

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

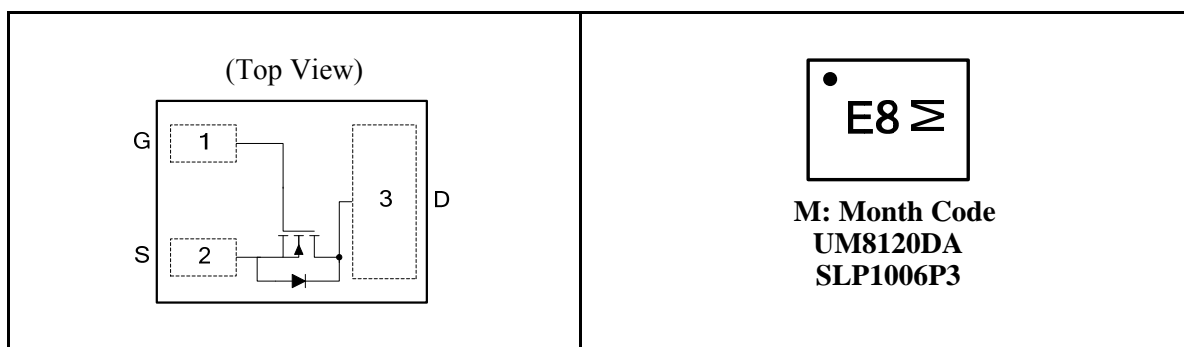
- Load Switch
- Battery Packs
- Battery-Powered Portable Equipments
- Cellular and Cordless Telephones

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	$^\circ C/W$
ESD	ESD Method 3015.8	2000	V

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

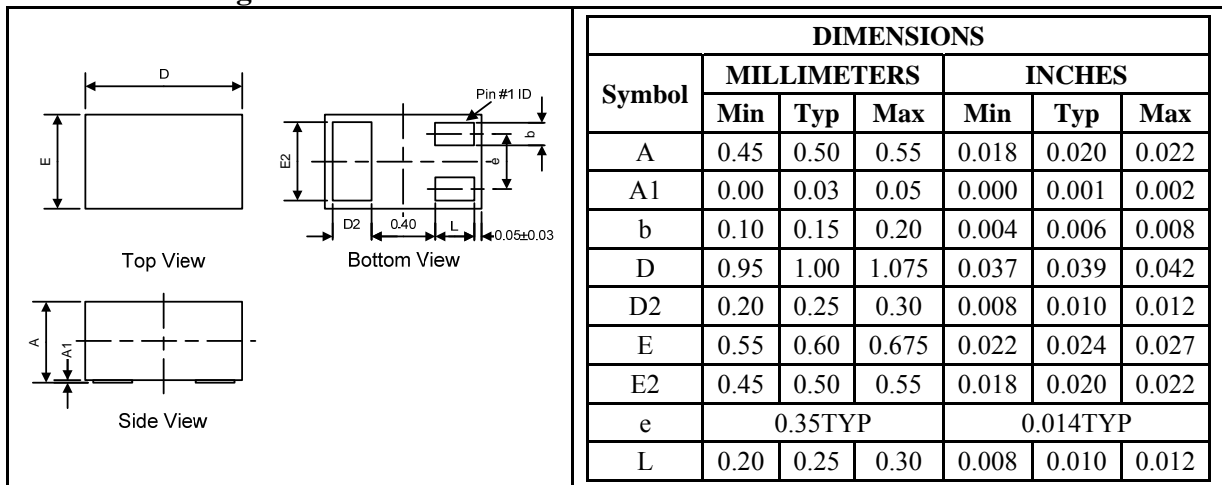
Note 1: Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

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

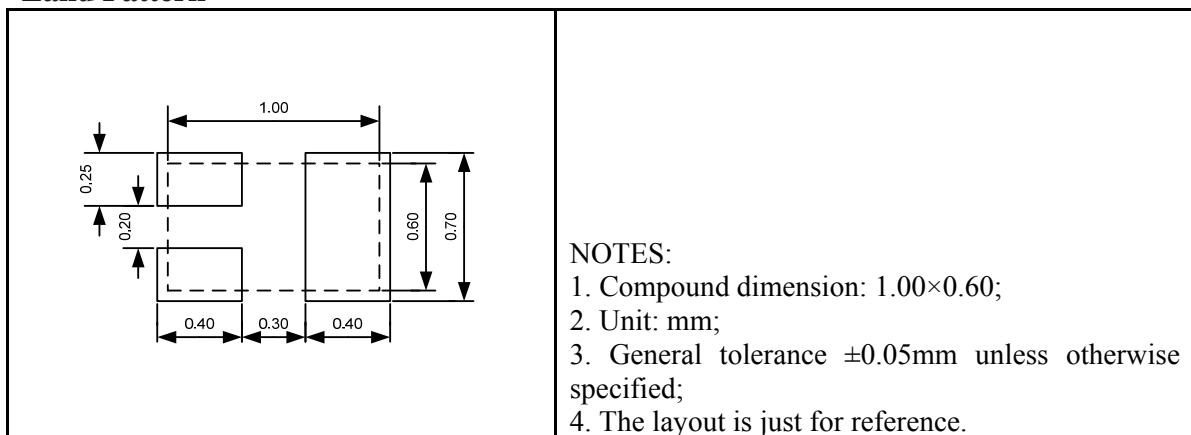
Package Information

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Outline Drawing



Land Pattern



Tape and Reel Orientation



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