

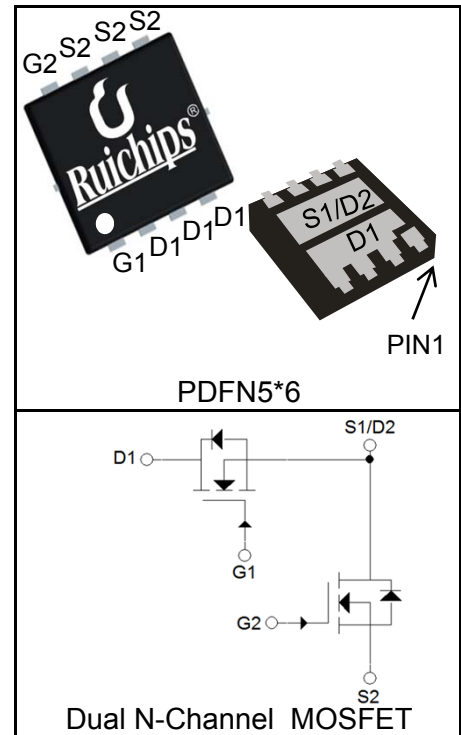
Features

- 30V/30A,
 $R_{DS(ON)} = 6m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 9.5m\Omega(Typ.)@V_{GS}=4.5V$
- Ultra Low On-Resistance
- Fast Switching Speed
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- DC/DC Converters
- On board power for server
- Synchronous rectification

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	11	
		T _A =70°C	9	
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	42	°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	RUH30J30M			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			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =30A		6	8	mΩ
		V _{GS} =4.5V, I _{DS} =20A		9.5	12	mΩ
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/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		1.2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz		470		pF
C _{oss}	Output Capacitance			130		
C _{rss}	Reverse Transfer Capacitance			19		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =0.47Ω, I _{DS} =30A, V _{GEN} =10V, R _G =0.8Ω		4		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			14		
t _f	Turn-off Fall Time			5		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =24V, V _{GS} =10V, I _{DS} =30A		12		nC
Q _{gs}	Gate-Source Charge			3		
Q _{gd}	Gate-Drain Charge			4		

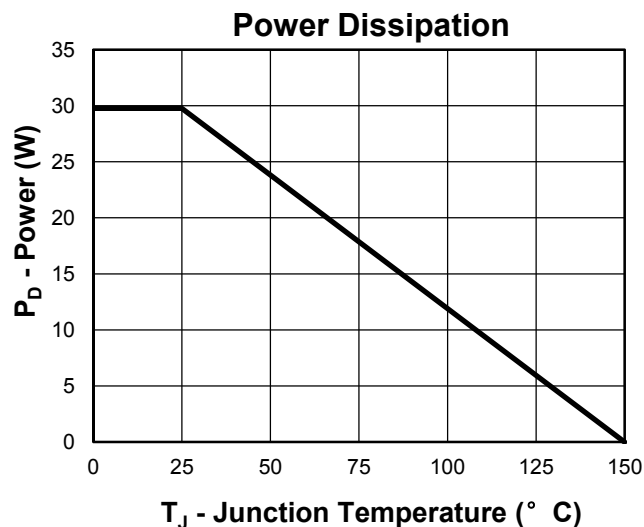
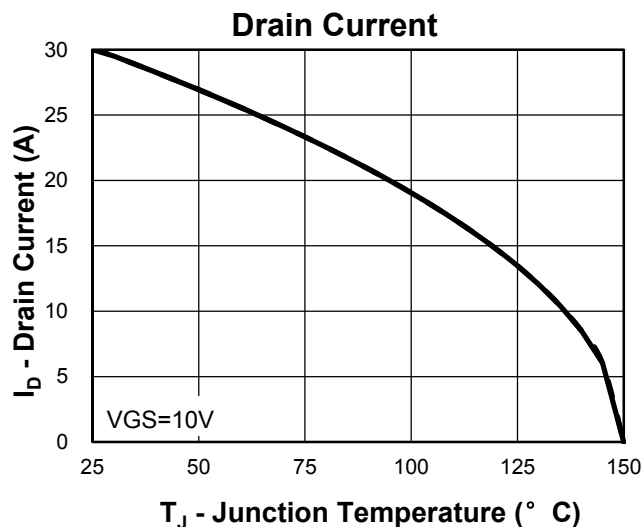
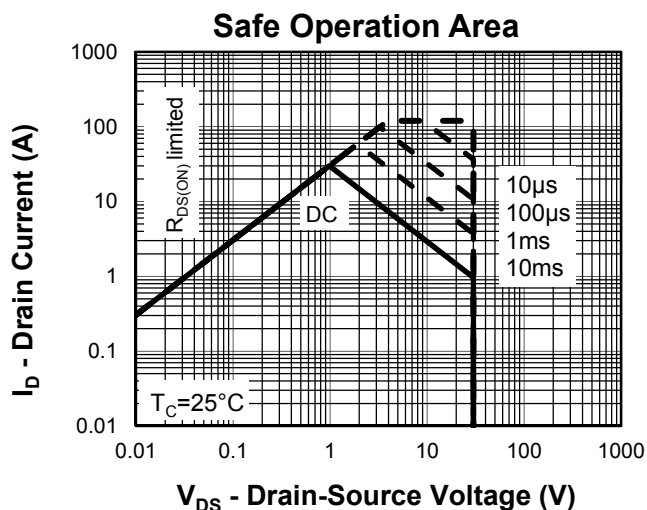
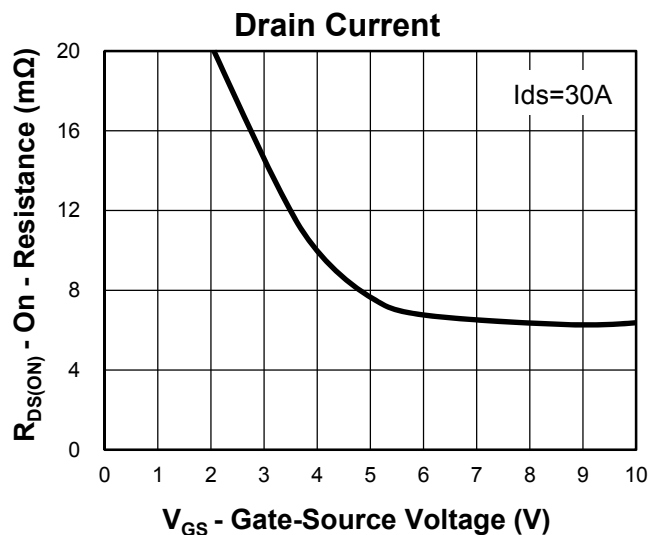
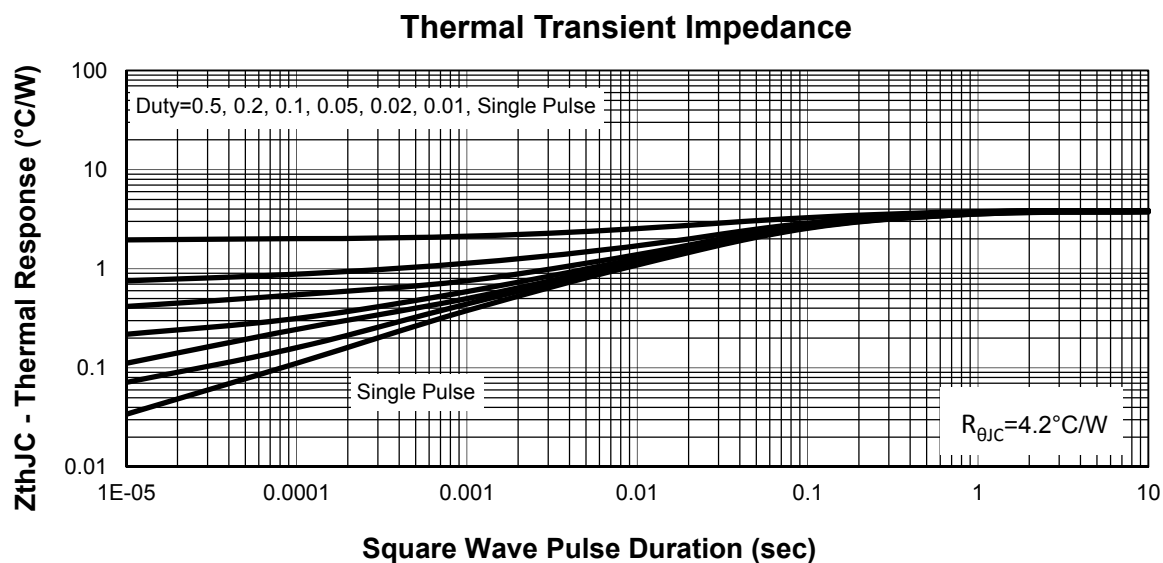
Notes:

- 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.

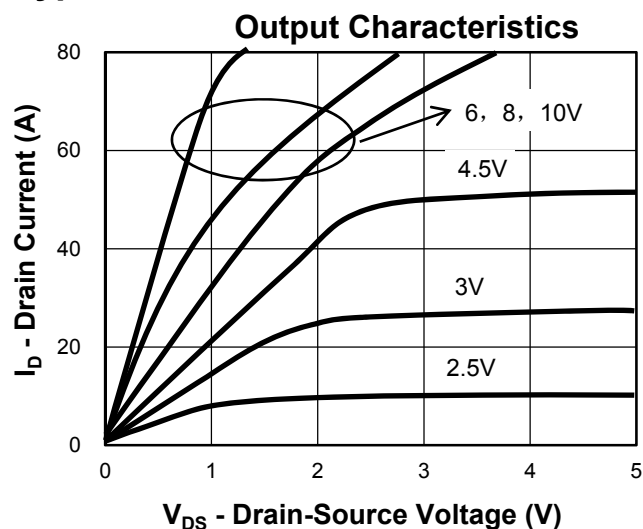
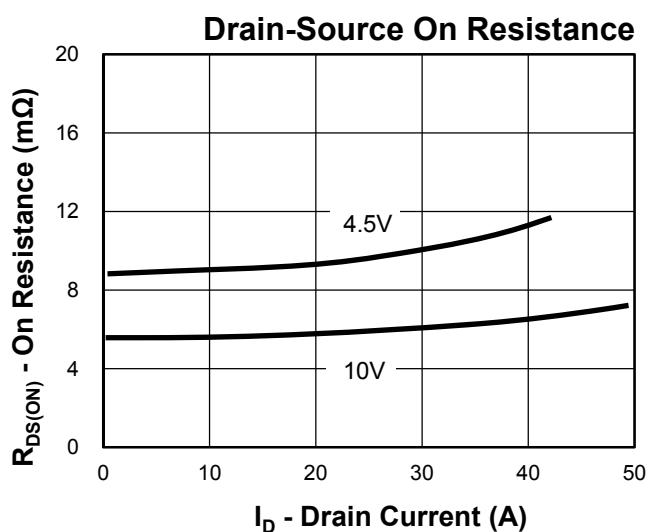
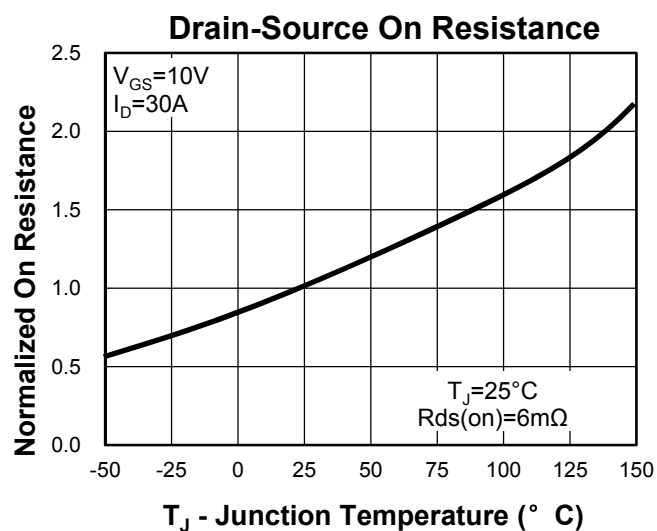
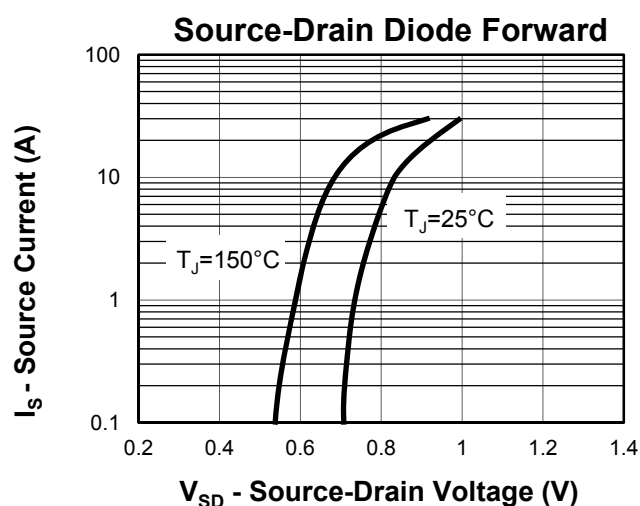
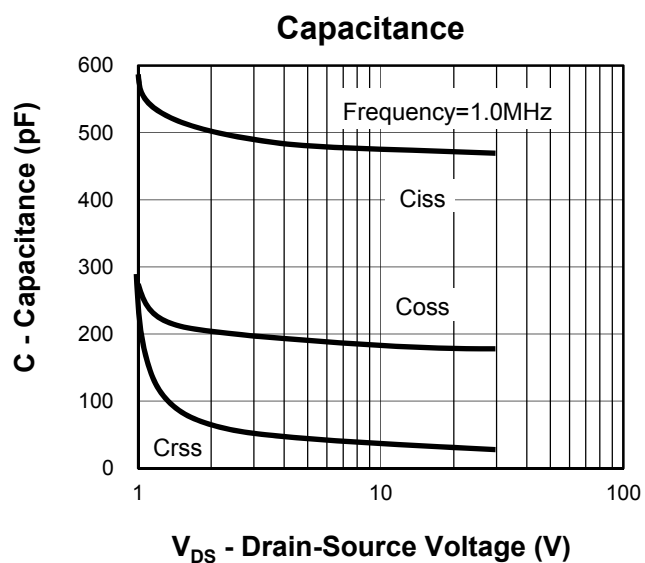
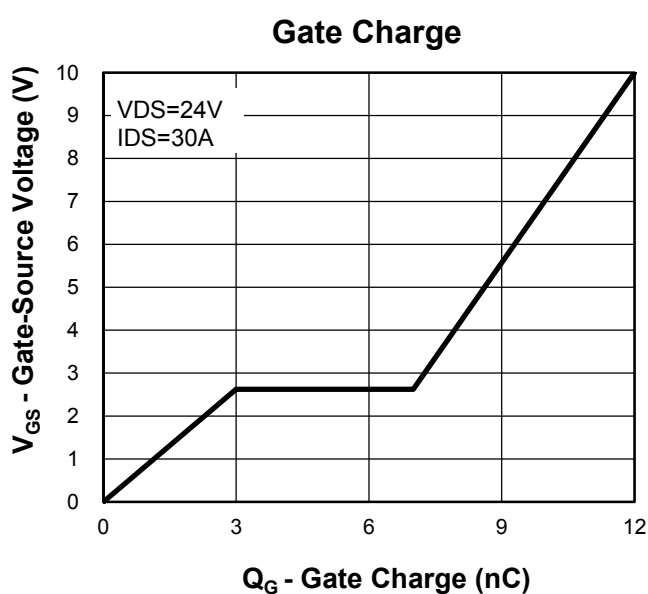
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RUH30J30M	RUH30J30M	PDFN5060	Tape&Reel	3000	13"	12mm

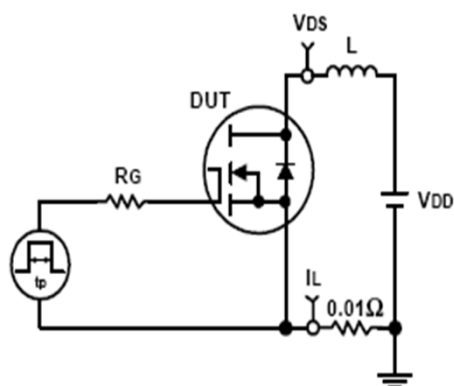
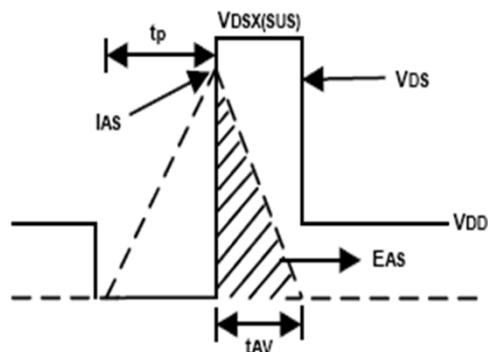
Typical Characteristics



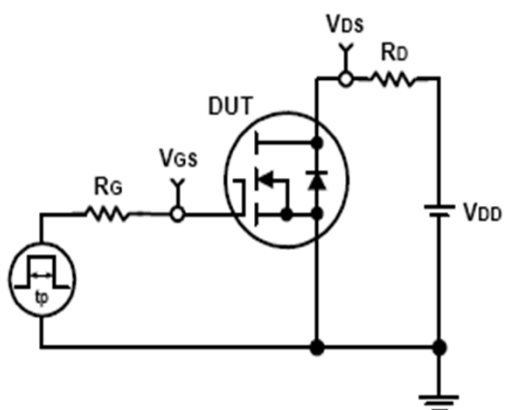
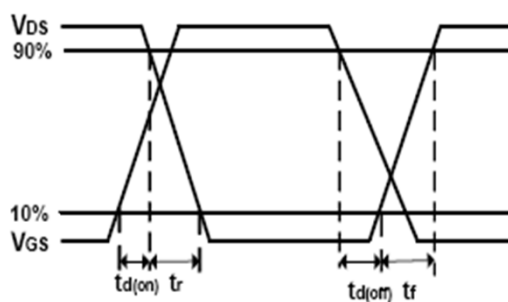
Typical Characteristics



Avalanche Test Circuit and Waveforms

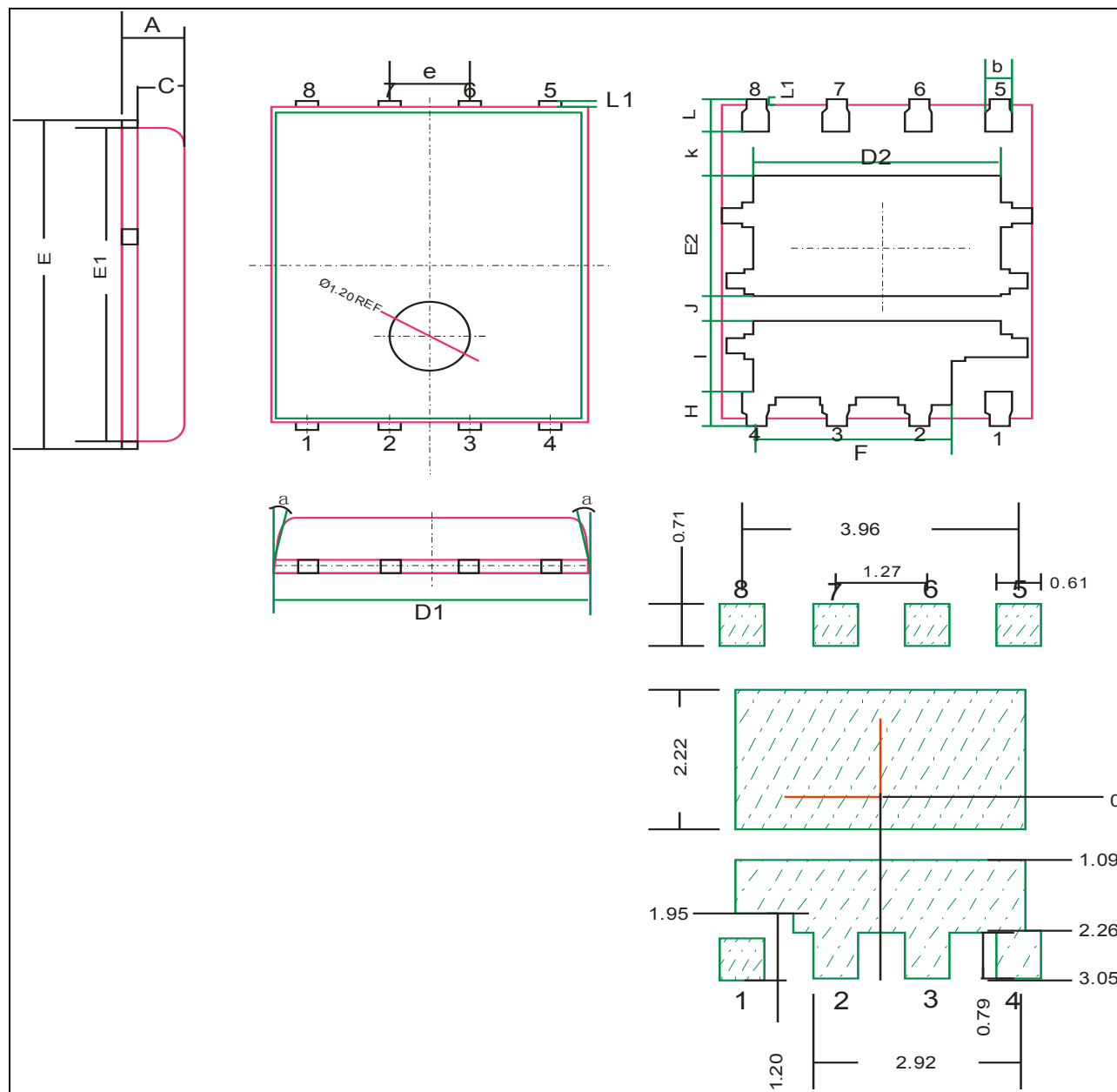


Switching Time Test Circuit and Waveforms



Package Information

PDFN5060



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	1.00	1.10	0.035	0.039	0.043	E1	5.70	5.75	5.80	0.224	0.226	0.228
b	0.33	0.41	0.51	0.013	0.016	0.020	E2	2.02	2.17	2.32	0.079	0.085	0.091
c	0.20	0.25	0.30	0.008	0.010	0.012	e	1.27BSC			0.05BSC		
D1	4.80	4.90	5.00	0.189	0.193	0.197	H	0.48	0.58	0.68	0.018	0.022	0.026
D2	3.61	3.81	3.96	0.142	0.150	0.156	L	0.51	0.61	0.71	0.020	0.024	0.028
L1	0.06	0.13	0.20	0.002	0.005	0.008							
E	5.90	6.00	6.10	0.232	0.236	0.240	@	0°	*	12°	*	10°	12°
K	0.50	*	*	0.019	*	*	J	0.40	0.50	0.60	0.015	0.019	0.023
I	1.22	1.32	1.42	0.048	0.051	0.055	F	2.87	3.07	3.22	0.112	0.12	0.126

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