

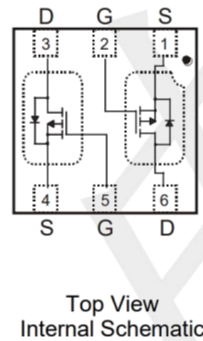
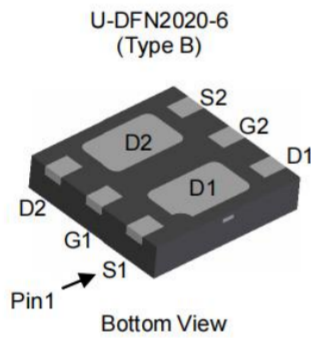
Product Summary

- V_{DS} -20 V
- I_{DS} (at $V_{GS}=-4.5V$) -4.2 A
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <58mΩ(TYP)

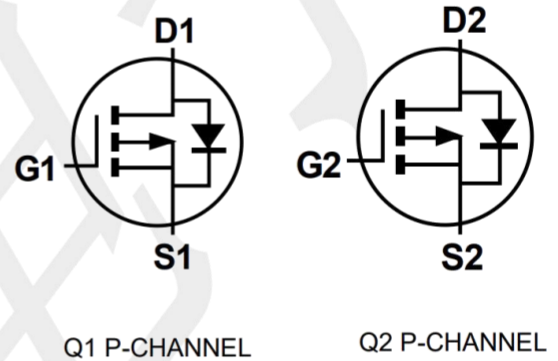
Application

- Reverse Battery protection
- Load switch
- Power management
- Motor Control
- Portable Power Adaptors

Package and Pin Configuration



Circuit diagram



Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

Characteristic	Symbol	Value	Unit	
Drain-Source Voltage	V_{DSS}	-20	V	
Gate-Source Voltage	V_{GSS}	±12	V	
Continuous Drain Current N-Channel: $V_{GS} = 4.5V$ P-Channel: $V_{GS} = -4.5V$	Steady State	$T_A=25^{\circ}C$	-4.2	A
		$T_A=70^{\circ}C$	-3.2	A
Pulsed Drain Current (10μs Pulse, Duty Cycle = 1%)	I_{DM}	-16	A	

Thermal Characteristic

PARAMETER	Symbol	Value	Unit
Total Power Dissipation (Note 1)	PD	1.36	W
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	92	$^{\circ}C/W$
Thermal Resistance, Junction to Case (Note 1)	$R_{\theta JC}$	18	$^{\circ}C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^{\circ}C$

Notes: 1. Device mounted on 1" × 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

Electrical Characteristics (@ TA = +25°C, unless otherwise specified.)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT	
OFF CHARACTERISTICS (Note 2)							
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BVDSS	-20	-23	--	V	
Zero Gate Voltage Drain Current $T_J = +25^\circ C$	$V_{DS}=-20V, V_{GS}= 0V$	I_{DSS}	--	--	-1	μA	
Gate-Source Leakage	$V_{DS}=0V, V_{GS}= \pm 12V$	I_{GSS}	--	--	± 100	nA	
ON CHARACTERISTICS (Note 2)							
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.4	-0.7	-1.0	V	
Static Drain-Source On-Resistance	$V_{GS}=-4.5V, I_D=-4.2A$	$R_{DS(on)}$	--	58	85	m Ω	
	$V_{GS}=-2.5V, I_D=-2.9A$		--	65	100		
Diode Forward Voltage	$V_{GS} = 0V, I_S = -4.2A$	VSD	--	-0.7	-1.2	V	
DYNAMIC CHARACTERISTICS (Note 3)							
Input Capacitance	$V_{DS} = -15V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	C_{iss}	--	540	--	pF	
Output Capacitance		C_{oss}	--	150	--		
Reverse Transfer Capacitance		C_{rss}	--	75	--		
Total Gate Charge ($V_{GS} = -4.5V$)	$V_{DS} = -10V,$ $I_D = -4.2A$	Q_g	--	12	--	nC	
Total Gate Charge ($V_{GS} = -2.5V$)			--	10	--		
Gate-Source Charge			Q_{gs}	--	2.4		--
Gate-Drain Charge			Q_{gd}	--	3.2		--
Turn-On Delay Time	$V_{DD} = -10V,$ $V_{GS} = -4.2V,$ $I_D = -1A,$ $R_G = 1\Omega$	$t_{D(ON)}$	--	8	--	nS	
Turn-On Delay Time		t_R	--	14	--		
Turn-Off Delay Time		$t_{D(OFF)}$	--	18	--		
Turn-Off Fall Time		t_F	--	10	--		
Body Diode Reverse Recovery Time		t_{RR}	--	7.6	--		
Body Diode Reverse Recovery Charge	Q_{RR}	--	0.9	--	nC		

- Notes:**
2. Short duration pulse test used to minimize self-heating effect.
 3. Guaranteed by design. Not subject to product testing.

Typical Performance Characteristics (TA=25°C unless otherwise Specified)

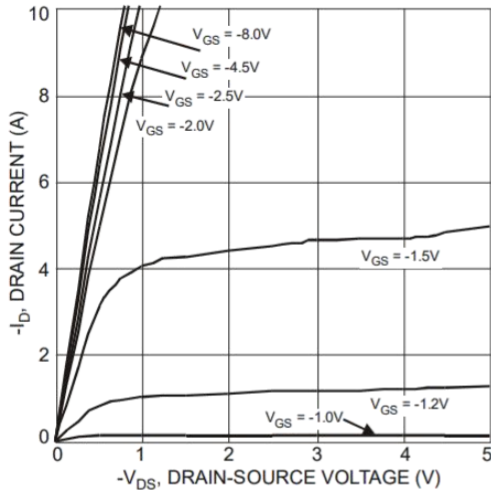


Fig. 1 Typical Output Characteristics

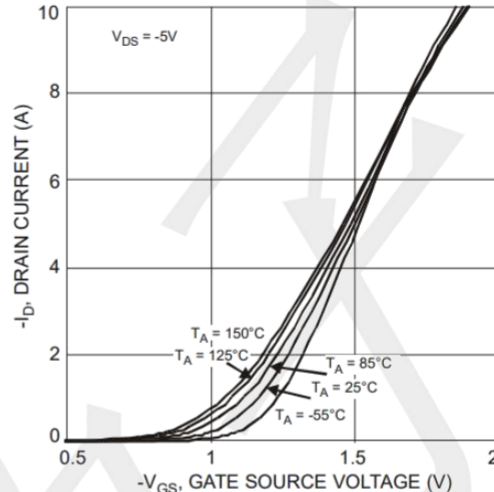


Fig. 2 Typical Transfer Characteristics

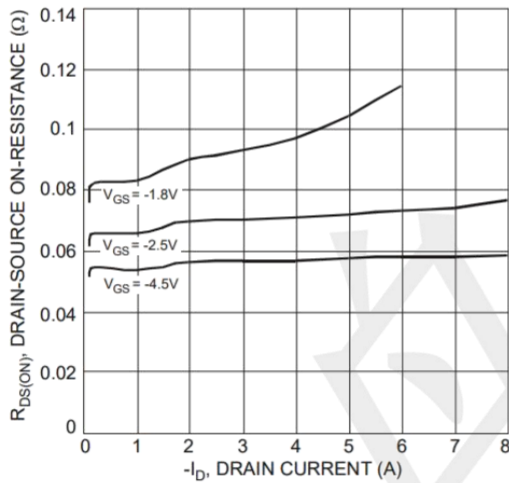


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

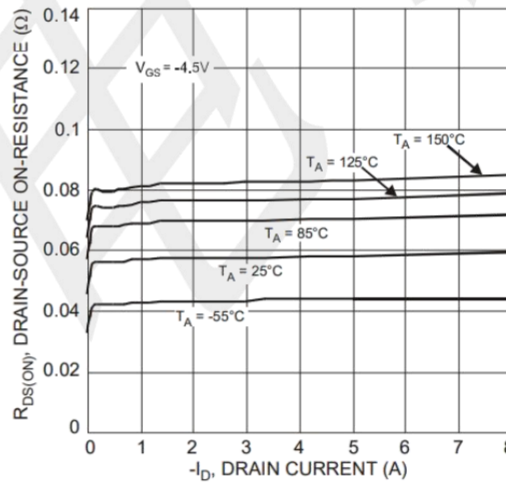


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

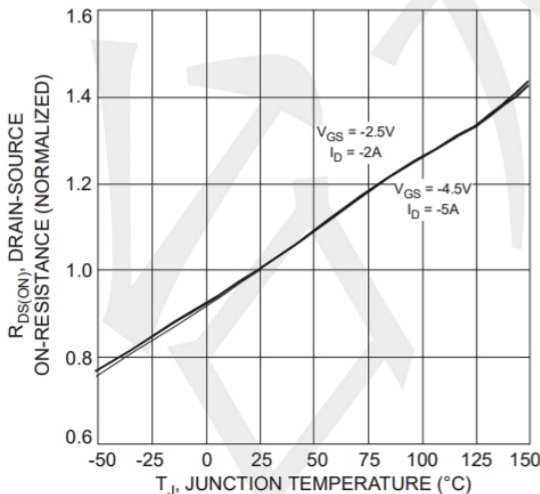


Fig. 5 On-Resistance Variation with Temperature

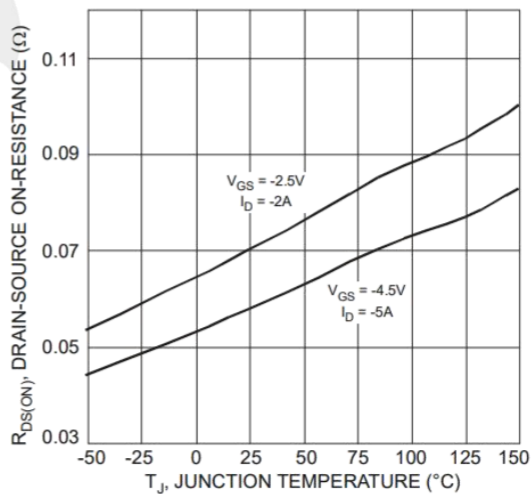
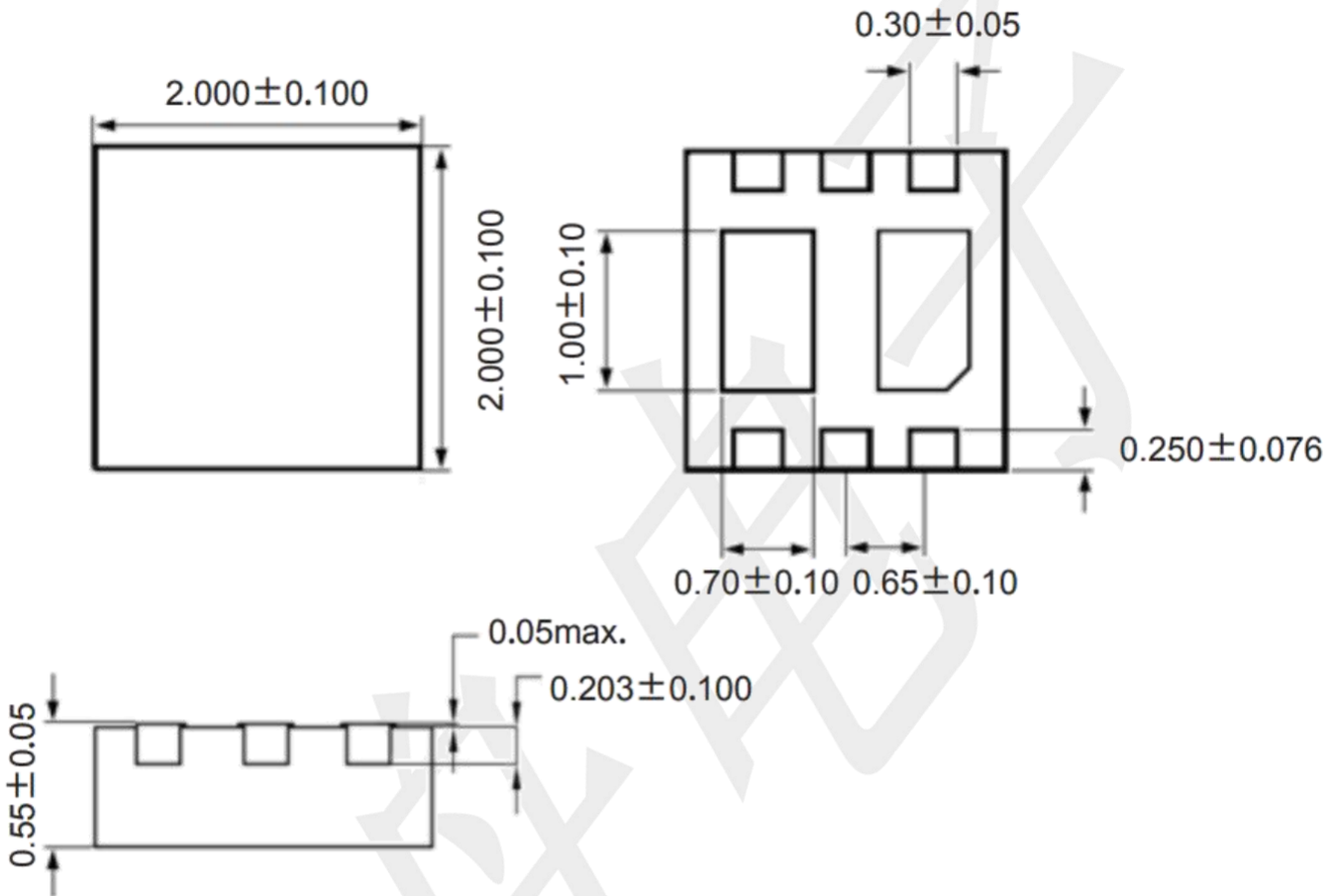


Fig. 6 On-Resistance Variation with Temperature

Package Outline Dimensions (unit: mm)

DFN2020-6



Mounting Pad Layout (unit: mm)

