



UDN302

Power MOSFET

**P-CHANNEL 2.5V SPECIFIED
POWERTRENCH MOSFET**

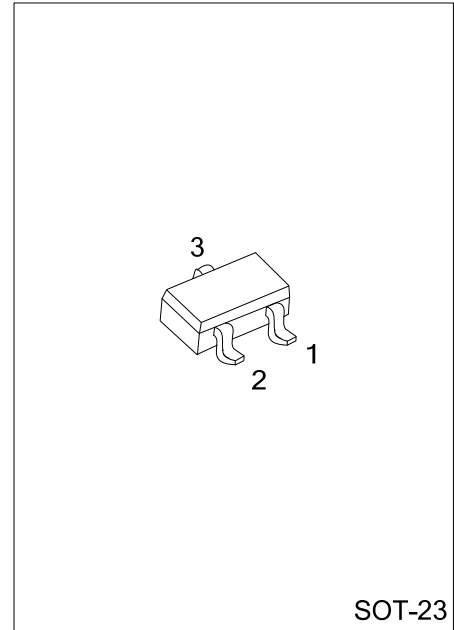
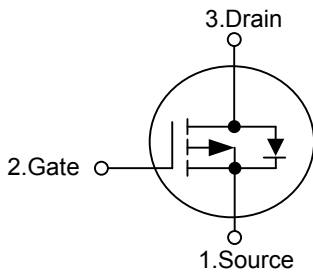
■ DESCRIPTION

The **UDN302** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

- * $R_{DS(ON)}=55m\Omega @ V_{GS}=-4.5V$
- * $R_{DS(ON)}=80m\Omega @ V_{GS}=-2.5V$
- * Low capacitance
- * Low gate charge
- * Fast switching capability
- * Avalanche energy specified

■ SYMBOL



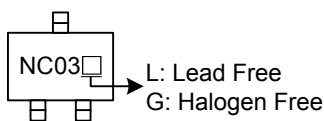
SOT-23

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UDN302L-AE3-R	UDN302G-AE3-R	SOT-23	S	G	D	Tape Reel

<p>UDN302L-AE3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel</p> <p>(2) AE3: SOT-23</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS ($T_a=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	-20	V
Gate-Source Voltage	V_{GSS}	± 12	V
Continuous Drain Current	I_D	-2.4	A
Pulsed Drain Current	I_{DM}	-10	A
Maximum Power Dissipation	P_D	0.5	W
Junction Temperature	T_J	+150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

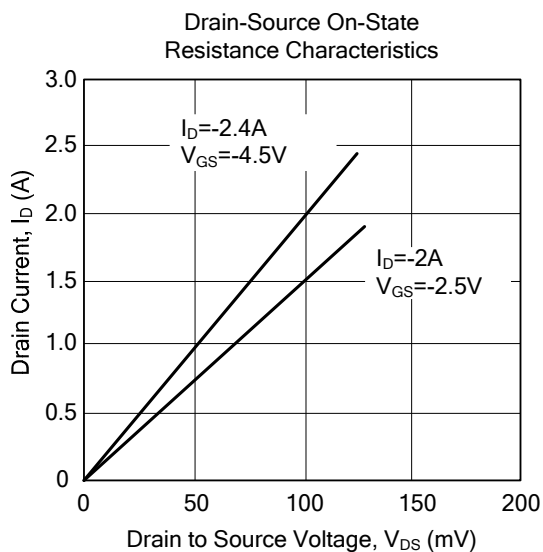
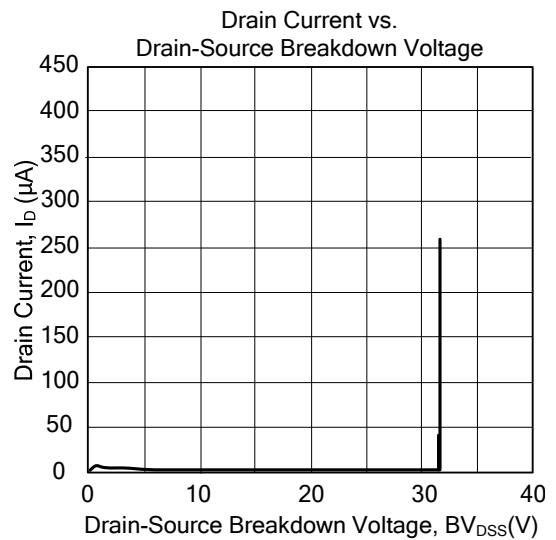
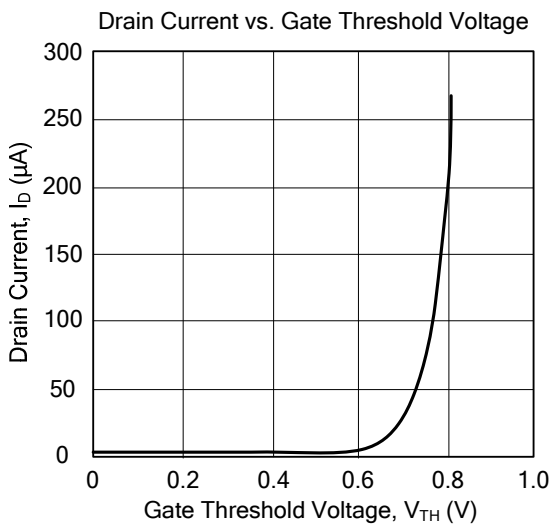
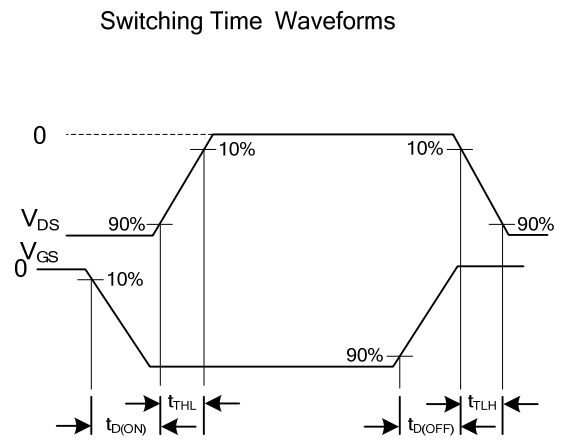
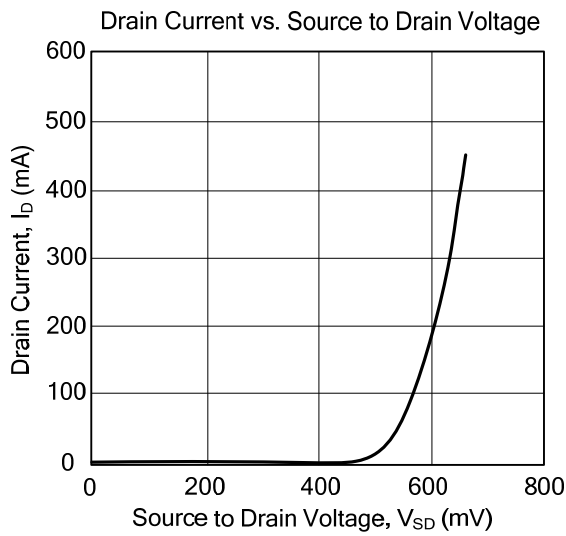
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}			250	$^\circ\text{C}/\text{W}$
Junction-to-Case	θ_{JC}			75	$^\circ\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}, I_D=-250\mu\text{A}$	-20			V
Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=-250\mu\text{A}$, Referenced to 25°C		-12		$\text{mV}/^\circ\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-16\text{V}, V_{GS}=0\text{V}$			-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12\text{V}, V_{DS}=0\text{V}$			± 100	nA
ON CHARACTERISTICS (Note)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=-250\mu\text{A}$	-0.6	-1.0	-1.5	V
Gate Threshold Voltage Temperature Coefficient	$\Delta V_{GS(TH)}/\Delta T_J$	$I_D=-250\mu\text{A}$, Referenced to 25°C		3		$\text{mV}/^\circ\text{C}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-4.5\text{V}, I_D=-2.4\text{A}$ $V_{GS}=-2.5\text{V}, I_D=-2\text{A}$		44 64	55 80	$\text{m}\Omega$
On-State Drain Current	$I_{D(ON)}$	$V_{GS}=-4.5\text{V}, V_{DS}=-5\text{V}$	-10			A
Forward Transconductance	g_{FS}	$V_{DS}=-5\text{V}, I_D=-2.4\text{A}$		10		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS}=-10\text{V}, V_{GS}=0\text{V}, f=1.0\text{MHz}$		882		pF
Output Capacitance	C_{OSS}			211		pF
Reverse Transfer Capacitance	C_{RSS}			112		pF
SWITCHING PARAMETERS (Note)						
Total Gate Charge	Q_G	$V_{DS}=-10\text{V}, I_D=-2.4\text{A}$, $V_{GS}=-4.5\text{V}$		9	14	nC
Gate Source Charge	Q_{GS}			2		nC
Gate Drain Charge	Q_{GD}			3		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=-10\text{V}, I_D=-1\text{A}, V_{GS}=-4.5\text{V}$ $R_G=6\Omega$		13	23	ns
Turn-ON Rise Time	t_R			11	20	ns
Turn-OFF Delay Time	$t_{D(OFF)}$			25	40	ns
Turn-OFF Fall-Time	t_F			15	27	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Diode Forward Voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=-0.42\text{A}$ (Note)		-0.7	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-0.42	A

Note: Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

TYPICAL CHARACTERISTICS



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