

SILICON N-CHANNEL MOS TYPE FIELD EFFECT TRANSISTOR

■ DESCRIPTION

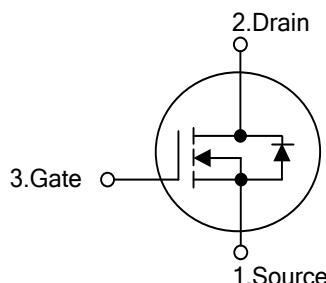
The UTC UK2962 is a silicon N-Channel MOS type field effect transistor, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low leakage current, etc.

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



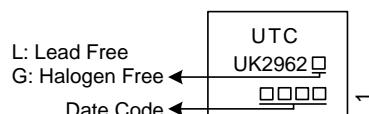
■ ORDERING INFORMATION

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

UK2962G-T9N-B	(1)Packing Type (2)Package Type (3)Green Package	(1) B: Tape Box, K: Bulk (2) T9N: TO-92NL (3) G: Halogen Free and Lead Free, L: Lead Free
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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}	± 20	V	
Drain Current (Note 1)	DC	I_D	1.0	A
	Pulse	I_{DP}	3.0	A
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	θ_{JA}	138	$^\circ\text{C}/\text{W}$

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

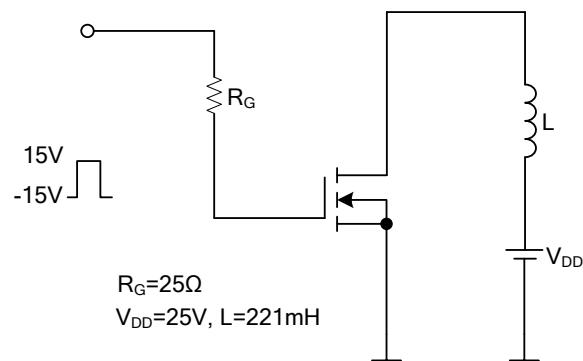
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=10\text{mA}, V_{GS}=0\text{V}$	100			V
Drain Cut-Off Current	I_{DSS}	$V_{DS}=100\text{V}, V_{GS}=0\text{V}$			100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			± 10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(\text{TH})}$	$V_{DS}=10\text{V}, I_D=1.0\text{mA}$	1.3		2.0	V
Static Drain-Source On-State Resistance	$R_{DS(\text{ON})}$	$V_{GS}=4.0\text{V}, I_D=0.5\text{A}$		0.65	0.95	Ω
		$V_{GS}=10\text{V}, I_D=0.5\text{A}$		0.5	0.7	Ω
Forward Transfer Admittance	$ Y_{FS} $	$V_{DS}=10\text{V}, I_D=0.5\text{A}$	0.6	1.2		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}, V_{DS}=10\text{V}, f=1.0\text{MHz}$		140		pF
Reverse Transfer Capacitance	C_{RSS}			20		pF
Output Capacitance	C_{OSS}			45		pF
SWITCHING PARAMETERS						
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_G	$V_{GS}=10\text{V}, V_{DD}\approx 80\text{V}, I_D=1.0\text{A}$		6.3		nC
Gate to Source Charge	Q_{GS}			4.3		nC
Gate-Drain ("Miller") Charge	Q_{GD}			2.0		nC
Turn-ON Time	t_{ON}	 V_{GS} 10V 0V 50Ω $I_D=0.5\text{A}$ V_{OUT} $R_L=100\Omega$ $V_{DD}\approx 50\text{V}$ Duty $\leq 1\%$, $t_w = 10\mu\text{s}$		13		ns
Rise Time	t_R			8		ns
Turn-OFF Time	t_{OFF}			175		ns
Fall-Time	t_F			45		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Drain Reverse Current (Note 1)	I_{DR}				1.0	A
Pulse Drain Reverse Current (Note 1)	I_{DRP}				3.0	A
Diode Forward Voltage	V_{DSF}	$I_{\text{DR}}=1.0\text{A}, V_{GS}=0\text{V}$			-1.5	V
Reverse Recovery Time	t_{rr}	$I_{\text{DR}}=1.0\text{A}, V_{GS}=0\text{V}, dI_{\text{DR}}/dt=50\text{A}/\mu\text{s}$		80		ns
Reverse Recovery Charge	Q_{rr}			140		nC

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

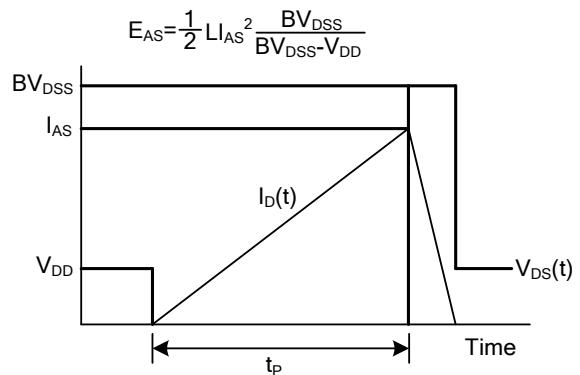
2. $V_{DD}=25\text{V}$, $T_{CH}=25^\circ\text{C}$ (initial), $L=221\text{mH}$, $R_G=25\Omega$, $I_{AR}=1\text{A}$

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

■ TEST CIRCUITS AND WAVEFORMS

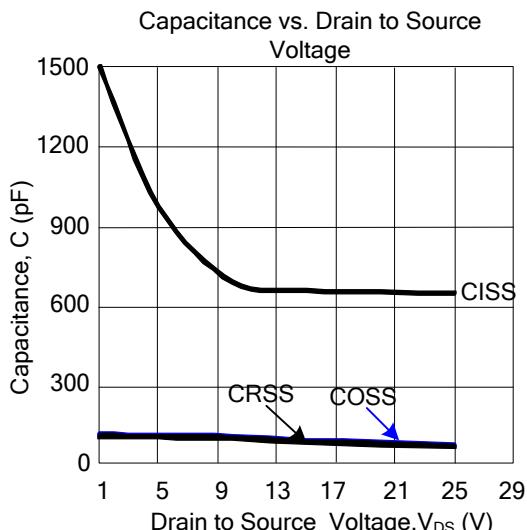
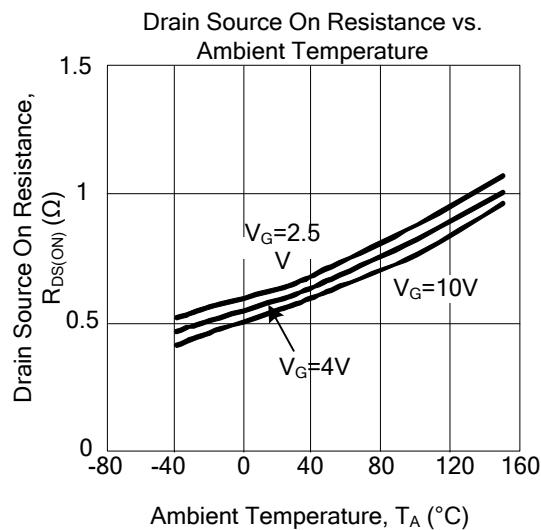
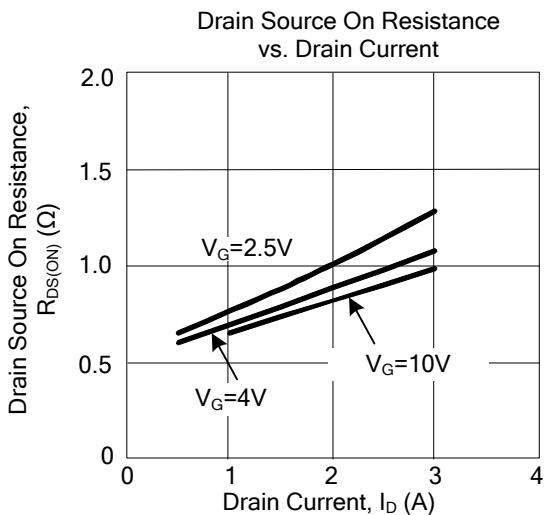
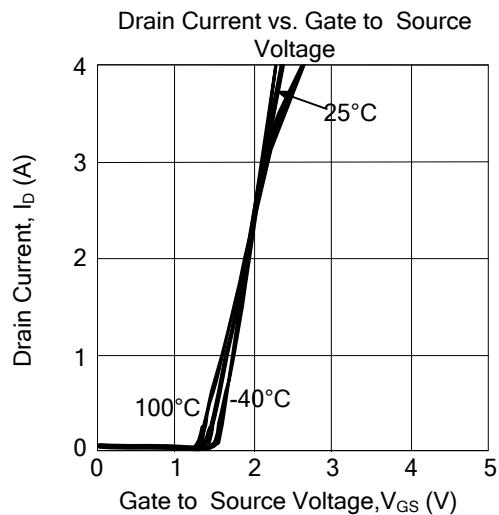
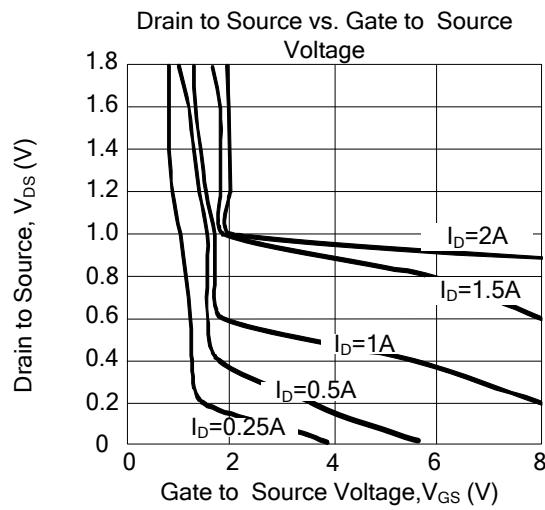
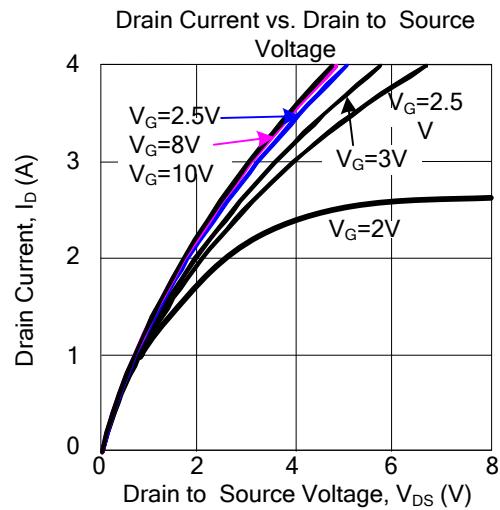


Unclamped Inductive Switching Test Circuit



Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERISTICS



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