

20V N-Channel Power MOSFET

UM8120DA DFN3 1.0×0.6

General Description

The UM8120DA is a low threshold N-channel MOSFET with extremely low on-resistance. This benefit provides the designer with an excellent efficient device for use in battery and load management applications. The device is available in a space-saving, small-outline DFN3 1.0×0.6 package.

Applications

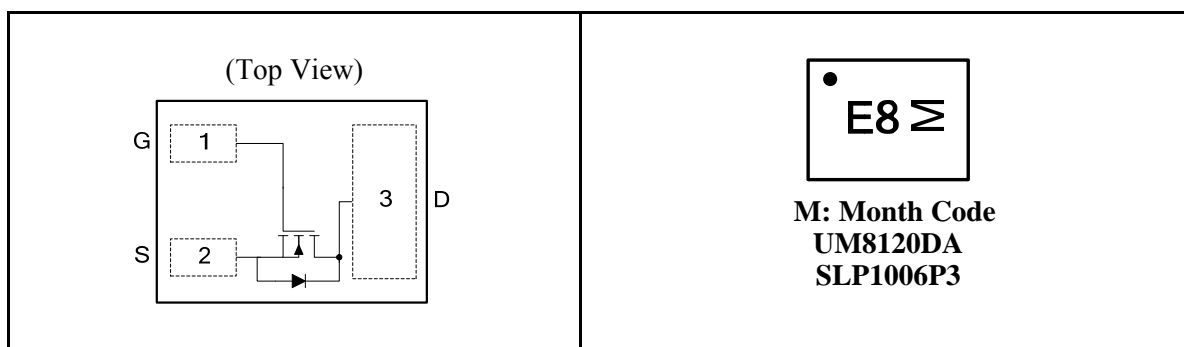
- Load Switch
- Battery Packs
- Battery-Powered Portable Equipments
- Cellular and Cordless Telephones

Features

- Drain-Source Voltage (Max): 20V
- Low On-Resistance:
160mΩ@V_{GS}=4.5V, I_D=0.6A
210mΩ@V_{GS}=2.5V, I_D=0.3A
270mΩ@V_{GS}=1.8V, I_D=0.2A
- Continuous Drain Current (Max):
0.6A@25°C

Pin Configurations

Top View



Ordering Information

Part Number	Packaging Type	Marking Code	Shipping Qty
UM8120DA	DFN3 1.0×0.6	E8	10000pcs/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 (5s)	0.6	A
I_{DP}	Drain Current Pulsed (Pulse Width $\leq 10\mu s$, Duty Cycle $\leq 1\%$)	3.6	A
P_D	Power Dissipation ($T_A=25^\circ C$)	0.23	W
T_J	Junction Temperature	-55~150	$^\circ C$
T_{stg}	Storage Temperature	-55~150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient ($\leq 5s$)	540	$^\circ C/W$

Electrical Characteristics ($T_J=25^\circ C$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
BV_{DSS}	Drain-to-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$			0.1	μA
I_{GSS}	Gate-to-Source Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$			± 10	μA
On Characteristics						
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance (Note 1)	$V_{GS}=4.5V, I_D=0.6A$		160	240	m Ω
		$V_{GS}=2.5V, I_D=0.3A$		200	300	
		$V_{GS}=1.8V, I_D=0.2A$		300	400	
$V_{GS(TH)}$	Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.8	1.1	V
g_{fs}	Forward Transconductance (Note 1)	$V_{DS}=5V, I_D=100mA$		0.5		S
Dynamic Characteristics (Note 2)						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=10V,$ $f=1.0MHz$		120		pF
C_{oss}	Output Capacitance			25		
C_{rss}	Reverse Transfer Capacitance			10		
Switching Characteristics (Note 2)						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=5V, I_D=0.3A,$ $V_{GS}=4.5V, R_G=6\Omega$		10		ns
t_r	Rise Time			40		
$t_{d(off)}$	Turn-off Delay Time			30		
t_f	Fall Time			30		
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Forward Diode Voltage	$I_S=0.6A, V_{GS}=0V$		0.8	1.2	V

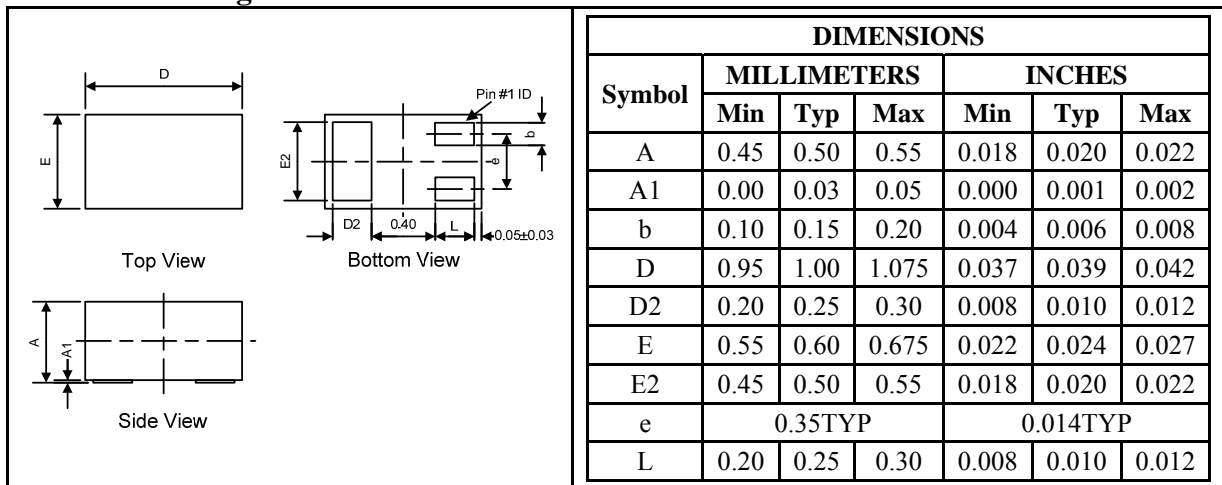
Note 1: Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

Note 2: Guaranteed by design, not subject to production testing.

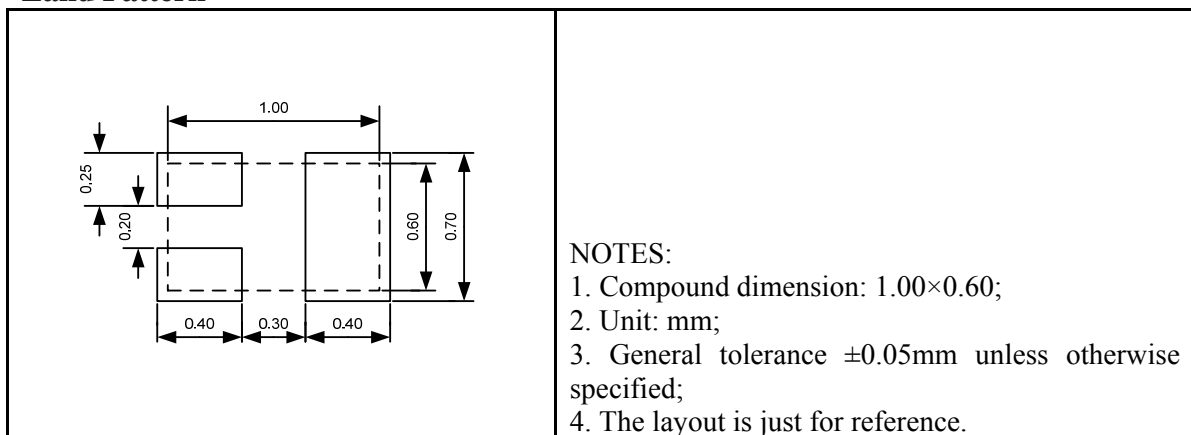
Package Information

UM8120DA DFN3 1.0×0.6

Outline Drawing



Land Pattern



Tape and Reel Orientation



GREEN COMPLIANCE

Union Semiconductor is committed to environmental excellence in all aspects of its operations including meeting or exceeding regulatory requirements with respect to the use of hazardous substances. Numerous successful programs have been implemented to reduce the use of hazardous substances and/or emissions.

All Union components are compliant with the RoHS directive, which helps to support customers in their compliance with environmental directives. For more green compliance information, please visit:

http://www.union-ic.com/index.aspx?cat_code=RoHSDeclaration

IMPORTANT NOTICE

The information in this document has been carefully reviewed and is believed to be accurate. Nonetheless, this document is subject to change without notice. Union assumes no responsibility for any inaccuracies that may be contained in this document, and makes no commitment to update or to keep current the contained information, or to notify a person or organization of any update. Union reserves the right to make changes, at any time, in order to improve reliability, function or design and to attempt to supply the best product possible.