

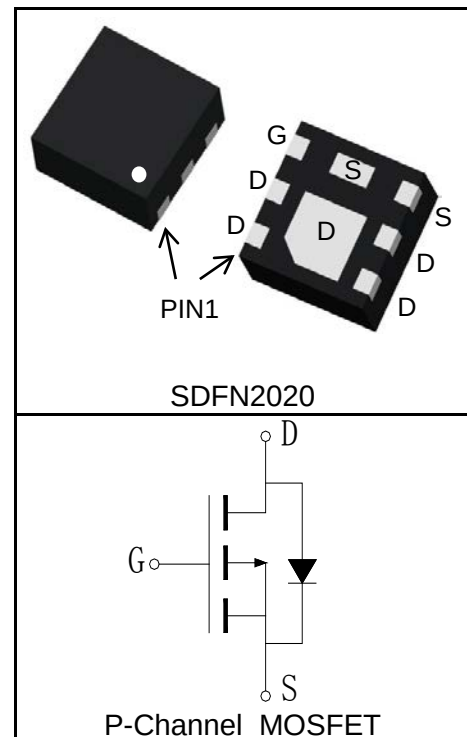
Features

- -16V/-8A,
 $R_{DS(ON)} = 40m\Omega(Typ.)@V_{GS} = -4.5V$
 $R_{DS(ON)} = 65m\Omega(Typ.)@V_{GS} = -2.5V$
- Super High Dense Cell Design
- Fast Switching Speed
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Load Switch
- Battery Charge
- 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		-16	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	-14	A
Mounted on Large Heat Sink				
I _{DP} ^①	300μs Pulse Drain Current Tested	T _C =25°C	-56	A
I _D ^②	Continuous Drain Current@T _C (V _{GS} =-4.5V)	T _C =25°C	-14	A
		T _C =100°C	-9	
	Continuous Drain Current@T _A (V _{GS} =-4.5V) ^③	T _A =25°C	-8	
		T _A =70°C	-5.6	
P _D	Maximum Power Dissipation@T _C	T _C =25°C	17.8	W
		T _C =100°C	7.1	
	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	7	°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	RU16P8M4			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-16			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	μA
			T _J =125°C		-30	
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} =-4A		40	50	mΩ
		V _{GS} =-2.5V, I _{DS} =-3A		65	80	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} =-4A, dI _{SD} /dt=100A/μs		8		ns
Q _{rr}	Reverse Recovery Charge			3		nC
Dynamic Characteristics ⑥						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		0.6		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-8V, Frequency=1.0MHz		500		pF
C _{oss}	Output Capacitance			90		
C _{rss}	Reverse Transfer Capacitance			45		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-8V, I _{DS} =-4A, V _{GEN} =-4.5V, R _G =6Ω		5		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			21		
t _f	Turn-off Fall Time			9		
Gate Charge Characteristics ⑥						
Q _g	Total Gate Charge	V _{DS} =-12V, V _{GS} =-4.5V, I _{DS} =-4A		8		nC
Q _{gs}	Gate-Source Charge			1.3		
Q _{gd}	Gate-Drain Charge			2.5		

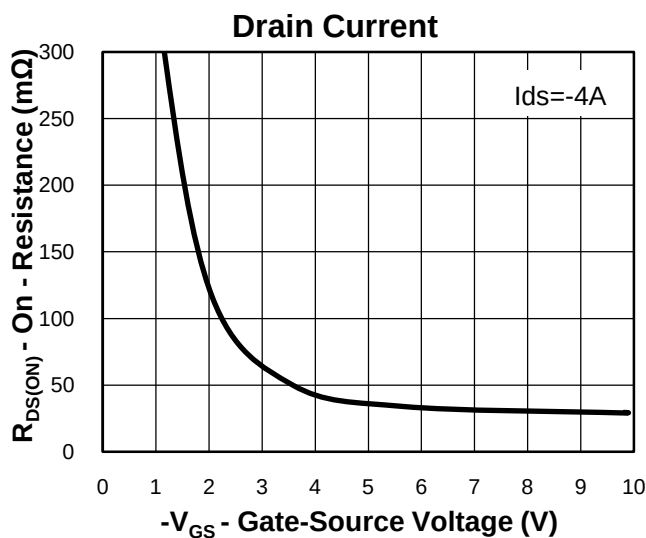
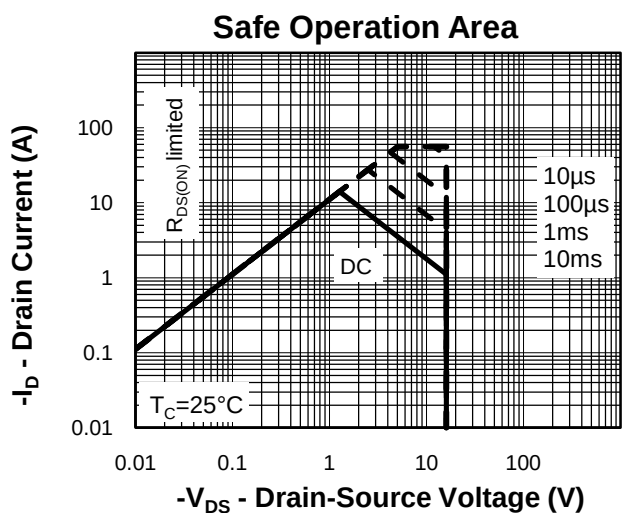
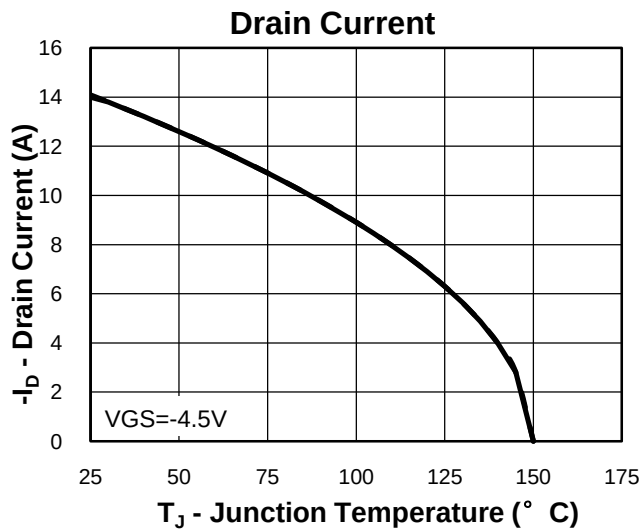
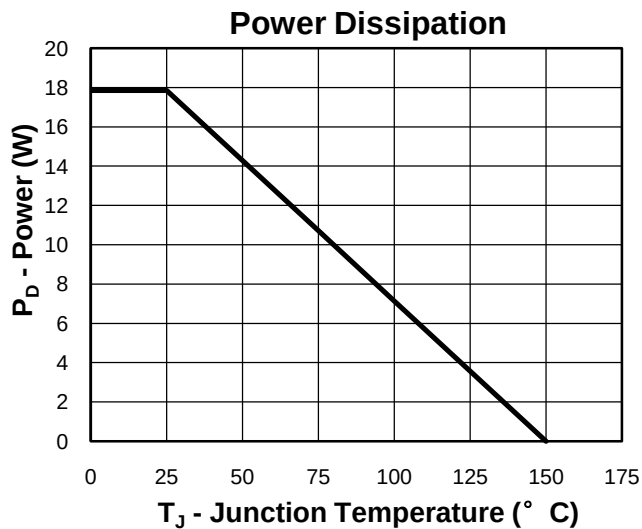
Notes:

- 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.

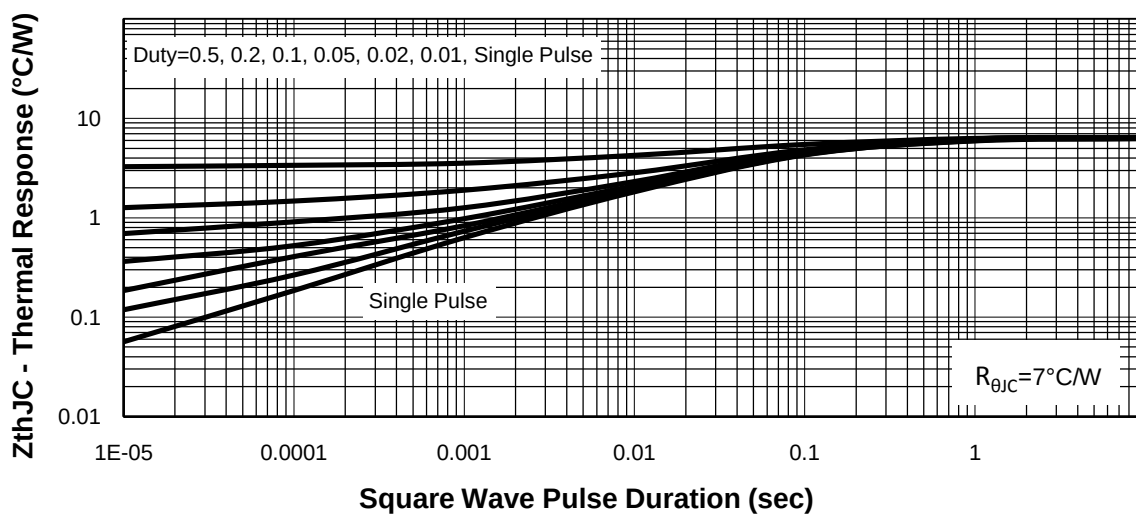
Ordering and Marking Information

Device	Marking	Package	Packaging	Quantity	Reel Size	Tape width
RU16P8M4	16P8	SDFN2020	Tape&Reel	3000	7"	8mm

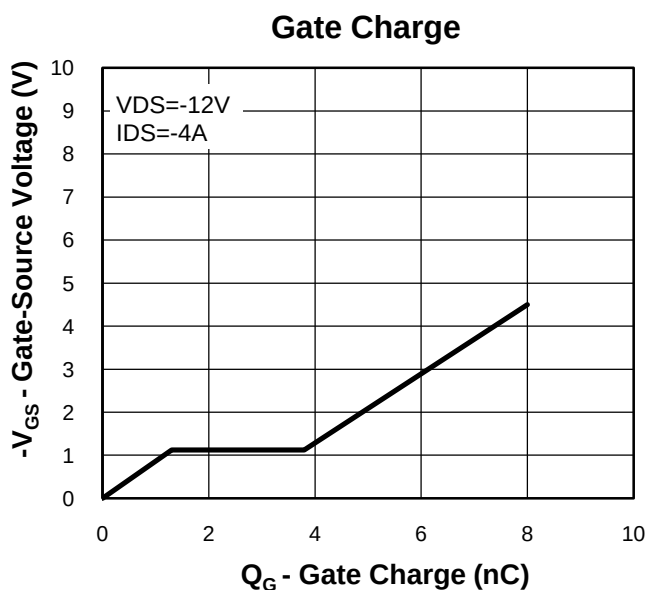
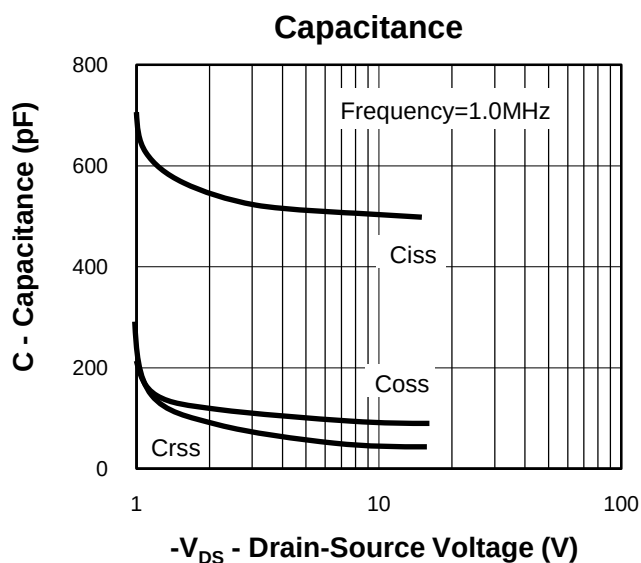
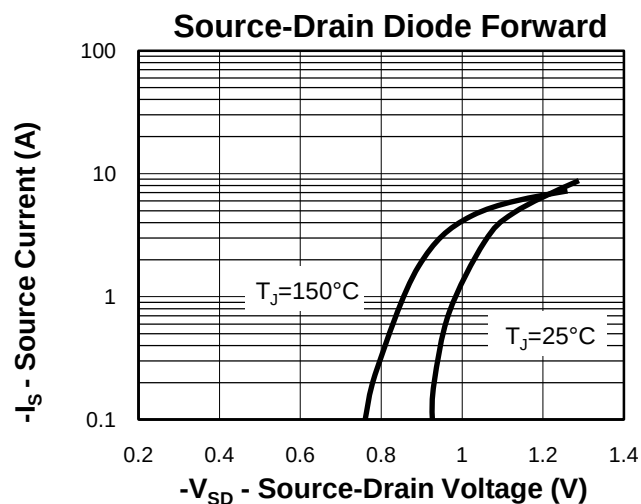
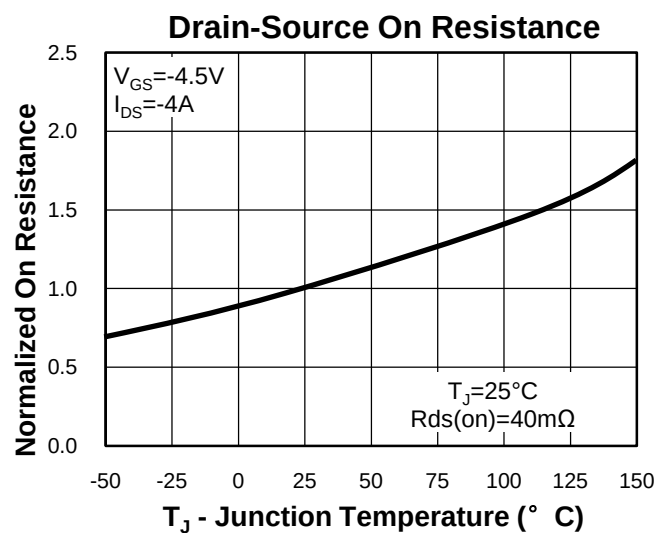
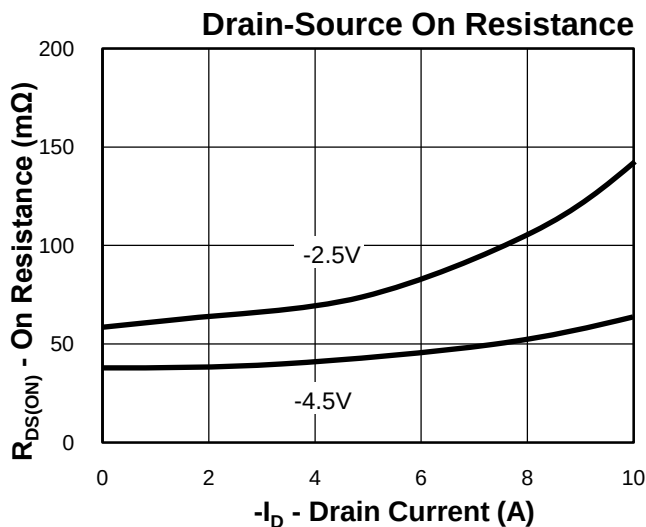
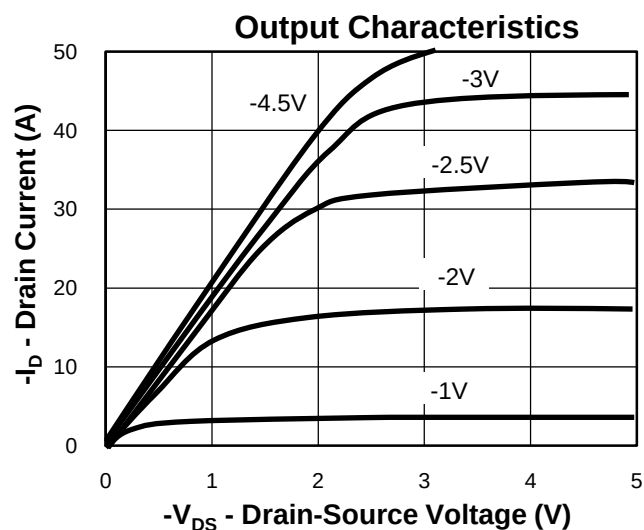
Typical Characteristics



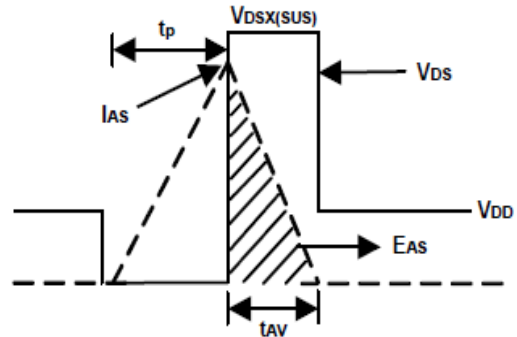
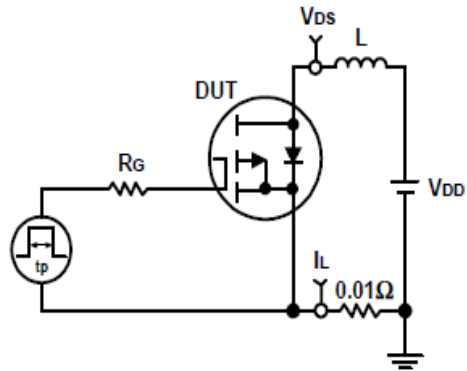
Thermal Transient Impedance



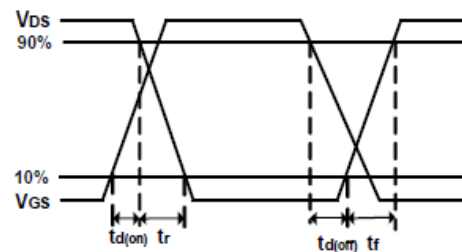
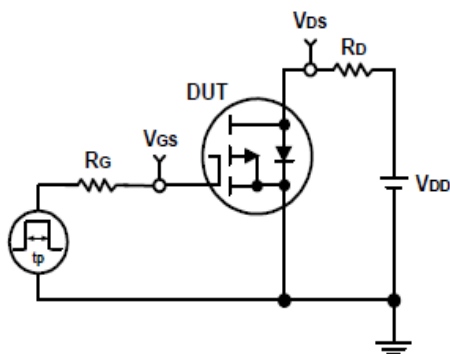
Typical Characteristics



Avalanche Test Circuit and Waveforms

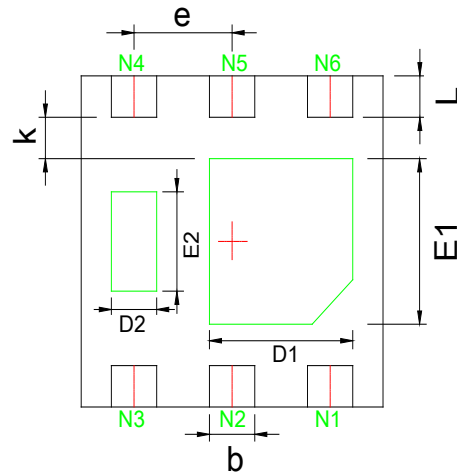
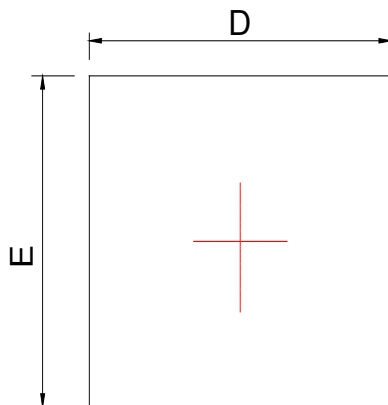


Switching Time Test Circuit and Waveforms

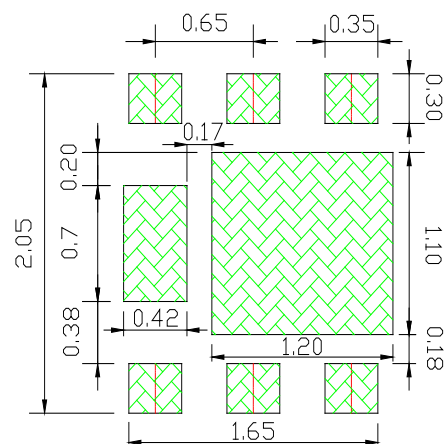
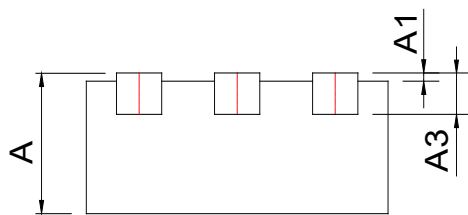


Package Information

SDFN2020



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
A3	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

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