

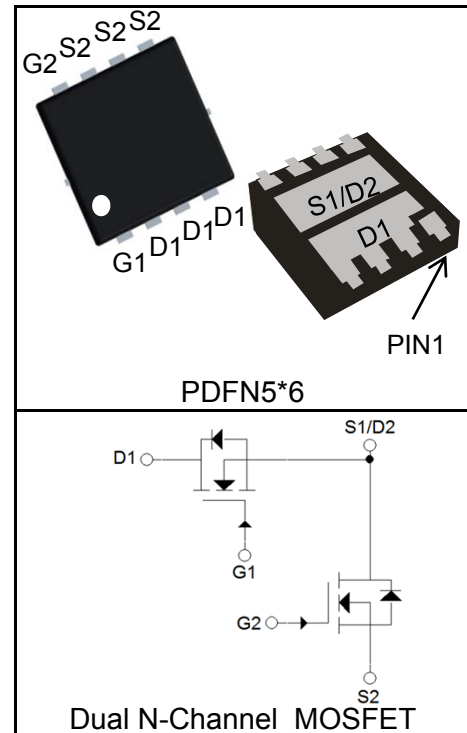
Features

- 30V/30A,
 $R_{DS(ON)} = 7m\Omega(Typ.) @ V_{GS} = 10V$
 $R_{DS(ON)} = 9.5m\Omega(Typ.) @ V_{GS} = 4.5V$
- Fast Switching Speed
- Low gate Charge
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Switching Application Systems
- DC/DC Converters

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} =4.5V)	T _C =25°C	30	A
		T _C =100°C	19	
	Continuous Drain Current@T _A (V _{GS} =4.5V) ^③	T _A =25°C	10	
		T _A =70°C	8	
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	3.1	
		T _A =70°C	2	

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	40	°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	RU30J30M			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		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} =20A		7	9	mΩ
		V _{GS} =4.5V, I _{DS} =16A		9.5	12	mΩ
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/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		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz		670		pF
C _{oss}	Output Capacitance			180		
C _{rss}	Reverse Transfer Capacitance			75		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =0.75Ω, I _{DS} =20A, V _{GEN} =10V, R _G =3Ω		5		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			15		
t _f	Turn-off Fall Time			4		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =24V, V _{GS} =10V, I _{DS} =20A		12		nC
Q _{gs}	Gate-Source Charge			3		
Q _{gd}	Gate-Drain Charge			4		

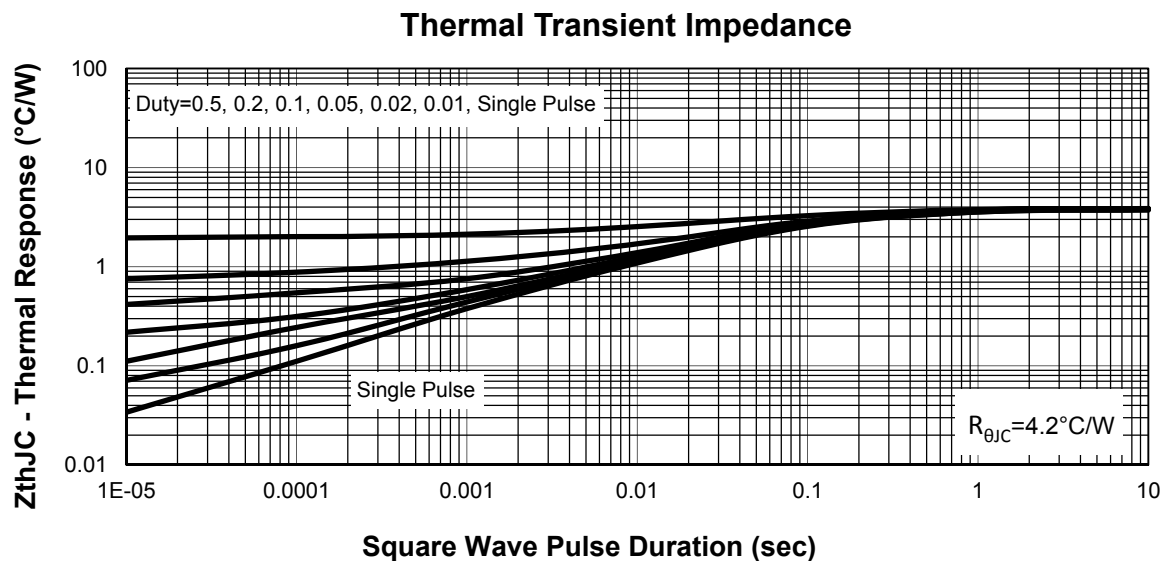
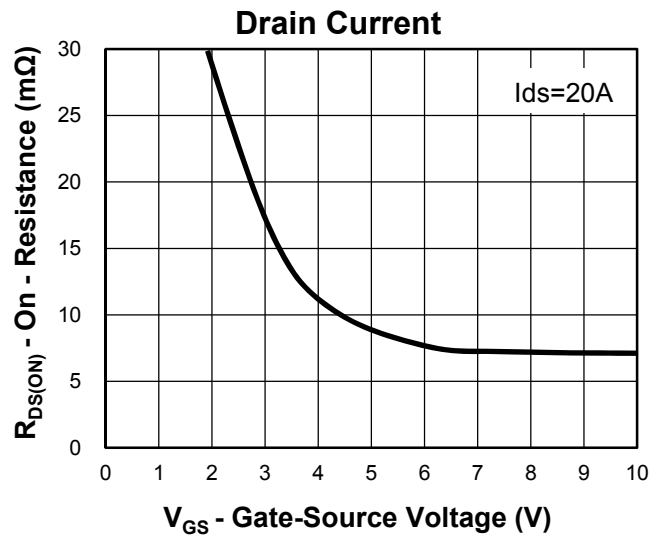
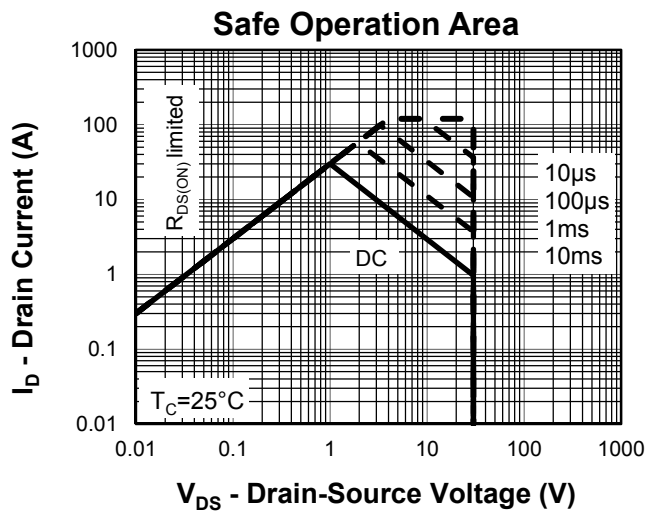
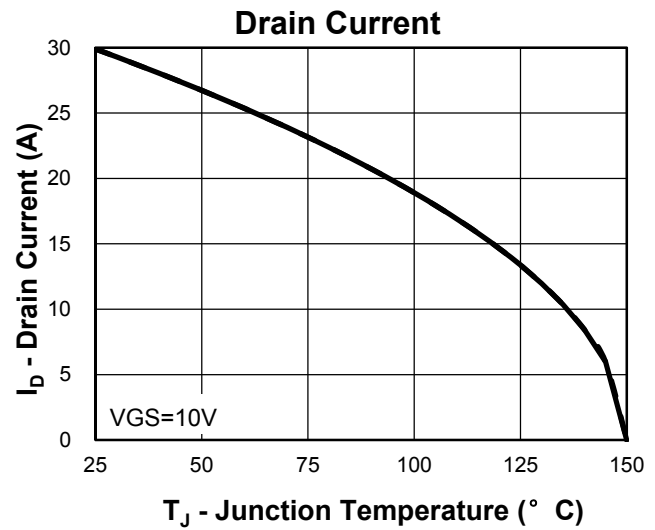
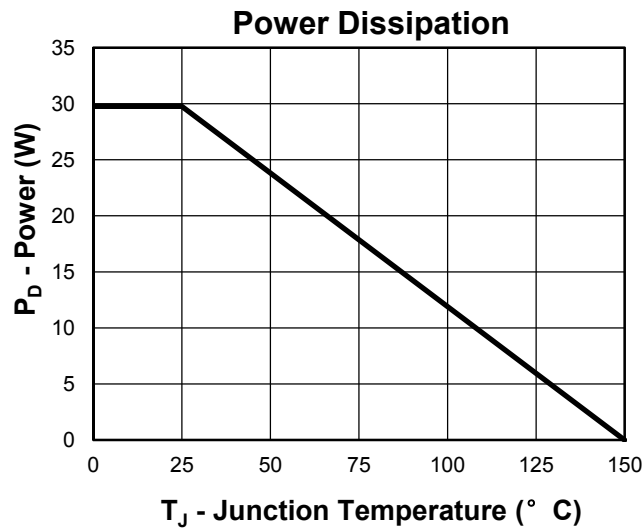
Notes:

- 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 $T_{J\text{max}}$, $I_{AS} = 14\text{A}$, $V_{DD} = 24\text{V}$, $R_G = 50\Omega$, 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.

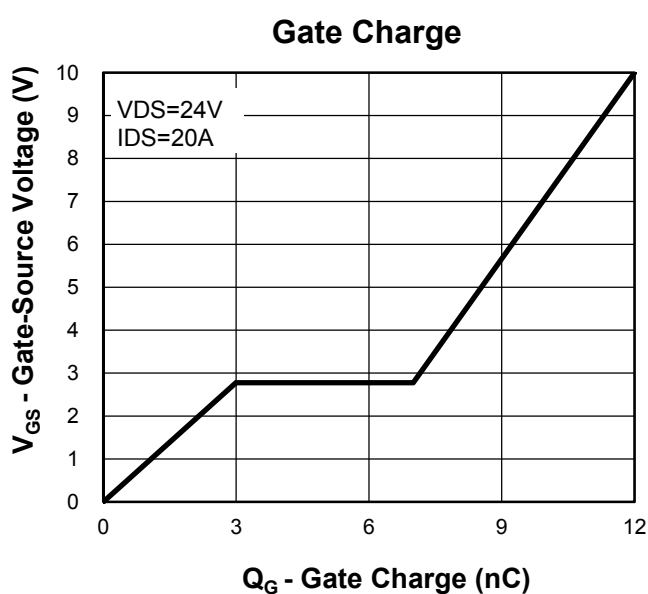
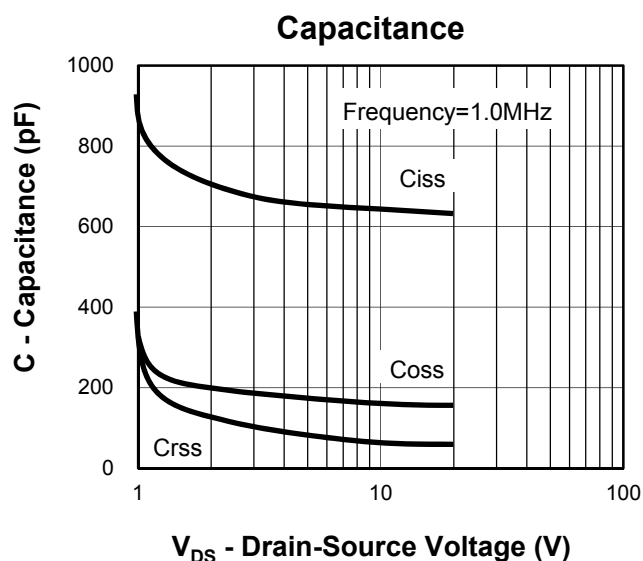
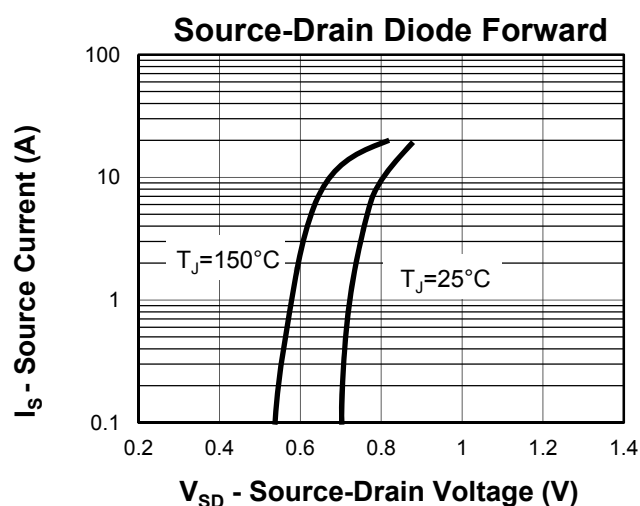
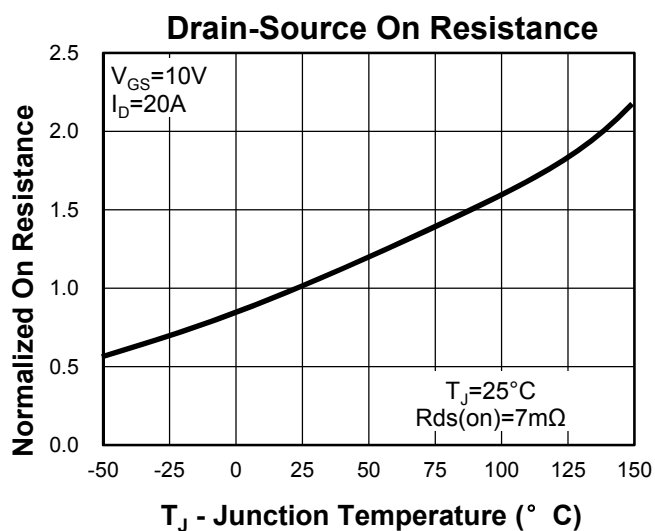
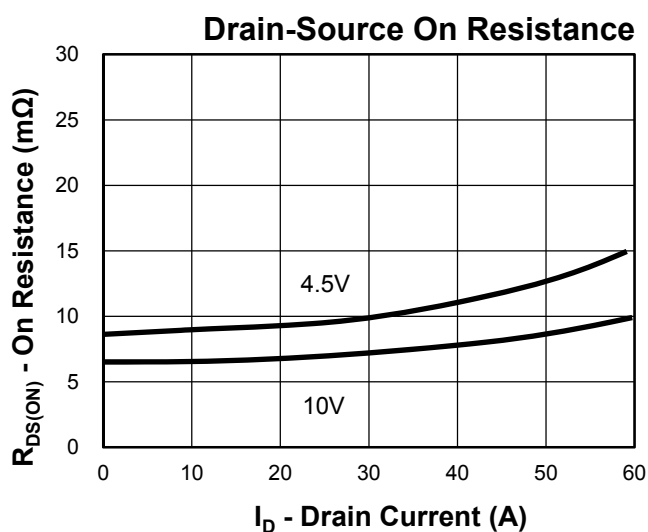
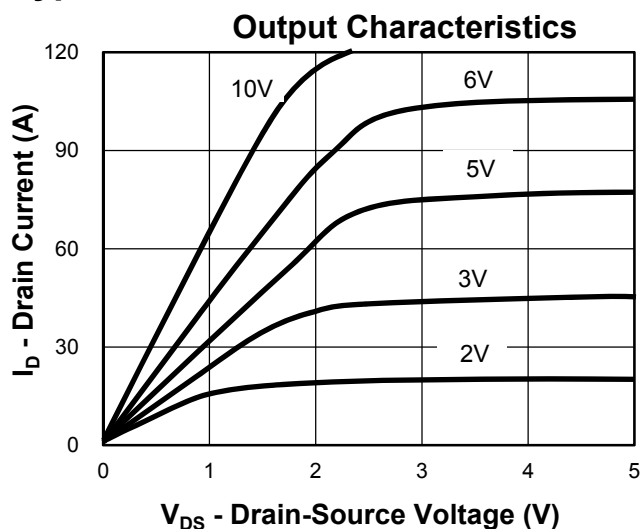
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU30J30M	RU30J30M	PDFN5060	Tape&Reel	3000	13"	12mm

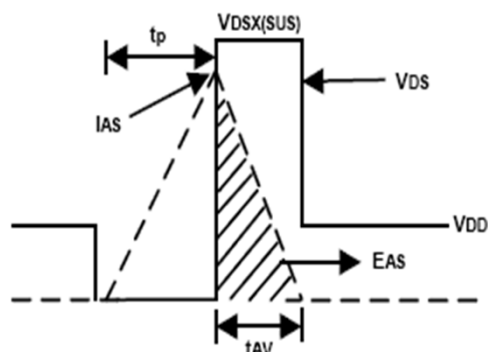
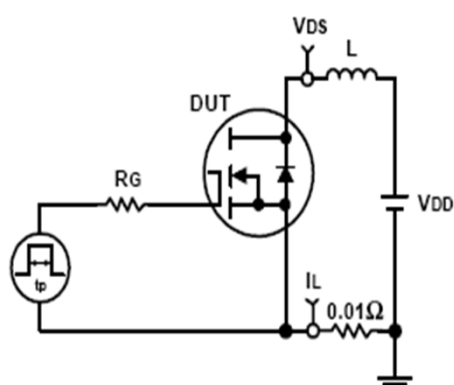
Typical Characteristics



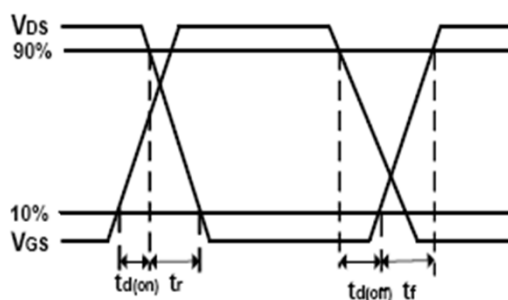
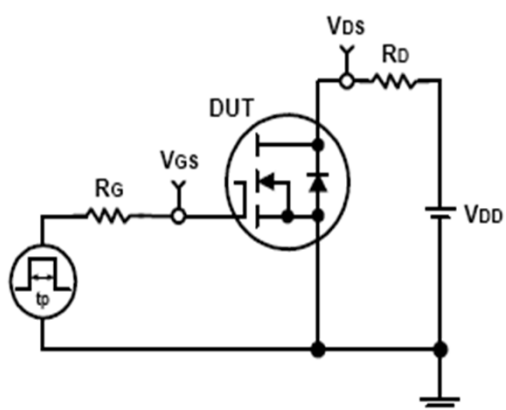
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Avalanche Test Circuit and Waveforms

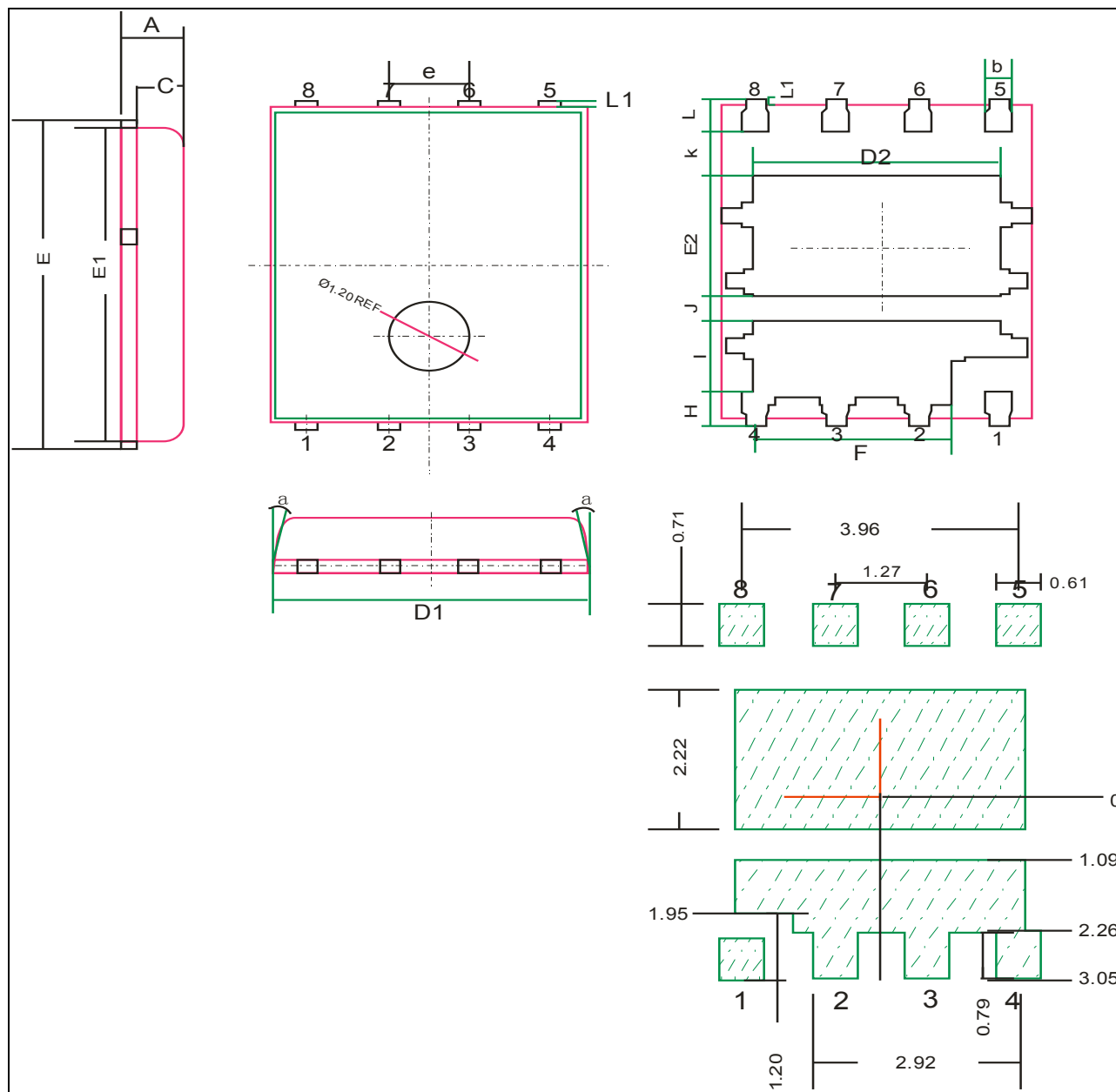


Switching Time Test Circuit and Waveforms



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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