

Description

The PPM6N20V15 uses advanced trench technology to provide excellent $R_{DS(on)}$, low gate charge. This device is suitable for use as a load switch or in PWM applications.

MOSFET Product Summary

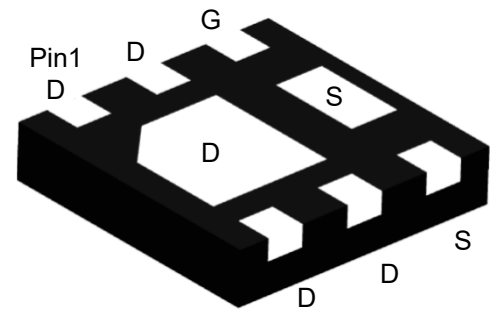
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
-20	19@ $V_{GS} = -4.5V$	-19
	25@ $V_{GS} = -2.5V$	

Feature

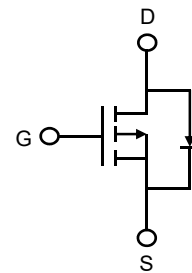
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

Applications

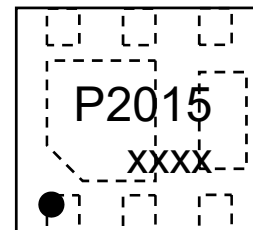
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



**DFN2020-6L
(Bottom View)**



Circuit Diagram



Pin1

Marking (Top View)

Absolute maximum rating@25°C

Rating		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Drain Current-Continuous ¹⁾	$T_C=25^\circ C$	I_D	-19	A
	$T_C=100^\circ C$		-12	
Pulsed Drain Current ²⁾		I_{DM}	-65	A
Total Power Dissipation ³⁾		P_D	11	W
Avalanche Current ⁴⁾		I_{AS}	-24	A
Avalanche Energy ⁴⁾		E_{AS}	29	mJ
Thermal Resistance , Junction-to-Case ⁵⁾		$R_{\theta JC}$	11.1	$^\circ C/W$
Thermal Resistance , Junction-to-Ambient ⁵⁾		$R_{\theta JA}$	65.2	$^\circ C/W$
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-20		-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V	-	-	-1.0	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ± 12V, V _{DS} = 0V	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-0.45	-0.65	-0.90	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-5A	-	19	25	mΩ
		V _{GS} =-2.5V, I _D =-4A	-	25	35	
Dynamic Characteristics ⁶⁾						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V f= 1MHz	-	962	-	pF
Output Capacitance	C _{oss}		-	122	-	
Reverse Transfer Capacitance	C _{rss}		-	103	-	
Switching Characteristics ⁶⁾						
Turn-on Delay Time	t _{d(on)}	V _{DS} =- 10V, V _{GS} = -4.5V, R _G = 10Ω, I _D = -5A	-	6	-	ns
Turn-on Rise Time	t _r		-	21	-	
Turn-Off Delay Time	t _{d(off)}		-	75	-	
Turn-Off Fall Time	t _f		-	38	-	
Total Gate Charge	Q _g	V _{DS} = -16V, V _{GS} = -4.5V, I _D = -5A	-	11.6	-	nC
Gate-Source Charge	Q _{gs}		-	1.4	-	
Gate-Drain Charge	Q _{gd}		-	2.9	-	
Gate Resistance	R _g	f=1MHz, Open Drain	-	9.1	-	Ω
Drain-Source Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = -4A	-	-0.8	-1.2	V
Reverse Recovery Time	t _{rr}	I _F =-5A, di/dt=100A/us	-	11	-	ns
Reverse Recovery Charge	Q _{rr}		-	2.3	-	nC

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature ($T_{J_Max} = 150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. This single-pulse measurement was taken under the following condition ($L = 0.1mH, V_{GS} = -4.5V, V_{DS} = -16V$) while its value is limited by $T_{J_Max} = 150^\circ C$.
5. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
6. Guaranteed by design, not subject to production.

Typical Characteristics

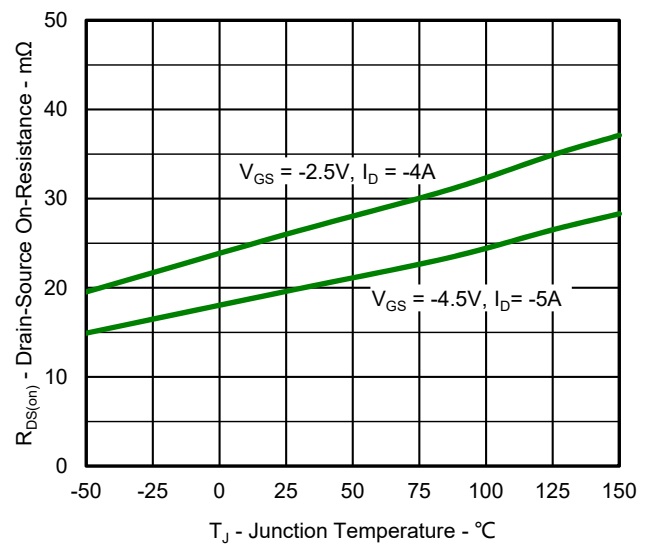
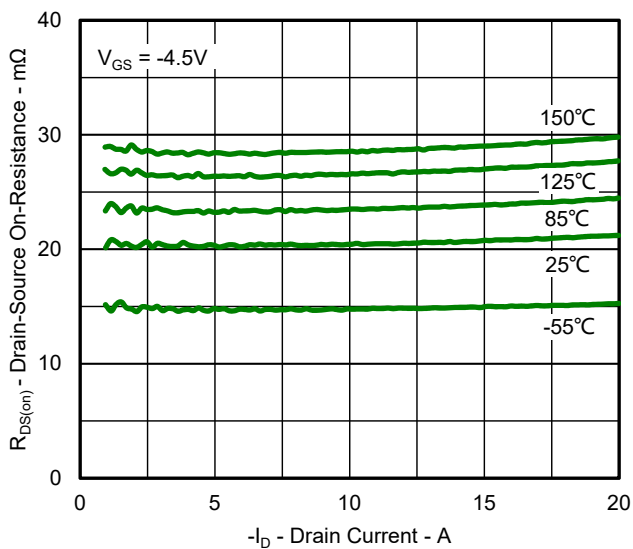
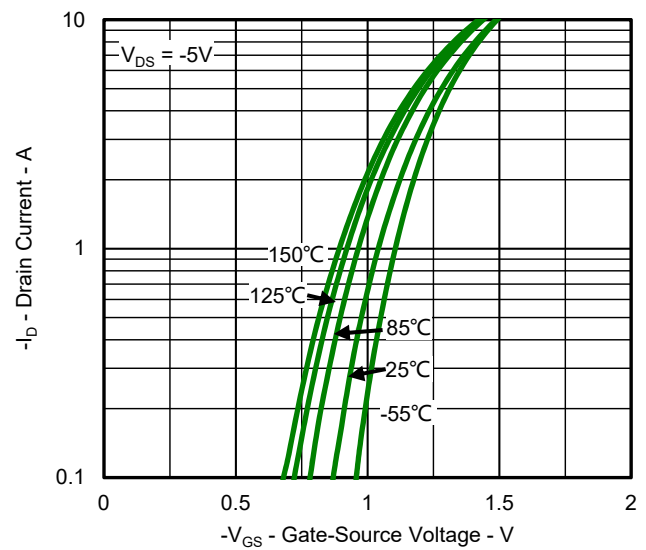
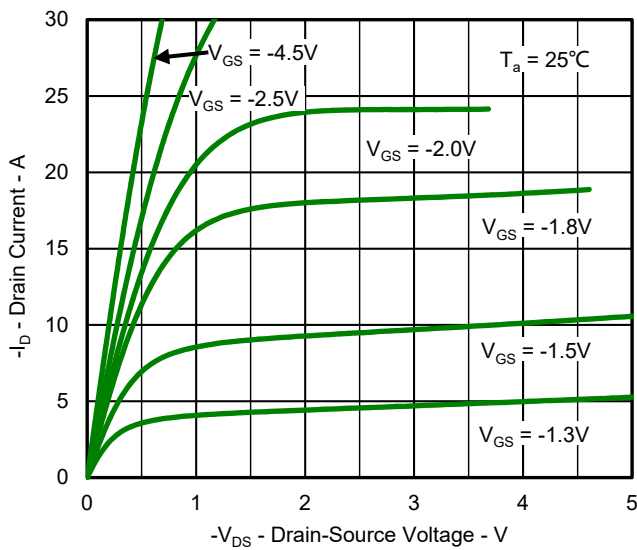
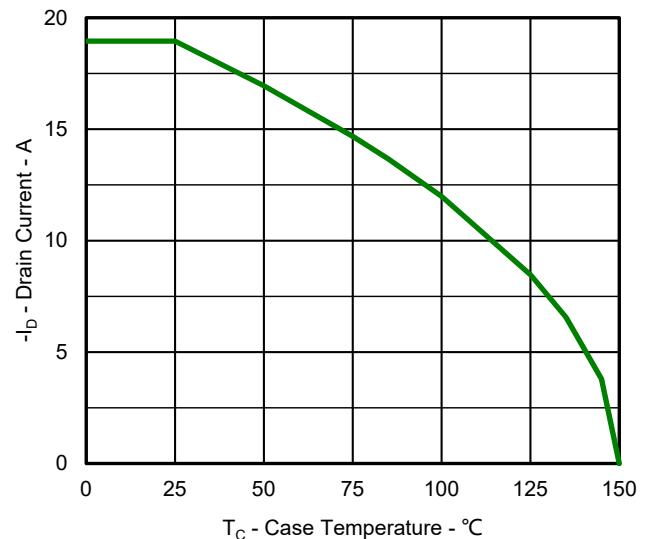
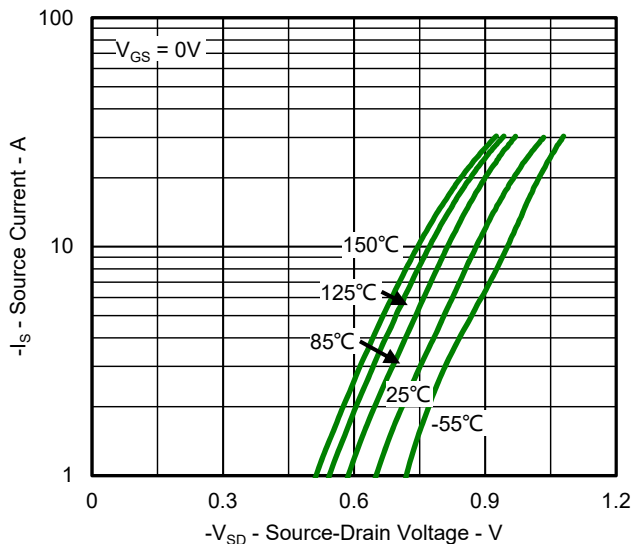


Fig.3 Typical On-Resistance vs Drain Current and Temperature

Fig.4 On-Resistance Variation with Temperature



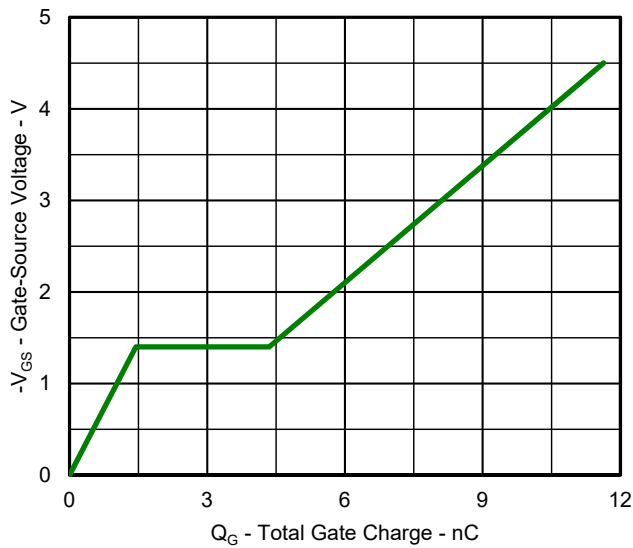


Fig.7 Gate Charge Characteristics

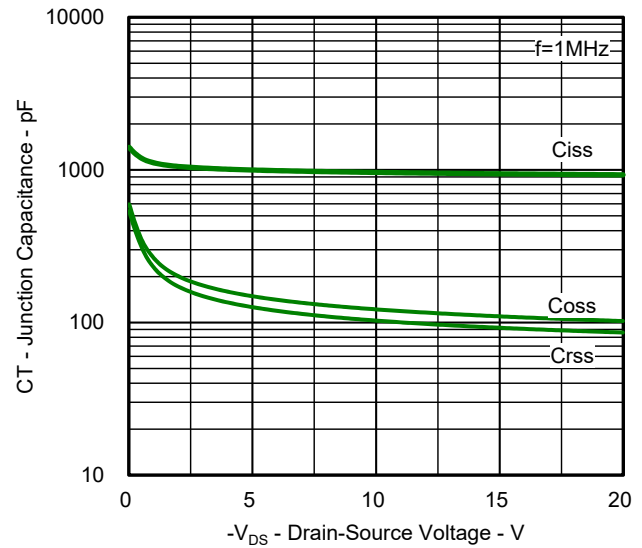


Fig.8 Typical Junction Capacitance

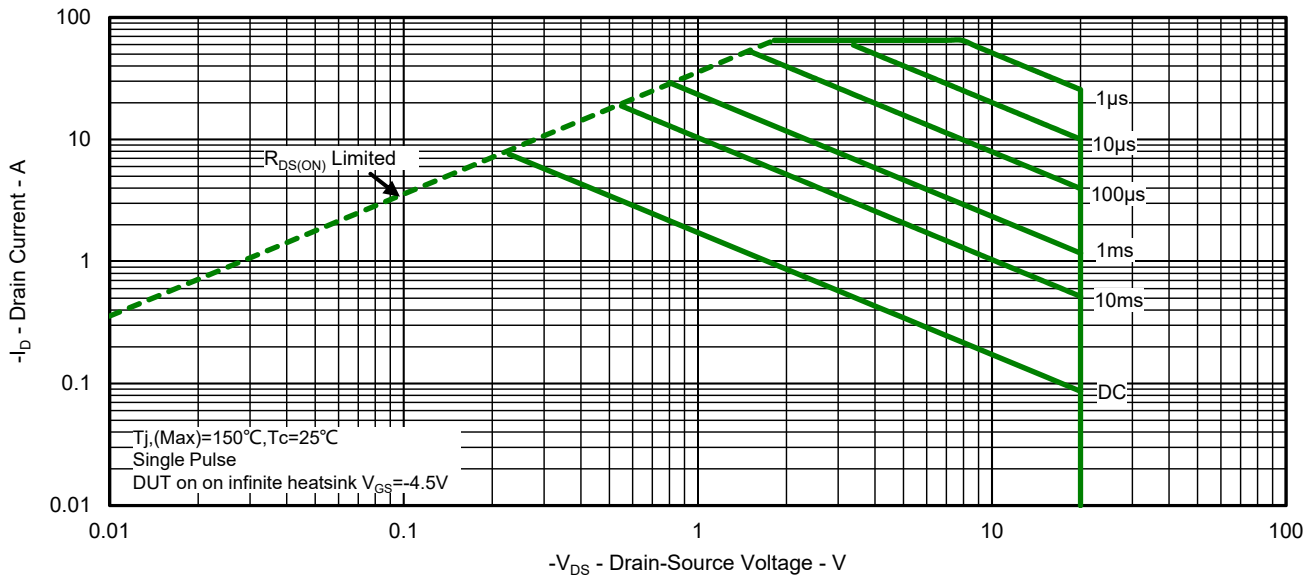


Fig.9 Safe Operation Area

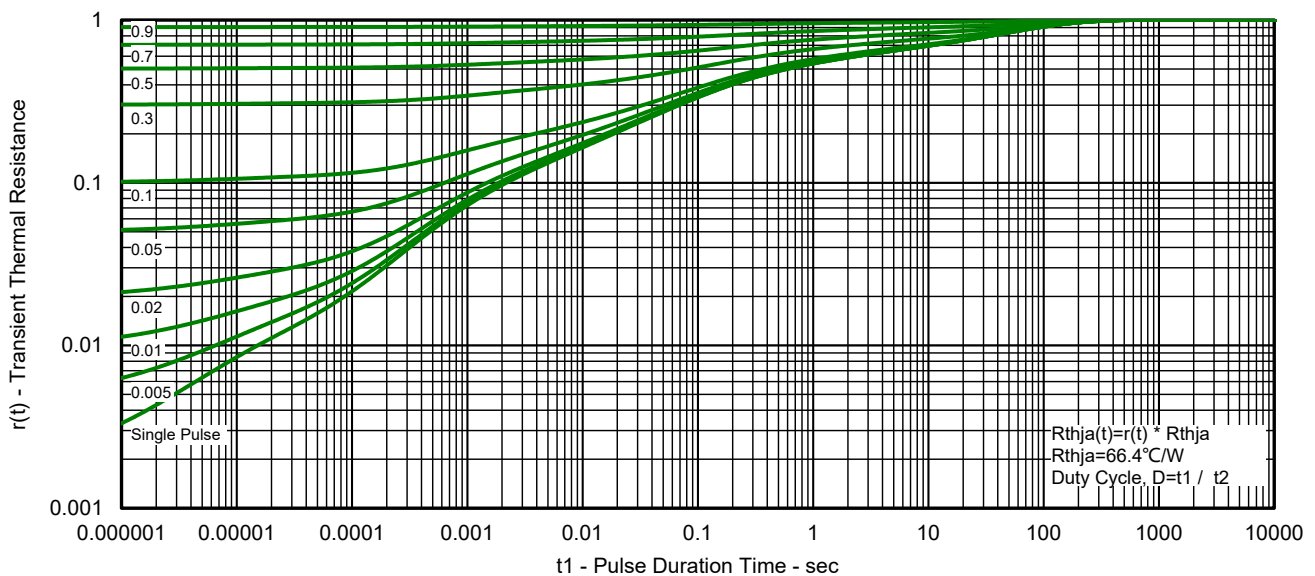
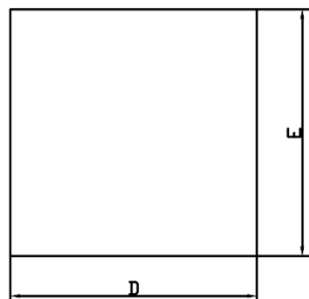
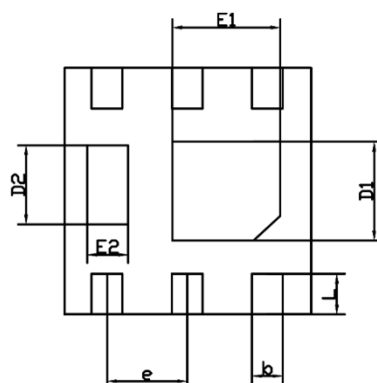


Fig.10 Transient Thermal Resistance

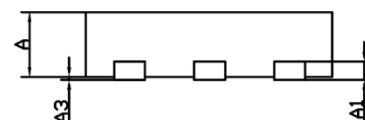
Product Dimension (DFN2020-6L)



Top View



Bottom View



Side View

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.50	0.60	0.020	0.024
A1	0.15 Ref.		0.006 Ref.	
A3	0.00	0.05	0.000	0.002
D	1.95	2.05	0.077	0.081
E	1.95	2.05	0.077	0.081
D1	0.875	0.925	0.034	0.036
D2	0.675	0.725	0.027	0.029
E1	0.875	0.925	0.034	0.036
E2	0.275	0.325	0.011	0.013
b	0.30 Ref.		0.012 Ref.	
e	0.65 Ref.		0.026 Ref.	
L	0.25	0.35	0.010	0.014

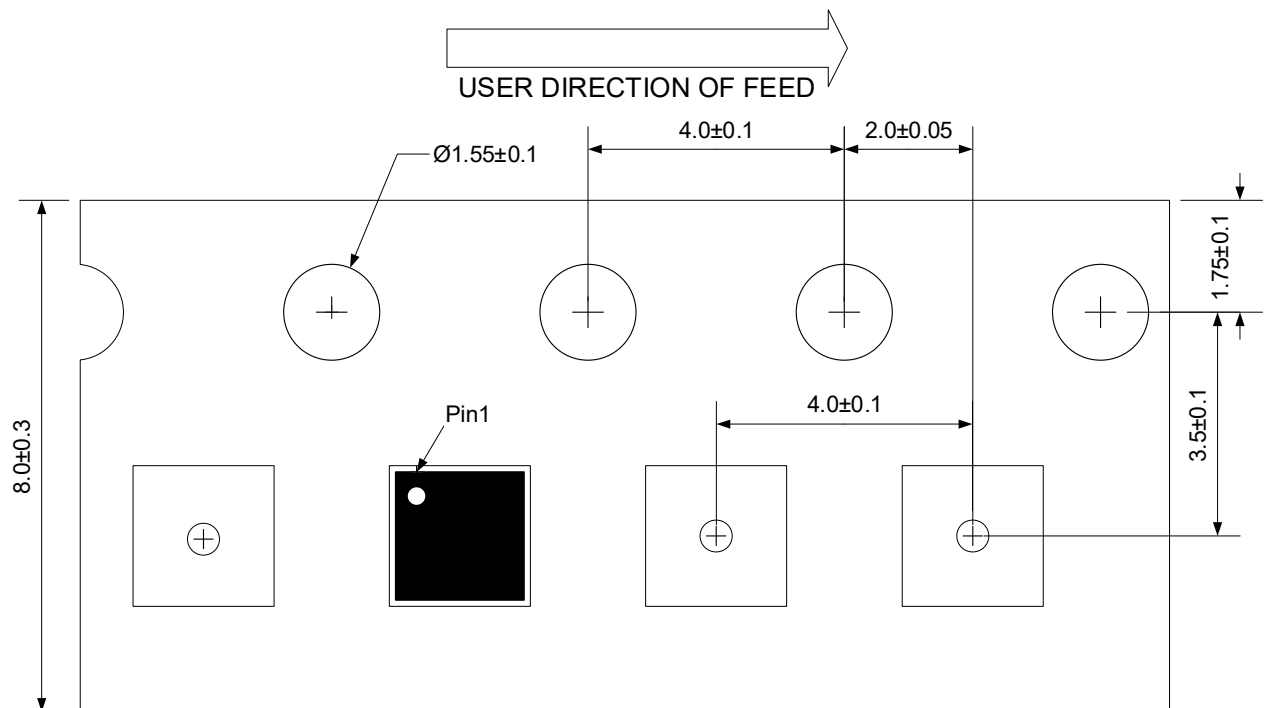
P-Channel MOSFET

PPM6N20V15

Ordering Information

Package	Reel	Shipping
DFN2020-6L	7"	3000 / Tape & Reel

Load With Information



Unit:mm

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