



## UK2962

Power MOSFET

### SILICON N-CHANNEL MOS TYPE FIELD EFFECT TRANSISTOR

#### DESCRIPTION

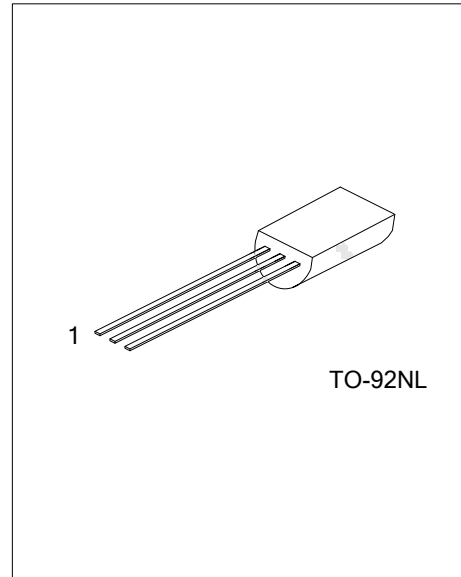
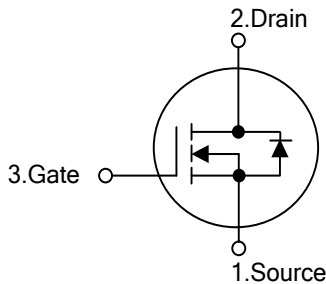
The UTC **UK2962** is a silicon N-Channel MOS type field effect transistor, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low leakage current, etc.

The UTC **UK2962** is suitable for chopper regulator, DC-DC converter and motor drive applications.

#### FEATURES

- \* Low  $R_{DS(ON)}$
- \* Low leakage current
- \* High forward transfer admittance

#### SYMBOL



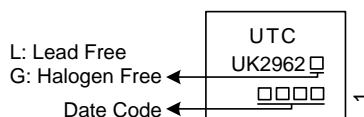
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UK2962L-T9N-B	UK2962G-T9N-B	TO-92NL	S	D	G	Tape Box
UK2962L-T9N-K	UK2962G-T9N-K	TO-92NL	S	D	G	Bulk

Note: Pin Assignment: S: Source D: Drain G: Gate

<p>UK2962G-T9N-B</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) B: Tape Box, K: Bulk</p> <p>(2) T9N: TO-92NL</p> <p>(3) G: Halogen Free and Lead 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	$V_{DSS}$	100	V
Drain-Gate Voltage ( $R_{GS}=20\text{k}\Omega$ )	$V_{DGR}$	100	V
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	V
Drain Current (Note 1)	DC	$I_D$	1.0
	Pulse	$I_{DP}$	3.0
Avalanche Current	$I_{AR}$	1.0	A
Repetitive Avalanche Energy (Note 3)	$E_{AR}$	0.09	mJ
Single Pulse Avalanche Energy (Note 2)	$E_{AS}$	137	mJ
Drain Power Dissipation	$P_D$	0.9	W
Channel Temperature	$T_{CH}$	+150	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-40 ~ +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-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	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	138	$^\circ\text{C/W}$

## ■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

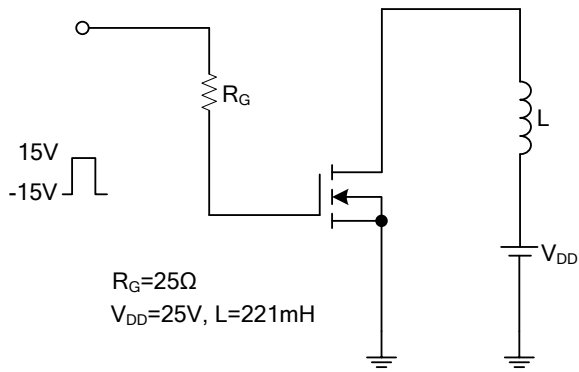
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
<b>OFF CHARACTERISTICS</b>							
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	I <sub>D</sub> =10mA, V <sub>GS</sub> =0V	100			V	
Drain Cut-Off Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			100	μA	
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>DS</sub> =0V			±10	μA	
<b>ON CHARACTERISTICS</b>							
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =1.0mA	1.3		2.0	V	
Static Drain-Source On-State Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.0V, I <sub>D</sub> =0.5A		0.65	0.95	Ω	
		V <sub>GS</sub> =10V, I <sub>D</sub> =0.5A		0.5	0.7	Ω	
Forward Transfer Admittance	Y <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =0.5A	0.6	1.2		S	
<b>DYNAMIC PARAMETERS</b>							
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =10V, f=1.0MHz		140		pF	
Reverse Transfer Capacitance	C <sub>RSS</sub>			20		pF	
Output Capacitance	C <sub>OSS</sub>			45		pF	
<b>SWITCHING PARAMETERS</b>							
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q <sub>G</sub>	V <sub>GS</sub> =10V, V <sub>DD</sub> ≈80V, I <sub>D</sub> =1.0A		6.3		nC	
Gate to Source Charge	Q <sub>GS</sub>			4.3		nC	
Gate-Drain ("Miller") Charge	Q <sub>GD</sub>			2.0		nC	
Turn-ON Time	t <sub>ON</sub>			13		ns	
Rise Time	t <sub>R</sub>				8		ns
Turn-OFF Time	t <sub>OFF</sub>				175		ns
Fall-Time	t <sub>F</sub>				45		ns
			Duty ≤ 1%, t <sub>w</sub> =10μs				
<b>SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS</b>							
Continuous Drain Reverse Current (Note 1)	I <sub>DR</sub>				1.0	A	
Pulse Drain Reverse Current (Note 1)	I <sub>DRP</sub>				3.0	A	
Diode Forward Voltage	V <sub>DSF</sub>	I <sub>DR</sub> =1.0A, V <sub>GS</sub> =0V			-1.5	V	
Reverse Recovery Time	t <sub>rr</sub>	I <sub>DR</sub> =1.0A, V <sub>GS</sub> =0V, dI <sub>DR</sub> /dt=50A/μs		80		ns	
Reverse Recovery Charge	Q <sub>rr</sub>				140		nC

Notes: 1. Please use devices on condition that the channel temperature is below 150°C

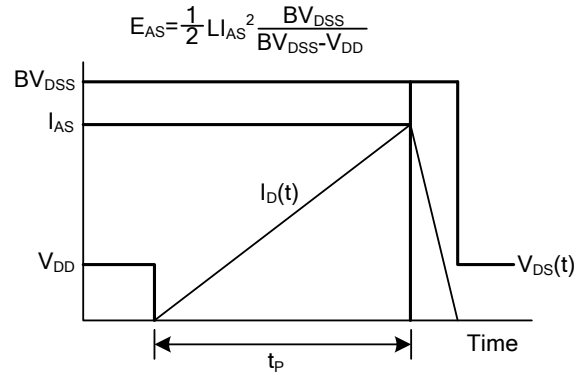
2. V<sub>DD</sub>=25V, T<sub>CH</sub>=25°C (initial), L=221mH, R<sub>G</sub>=25Ω, I<sub>AR</sub>=1A

3. Repetitive rating; Pulse width limited by maximum channel temperature

## ■ TEST CIRCUITS AND WAVEFORMS

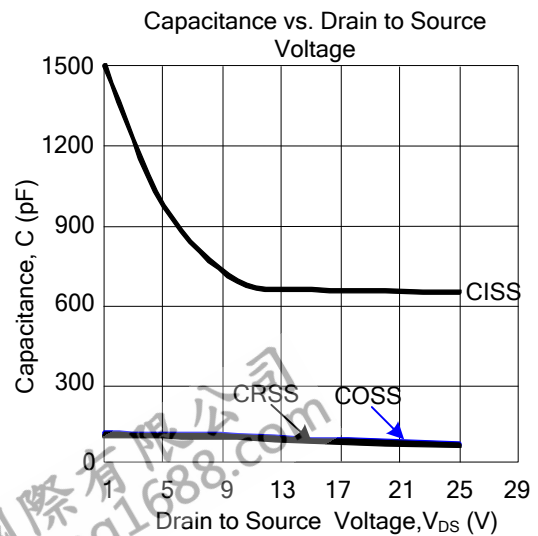
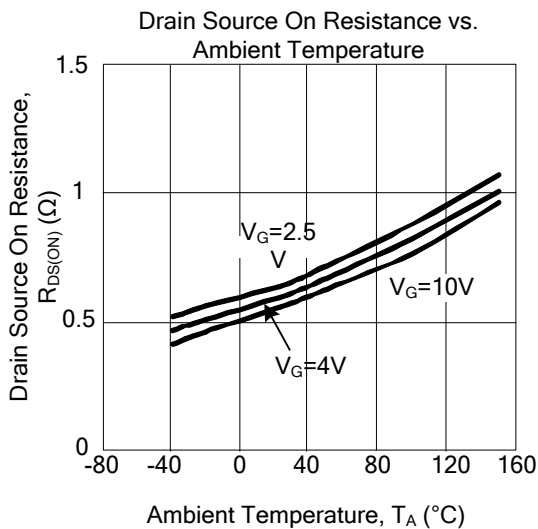
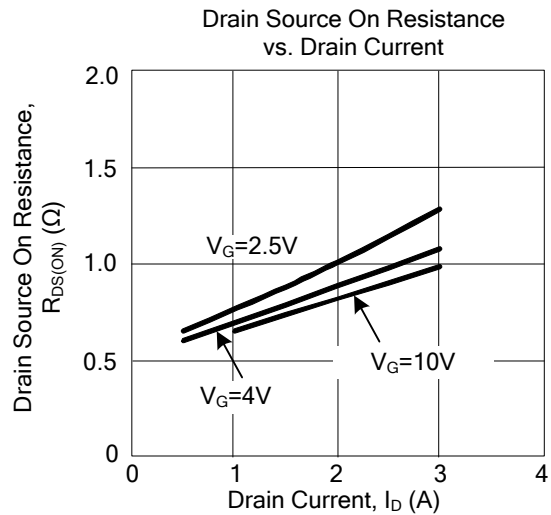
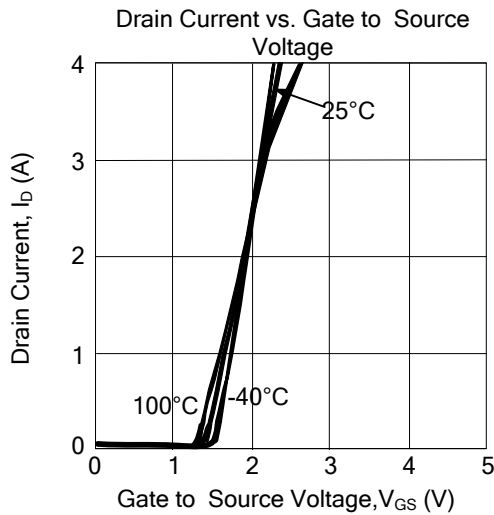
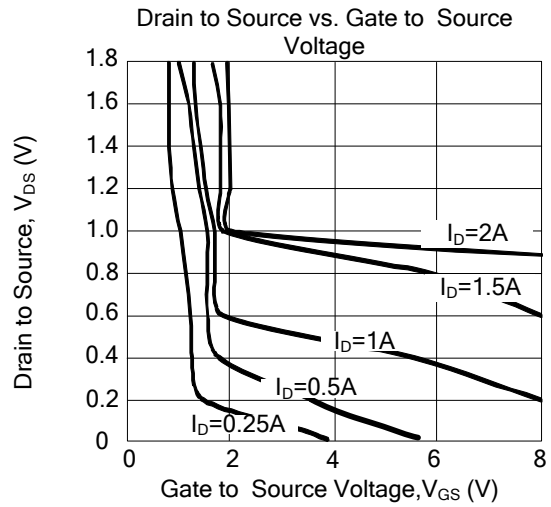
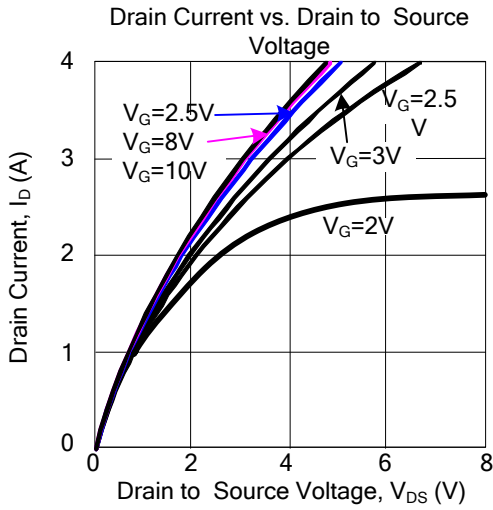


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

## TYPICAL CHARACTERISTICS



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