



UT9971P

Power MOSFET

5.0A, 60V N-CHANNEL POWER MOSFET

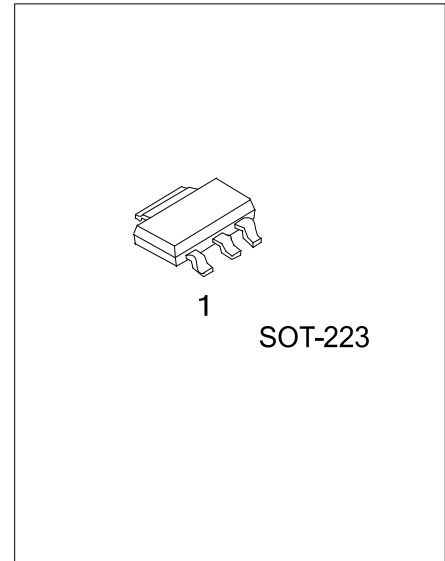
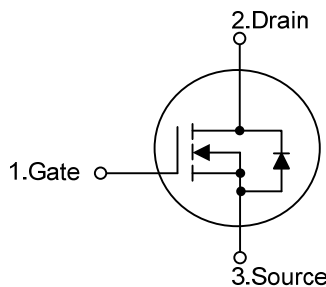
DESCRIPTION

The UTC **UT9971P** is an N-Channel enhancement mode power MOSFET providing customers with high switching speed, cost-effectiveness and minimum on-state resistance.

FEATURES

- * $R_{DS(ON)} < 50m\Omega$ @ $V_{GS}=10V, I_D=5A$
- * High switching speed

SYMBOL



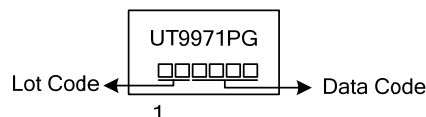
ORDERING INFORMATION

Ordering Number	Package	Pin Assignment			Packing
		1	2	3	
UT9971PG-AA3-R	SOT-223	G	D	S	Tape Reel

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

<p>UT9971PG-AA3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AA3: SOT-223</p> <p>(3) G: Halogen Free and Lead Free</p>
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MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	60	V
Gate-Source Voltage		V_{GSS}	±25	V
Drain Current	Continuous $T_A=25^\circ\text{C}$	I_D	5	A
	Pulsed	I_{DM}	20	A
Power Dissipation ($T_A=25^\circ\text{C}$)		P_D	2.7	W
Junction Temperature		T_J	-55~+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 CHARACTERISTICS

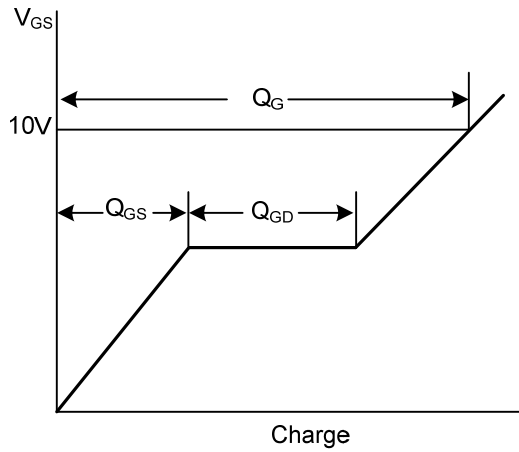
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 3)	θ_{JA}	45	$^\circ\text{C/W}$

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

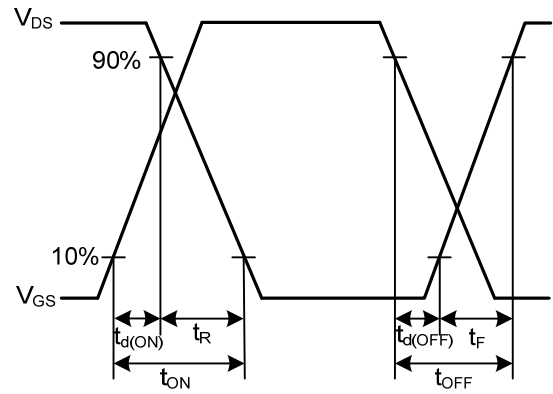
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}$, $V_{GS}=0\text{V}$	60			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=60\text{V}$, $V_{GS}=0\text{V}$, $T_J=25^\circ\text{C}$			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}			+100	nA
	Reverse				-100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-State Resistance (Note 2)	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=5\text{A}$			50	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=2.5\text{A}$			60	m Ω
Forward Transconductance	g_{FS}	$V_{DS}=10\text{V}$, $I_D=5\text{A}$		7		S
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{GS}=0\text{V}$, $V_{DS}=25\text{V}$, $f=1.0\text{MHz}$		760		pF
Output Capacitance	C_{OSS}			188		pF
Reverse Transfer Capacitance	C_{RSS}			35		pF
SWITCHING PARAMETERS						
Total Gate Charge (Note 2)	Q_G	$V_{GS}=10\text{V}$, $V_{DS}=48\text{V}$, $I_D=5\text{A}$		56		nC
Gate to Source Charge	Q_{GS}			5.5		nC
Gate to Drain Charge	Q_{GD}			8.8		nC
Turn-ON Delay Time (Note 2)	$t_{D(ON)}$	$V_{DS}=30\text{V}$, $I_D=1\text{A}$, $V_{GS}=10\text{V}$, $R_G=3.3\Omega$, $R_D=6\Omega$		40		ns
Rise Time	t_R			40		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			170		ns
Fall-Time	t_F			50		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage (Note 2)	V_{SD}	$I_S=5\text{A}$, $V_{GS}=0\text{V}$			1.2	V

Notes: 1. Pulse width limited by Max. junction temperature.
2. Pulse width $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

■ TEST CIRCUITS AND WAVEFORMS

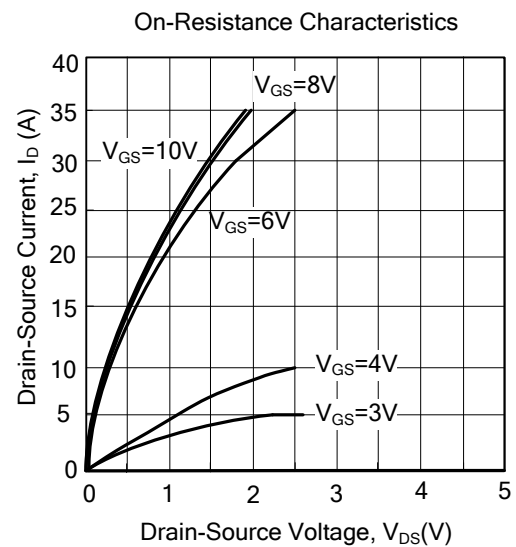
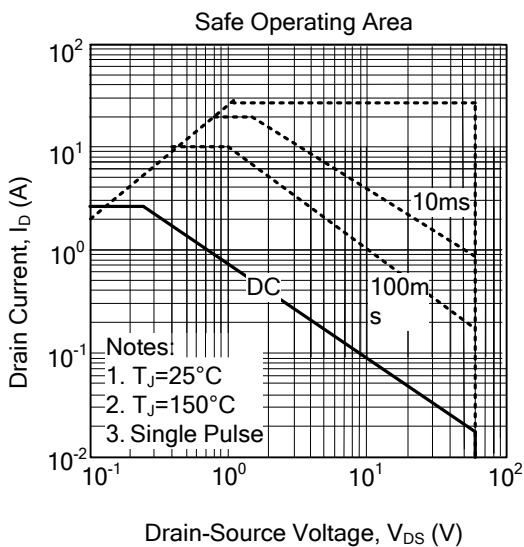
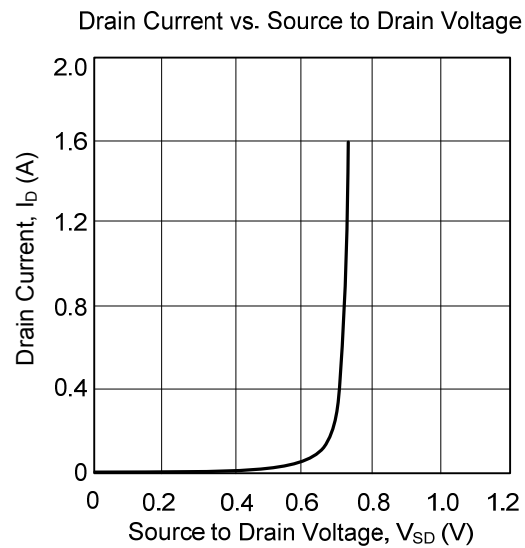
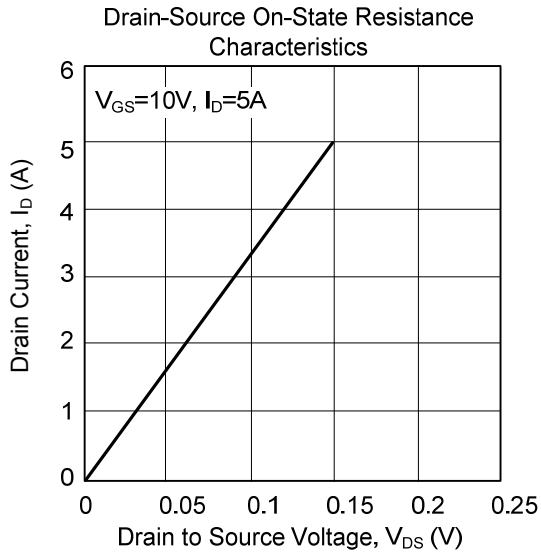
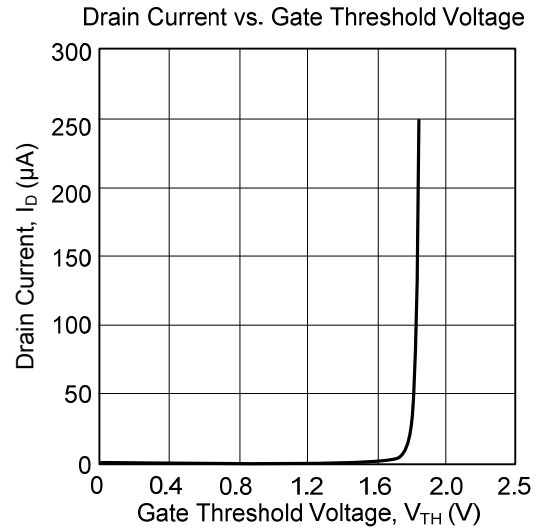
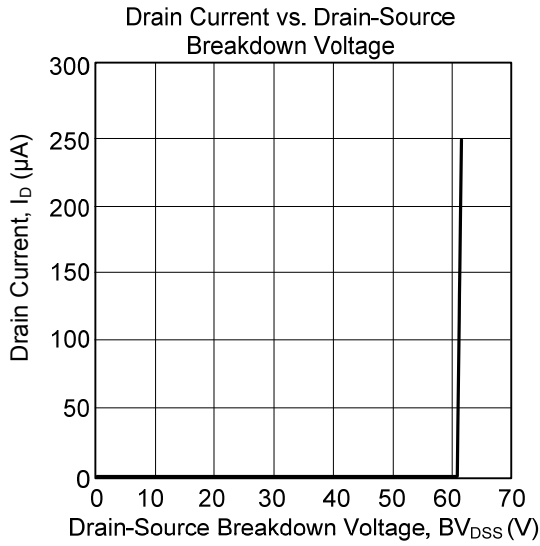


Gate Charge Waveforms

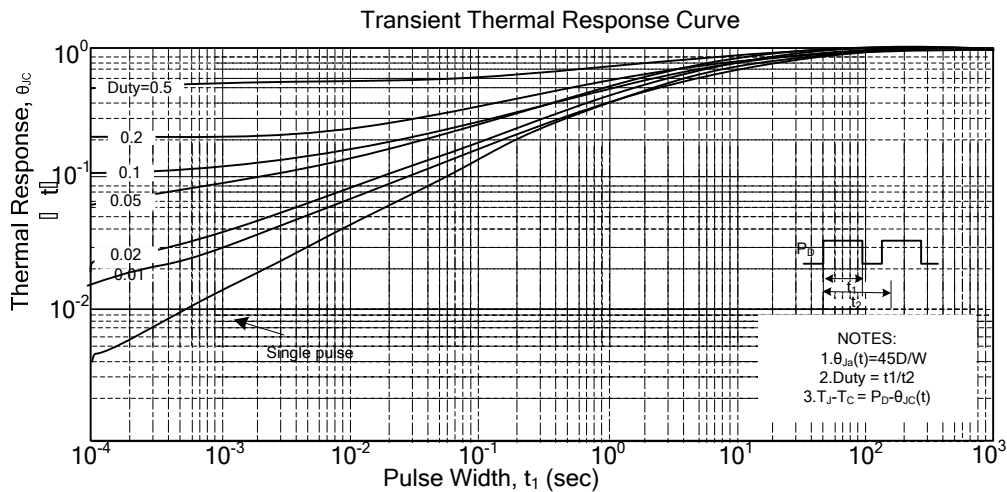
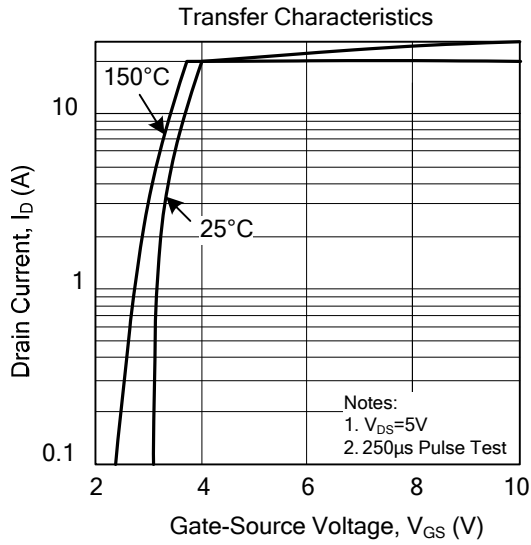


Resistive Switching Waveforms

TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



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