



## General Description

The UV3008DN uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge.

This device is suitable for use in PWM, load switching and general purpose applications.

## Features

Enhancement Mode

Enhanced Body diode dv/dt capability

100% Avalanche Tested

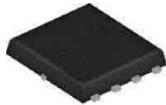
$V_{DS}$	30	V
$R_{DS(on)type}@V_{GS}=10V$	8.5	mΩ
$R_{DS(on) type}@V_{GS}=4.5V$	12.5	mΩ
$I_D$	40	A

## Applications

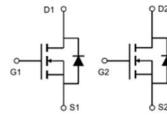
Power switching application

Hard Switched and High Frequency Circuits

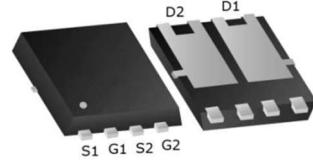
Uninterruptible Power Supply



DFN3\*3-8L Top view



Schematic diagram



S1 G1 S2 G2

## Package Marking And Ordering Information

Part ID	Package Type	Marking	Tape and Reel information
UV3008DN	DFN3*3-8L	UV3008DN	5000pcs/Reel

## Maximum ratings, at $T_j=25^\circ\text{C}$ , unless otherwise specified

Symbol	Parameter	Rating	Unit
$V_{(BR)DSS}$	Drain –Source breakdown voltage	30	V
$I_D$	Continuous drain current (Silicon Limited)	$T_c=25^\circ\text{C}$	A
		$T_c=75^\circ\text{C}$	A
$I_{DM}$	Pulse drain current tested①	$T_c=25^\circ\text{C}$	A
$E_{AS}$	Avalanche energy, single pulsed②	28	mJ
$P_D$	Maximum power dissipation	$T_c=25^\circ\text{C}$	W
$V_{GS}$	Gate-Source voltage	$\pm 20$	V
$T_{STG} T_J$	Storage and operating temperature range	-55 to 150	°C



## Thermal Characteristic

Symbol	Parameter	Typical	Unit
$R_{QJC}$	Thermal Resistance-Junction to Case	0.8	°C/W
$R_{QJA}$	Thermal Resistance-Junction to Ambient	40	°C/W

## Typical Characteristics

Symbol	Parameter	Condition	Min	Type	Max	Unit
Static Electrical Characteristics @ $T_j=25^\circ\text{C}$ ( unless otherwise stated )						
$V_{(\text{BR})DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0\text{V}$ , $I_D=250\mu\text{A}$	30			V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=24\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20\text{V}$ , $V_{DS}=0\text{V}$			$\pm 100$	nA
$V_{GS(\text{TH})}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$ , $I_D=250\mu\text{A}$	1.4		2.5	V
$R_{DS(\text{ON})}$	Drain-Source On-State Resistance③	$V_{GS}=10\text{V}$ , $I_D=12\text{A}$		8.5	11.5	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}$ , $I_D=10\text{A}$		12.5	16	$\text{m}\Omega$
$G_{fs}$	Forward Transconductance	$V_{DS}=5\text{V}$ , $I_D=10\text{A}$		12	20	S
Dynamic Electrical Characteristics @ $T_j=25^\circ\text{C}$ ( unless otherwise stated )						
$C_{iss}$	Input Capacitance	$V_{DS}=15\text{V}$ , $V_{GS}=0\text{V}$ , $F=1\text{MHz}$		860		PF
$C_{oss}$	Output Capacitance			134		PF
$C_{rss}$	Reverse Transfer Capacitance			99		PF
$R_g$	Gate resistance	$F=1.0\text{MHz}$		2.2		$\Omega$
$Q_g$	Total Gate Charge	$V_{DS}=15\text{V}$ , $I_D=12\text{A}$ , $V_{GS}=10\text{V}$		19.5		nC
$Q_{gs}$	Gate-Source Charge			4.1		nC
$Q_{gd}$	Gate-Drain Charge			3.1		nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay time	$V_{DS}=15\text{V}$ , $I_D=12\text{A}$ , $R_G=3\Omega$ , $V_{GS}=10\text{V}$		17.5		nS
$t_r$	Turn-on Rise time			17		nS
$t_{d(off)}$	Turn-off Delay time			63		nS
$t_f$	Turn-off Fall time			32		nS
Source-Drain Diode Characteristics						
$V_{SD}$	Forward voltage	$I_S=1\text{A}$ , $V_{GS}=0\text{V}$			1.2	V

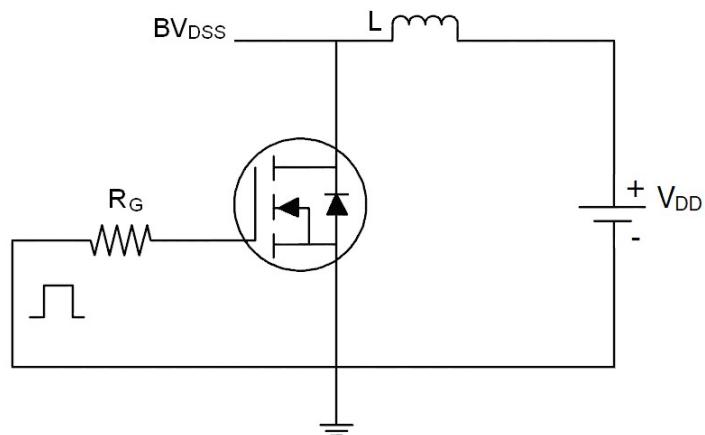
Note:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by  $T_{J\max}$ , starting  $T_j=25^\circ\text{C}$ ,  $L=0.1\text{mH}$ ,  $R_G=25\Omega$ ,  $I_{AS}=12\text{A}$ ,  $V_{DD}=24\text{V}$ , Part not recommended for use above this value
- ③ Pulse width  $\leq 300\mu\text{s}$ ; duty cycle  $\leq 2\%$

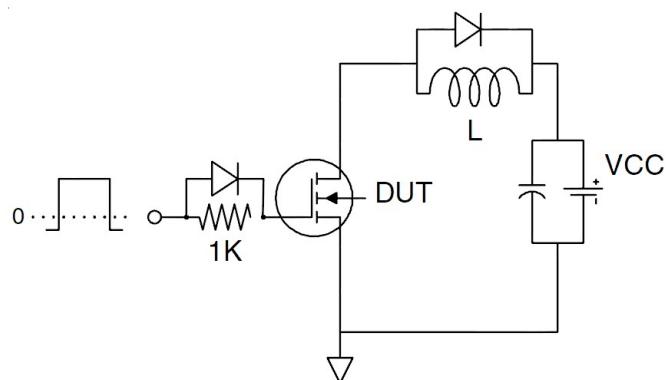


## Test circuit

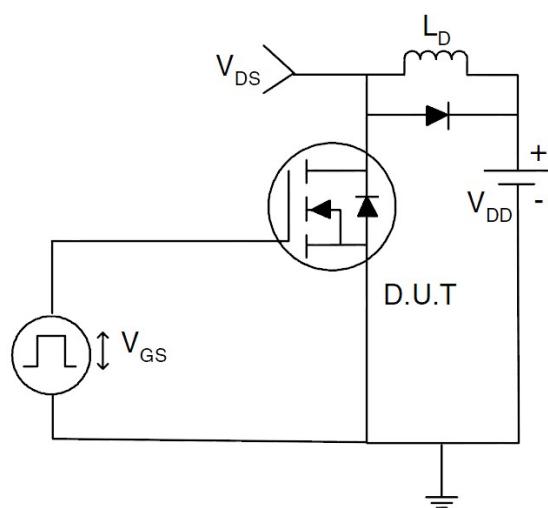
### (1) E<sub>AS</sub> test circuits



### (2) Gate charge test circuit

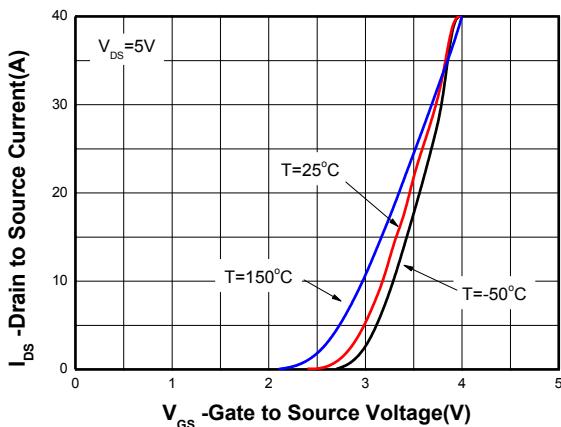
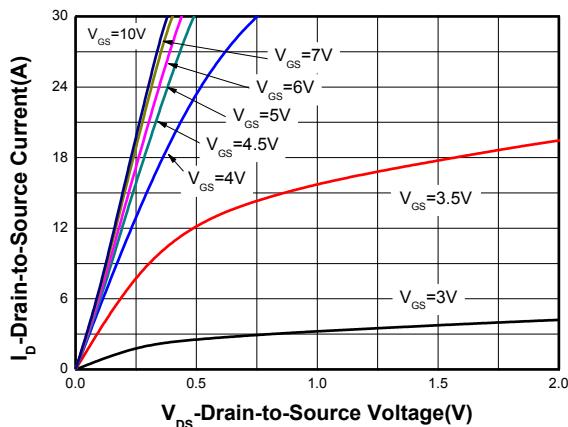


### (3) Switch time test circuit

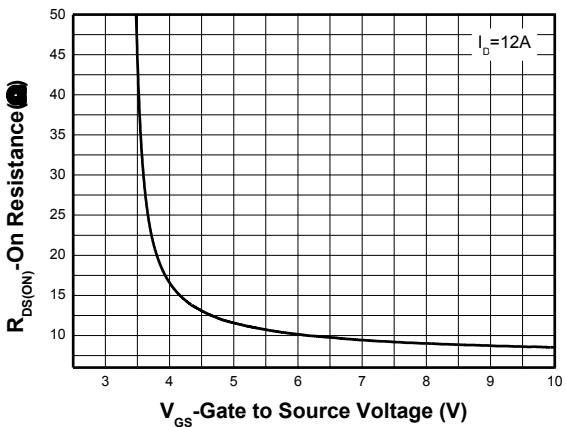
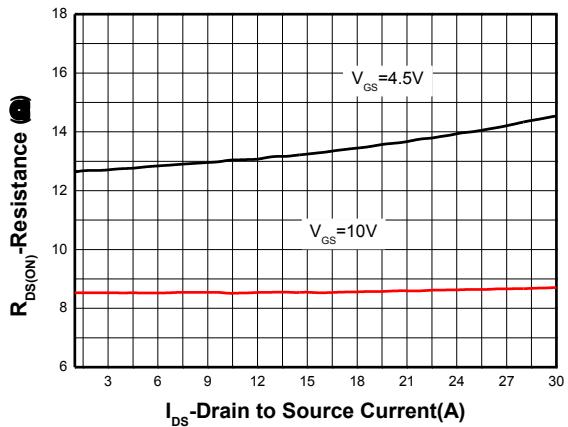




### Typical Characteristics (Ta=25°C, unless otherwise noted)

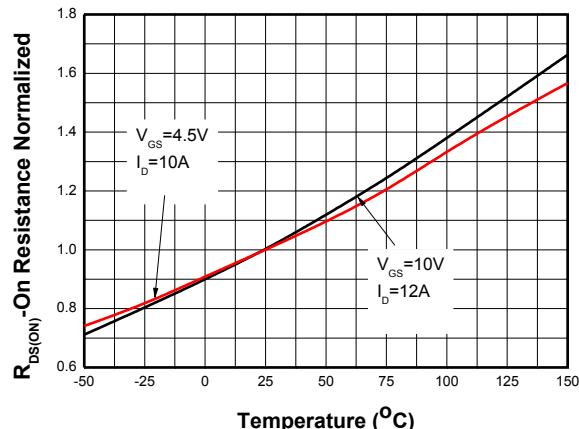


Output Characteristics <sup>d</sup>

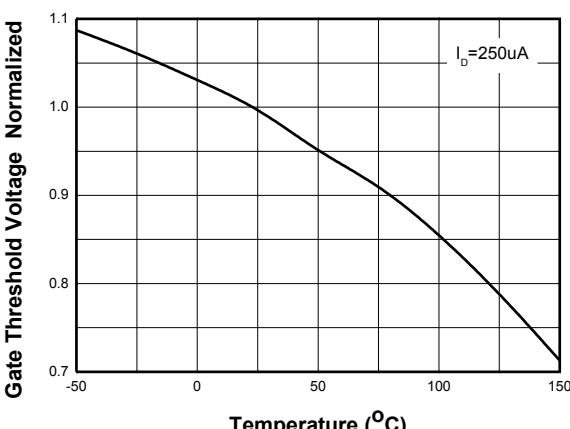


On-Resistance vs. Drain Current <sup>d</sup>

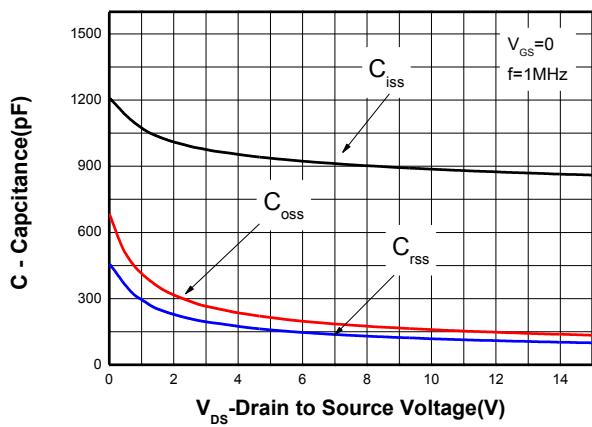
On-Resistance vs. Gate-to-Source Voltage <sup>d</sup>



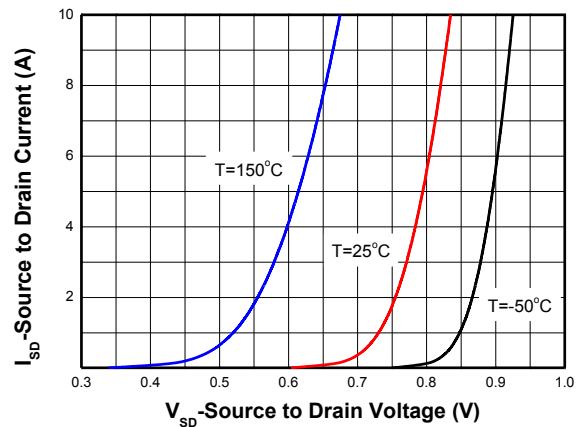
On-Resistance vs. Junction Temperature <sup>d</sup>



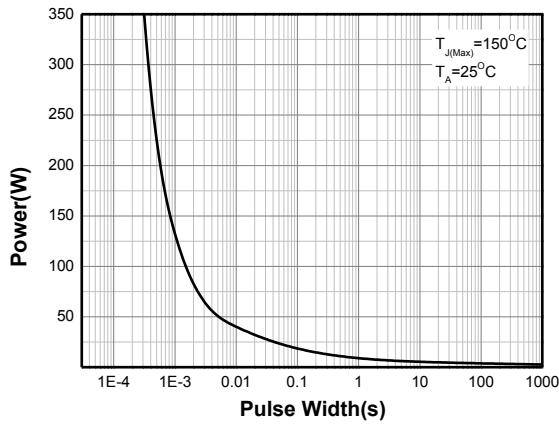
Threshold Voltage vs. Temperature



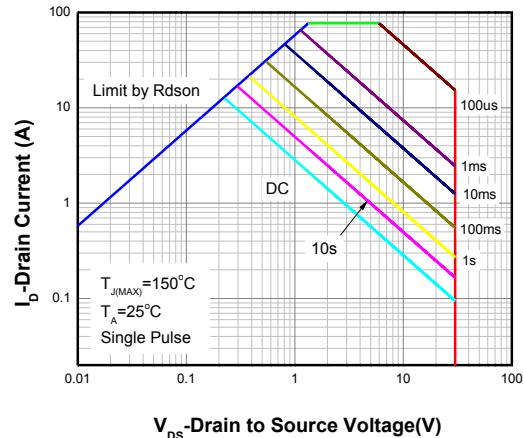
Capacitance



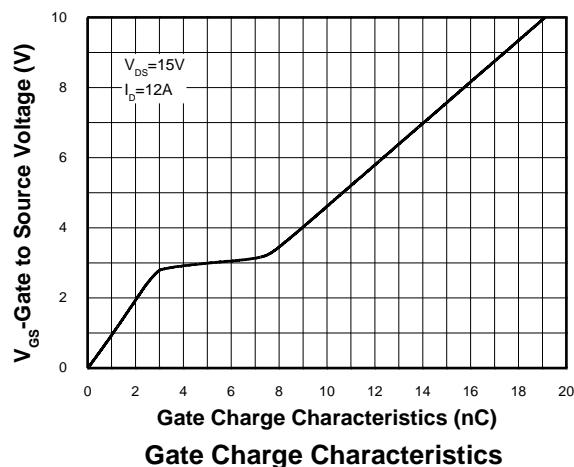
Body Diode Forward Voltage <sup>d</sup>



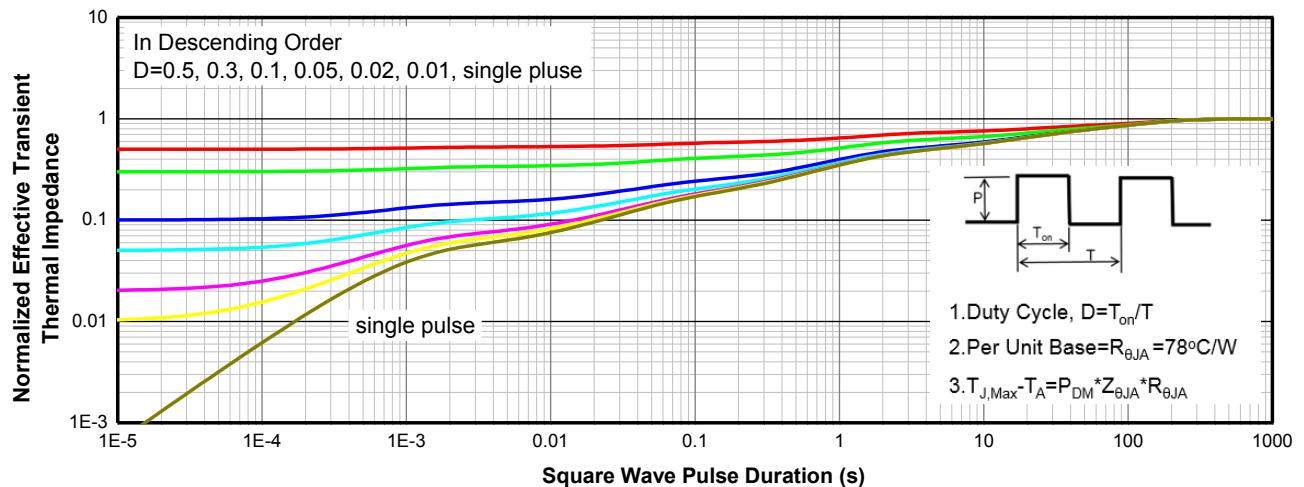
Single Pulse power



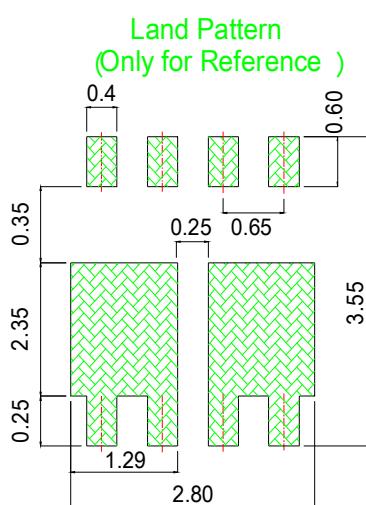
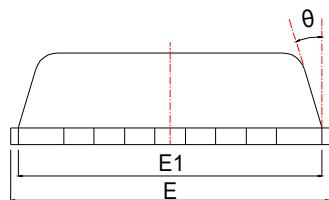
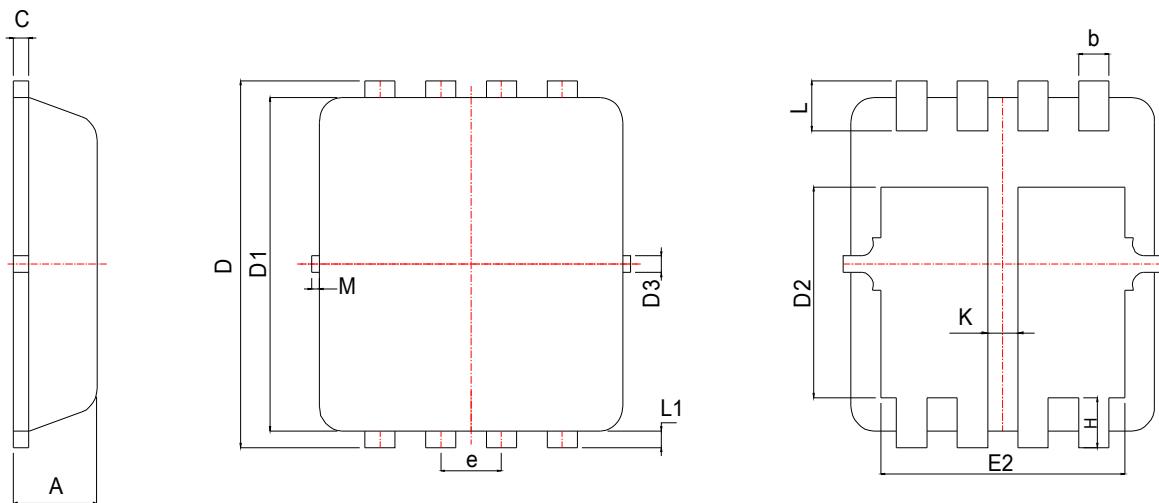
Safe Operating Power



Gate Charge Characteristics



Transient thermal response (Junction-to-Ambient)



SYMBOL	MM			INCH			SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX		MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031	E1	3.00	3.15	3.20	0.118	0.122	0.126
b	0.25	0.30	0.35	0.010	0.012	0.014	E2	2.39	2.49	2.59	0.094	0.098	0.102
c	0.10	0.15	0.25	0.004	0.007	0.010	e	0.65BSC			0.026BSC		
D	3.25	3.35	3.45	0.128	0.132	0.136	H	0.30	0.40	0.50	0.012	0.016	0.020
D1	3.00	3.10	3.20	0.118	0.122	0.126	L	0.30	0.40	0.50	0.012	0.016	0.020
D2	1.78	1.88	1.98	0.070	0.074	0.078	L1	*	0.13	*	*	0.005	*
D3	*	0.13	*	*	0.005	*	θ	*	10°	12°	*	10°	12°
E	3.20	3.30	3.40	0.126	0.130	0.134	M	*	*	0.15	*	*	0.006
K	0.30	*	*	0.012	*	*							