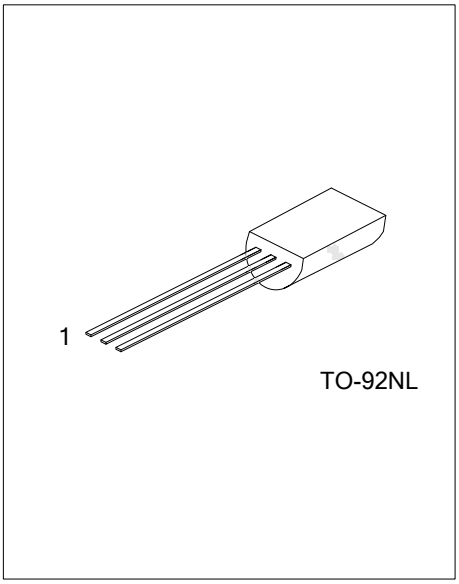
UK2962

Power MOSFET

SILICON N-CHANNEL MOS TYPE FIELD EFFECT TRANSISTOR



■ DESCRIPTION

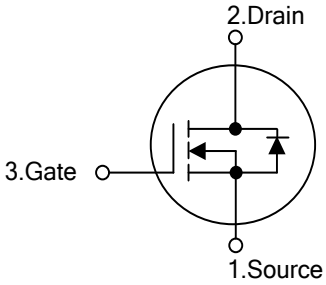
The UTC **UK2962** is a silicon N-Channel MOS type field effect transistor, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low leakage current, etc.

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

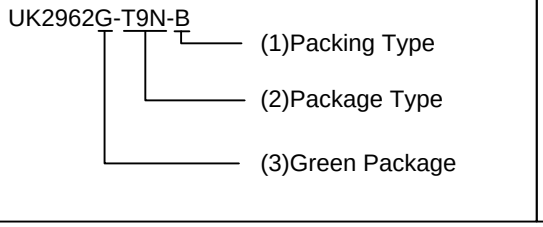
■ SYMBOL



■ 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

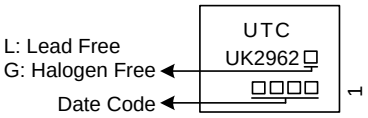


(1) B: Tape Box, K: Bulk

(2) T9N: TO-92NL

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

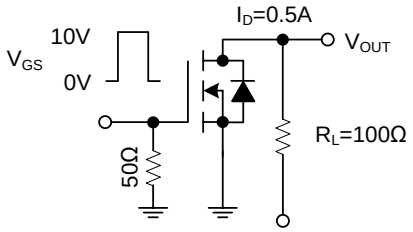
PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Drain-Gate Voltage (R_{GS}=20kΩ)		V_{DGR}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Note 1)	DC	I_D	1.0	A
	Pulse	I_{DP}	3.0	A
Avalanche Current		I_{AR}	1.0	A
Repetitive Avalanche Energy (Note 3)		E_{AR}	0.09	mJ
Single Pulse Avalanche Energy (Note 2)		E_{AS}	137	mJ
Drain Power Dissipation		P_D	0.9	W
Channel Temperature		T_{CH}	+150	°C
Operating Temperature		T_{OPR}	-40 ~ +150	°C
Storage Temperature Range		T_{STG}	-55 ~ +150	°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

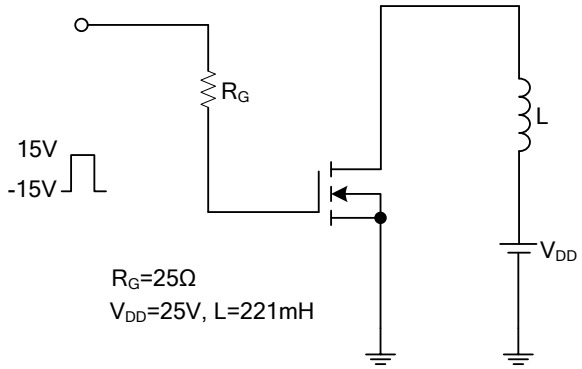
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	138	°C/W

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

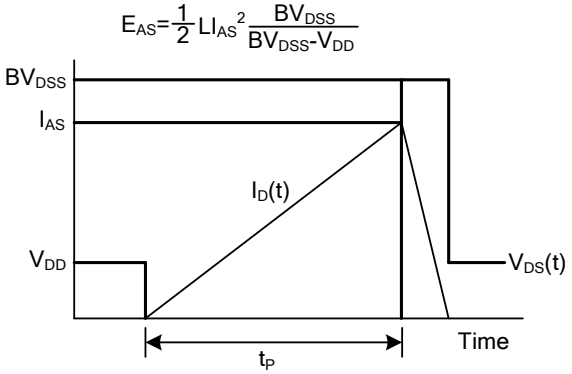
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=10mA, V_{GS}=0V	100			V
Drain Cut-Off Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			100	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±16V,V_{DS}=0V			±10	μA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=10V, I_D=1.0mA	1.3		2.0	V
Static Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.0V, I_D=0.5A		0.65	0.95	Ω
		V_{GS}=10V, I_D=0.5A		0.5	0.7	Ω
Forward Transfer Admittance	$\|Y_{FS}\|$	V_{DS}=10V, I_D=0.5A	0.6	1.2		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=10V, f=1.0MHz		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}=10V, V_{DD}≈80V, I_D=1.0A		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}	 Duty ≤ 1%, t_W =10μs		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_{DR}=1.0A,V_{GS}=0V			-1.5	V
Reverse Recovery Time	t_{rr}	I_{DR}=1.0A, V_{GS}=0V, dI_{DR}/dt=50A/μs		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}=25V, T_{CH}=25°C (initial), L=221mH, R_G=25Ω, I_{AR}=1A
3. Repetitive rating; Pulse width limited by maximum channel temperature

■ TEST CIRCUITS AND WAVEFORMS



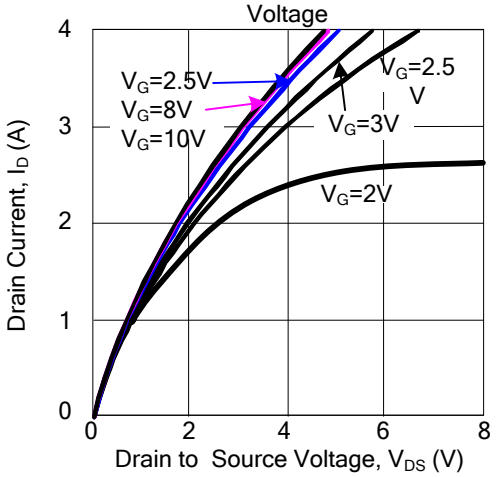
Unclamped Inductive Switching Test Circuit



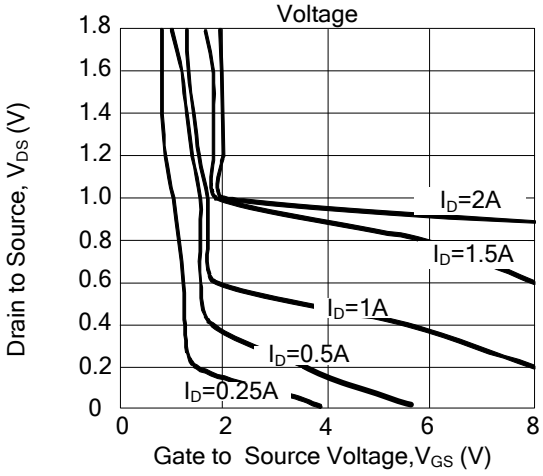
Unclamped Inductive Switching Waveforms

■ TYPICAL CHARACTERICS

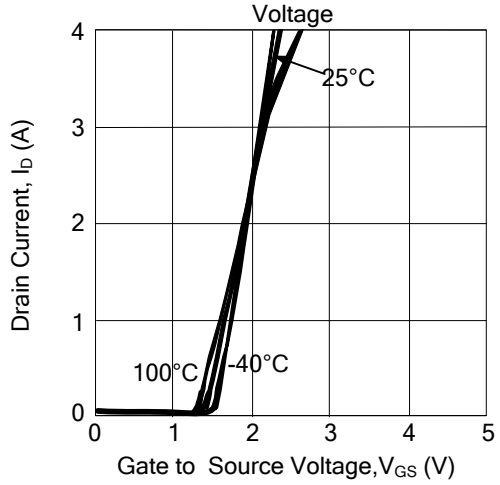
Drain Current vs. Drain to Source Voltage



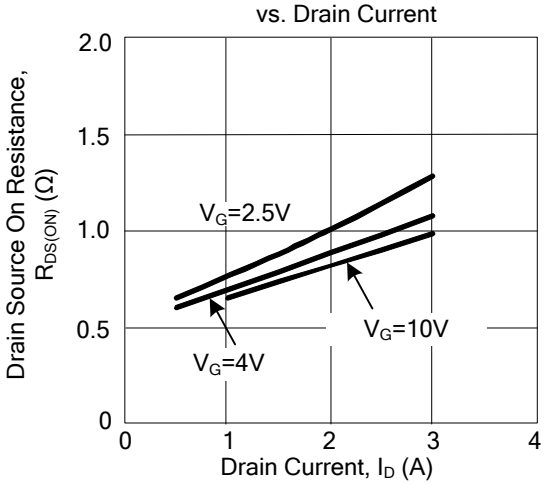
Drain to Source vs. Gate to Source Voltage



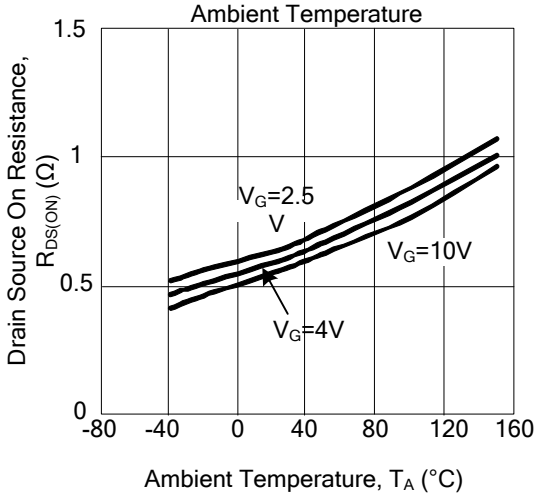
Drain Current vs. Gate to Source Voltage



Drain Source On Resistance vs. Drain Current



Drain Source On Resistance vs. Ambient Temperature



Capacitance vs. Drain to Source Voltage