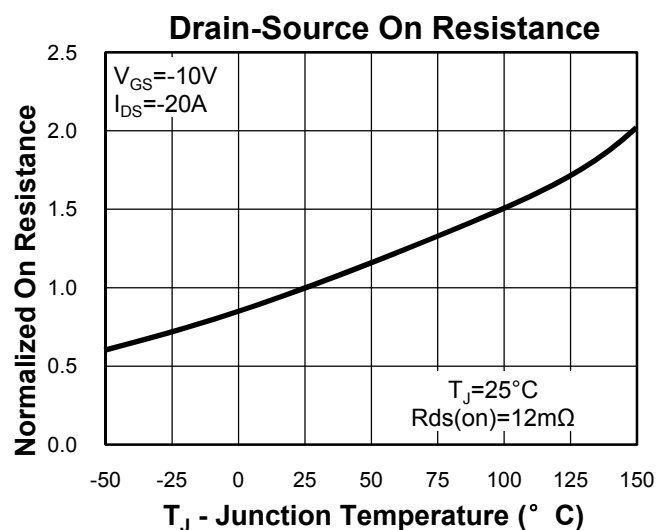
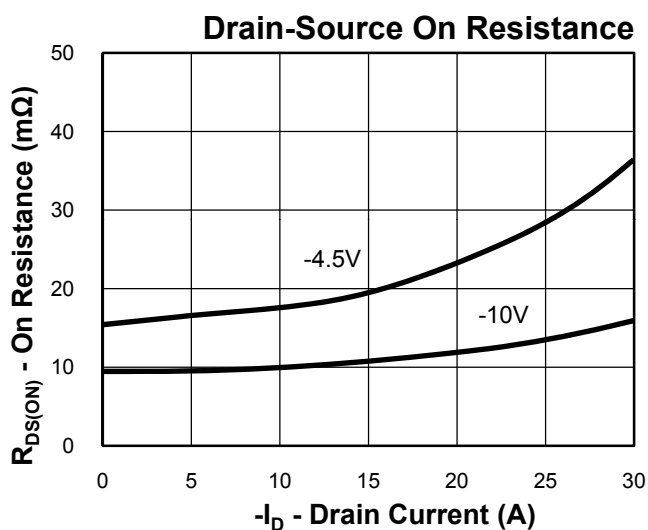
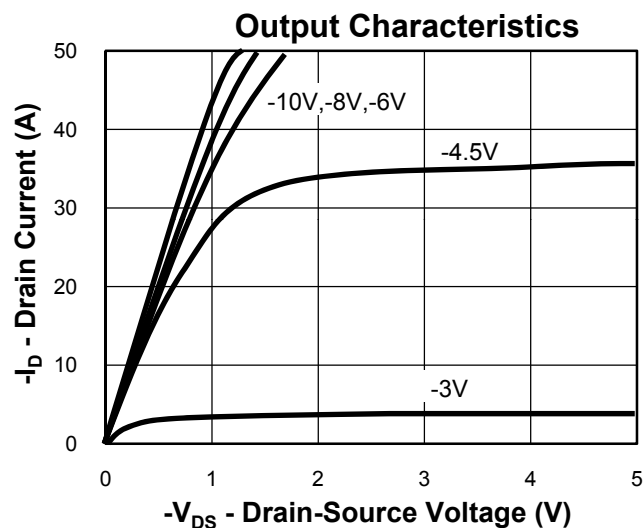
Typical Characteristics



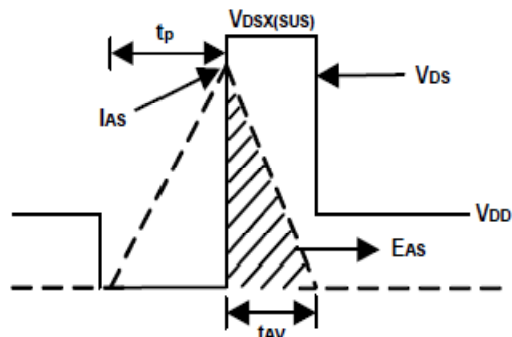
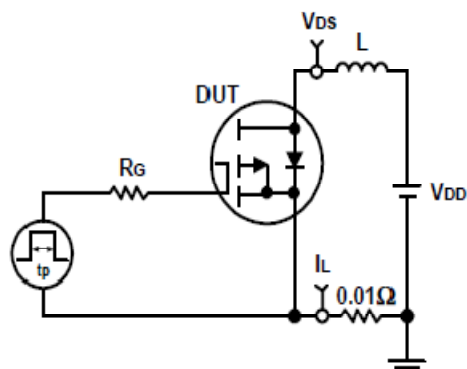
Thermal Transient Impedance



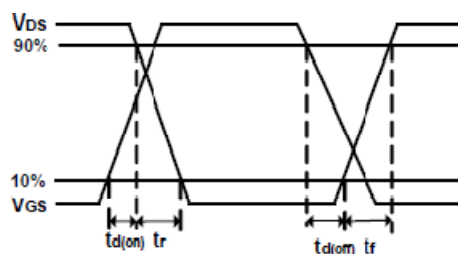
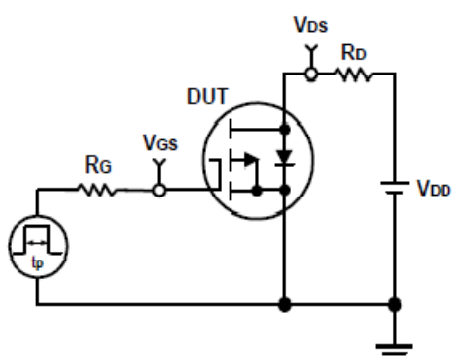
Typical Characteristics



Avalanche Test Circuit and Waveforms

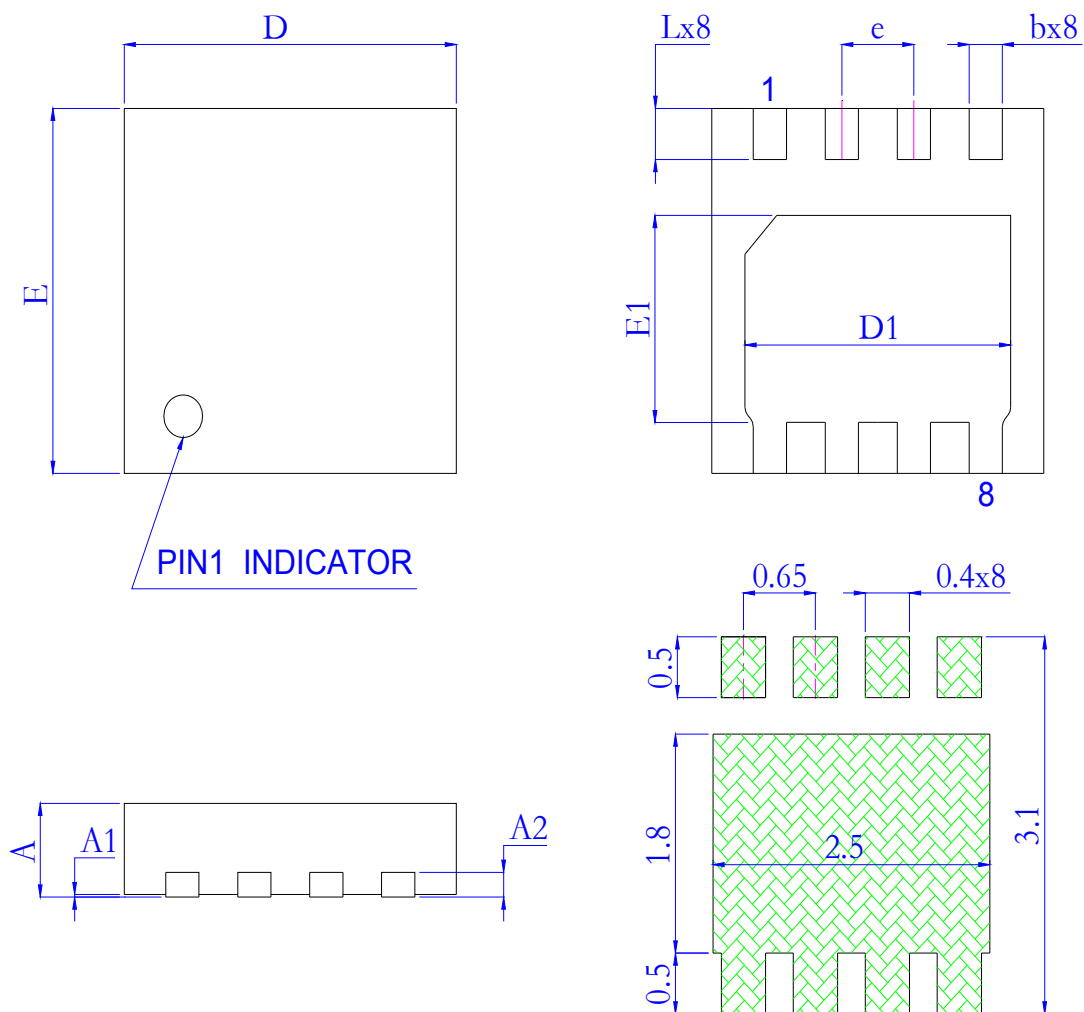


Switching Time Test Circuit and Waveforms



Package Information

SDFN3030



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	2.900	3.000	3.100	0.114	0.118	0.122
D1	2.350	2.400	2.450	0.093	0.094	0.096
E	2.900	3.000	3.100	0.114	0.118	0.122
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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