



General Description

The UV30P10MS 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
$R_{DS(on)type}@V_{GS}=10V$	-12	m Ω
$R_{DS(on)type}@V_{GS}=4.5V$	-16.5	m Ω
I_D	-20	A

Applications

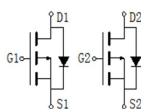
Power switching application

Hard Switched and High Frequency Circuits

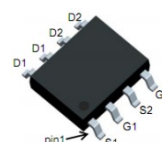
Uninterruptible Power Supply



SOP8 Top view



Schematic diagram



Package Marking And Ordering Information

Part ID	Package Type	Marking	Tape and Reel information
UV30P10MS	SOP-8	UV30P10MS	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	T _c =25℃	-40	A
		T _c =75℃	-28	A
I _{DM}	Pulse drain current tested①	T _c =25℃	-68	A
E _{AS}	Avalanche energy, single pulsed②		45	mJ
P _D	Maximum power dissipation	T _c =25℃	2.8	W
V _{GS}	Gate-Source voltage		±20	V
T _{STG} T _J	Storage and operating temperature range		-55 to 150	℃



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
Static Electrical Characteristics @T _j =25℃ (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V			1	μA
	Zero Gate Voltage Drain Current(T _j =100℃)	V _{DS} =-24V, V _{GS} =0V			10	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{BS} =0V			±100	nA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	-1.2	-1.7	-2.5	V
R _{DS(ON)}	Drain-Source On-State Resistance③	V _{GS} =-10V,I _D =-12A		12.5	13.5	mΩ
		V _{GS} =-4.5V,I _D =-6A		16.5	18.5	mΩ
Dynamic Electrical Characteristics @T _j =25℃ (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, F=1MHz		2350		PF
C _{Oss}	Output Capacitance			330		PF
C _{rss}	Reverse Transfer Capacitance			139		PF
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-8A, V _{GS} =-10V		29.8		nC
Q _{gs}	Gate-Source Charge			14		nC
Q _{gd}	Gate-Drain Charge			10		nC
Switching Characteristics						
t _{d(on)}	Turn-on Delay time	V _{DD} =-15V I _D =-8A R _G =6Ω V _{GS} =-10V		11		nS
t _r	Turn-on Rise time			9		nS
t _{d(off)}	Turn-off Delay time			25		nS
t _f	Turn-off Fall time			13		nS
Source-Drain Diode Characteristics						
V _{SD}	Forward on voltage	I _{SD} =-3.5A, V _{GS} =0V			-1.2	V
T _{rr}	Reverse Recovery Time	I _{SD} =-5A V _{GS} =0V		39		nS
Q _{rr}	Reverse Recovery Charge	di/dt=100A/us		22		nC

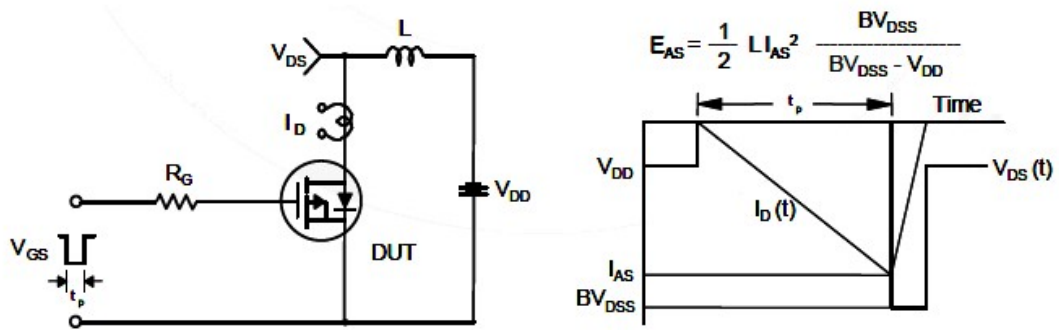
Note:

- ① Repetitive rating; pulse width limited by max. junction temperature.
- ② Limited by T_{Jmax} , starting $T_J=25^{\circ}\text{C}$, $L=0.1\text{mH}$, $R_G=6\Omega$, $I_{AS}=-6A$, $V_{DD}=-24V$, Part not recommended for use above this value
- ③ Pulse width $\leq 300\mu s$; duty cycle $\leq 2\%$



Test circuit

(1) Unclamped inductive test circuits and waveforms



(2) Switching time test circuit and waveforms

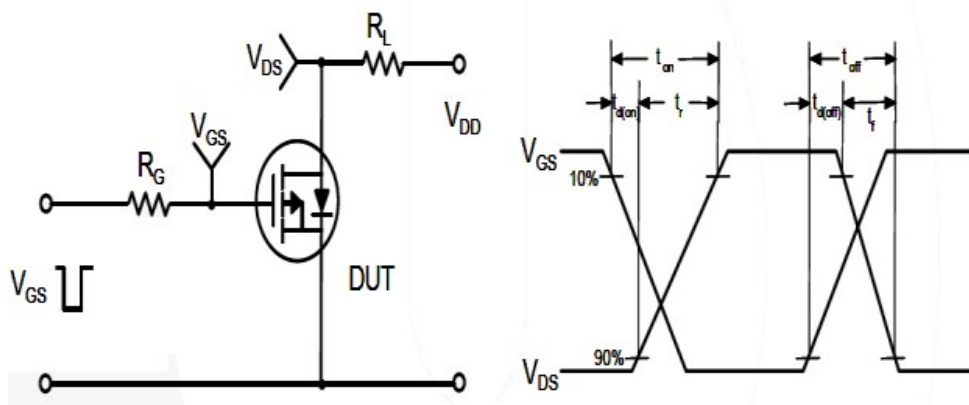




Fig 1. Typical Output Characteristics

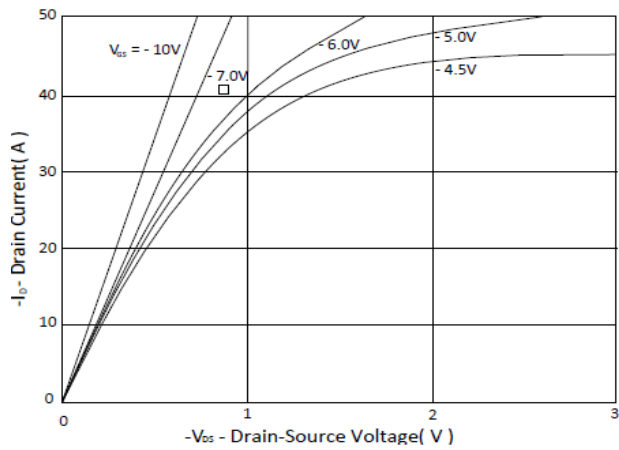


Figure 2. On-Resistance vs. Gate-Source Voltage

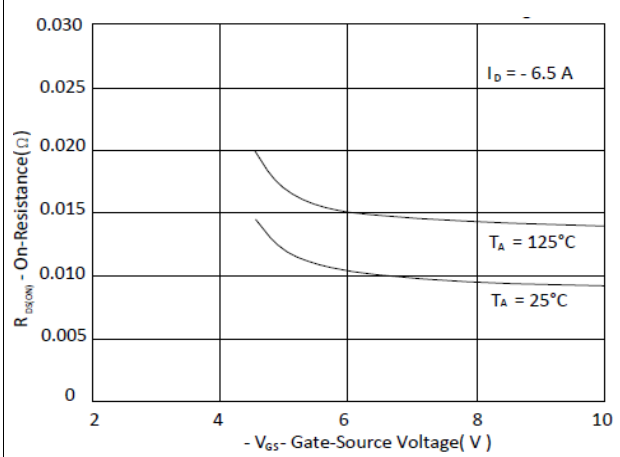


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

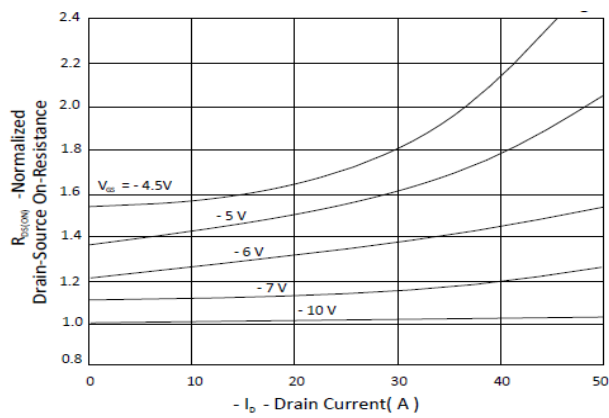


Figure 4. Normalized On-Resistance vs. Junction Temperature

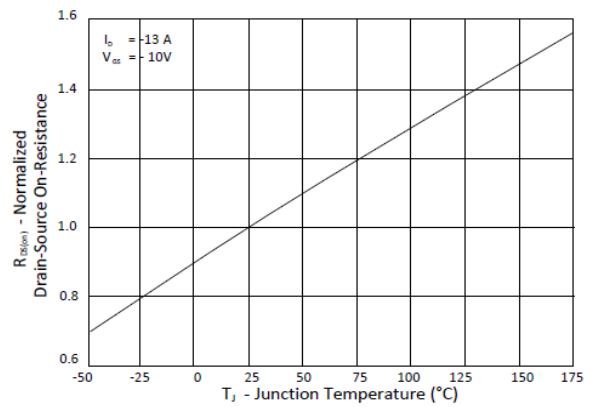


Figure 5. Typical Transfer Characteristics

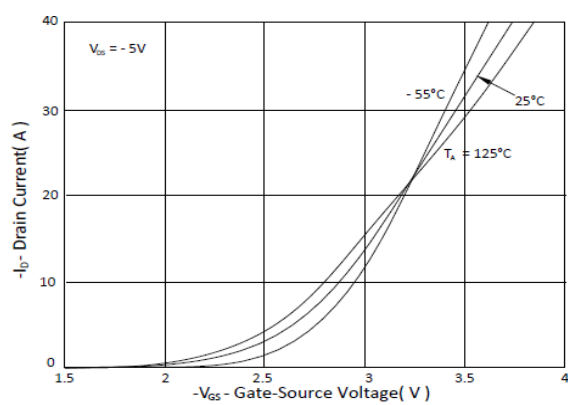


Figure 6. Typical Source-Drain Diode Forward Voltage

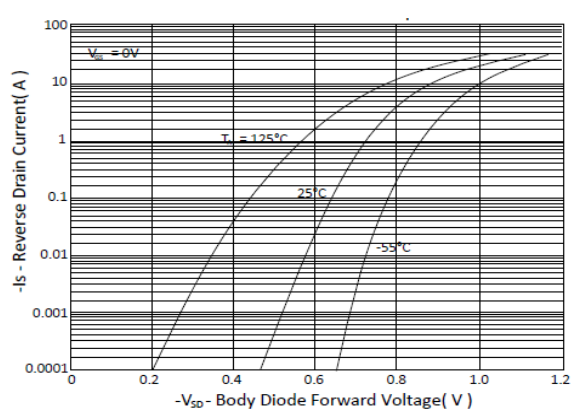




Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

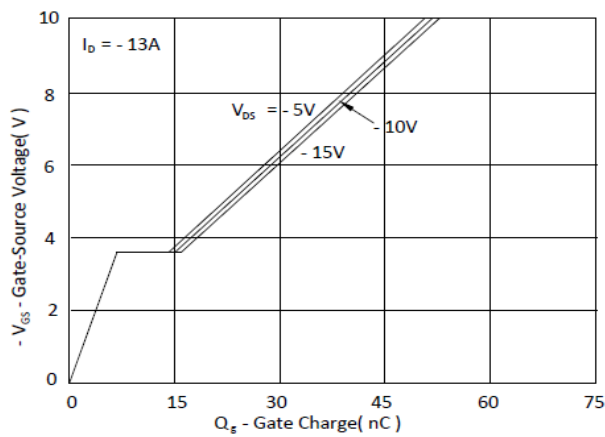


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

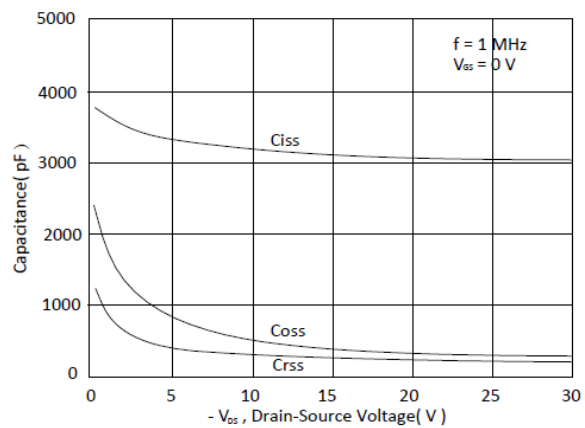


Figure 9. Maximum Safe Operating Area

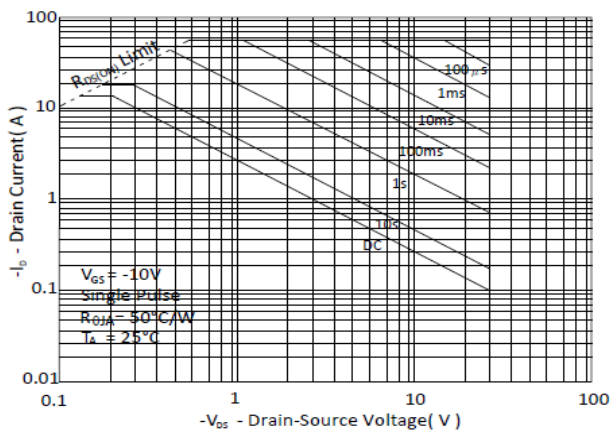


Figure 10. Single Pulse Maximum Power Dissipation

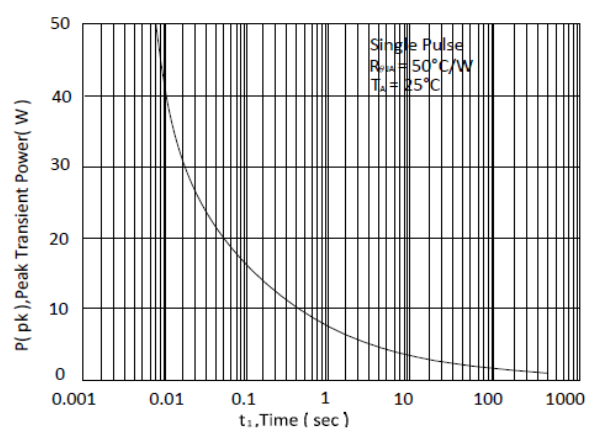
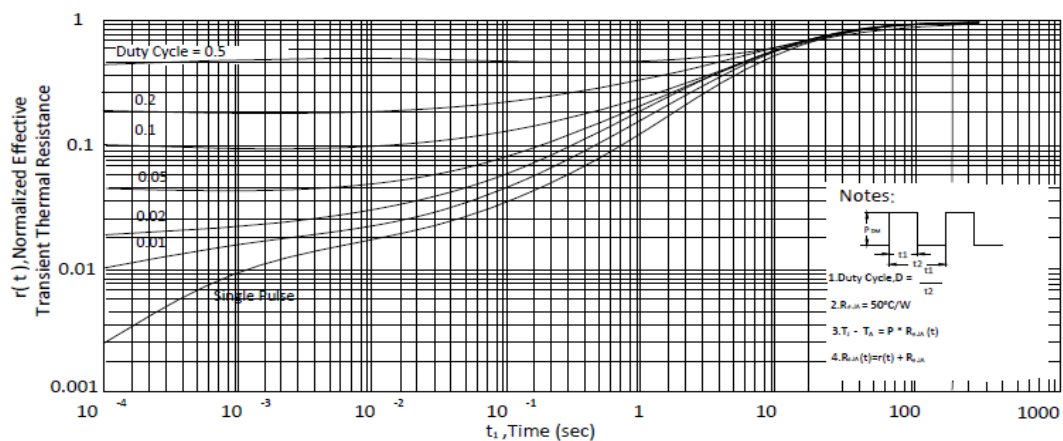


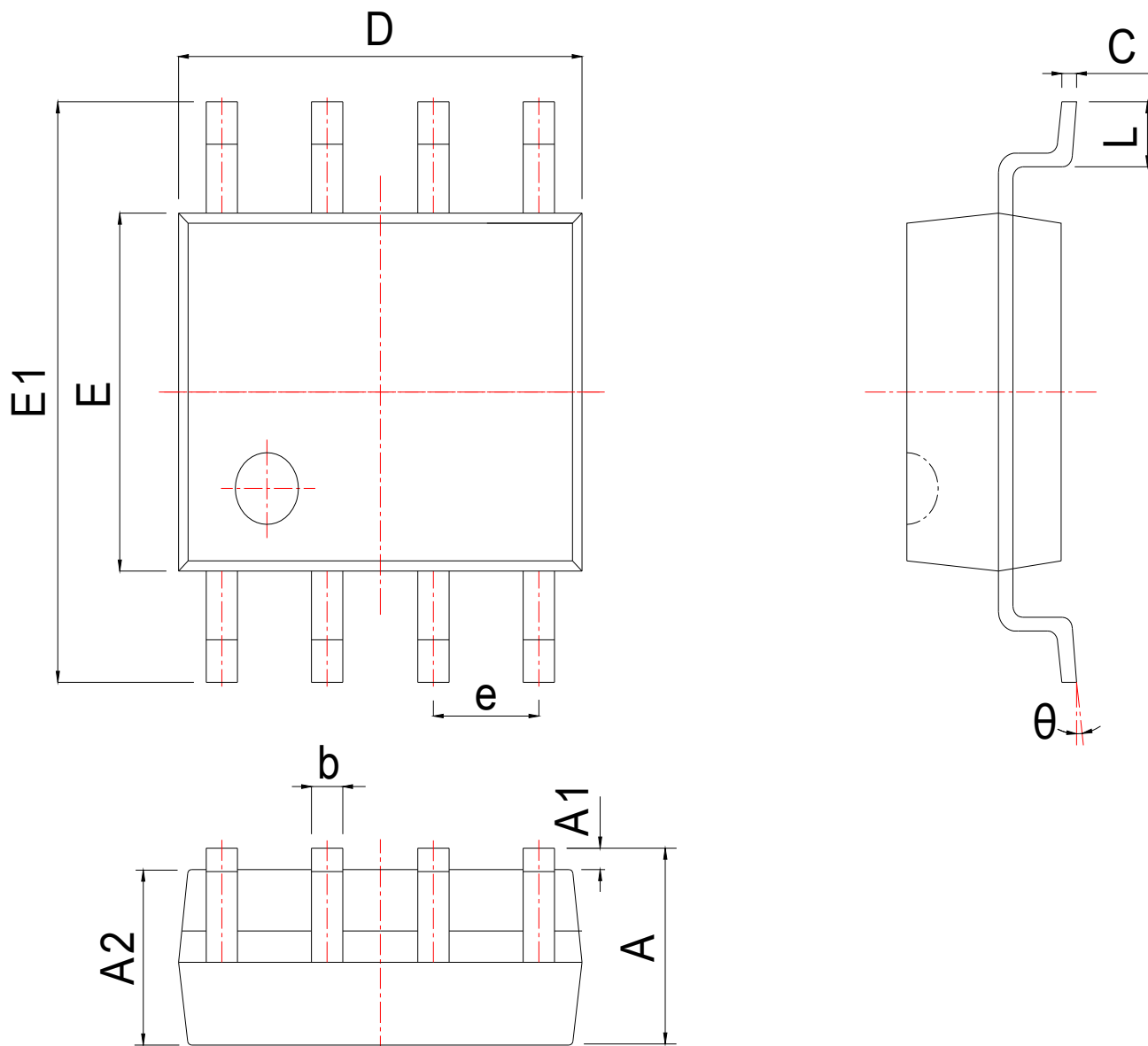
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient





Package Information

SOP-8



SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.300	1.525	1.750	0.051	0.060	0.069
A1	0.050	0.150	0.250	0.002	0.006	0.010
A2	1.350	1.450	1.550	0.053	0.057	0.061
b	0.330	0.420	0.510	0.013	0.017	0.020
c	0.170	0.210	0.250	0.007	0.008	0.010
D	4.700	4.900	5.100	0.185	0.193	0.201
E	3.800	3.900	4.000	0.150	0.154	0.157
E1	5.800	6.000	6.200	0.228	0.236	0.244
e	1.270 BSC			0.050 BSC		
L	0.400	0.835	1.270	0.016	0.033	0.050
θ	0°		8°	0°		8°