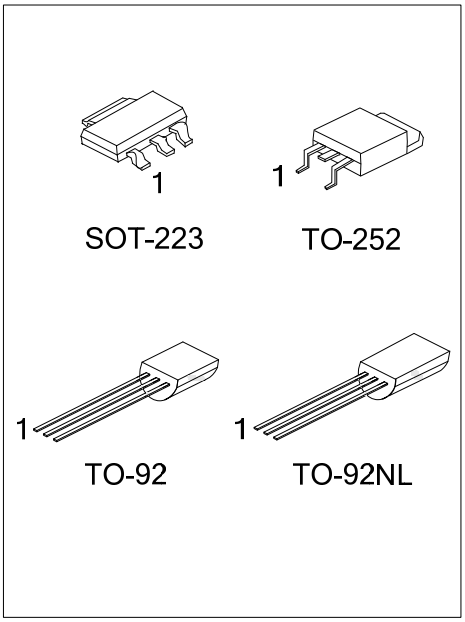
2 Amps,100 Volts
N-CHANNEL POWER MOSFET



■ DESCRIPTION

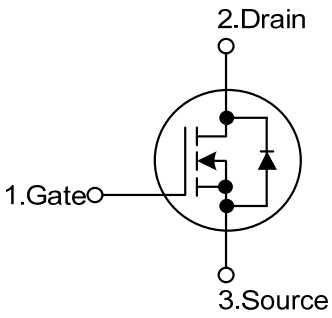
The UTC **UT2N10** is N-Channel enhancement mode silicon gate power FET.it uses a special gate oxide designed to provide full rated conductance at gate biases through 3V ~ 5V and facilitate true on-off power control directly from logic circuit supply voltages.

The UTC **UT2N10** is universally applied in logic level (5V) driving sources, such as automotive switching, solenoid drivers and programmable controllers.

■ FEATURES

* $R_{DS(ON)}$ < 1.050Ω @ V_{GS}=5V, I_D=2A
* Design Optimized for 5V Gate Drives
* Can be Driven Directly from QMOS, NMOS, TTL Circuits
* Compatible with Automotive Drive Requirements
* SOA is Power Dissipation Limited
* Nanosecond Switching Speeds
* Linear Transfer Characteristics
* High Input Impedance
* Majority Carrier Device

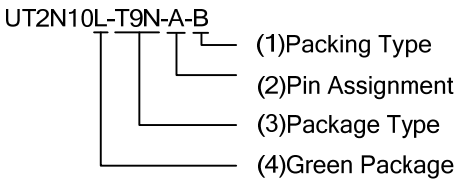
■ SYMBOL



■ ORDERING INFORMATION

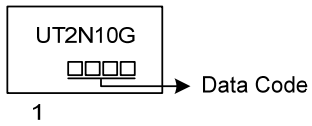
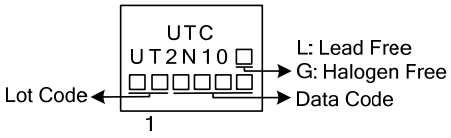
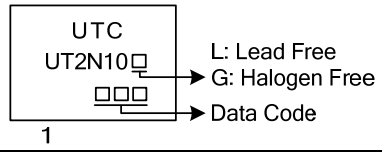
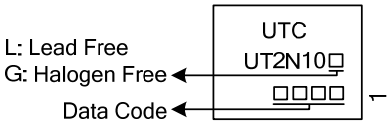
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	UT2N10G-AA3-R	SOT-223	G	D	S	Tape Reel
UT2N10L-TN3-R	UT2N10G-TN3-R	TO-252	G	D	S	Tape Reel
UT2N10L-T92-B	UT2N10G-T92-B	TO-92	G	D	S	Tape Box
UT2N10L-T92-K	UT2N10G-T92-K	TO-92	G	D	S	Bulk
UT2N10L-T9N-B	UT2N10G-T9N-B	TO-92NL	G	D	S	Tape Box
UT2N10L-T9N-K	UT2N10G-T9N-K	TO-92NL	G	D	S	Bulk
UT2N10L-T9N-A-B	UT2N10G-T9N-A-B	TO-92NL	S	D	G	Tape Box
UT2N10L-T9N-A-K	UT2N10G-T9N-A-K	TO-92NL	S	D	G	Bulk

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



(1) R: Tape Reel, B: Tape Box, K: Bulk
(2) refer to Pin Assignment (for TO-92NL)
(3) AA3: SOT-223, TN3: TO-252, T92: TO-92
T9N: TO-92NL
(4) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING

SOT-223	TO-252
	
TO-92	TO-92NL
	

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

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage (Note 1)		V_{DSS}	100	V
Gate-Source Voltage		V_{GSS}	±10	V
Drain-Gate Voltage (R_{GS}=1MΩ) (Note 1)		V_{DGR}	100	V
Drain Current	Continuous	I_D	2	A
	Pulsed (Note 3)	I_{DM}	5	A
Power Dissipation	SOT-223	P_D	1	W
	TO-252		25	W
	TO-92/ TO-92NL		3	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55~+150	°C

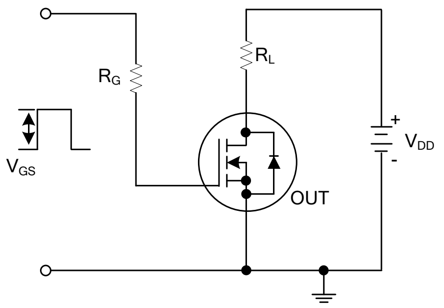
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

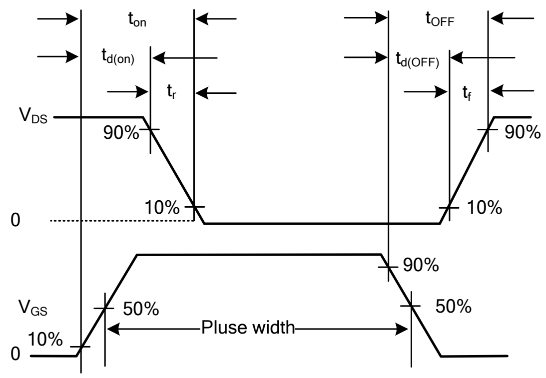
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Drain-Source Leakage Current		I_{DSS}	V_{DS} = Rated BV_{DSS}, V_{GS} = 0V			1.0	μA
			V_{DS} = 0.8 x Rated BV_{DSS}, V_{GS} = 0V, T_C = 125°C			25	
Gate- Source Leakage Current	Forward	I_{GSS}	V_{GS}=+10V, V_{DS}=0V			+100	nA
	Reverse		V_{GS}=-10V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1.0		2.5	V
Drain-Source On Voltage (Note 2)		$V_{DS(ON)}$	V_{GS}=5V, I_D=2A			2.1	V
Static Drain-Source On-State Resistance (Note 2)		$R_{DS(ON)}$	V_{GS}=5V, I_D=2A			1.050	Ω
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=25V, f=1.0MHz			200	pF
Output Capacitance		C_{OSS}				80	pF
Reverse Transfer Capacitance		C_{RSS}				35	pF
Thermal Resistance Junction to Case		$R_{θJC}$				5	°C/W
SWITCHING PARAMETERS							
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=50V, I_D=2A, R_G=6.25Ω, R_L=25 Ω, V_{GS}=5V		10	25	ns
Rise Time		t_R			15	45	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			25	45	ns
Fall-Time		t_F			20	25	ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage (Note 2)		V_{SD}	I_{SD}=2A			1.4	V
Body Diode Reverse Recovery Time		t_{RR}	I_{SD}=2A, dI_{SD}/dt=50A/μs		100		ns

Notes: 1. T_J = 25°C ~ 125°C
2. Pulse test: pulse width≤300ms, duty cycle≤2%.
3. Repetitive rating: pulse width limited by maximum junction temperature

■ TEST CIRCUITS AND WAVEFORMS



Switching Time Test Circuit



Resistive Switching Waveforms