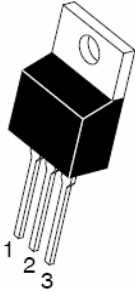
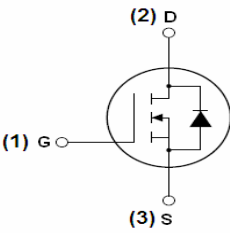




N-Channel Enhancement Mode Power MOSFET

<p>General Description</p> <p>The UV3710R 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.</p> <p>Features</p> <ul style="list-style-type: none"> ● $V_{DS}=100V$ $I_D=55A@V_{GS}=10V$; $R_{DS(ON)} < 16\ m\Omega @ V_{GS} = 10V$ ● Special process technology for high ESD capability ● Special designed for Convertors and power controls ● High density cell design for ultra low R_{dson} ● Fully characterized Avalanche voltage and current ● Good stability and uniformity with high E_{AS} ● Excellent package for good heat dissipation <p>Application</p> <ul style="list-style-type: none"> ● Power switching application ● Hard Switched and High Frequency Circuits ● Uninterruptible Power Supply 	<div style="text-align: center;">  <p>TO-220-3L top view</p> </div> <div style="text-align: center; margin-top: 20px;">  <p>Schematic diagram</p> </div>
--	---

Package Marking And Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
UV3710R	UV3710R	TO-220	-	-	Y

Table 1. Absolute Maximum Ratings (TA=25°C)

Parameter	Symbol	Value	Unit
Drain-Source Voltage ($V_{GS}=0V$)	V_{DS}	100	V
Gate-Source Voltage ($V_{DS}=0V$)	V_{GS}	± 25	V
Drain Current (DC) at $T_c=25^\circ C$	$I_{D(DC)}$	65	A
Drain Current (DC) at $T_c=100^\circ C$	$I_{D(DC)}$	50	A
Drain Current-Continuous@ Current-Pulsed (Note 1)	$I_{DM(pluse)}$	180	A
Maximum Power Dissipation($T_c=25^\circ C$)	P_D	220	W
Derating factor		1.33	W/°C
Single pulse avalanche energy (Note 2)	E_{AS}	500	mJ
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	°C

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature

2.EAS condition: $T_J=25^\circ C, V_{DD}=50V, V_G=10V, L=0.5mH, R_g=25\Omega$;

**Table 2. Thermal Characteristic**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case (Note2)	R_{thJC}	0.75	$^{\circ}C/W$

Table 3. Electrical Characteristics (TA=25 $^{\circ}C$ unless otherwise noted)

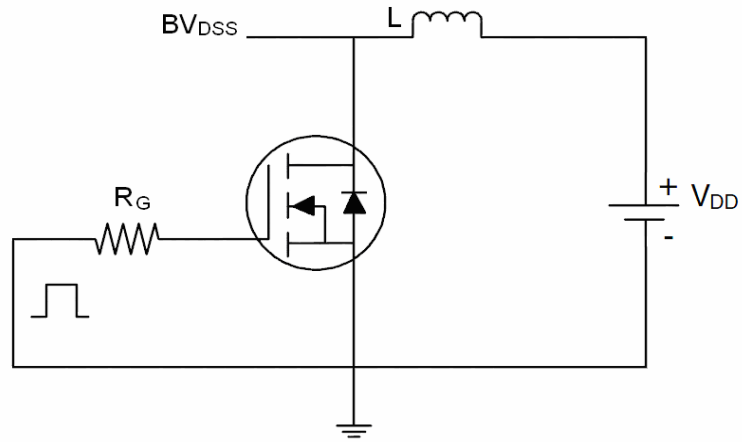
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100			V
Zero Gate Voltage Drain Current(Tc=25 $^{\circ}C$)	I_{DSS}	$V_{DS}=-80V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{DSS}	$V_{GS}=\pm 25V, V_{DS}=0V$			± 100	μA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		14	16	m Ω
Dynamic Characteristics						
Forward Transconductance	G_{FS}	$V_{DS}=25V, I_D=20A$	50			S
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V,$ $F=1.0MHz$		3500	4200	PF
Output Capacitance	C_{oss}			440		PF
Reverse Transfer Capacitance	C_{rss}			265		PF
Total Gate Charge	Q_g	$V_{DS}=50V, I_D=30A,$ $V_{GS}=10V$		80	106	nC
Gate-Source Charge	Q_{gs}			15		nC
Gate-Drain Charge	Q_{gd}			27		nC
Switching times						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=50V, I_D=1A, R_L=30\Omega$		22	30	nS
Turn-on Rise Time	t_r			16	27	nS
Turn-Off Delay Time	$t_{d(off)}$	$V_{GS}=10V, R_G=2\Omega$		65	110	nS
Turn-Off Fall Time	t_f			34	58	nS
Source- Drain Diode Characteristics						
Source-drain current(Body Diode)	I_{SD}				20	A
Forward on voltage ^(Note 3)	V_{SD}	$T_j=25^{\circ}C, I_{SD}=20A, V_{GS}=0V$		0.8	1.3	V
Reverse Recovery Time ^(Note 1)	t_{rr}	$T_j=25^{\circ}C, I_F=20A, di/dt=100A/\mu s$		65		nS
Reverse Recovery Charge	Q_{rr}			90		nC
Forward Turn-on Time	t_{on}	Intrinsic turn-on time is negligible(turn-on is dominated by L_S+L_D)				

Notes 3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$, $R_G=25\Omega$, Starting $T_j=25^{\circ}C$

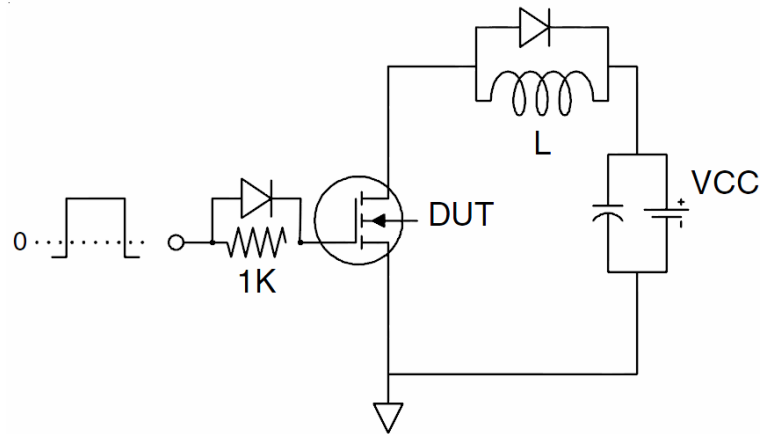


Test circuit

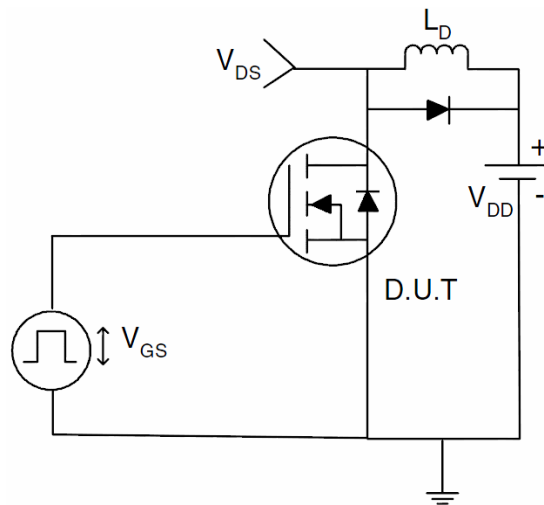
1) E_{AS} test Circuits



2) Gate charge test Circuit:

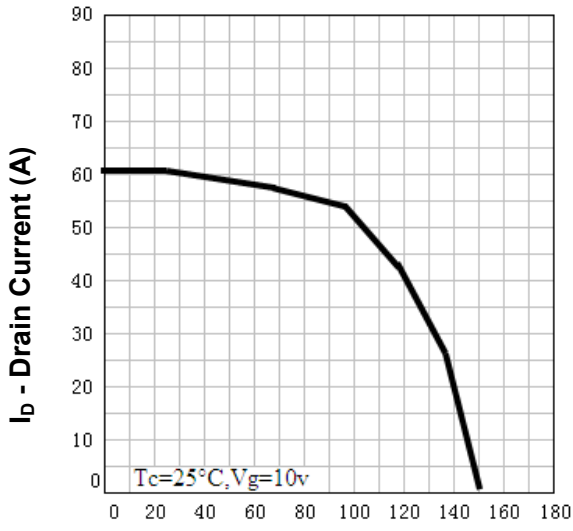


3) Switch Time Test Circuit:



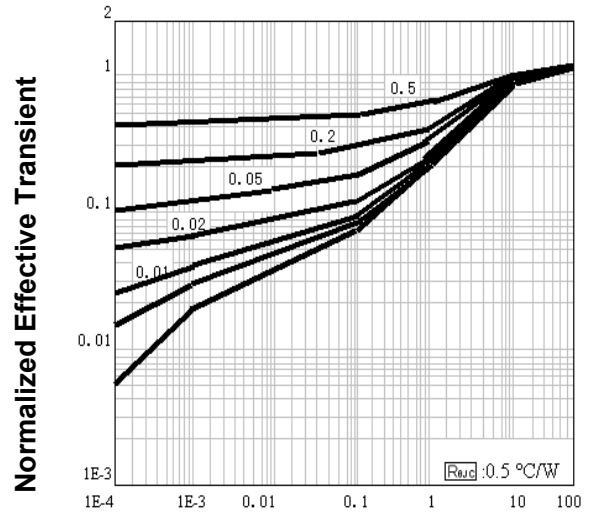


Drain Current



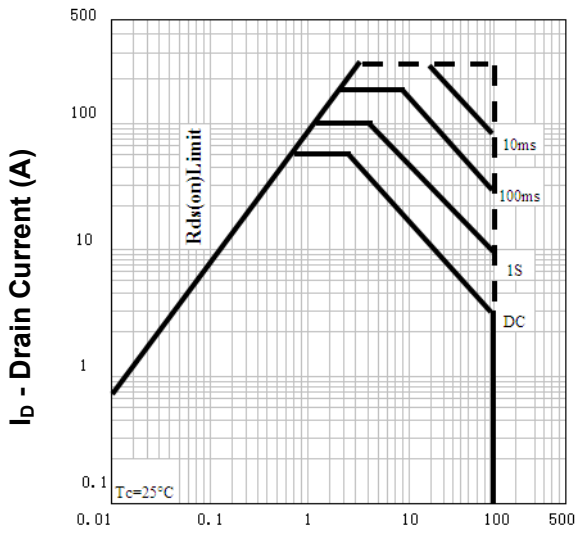
T_j - Junction Temperature ($^{\circ}C$)

Thermal Transient Impedance



Square Wave Pulse Duration (sec)

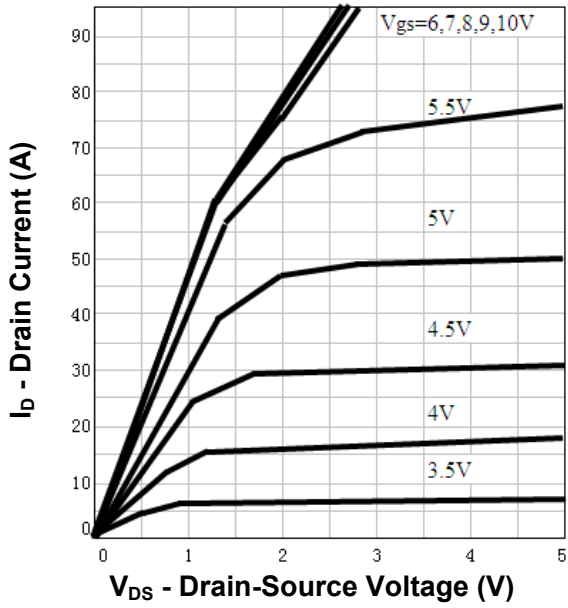
Safe Operation Area



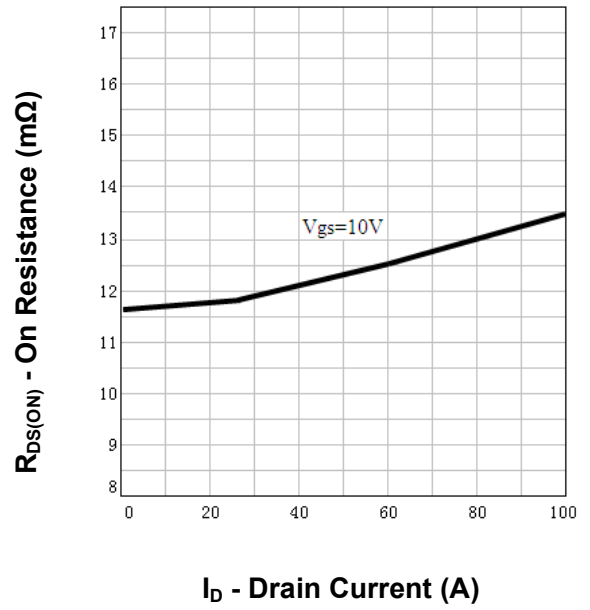
V_{DS} - Drain-Source Voltage (V)



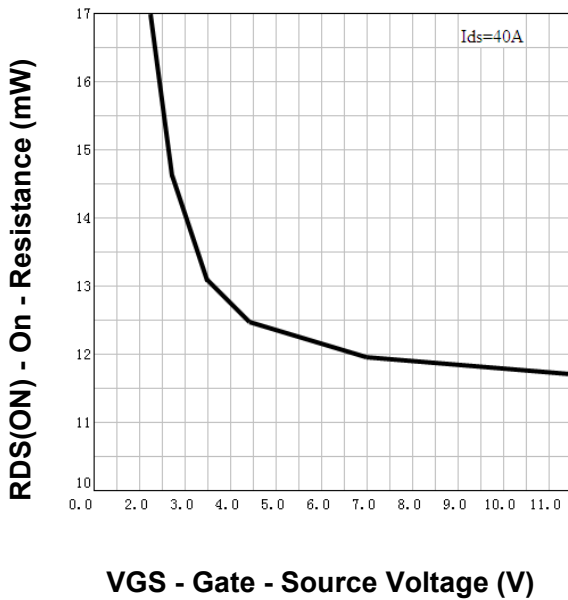
Output Characteristics



Drain-Source On Resistance

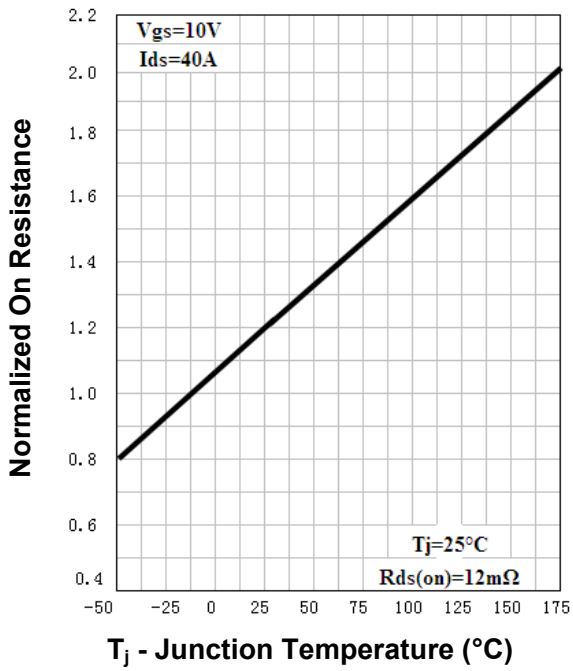


Drain-Source On Resistance

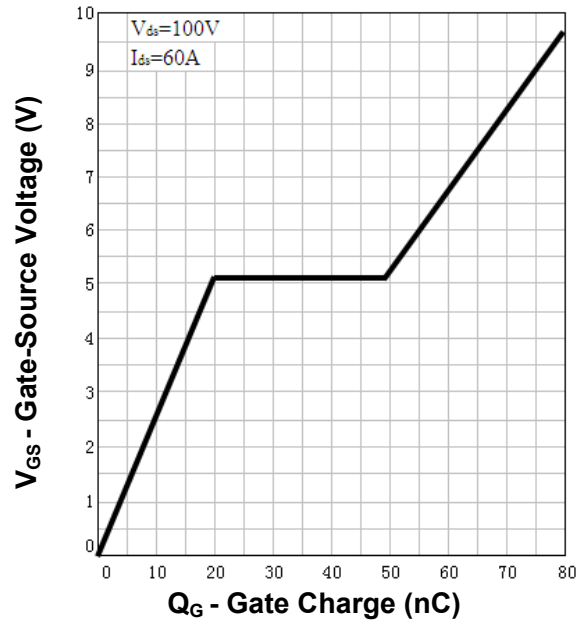




Drain-Source On Resistance



Gate Charge



Capacitance

