

## General Description

The UV4842A 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

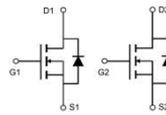
$V_{DS}$	30	V
$R_{DS(on) \max}@V_{GS}=10V$	16	m $\Omega$
$R_{DS(on) \max}@V_{GS}=4.5V$	20	m $\Omega$
Q g	8.6	nC

## Applications

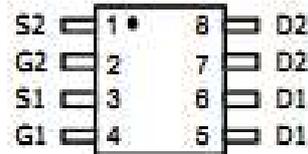
- Power switching application
- Hard Switched and High Frequency Circuits
- Uninterruptible Power Supply



SOP-8L Top view



Schematic diagram



## Package Marking And Ordering Information

Part ID	Package Type	Marking	Tape and Reel information
UV4842	SOP-8L	UV4842	3000pcs/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)	$T_c=25^\circ\text{C}$ 11	A
$I_{DM}$	Pulse drain current tested①	$T_c=25^\circ\text{C}$ 32	A
$I_S$	Drain-Source Diode Forward Current	4.3	A
$P_D$	Maximum power dissipation	$T_c=25^\circ\text{C}$ 2	W
		$T_c=75^\circ\text{C}$ 1.2	W
$V_{GS}$	Gate-Source voltage	$\pm 20$	V
$T_{STG} T_J$	Storage and operating temperature range	-55 to 150	$^\circ\text{C}$



## Thermal Characteristic

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

## Typical Characteristics

Symbol	Parameter	Condition	Min	Type	Max	Unit
<b>Static Electrical Characteristics @<math>T_j=25^{\circ}\text{C}</math> ( unless otherwise stated )</b>						
$V_{(BR)DSS}$	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	$\mu\text{A}$
	Zero Gate Voltage Drain Current( $T_j=100^{\circ}\text{C}$ )	$V_{DS}=24\text{V}, V_{GS}=0\text{V}$			10	$\mu\text{A}$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$			$\pm 100$	nA
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	1	1.6	3	V
$R_{DS(ON)}$	Drain-Source On-State Resistance <sup>③</sup>	$V_{GS}=10\text{V}, I_D=11\text{A}$		16	20	$\text{m}\Omega$
		$V_{GS}=4.5\text{V}, I_D=8\text{A}$		20	26	$\text{m}\Omega$
<b>Dynamic Electrical Characteristics @<math>T_j=25^{\circ}\text{C}</math> ( unless otherwise stated )</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=10\text{V},$		333		PF
$C_{oss}$	Output Capacitance	$V_{GS}=0\text{V},$		94		PF
$C_{rss}$	Reverse Transfer Capacitance	$F=1\text{MHz}$		75		PF
$Q_g$	Total Gate Charge	$V_{DS}=10\text{V},$		8.6		nC
$Q_{gs}$	Gate-Source Charge	$I_D=1\text{A},$		2.1		nC
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=10\text{V}$		1.1		nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay time	$V_{DD}=15\text{V}$		7.4		nS
$t_r$	Turn-on Rise time	$I_D=1\text{A}$		2.4		nS
$t_{d(off)}$	Turn-off Delay time	$R_G=6\Omega$		18.4		nS
$t_f$	Turn-off Fall time	$V_{GS}=10\text{V}$		4		nS
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Forward on voltage	$I_{SD}=1\text{A}, V_{GS}=0\text{V}$			1.0	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=7.7\text{A}$		10.5		nS
$Q_{rr}$	Body Diode Reverse Recovery Charge	$di/dt=100\text{A}/\mu\text{s}$		4.5		nC

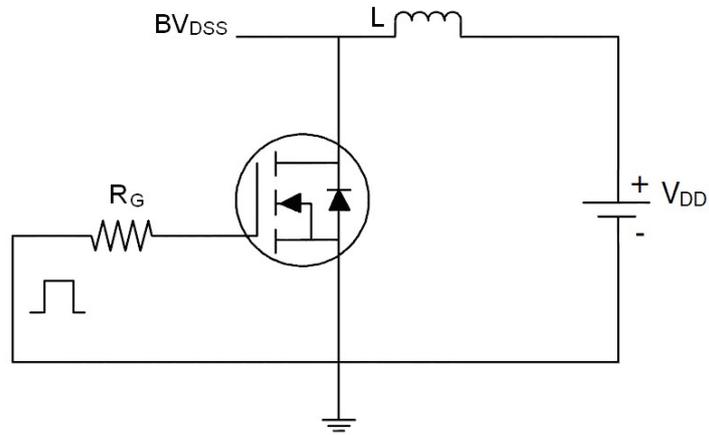
Note:

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

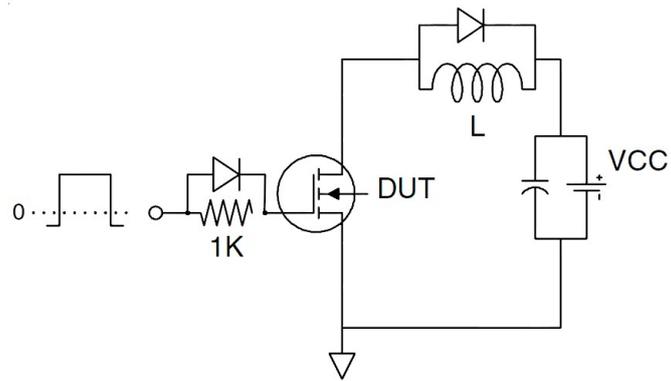


## Test circuit

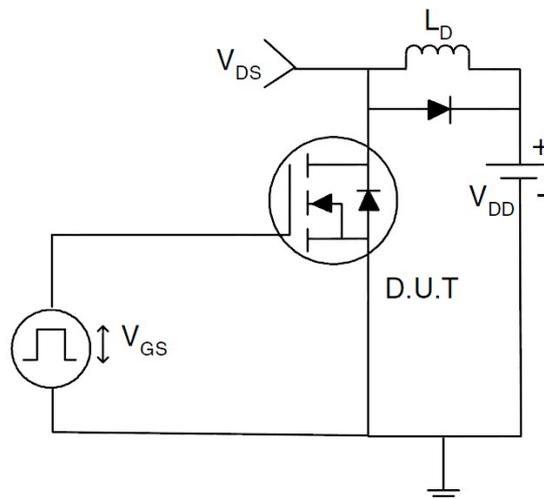
### (1) $E_{AS}$ test circuits



### (2) Gate charge test circuit



### (3) Switch time test circuit



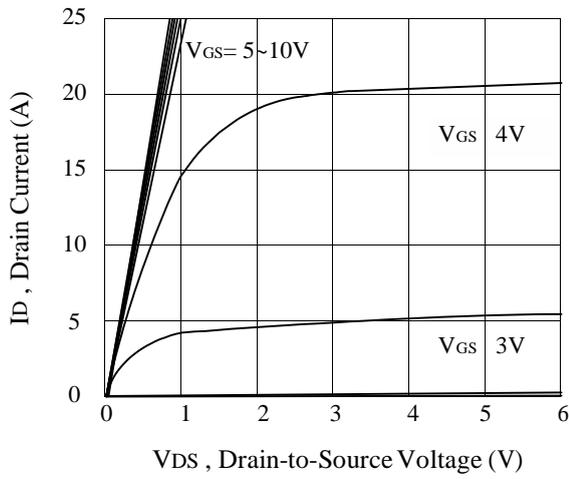


Figure 1. Output Characteristics

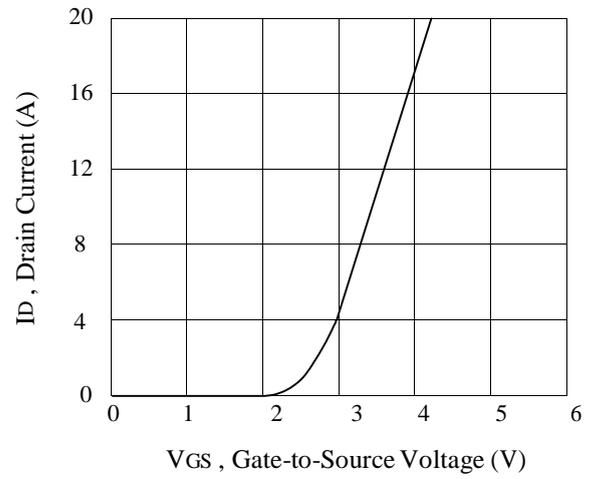


Figure 2. Transfer Characteristics

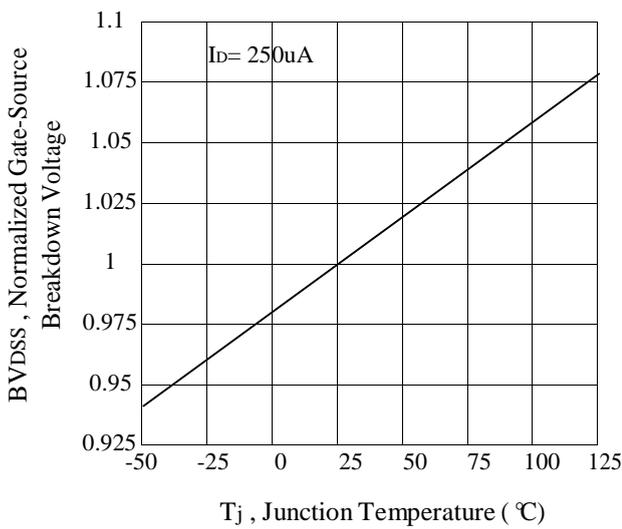


Figure 3. Breakdown Voltage Variation with Temperature

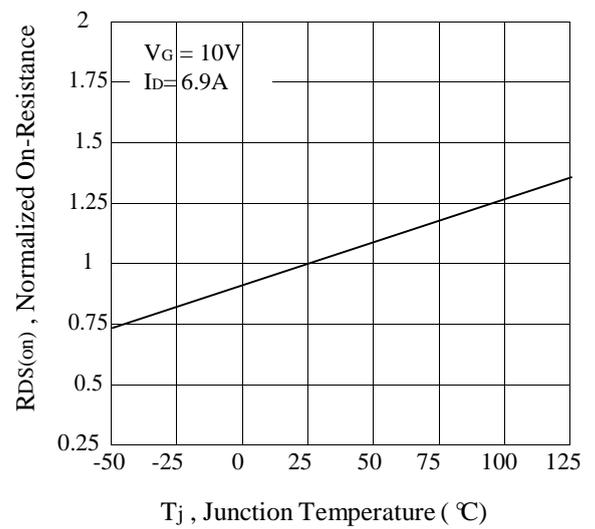


Figure 4. On-Resistance Variation with Temperature

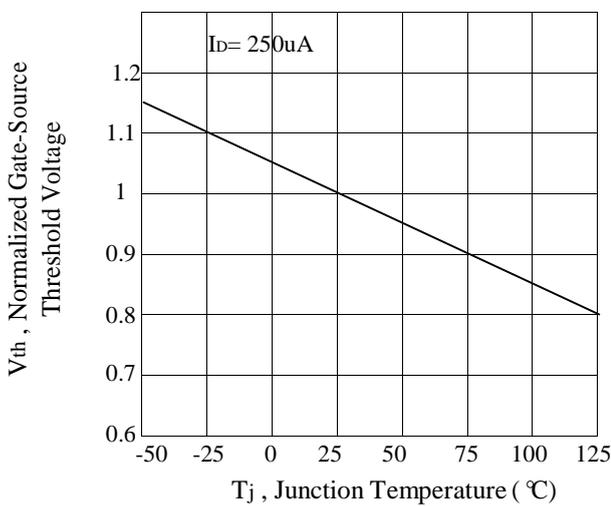


Figure 5. Gate Threshold Variation with Temperature

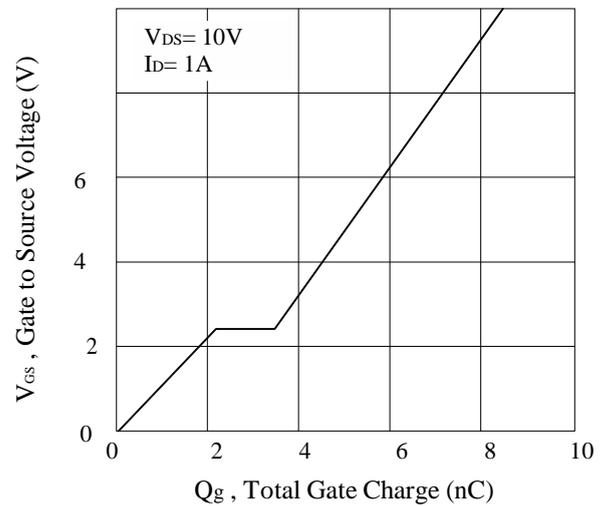
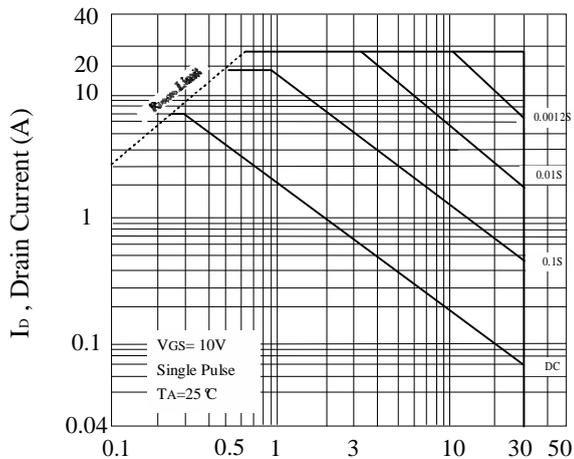
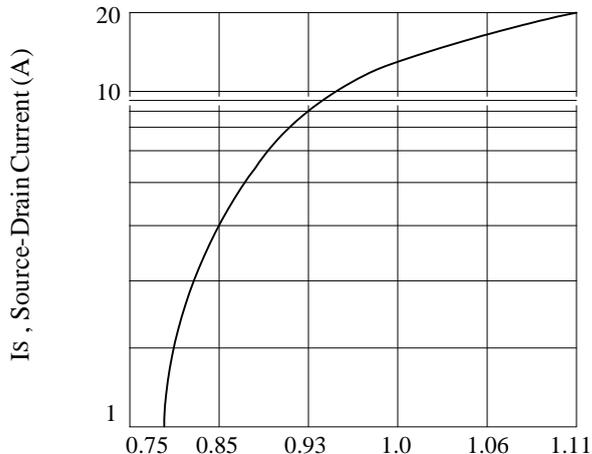


Figure 6. Gate Charge



VDS, Drain-Source Voltage (V)  
Figure 7. Maximum Safe Operating Area



VSD, Body Diode Forward Voltage (V)  
Figure 8. Body Diode Forward Voltage Variation with Source Current

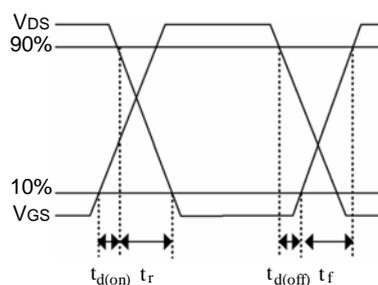
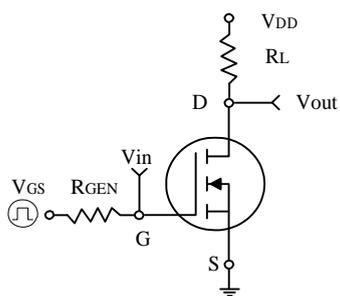


Figure 9. Switching Test Circuit and Switching Waveforms

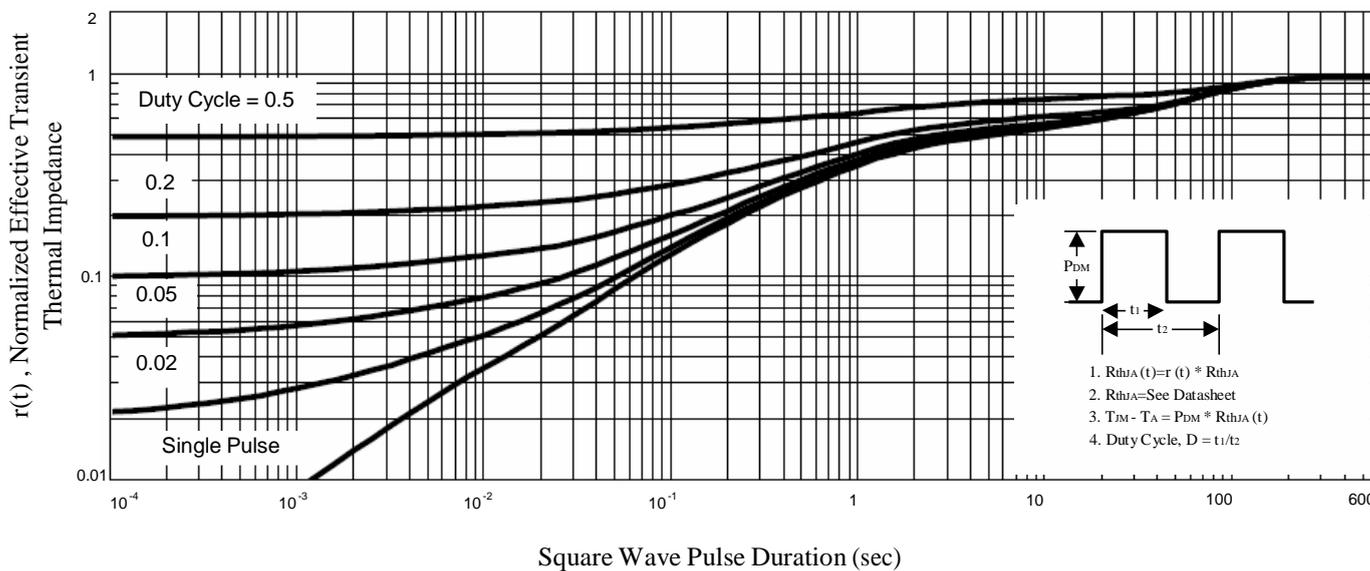


Figure 10. Normalized Thermal Transient Impedance Curve