

20V P-Channel Power MOSFET

UM8515 SOT23-6

General Description

The UM8515 is a low threshold P-channel MOSFET, have extremely low on-resistance. This benefit provides the designer with an extremely efficient device for use in battery and load management applications. The devices use a space-saving, small-outline SOT23-6 package.

Applications

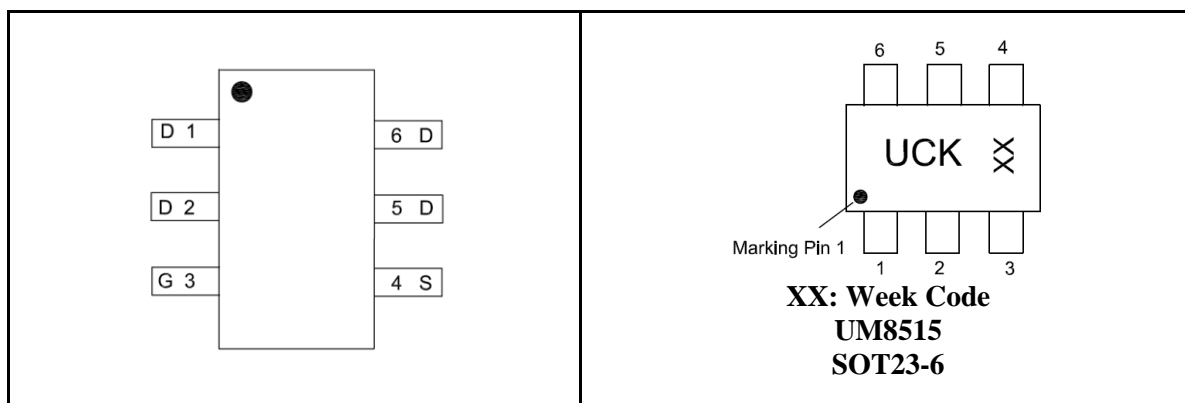
- Battery Packs
- Battery-Powered Portable Equipment
- Cellular and Cordless Telephones

Features

- Drain-Source Voltage (Max): -20V
- Low On-Resistance:
90mΩ@V_{GS}=-4.5V
110mΩ@V_{GS}=-2.5V
- Continuous Drain Current (Max): -2A@25°C

Pin Configurations

Top View



Ordering Information

Part Number	Packaging Type	Marking Code	Shipping Qty
UM8515	SOT23-6	UCK	3000pcs/7 Inch Tape & Reel

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
V _{DSS}	Drain-Source Voltage	-20	V
V _{GS}	Gate-Source Voltage	±8	V
I _D	Continuous Drain Current	-2.0	A
I _{DM}	Drain Current Pulsed	-10	A
P _D	Power Dissipation	0.7	W
T _J	Junction Temperature	-55~150	°C
T _{stg}	Storage Temperature	-55~150	°C
R _{θJA}	Thermal Resistance, Junction-to-Ambient	100	°C/W

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
BV _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V			-1	μA
I _{GSS}	Gate-to-Source Leakage Current	V _{GS} =±8V, V _{DS} =0V			±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-to-Source On-Resistance	V _{GS} =-4.5V, I _D =-2.8A		90	110	mΩ
		V _{GS} =-2.5V, I _D =-2A		110	150	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =-250μA	-0.4	-0.6	-1	V
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-2.7A		7.0		S
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, f=1.0MHz		480		pF
C _{oss}	Output Capacitance			46		
C _{rss}	Reverse Transfer Capacitance			10		
Switching Characteristics						
Q _{g(TOT)}	Total Gate Charge	V _{DS} =-6V, V _{GS} =-4.5V, I _D =-2.8A		7.2		nC
Q _{g(TH)}	Threshold Gate Charge			2.2		
Q _{gs}	Gate-Source Charge			2.2		
Q _{gd}	Gate-Drain Charge			1.2		
td(on)	Turn-on Delay Time	V _{GS} =-4.5V, V _{DS} =-6V, R _L =6Ω, R _G =6Ω		38		ns
tr	Rise Time			25		
td(off)	Turn-off Delay Time			43		
tf	Fall Time			5		
Drain-Source Diode Characteristics and Maximum Ratings						
V _{SD}	Forward Diode Voltage	V _{GS} =0V, I _S =-1A		-0.7	-1.4	V

Typical Characteristics (T_J=25°C, unless otherwise noted)

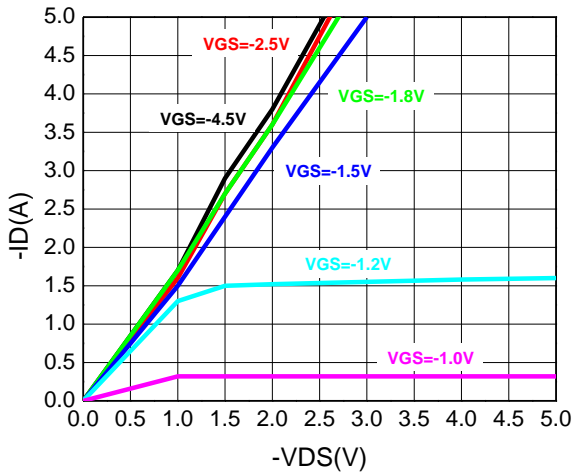


Fig1. Typical Output Characteristics

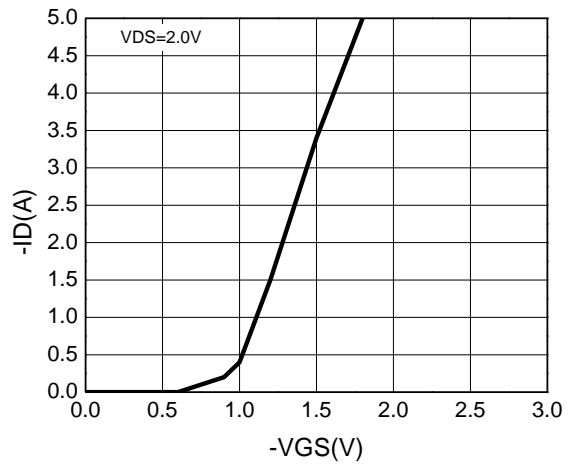


Fig2. Typical Transfer Characteristics

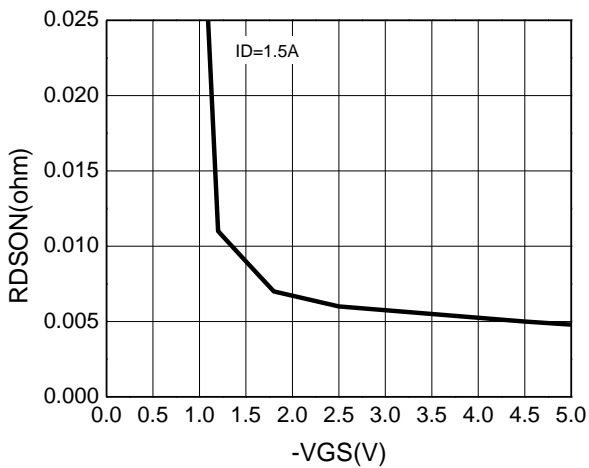


Fig3. On-Resistance vs. Gate-to-Source Voltage

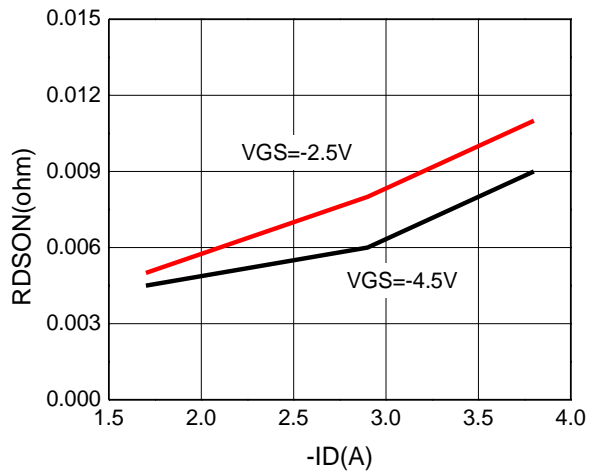


Fig4. On-Resistance vs. Drain Current

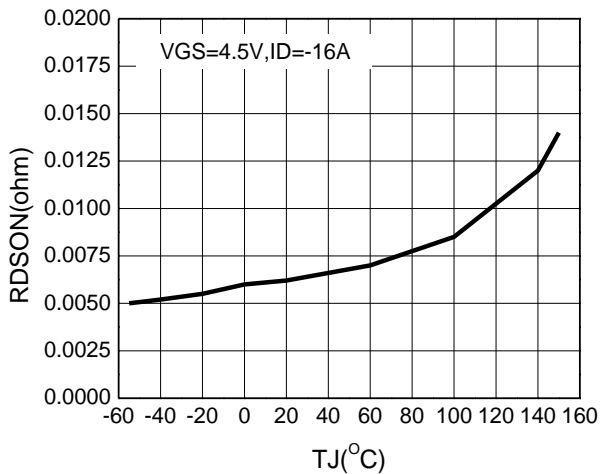


Fig5. On-Resistance vs. Junction Temperature

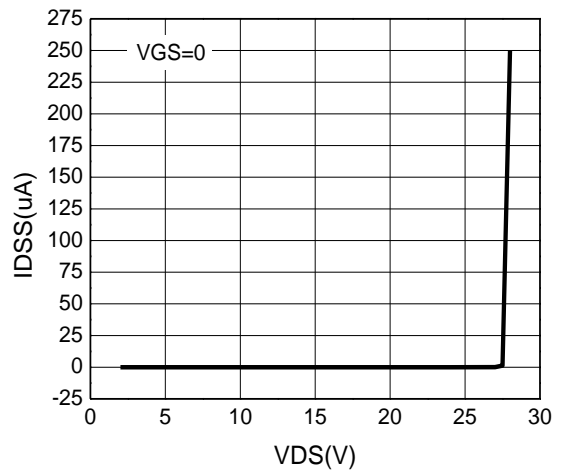
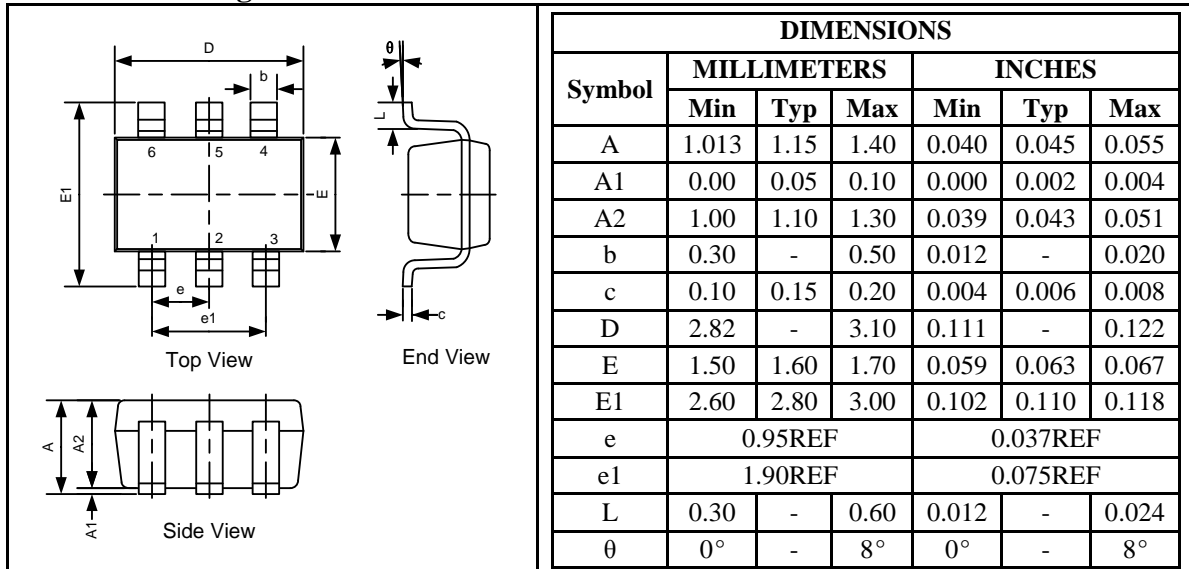


Fig6. IDS vs. Drain-to-Source Voltage

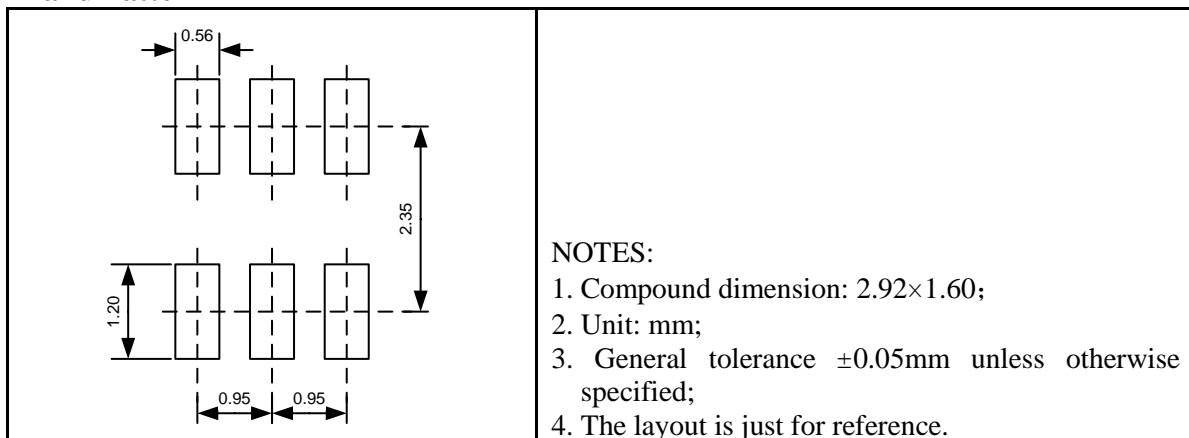
Package Information

UM8515 SOT23-6

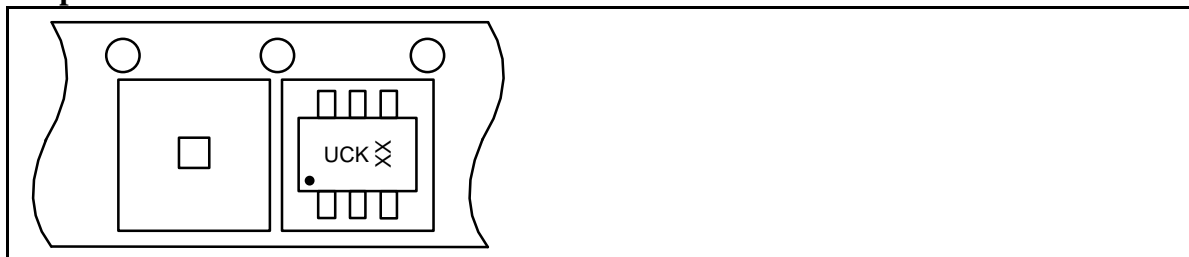
Outline Drawing



Land Pattern



Tape and Reel Orientation



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