

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

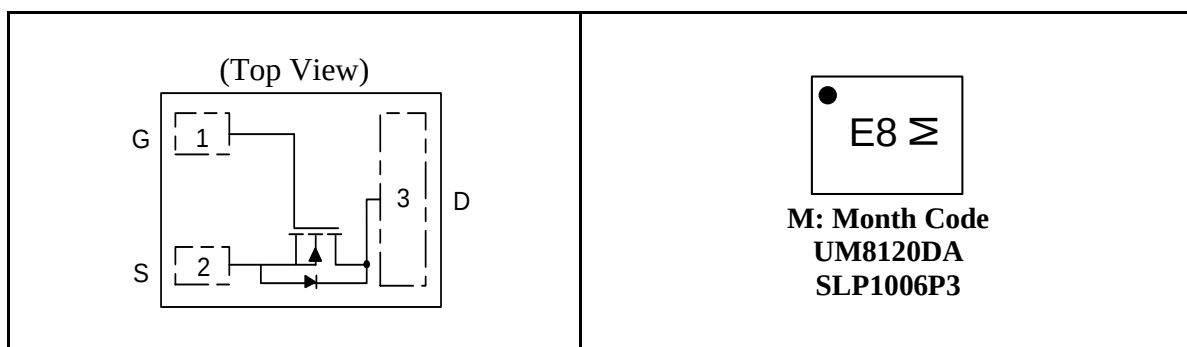
- Load Switch
- Battery Packs
- Battery-Powered Portable Equipments
- Cellular and Cordless Telephones

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℃

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 =250μA	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} =±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	mΩ
		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 =250μA	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)						
td(on)	Turn-on Delay Time	V _{DD} = 5V ,I _D =0.3A, V _{GS} =4.5V, R _G =6Ω		10		ns
tr	Rise Time			40		
td(off)	Turn-off Delay Time			30		
tf	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

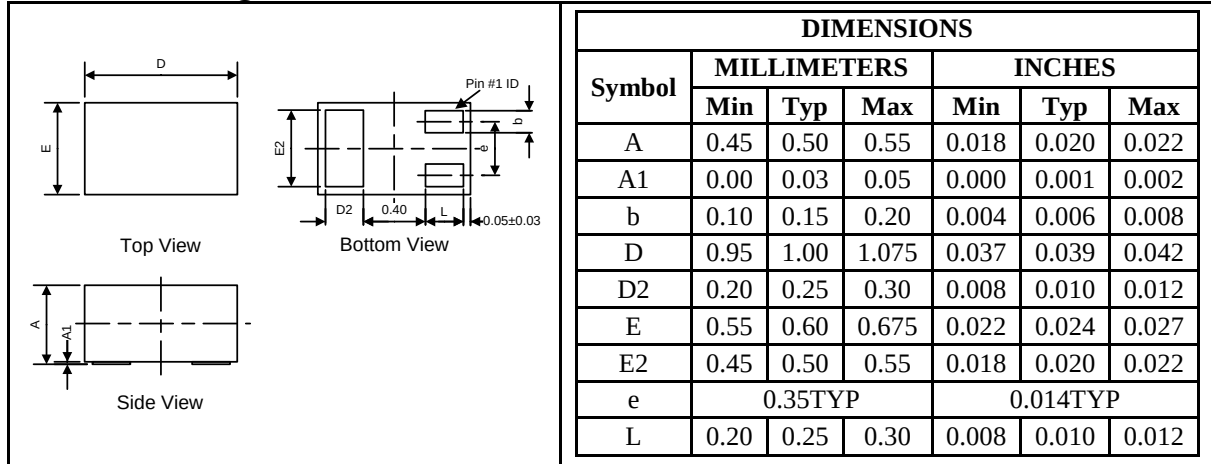
Note 1: Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

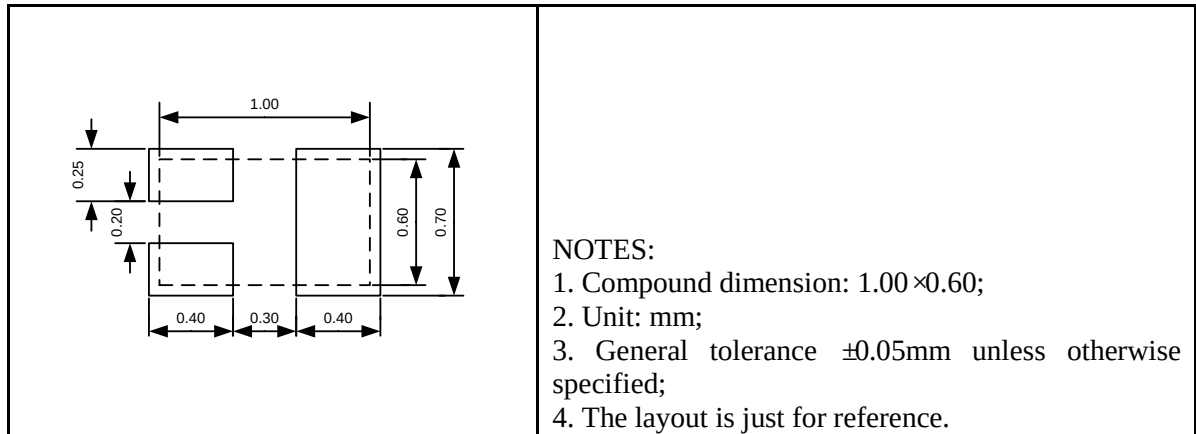
Package Information

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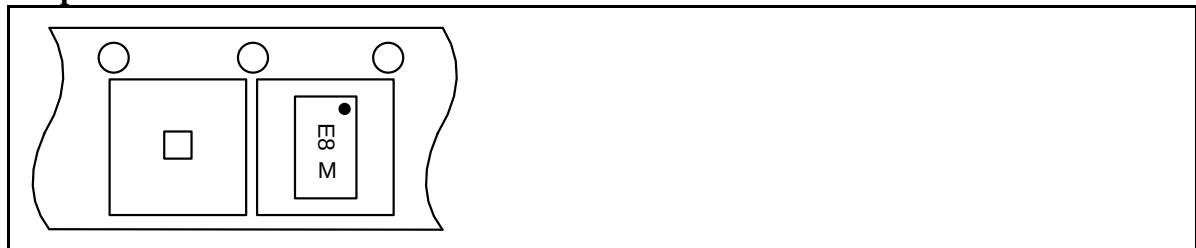
Outline Drawing



Land Pattern



Tape and Reel Orientation



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