

Features

- -17V/-16A,
 $R_{DS(ON)} = 18m\Omega(Typ.)@V_{GS}=-4.5V$
 $R_{DS(ON)} = 24m\Omega(Typ.)@V_{GS}=-2.5V$
- Uses Ruichips Proprietary New Trench™ Technology
- Low On-Resistance
- Exceptional dv/dt capability
- Low Gate Charge Minimize Switching Loss
- Lead Free and Green Devices (RoHS Compliant)

Applications

- Load Switch
- Battery Charge
- DC/DC Converters

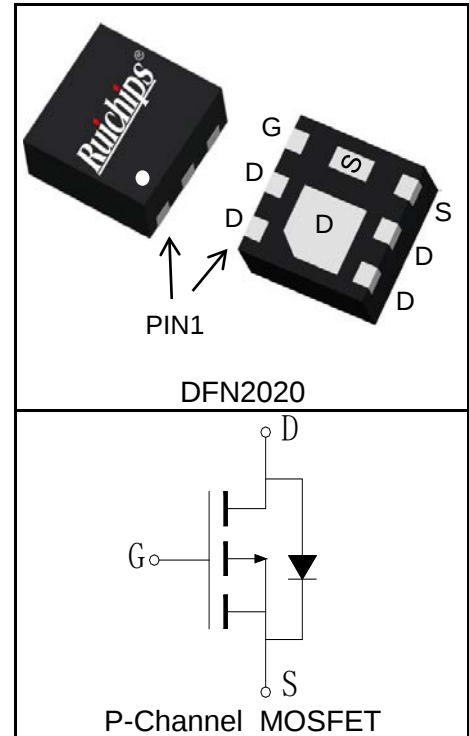


RoHS



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _C =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-17	V
V _{GSS}	Gate-Source Voltage		±12	
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	-16	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	-48	A
I _D ^②	Continuous Drain Current@T _C (V _{GS} =-4.5V)	T _C =25°C	-16	A
		T _C =100°C	-10	
	Continuous Drain Current@T _A (V _{GS} =-4.5V) ^③	T _A =25°C	-3.2	
		T _A =70°C	-2.5	
P _D	Maximum Power Dissipation@T _C	T _C =25°C	21	W
		T _C =100°C	8	
	Maximum Power Dissipation@T _A ^③	T _A =25°C	2.5	
		T _A =70°C	1.6	

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	6	°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	TBD	mJ

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

Symbol	Parameter	Test Condition	RU17P6M4			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-17			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-17V, V _{GS} =0V			-1	μA
			T _J =125°C			
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.4		-1.1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
R _{DS(ON)} ^⑤	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-8A		18	22	mΩ
		V _{GS} =-2.5V, I _{DS} =-6A		24	28	mΩ
Diode Characteristics						
V _{SD} ^⑤	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V			-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-16A, dI _{SD} /dt=100A/μs		13		ns
Q _{rr}	Reverse Recovery Charge			6		nC
Dynamic Characteristics ^⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.7		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz		310		pF
C _{oss}	Output Capacitance			98		
C _{rss}	Reverse Transfer Capacitance			23		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, I _{DS} =-16A, V _{GEN} =-4.5V, R _G =6Ω		12		ns
t _r	Turn-on Rise Time			35		
t _{d(OFF)}	Turn-off Delay Time			30		
t _f	Turn-off Fall Time			11		
Gate Charge Characteristics ^⑥						
Q _g	Total Gate Charge	V _{DS} =-12V, V _{GS} =-4.5V, I _{DS} =-6A		9.5		nC
Q _{gs}	Gate-Source Charge			1		
Q _{gd}	Gate-Drain Charge			2.5		

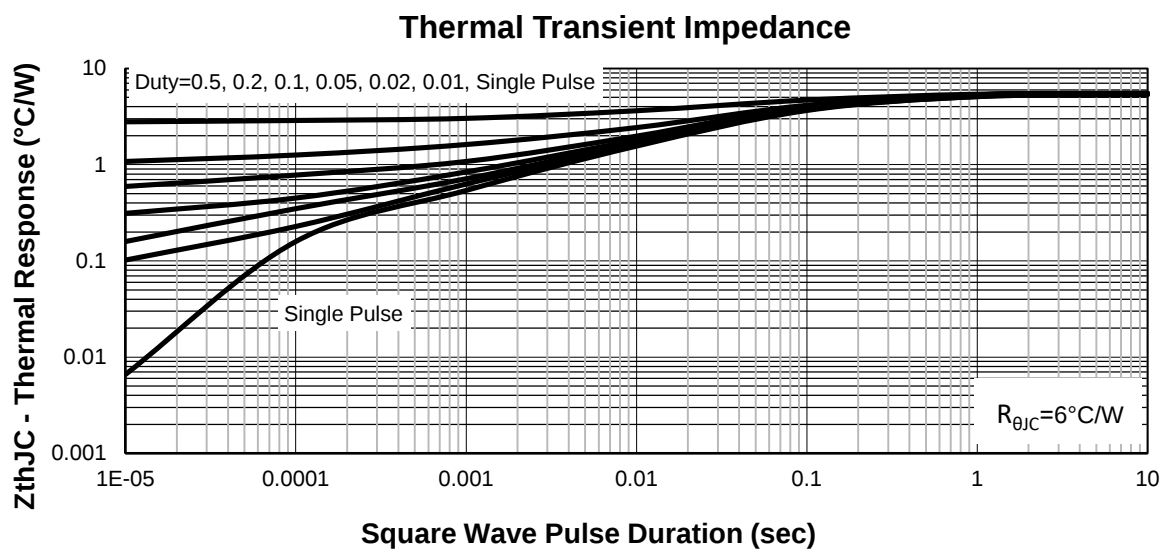
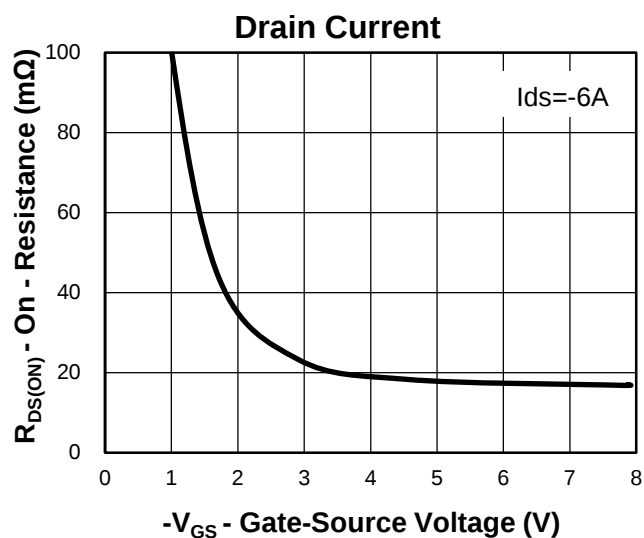
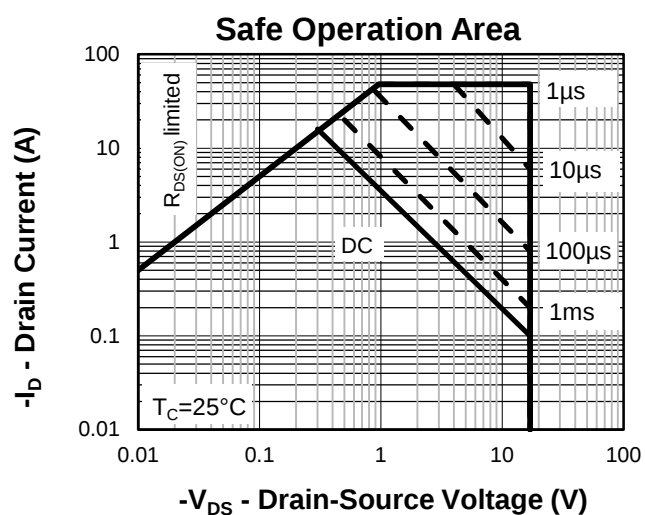
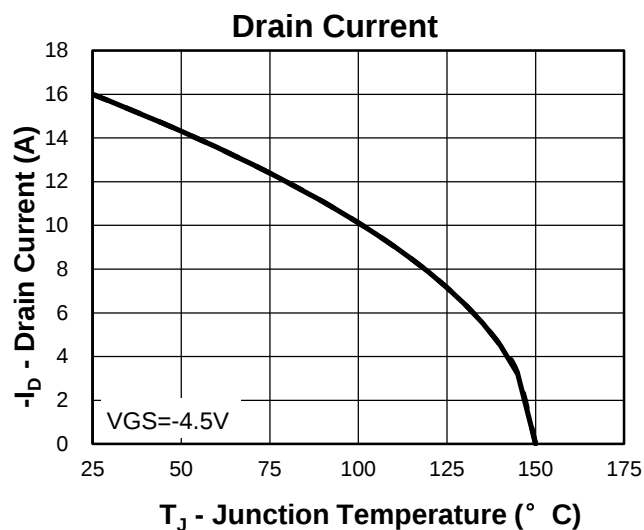
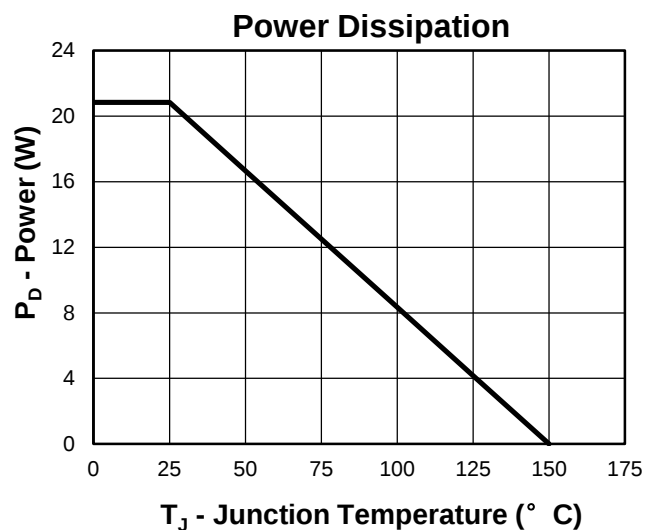
Notes:

- 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 $T_{J\max}$, 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.

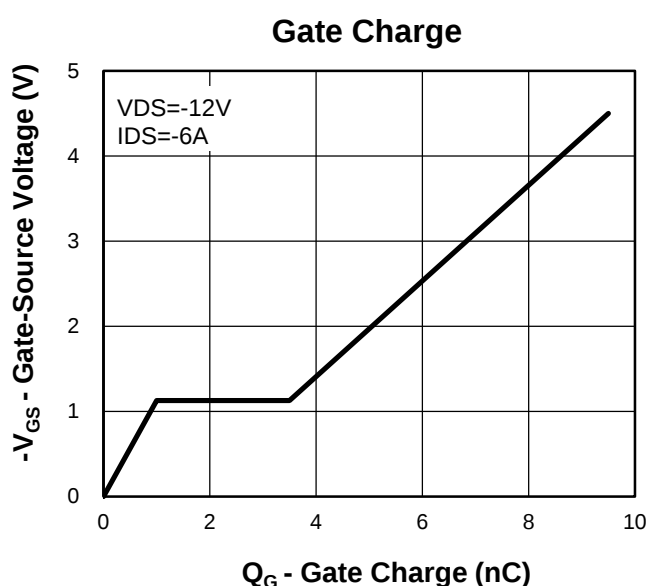
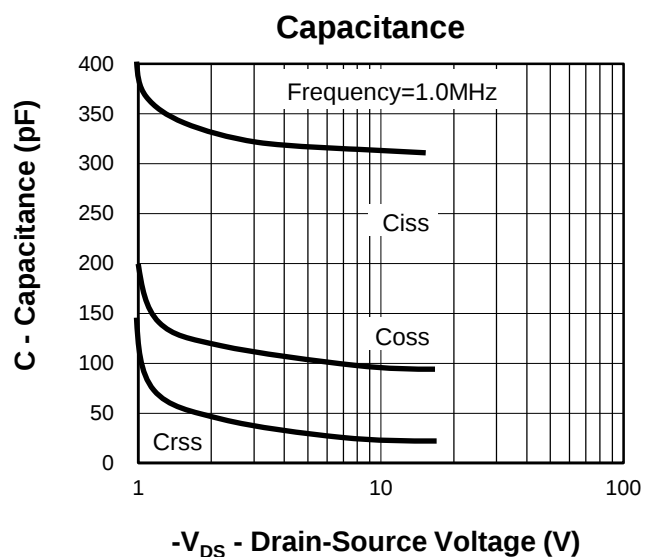
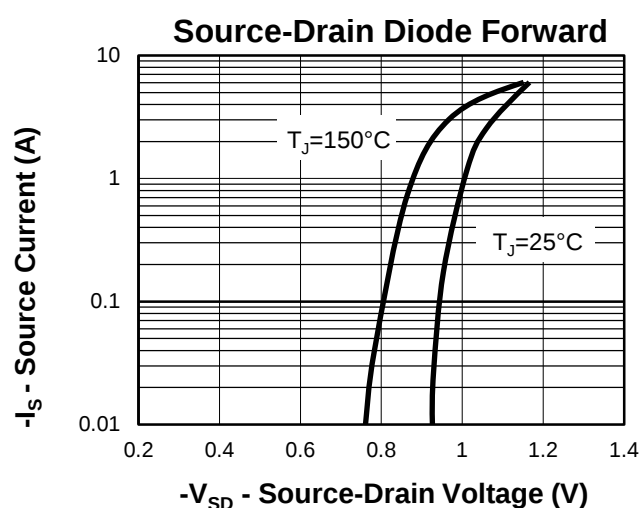
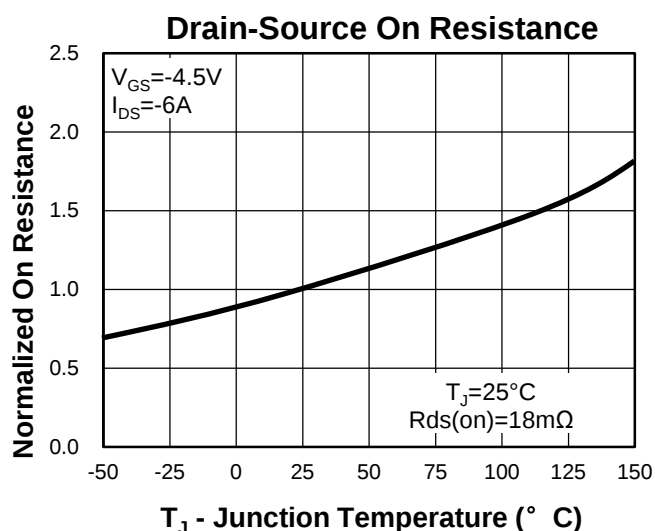
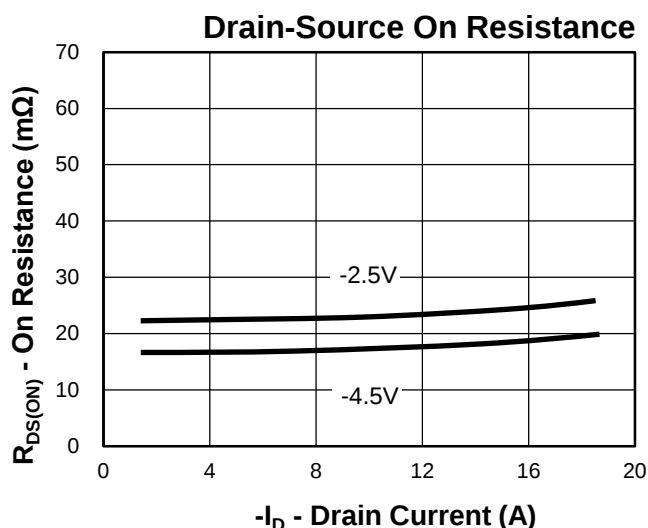
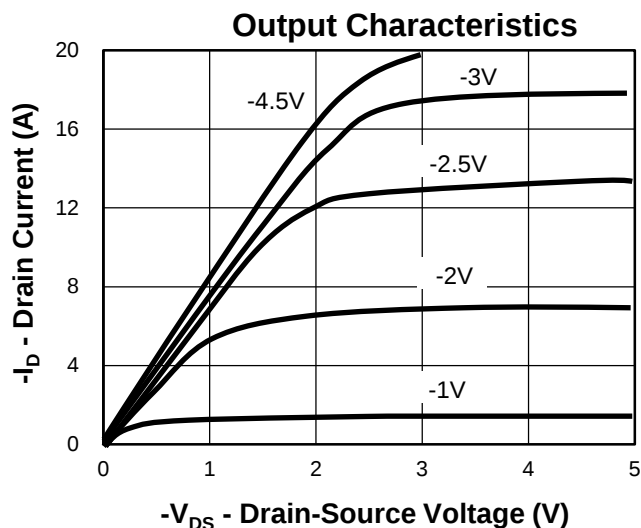
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU17P6M4	RU17P6	DFN2020	Tape&Reel	3000	7"	8mm

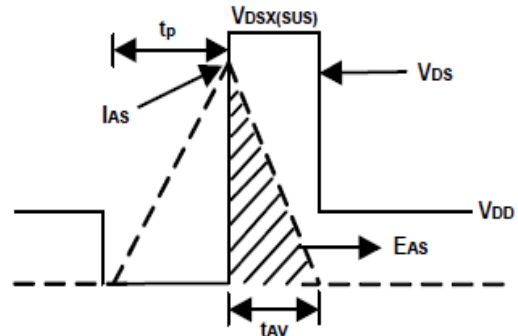
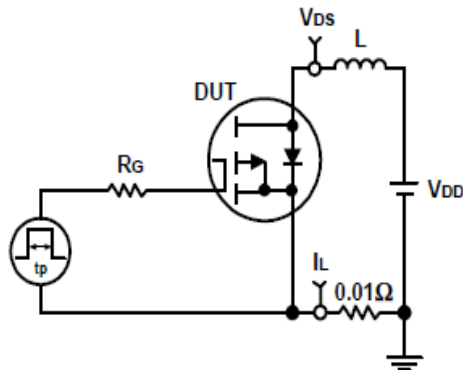
Typical Characteristics



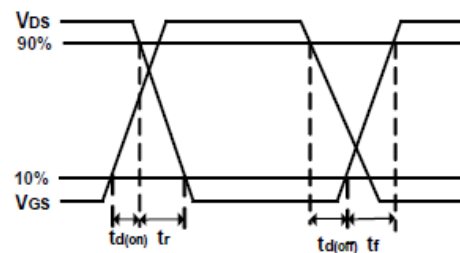
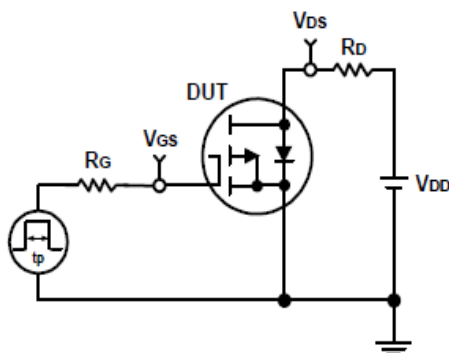
Typical Characteristics



Avalanche Test Circuit and Waveforms

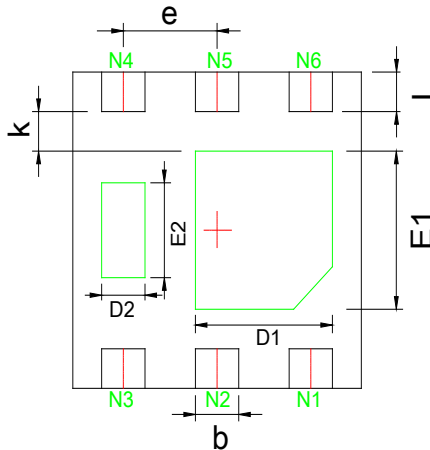
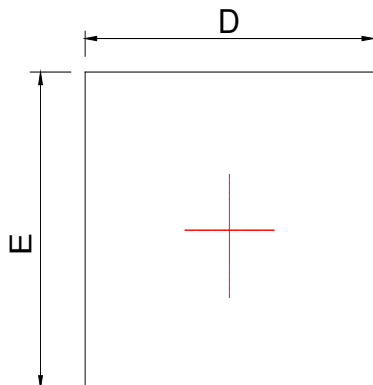


Switching Time Test Circuit and Waveforms

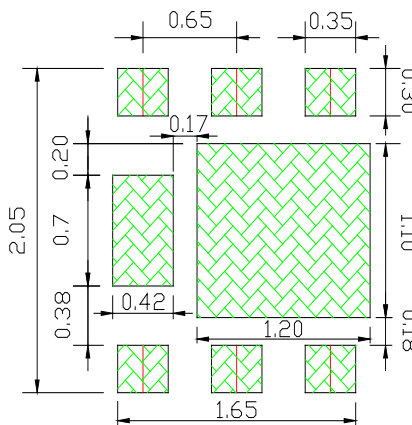
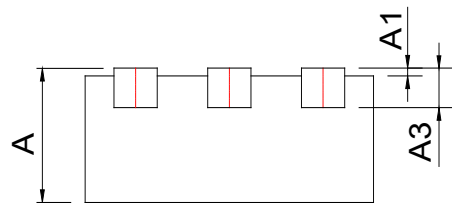


Package Information

DFN2020



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	0.025	0.050	0.000	0.001	0.002
A2	0.203 REF.			0.008 REF.		
D	1.924	2.000	2.076	0.076	0.079	0.082
E	1.924	2.000	2.076	0.076	0.079	0.082
D1	0.800	0.900	1.000	0.031	0.035	0.039
E1	0.850	0.950	1.050	0.033	0.037	0.041
D2	0.200	0.300	0.400	0.008	0.012	0.016
E2	0.460	0.560	0.660	0.018	0.022	0.026
K	0.200 MIN.			0.008 MIN.		
b	0.250	0.300	0.350	0.010	0.012	0.014
e	0.650 TYP			0.026 TYP		
L	0.174	0.250	0.326	0.007	0.010	0.013