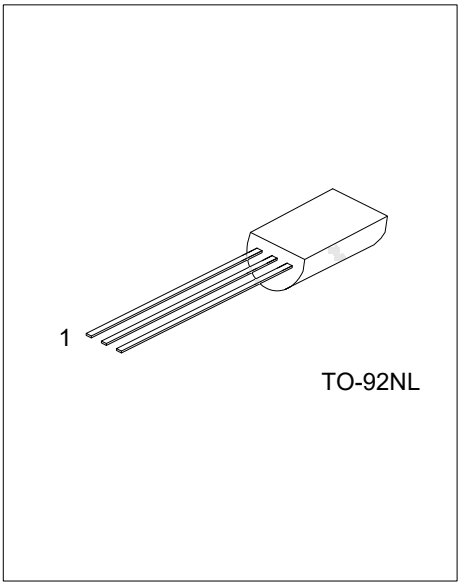
UK2962

Power MOSFET

SILICON N-CHANNEL MOS TYPE FIELD EFFECT TRANSISTOR



■ DESCRIPTION

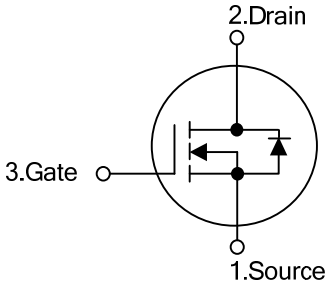
The UTC **UK2962** is a silicon N-Channel MOS type field effect transistor, it uses UTC's advanced technology to provide the customers with a minimum on state resistance and low leakage current, etc.

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

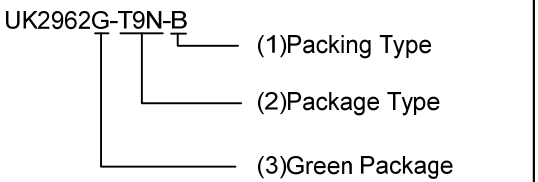
■ SYMBOL



■ 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

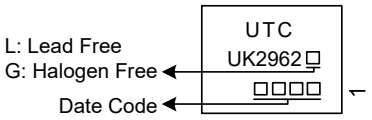


(1) B: Tape Box, K: Bulk

(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)

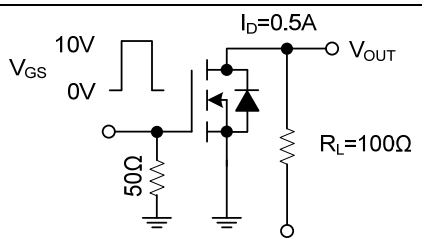
PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±20	V
Drain Current (Note 1)	DC	I_D	1.0	A
	Pulse	I_{DP}	3.0	A
Avalanche Current		I_{AR}	1.0	A
Repetitive Avalanche Energy (Note 3)		E_{AR}	0.09	mJ
Single Pulse Avalanche Energy (Note 2)		E_{AS}	100	mJ
Drain 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)

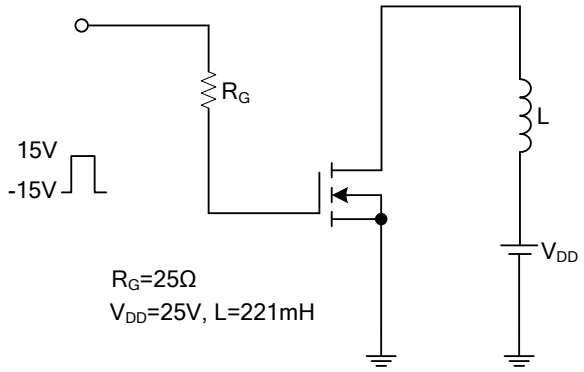
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	I_D=10mA, V_{GS}=0V	100			V
Drain Cut-Off Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			100	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±16V,V_{DS}=0V			±10	μA
ON CHARACTERISTICS						
Gate 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			0.95	Ω
		V_{GS}=10V, I_D=0.5A			0.7	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{GS}=0V, V_{DS}=10V, f=1.0MHz		510		pF
Output Capacitance	C_{OSS}			110		pF
Reverse Transfer Capacitance	C_{RSS}			8		pF
SWITCHING PARAMETERS						
Total Gate Charge (Gate-Source Plus Gate-Drain)	Q_G	V_{GS}=10V, V_{DD}≈80V, I_D=1.0A		11		nC
Gate to Source Charge	Q_{GS}			2		nC
Gate-Drain (“Miller”) Charge	Q_{GD}			1.1		nC
Turn-ON Time	t_{ON}	 Duty ≤ 1%, t_W =10μs		4.5		ns
Rise Time	t_R			16.5		ns
Turn-OFF Time	t_{OFF}			106		ns
Fall-Time	t_F			28		ns

■ ELECTRICAL CHARACTERISTICS (Cont.)

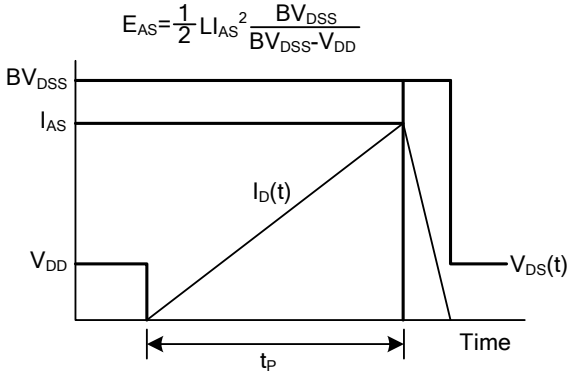
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Drain Reverse Current (Note 1)	I_{DR}				1.0	A
Pulse Drain Reverse Current (Note 1)	I_{DRP}				3.0	A
Diode Forward Voltage	V_{DSF}	I_{DR}=1.0A,V_{GS}=0V			-1.5	V
Reverse Recovery Time	t_{rr}	I_{DR}=1.0A, V_{GS}=0V, dI_{DR}/dt=50A/μs		49		ns
Reverse Recovery Charge	Q_{rr}			90		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=100mH, R_G=25Ω, I_{AR}=1.4A.
3. Repetitive rating; Pulse width limited by maximum channel temperature.

■ TEST CIRCUITS AND WAVEFORMS

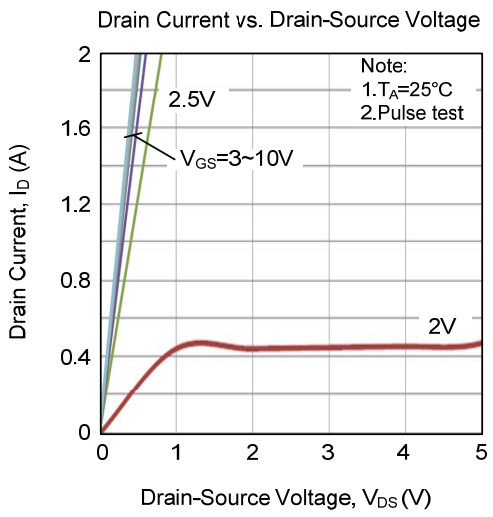


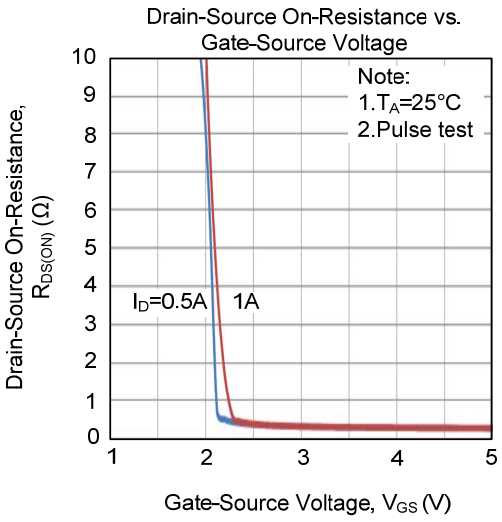
Unclamped Inductive Switching Test Circuit

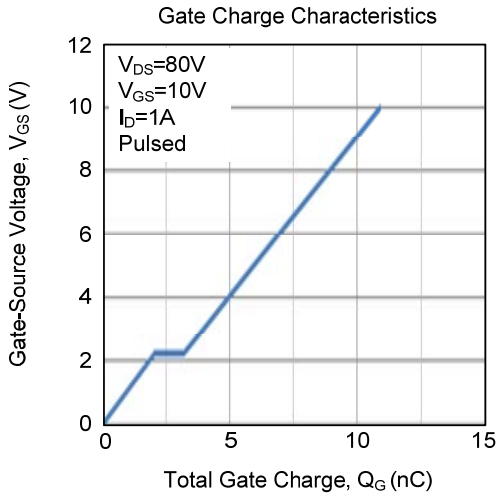


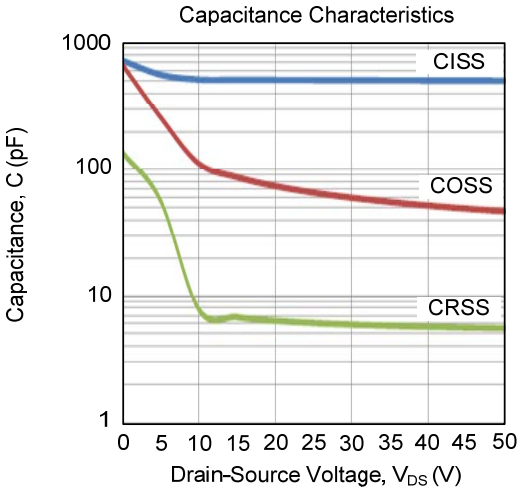
Unclamped Inductive Switching Waveforms

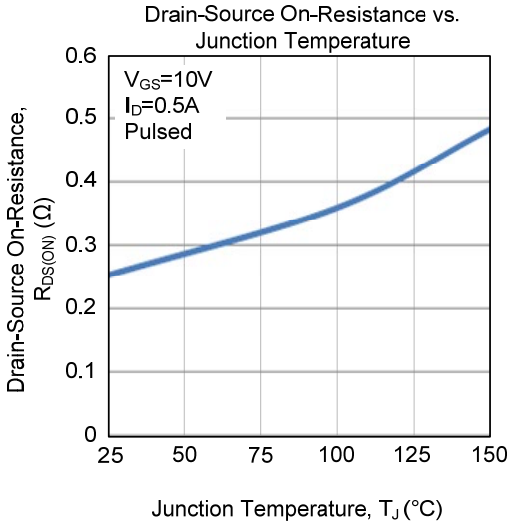
■ TYPICAL CHARACTERISTICS

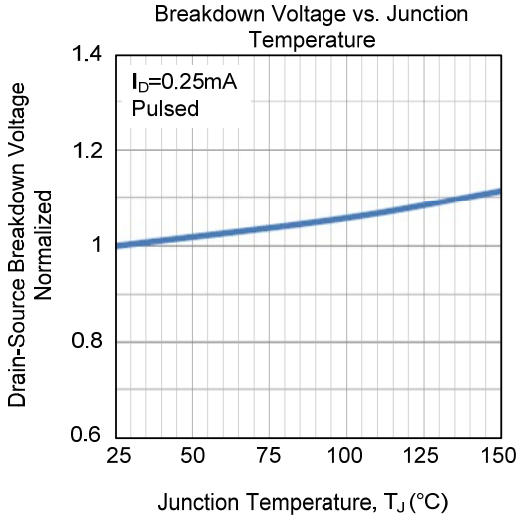






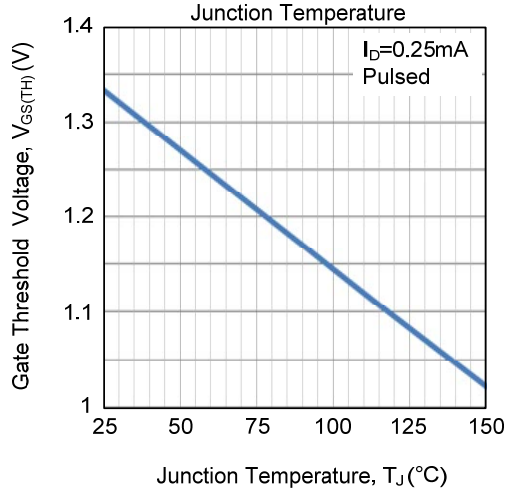




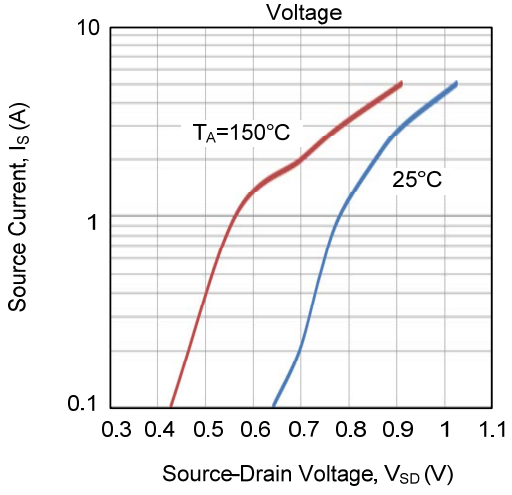


■ TYPICAL CHARACTERISTICS (Cont.)

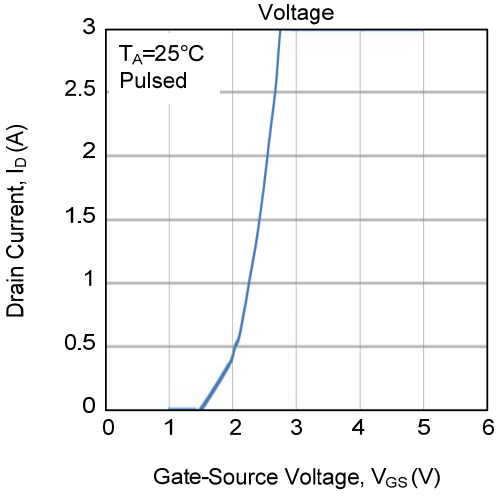
Gate Threshold Voltage vs. Junction Temperature



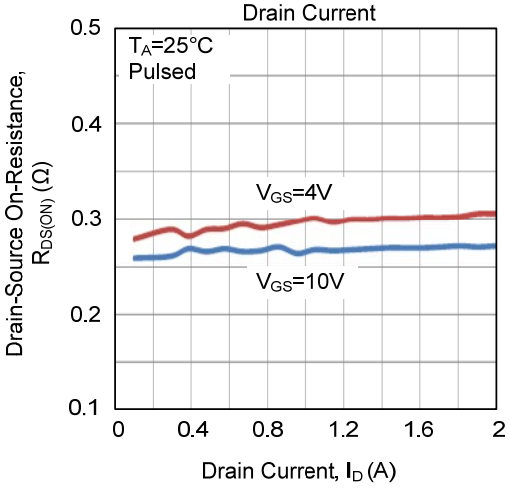
Source Current vs. Source-Drain Voltage



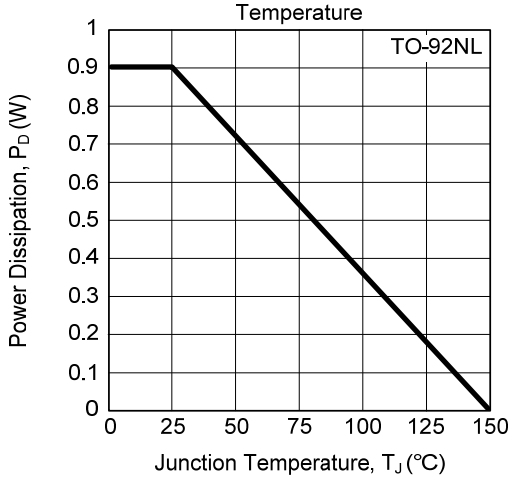
Drain Current vs. Gate-Source Voltage



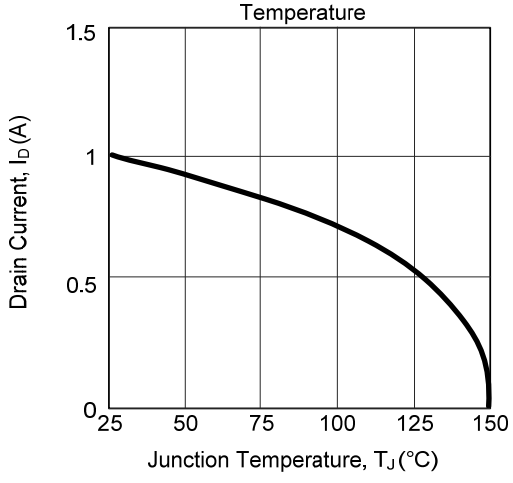
Drain-Source On-Resistance vs. Drain Current



Power Dissipation vs. Junction Temperature



Drain Current vs. Junction Temperature



■ TYPICAL CHARACTERISTICS (Cont.)