



General Description

The UV250N08Q 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

Very low on-resistance $R_{DS(on)}$ @ $V_{GS}=10V$

100% Avalanche Tested

Pb-free lead plating; ROHS compliant

VDS	80	V
$R_{DS(on)\ TYP}$ @ $V_{GS}=10V$	3.7	$m\Omega$
I_D	250	A

Applications

Power switching application

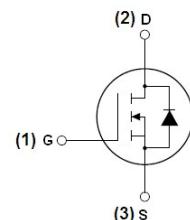
Hard Switched and High Frequency Circuits

Uninterruptible Power Supply

Isolated DC/DC Converters in Telecom and Industrial



TO-247-3L Top view



Schematic diagram

Package Marking And Ordering Information

Part ID	Package Type	Marking	Tape and Reel information
UV250N08Q	TO-247-3L	UV250N08Q	30pcs/Tube

Maximum ratings, at $T_j=25^\circ C$, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain –Source breakdown voltage		80	V
I_S	Diode continuous forward current	$T_c=25^\circ C$	250	A
I_D	Continuous drain current @ $V_{GS}=10V$	$T_c=25^\circ C$	250	A
		$T_c=100^\circ C$	160	A
I_{DM}	Pulse drain current tested①	$T_c=25^\circ C$	400	A
E_{AS}	Avalanche energy, single pulsed②		1750	mJ
P_D	Maximum power dissipation	$T_c=25^\circ C$	320	W
V_{GS}	Gate-Source voltage		± 30	V
$T_{STG}\ T_J$	Storage and operating temperature range		-55 to 175	°C



Thermal Characteristic

Symbol	Parameter	Typical	Unit
R_{QJC}	Thermal Resistance-Junction to Case	0.43	°C/W
R_{QJA}	Thermal Resistance-Junction to Ambient	62.5	°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	$V_{GS}=0\text{V}$ $I_D=250\mu\text{A}$	80			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			1	μA
	Zero Gate Voltage Drain Current($T_j=125^\circ\text{C}$)	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$			100	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 25\text{V}$, $V_{DS}=0\text{V}$			± 100	nA
$V_{GS(\text{TH})}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	2		4	V
$R_{DS(\text{ON})}$	Drain-Source On-State Resistance③	$V_{GS}=10\text{V}$, $I_D=20\text{A}$		3.5	4	$\text{m}\Omega$
Dynamic Electrical Characteristics @ $T_j=25^\circ\text{C}$ (unless otherwise stated)						
C_{iss}	Input Capacitance	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$, $f=1\text{MHz}$		6800		PF
C_{oss}	Output Capacitance			1100		PF
C_{rss}	Reverse Transfer Capacitance			480		PF
R_g	Gate Resistance	$f=1\text{MHz}$		2		Ω
Q_g	Total Gate Charge	$V_{DS}=64\text{V}$, $I_D=80\text{A}$, $V_{GS}=10\text{V}$		155		nC
Q_{gs}	Gate-Source Charge			45		nC
Q_{gd}	Gate-Drain Charge			48		nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay time	$V_{DD}=30\text{V}$, $I_D=1\text{A}$, $R_G=2.3\ \Omega$, $V_{GS}=10\text{V}$		38		nS
t_r	Turn-on Rise time			22		nS
$t_{d(off)}$	Turn-off Delay time			124		nS
t_f	Turn-off Fall time			75		nS
Source-Drain Diode Characteristics						
V_{SD}	Forward on voltage	$I_{SD}=20\text{A}$, $V_{GS}=0\text{V}$		0.8	1.3	V
t_{rr}	Reverse Recovery Time	$T_j=25^\circ\text{C}$, $I_{SD}=40\text{A}$, $V_{GS}=0\text{V}$, $di/dt=500\text{A}/\mu\text{s}$		68		nS
Q_{rr}	Reverse Recovery Charge			130		nC

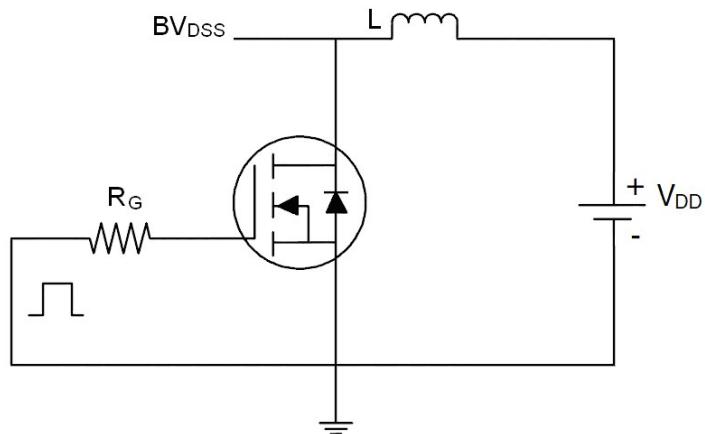
Note:

- ① Repetitive rating; pulse width limited by max, junction temperature.
- ② Limited by T_j max, starting $T_j=25^\circ\text{C}$, $L=0.5\text{mH}$, $R_G=25\ \Omega$, $I_{AS}=20\text{A}$, $V_{GS}=10\text{V}$, Part not recommended for use above this value
- ③ Pulse width $\leq 300\mu\text{s}$; duty cycle $\leq 2\%$

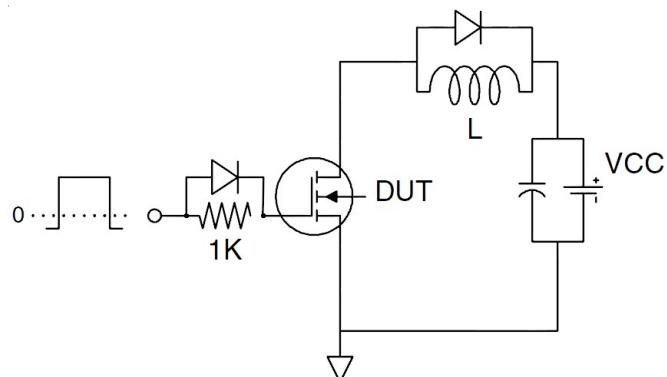


Test circuit

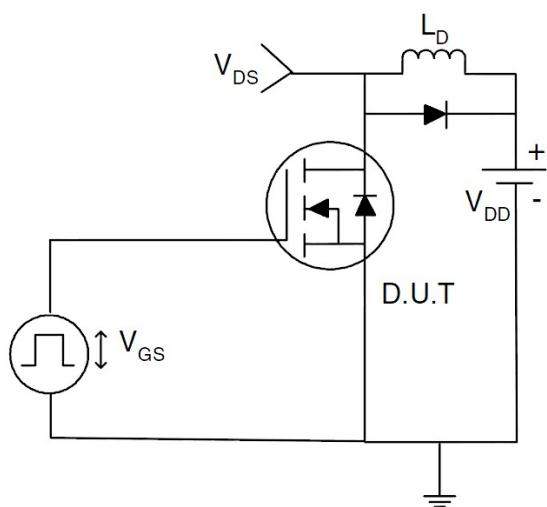
(1) E_{AS} test circuits



(2) Gate charge test circuit

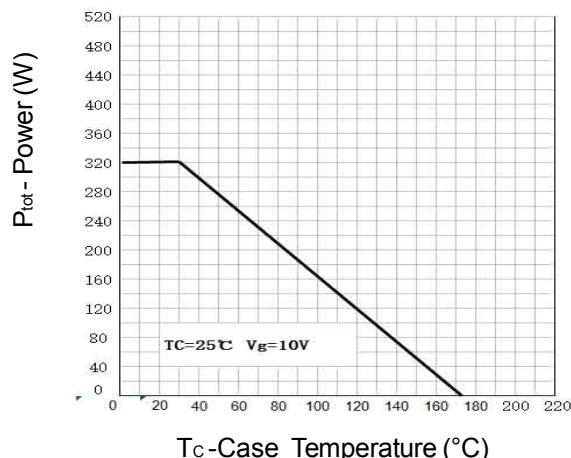


(3) Switch time test circuit

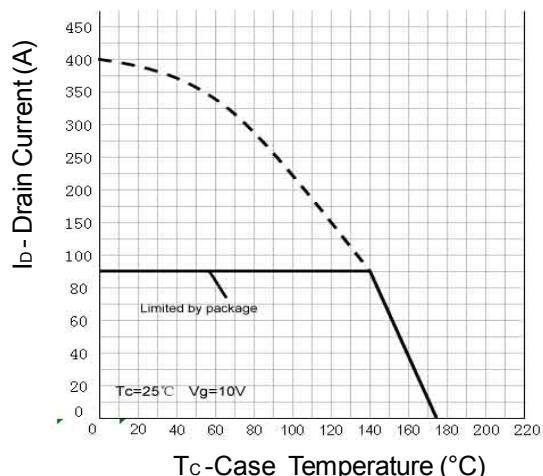


Typical Operating Characteristics

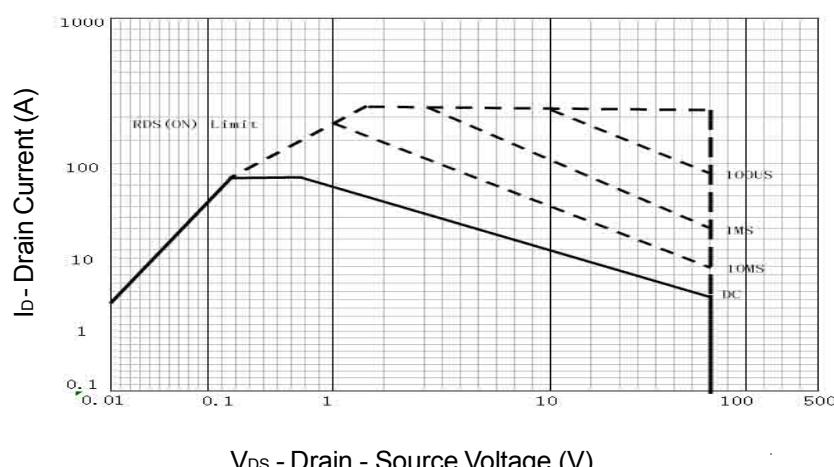
Power Dissipation



Drain Current

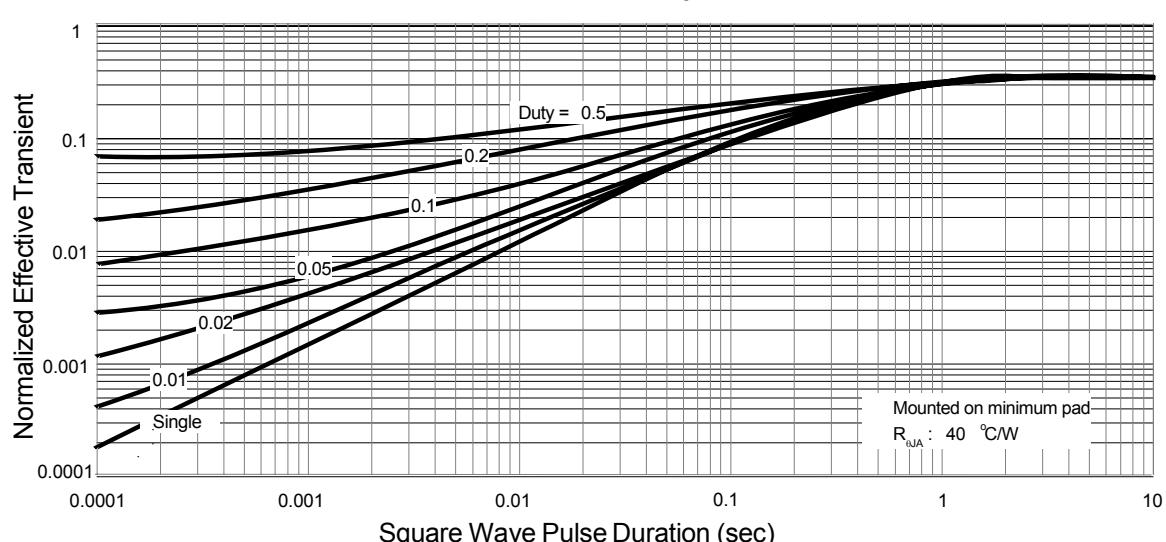


Safe Operation Area

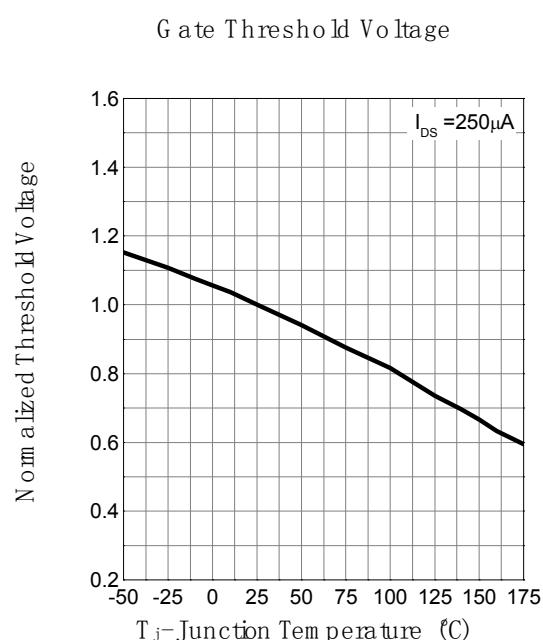
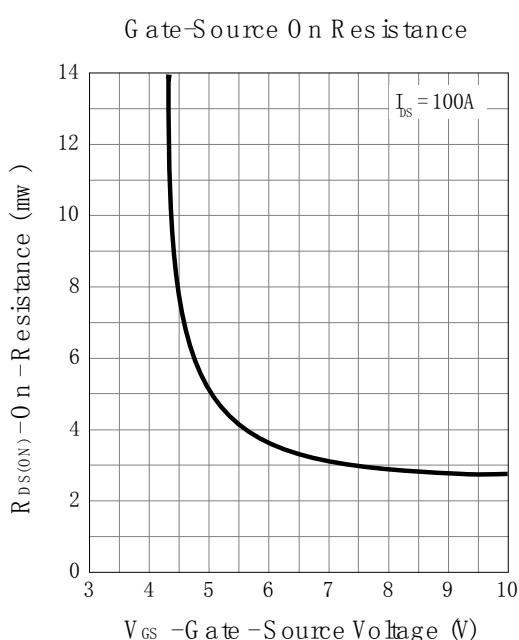
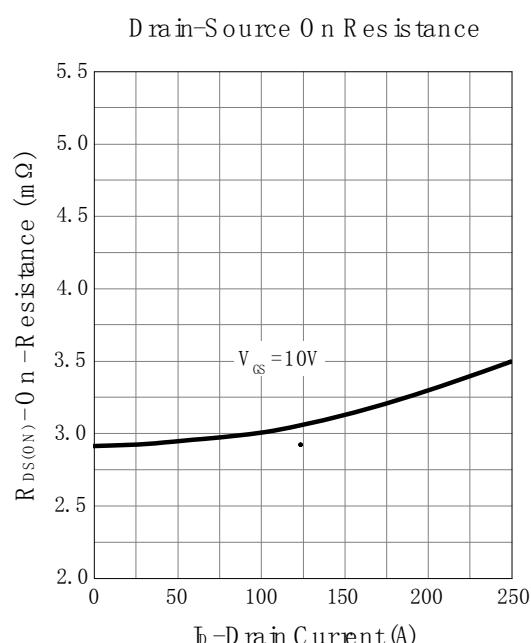
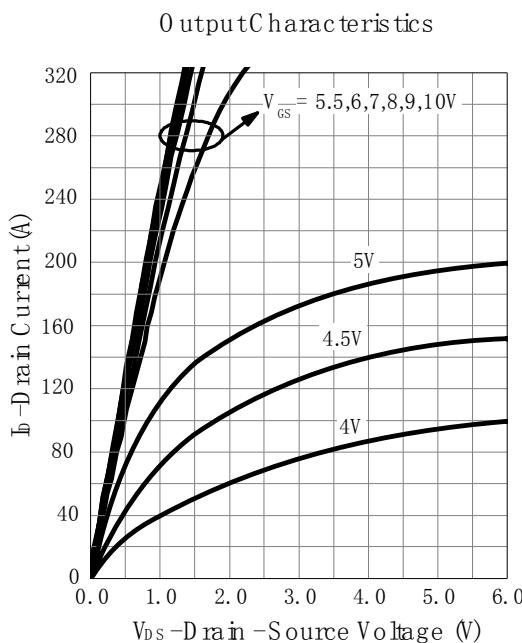


V_{DS} - Drain - Source Voltage (V)

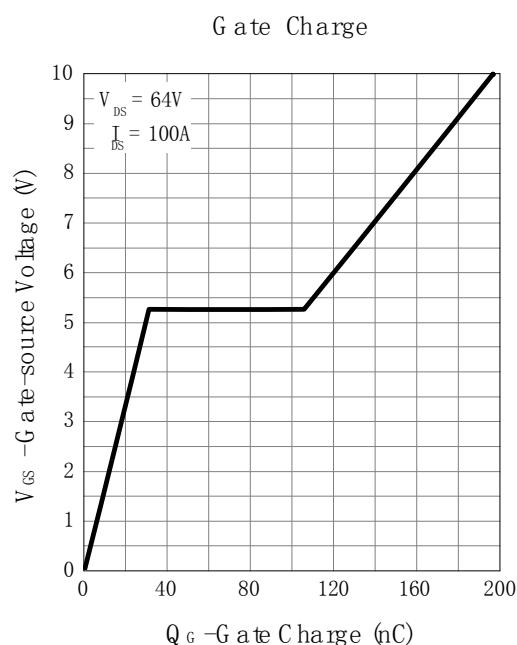
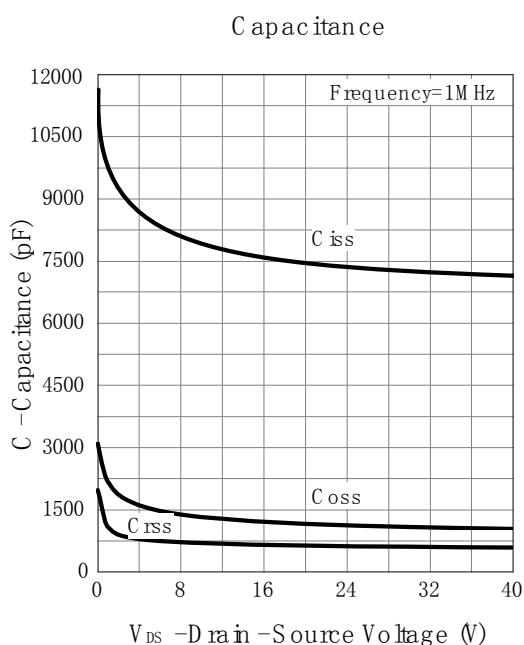
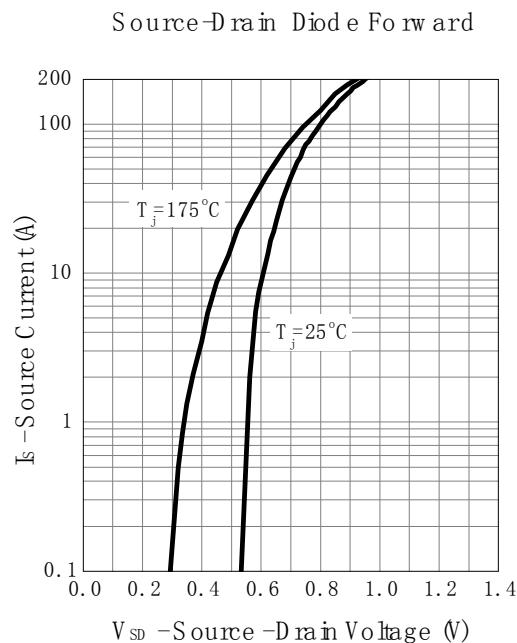
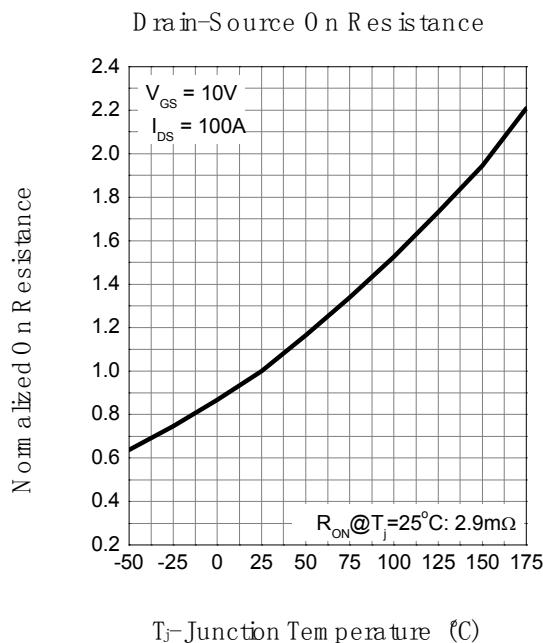
Thermal Transient Impedance



Typical Operating Characteristics (Cont.)



Typical Operating Characteristics (Cont.)



Package Information

TO-247-3L

