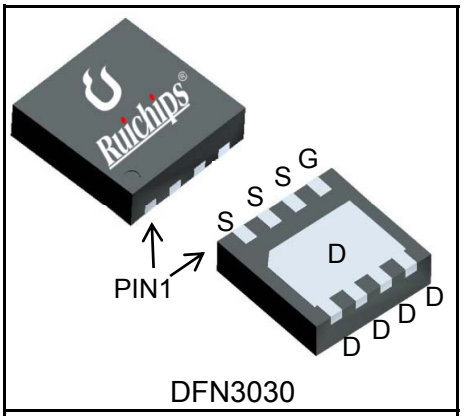
RU30L30M3

P-Channel Advanced Power MOSFET

Features

- -30V/-30A,
  $R_{DS\ (ON)}$ =10mΩ(Typ.)@V_{GS}=-10V
  $R_{DS\ (ON)}$ =18mΩ(Typ.)@V_{GS}=-4.5V
- Uses Ruichips advanced Trench™ technology
- Excellent Q_gx$R_{DS(on)}$ product(FOM)
- Reliable and Rugged
- 100% avalanche tested
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



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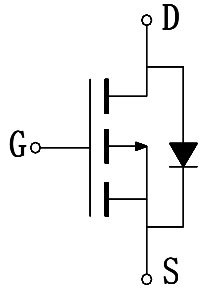


P-Channel MOSFET

Applications

- Switching Application Systems
- On Board power for server
- Synchronous rectification

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°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		10	12	mΩ
		V_{GS}=-4.5V, I_{DS}=-16A		18	20	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		

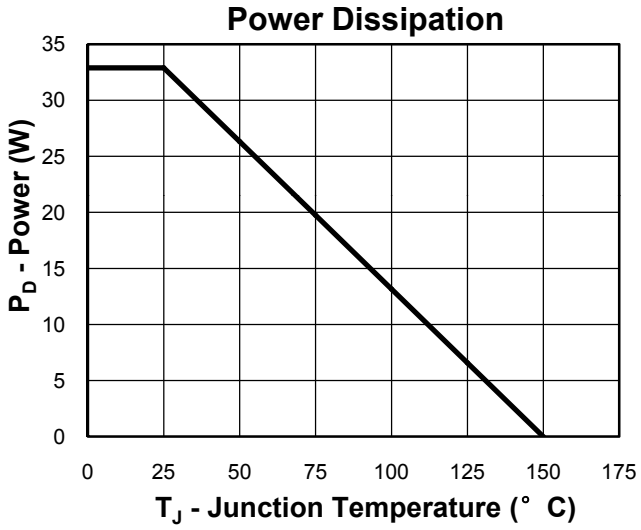
Notes:

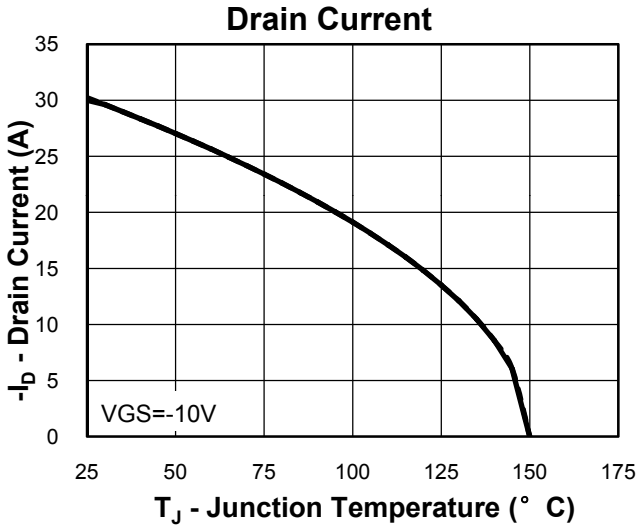
①Pulse width limited by safe operating area.
②Calculated continuous current based on maximum allowable junction temperature.
③When mounted on 1 inch square copper board, t≤10sec.
④Limited by T_{Jmax}, I_{AS}=-12A,V_{DD}=-24V,R_G=50Ω,Starting T_J = 25°C.
⑤Pulse test;Pulse width≤300μs, duty cycle≤2%.
⑥Guaranteed by design, not subject to production testing.

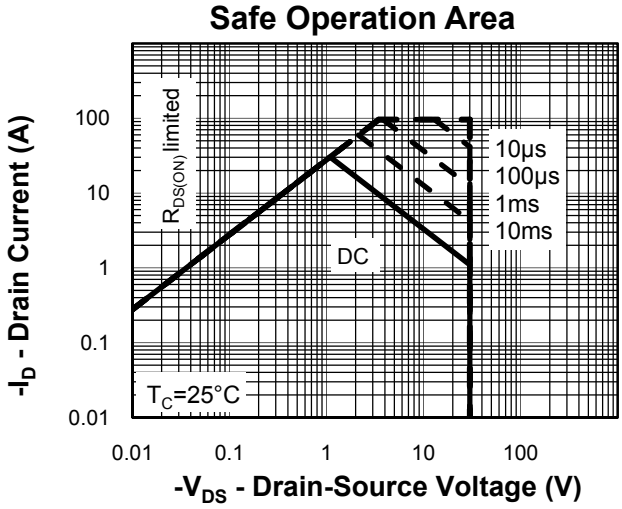
Ordering and Marking Information

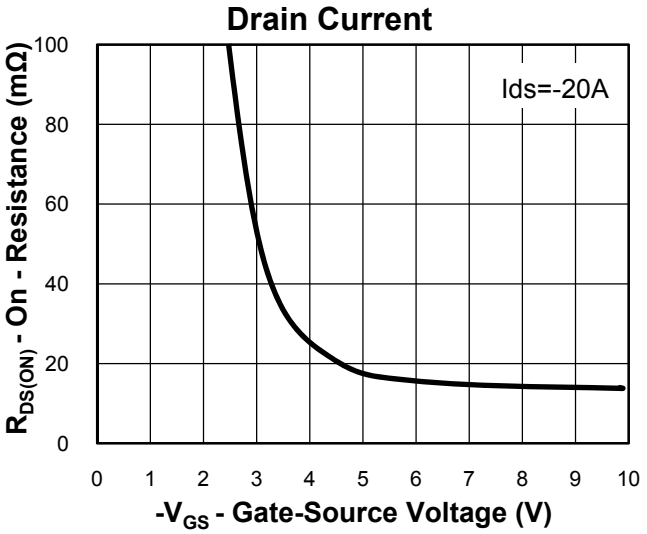
Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU30L30M3	RU30L30	DFN3030	Tape&Reel	5000	13"	12mm

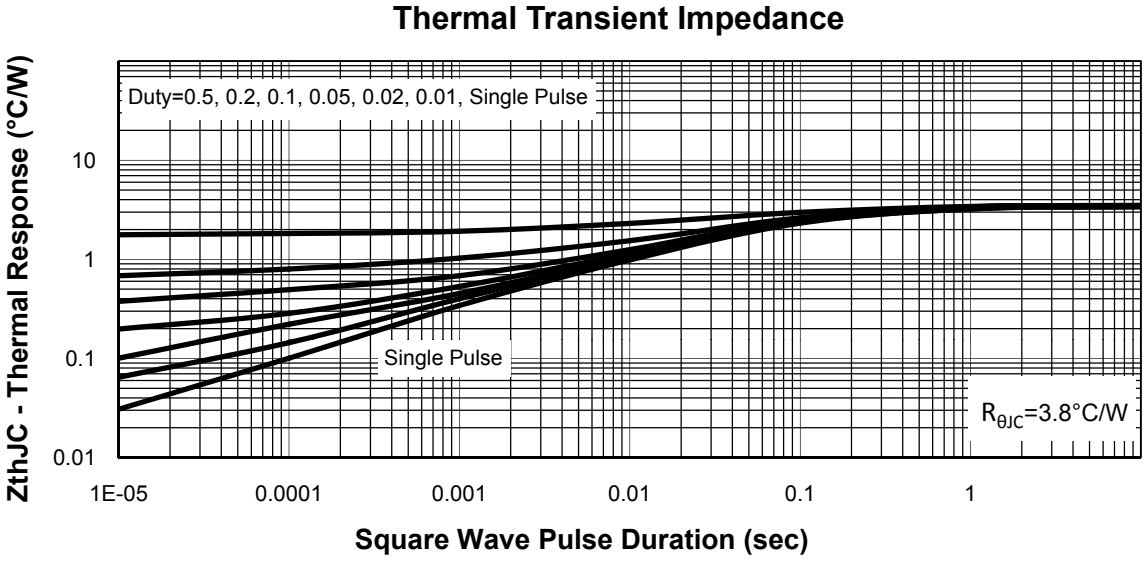
Typical Characteristics











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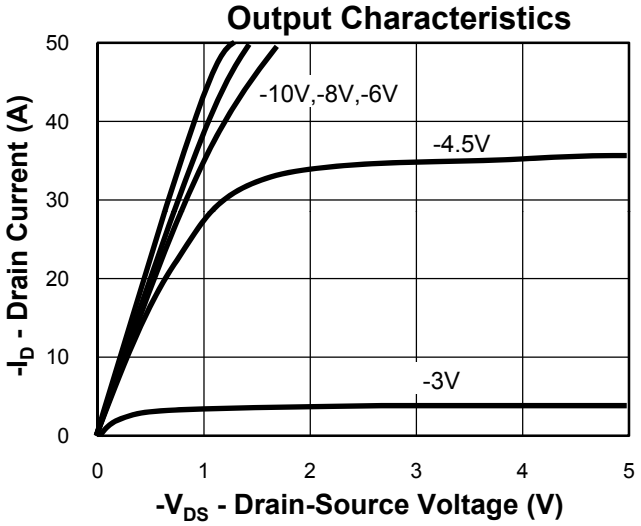
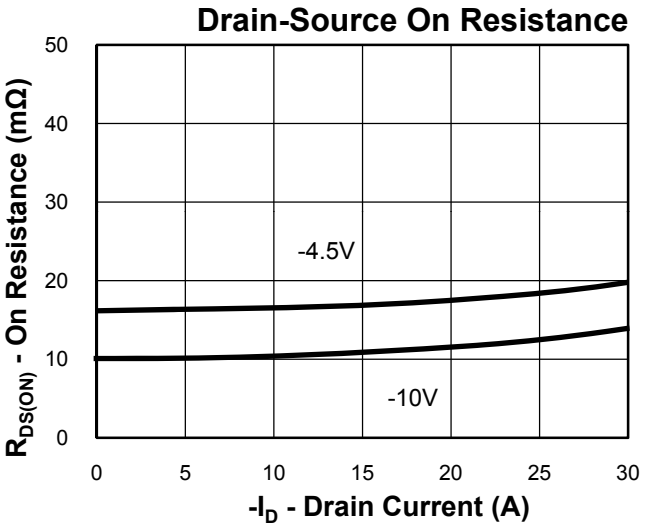
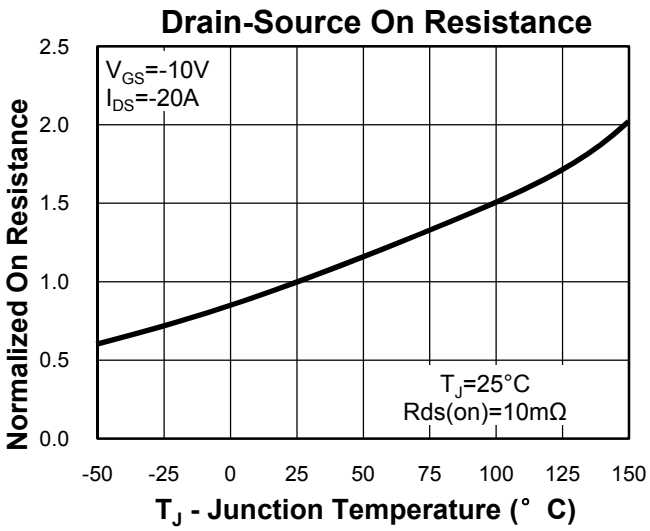
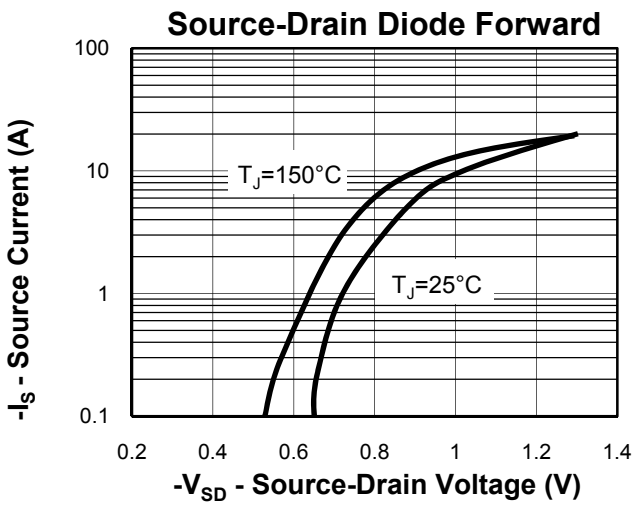
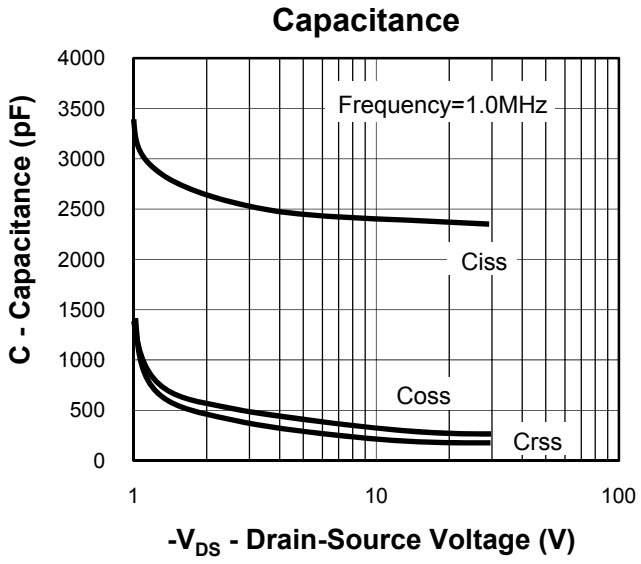
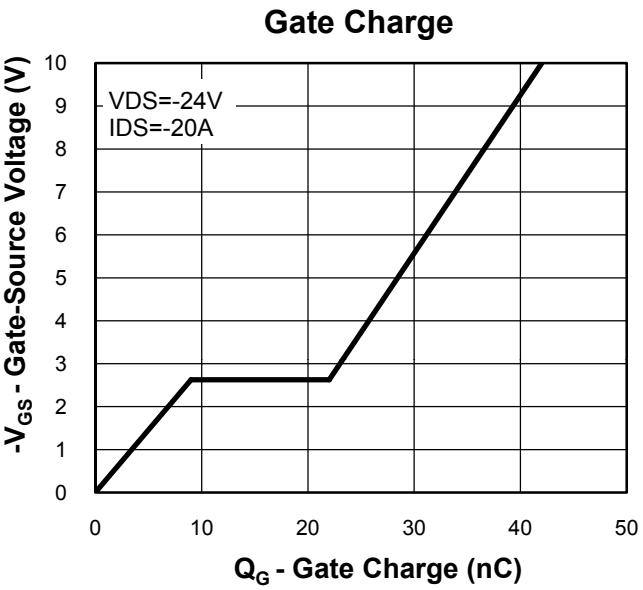




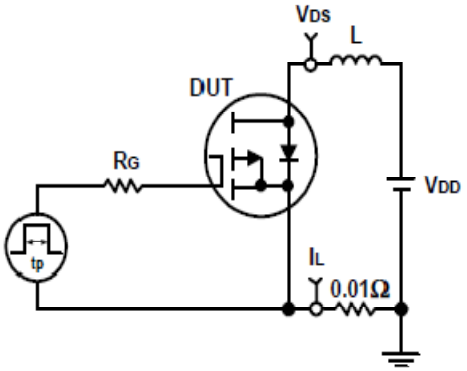


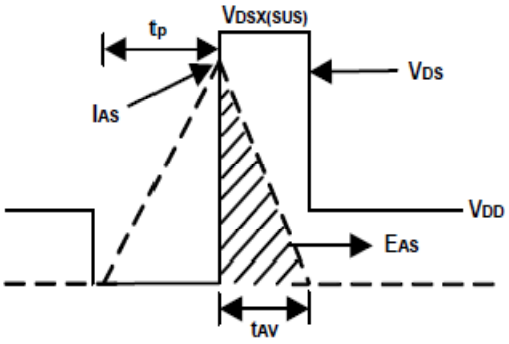




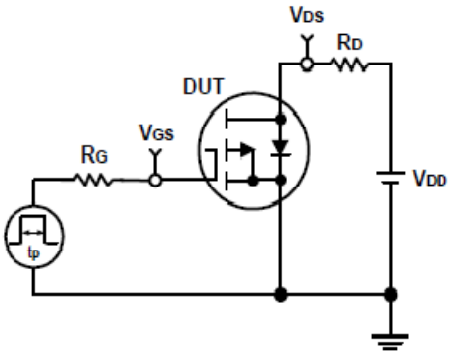


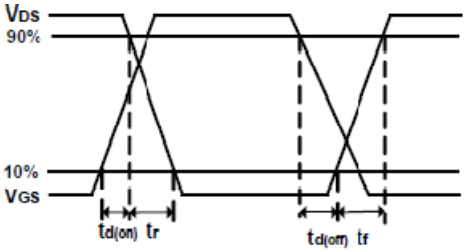
Avalanche Test Circuit and Waveforms





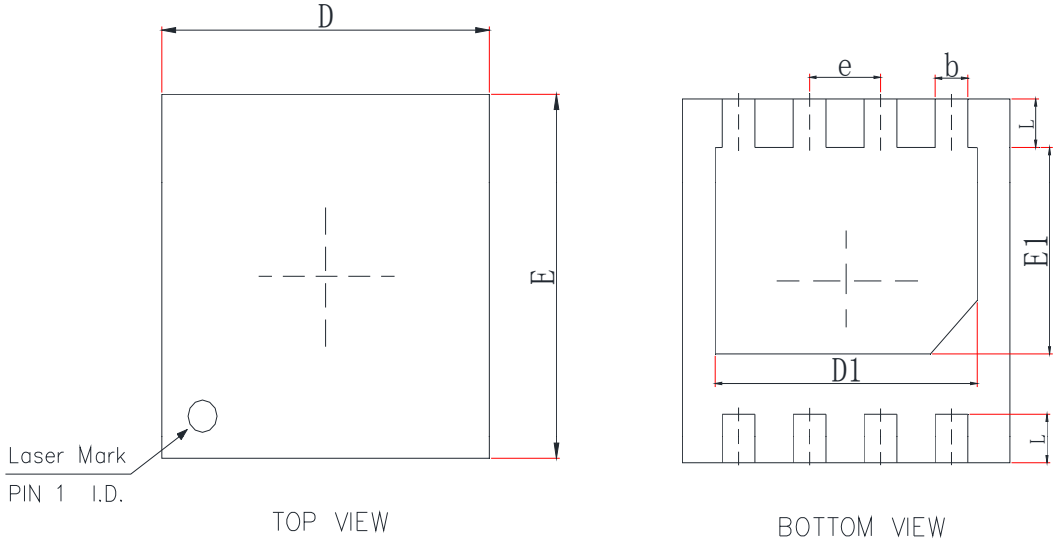
Switching Time Test Circuit and Waveforms

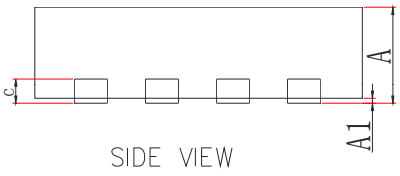




Package Information

DFN3030





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		