



UTD420

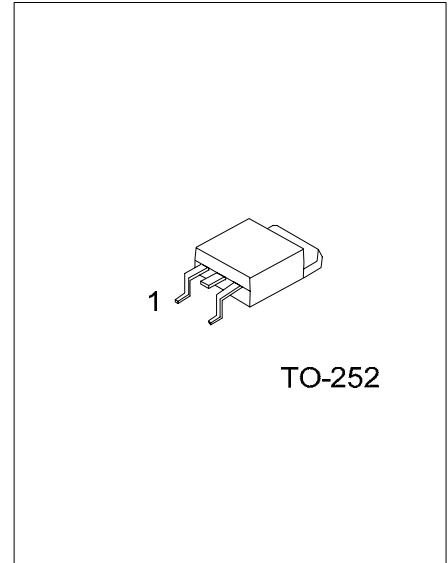
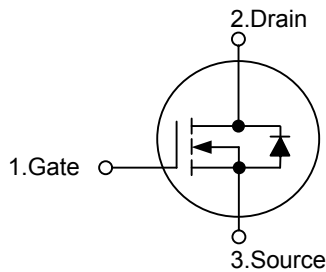
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

■ FEATURES

- * $R_{DS(ON)} = 28m\Omega @ V_{GS} = 10V$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified

■ SYMBOL



*Pb-free plating product number: UTD420L

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Normal	Lead Free Plating		1	2	3	
UTD420-TN3-R	UTD420L-TN3-R	TO-252	G	D	S	Tape Reel
UTD420-TN3-T	UTD420L-TN3-T	TO-252	G	D	S	Tube

UTD420L-TN3-R (1)Packing Type (2)Package Type (3)Lead Plating		(1) R: Tape Reel, T: Tube (2) TN3: TO-252 (3) L: Lead Free Plating, Blank: Pb/Sn
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■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current	I_{DM}	30	A
Avalanche Current	I_{AR}	15	A
Repetitive Avalanche Energy (L=0.1mH)	E_{AR}	36	mJ
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	60	W
Junction Temperature	T_J	+175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +175	$^\circ\text{C}$

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	MIN	TYP	MAX	UNIT
Junction-to-Ambient	θ_{JA}		40	50	$^\circ\text{C/W}$

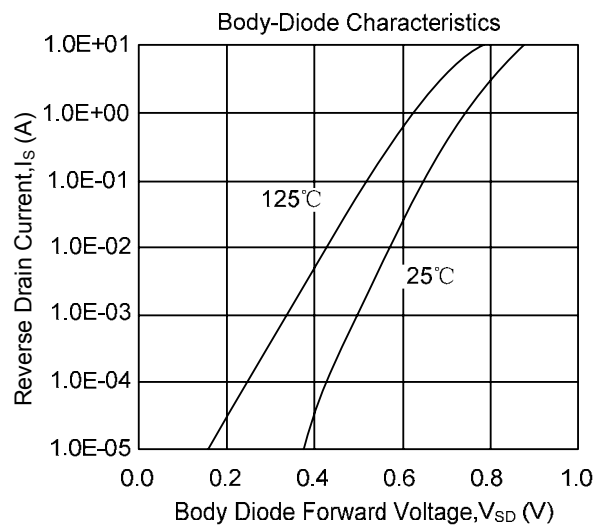
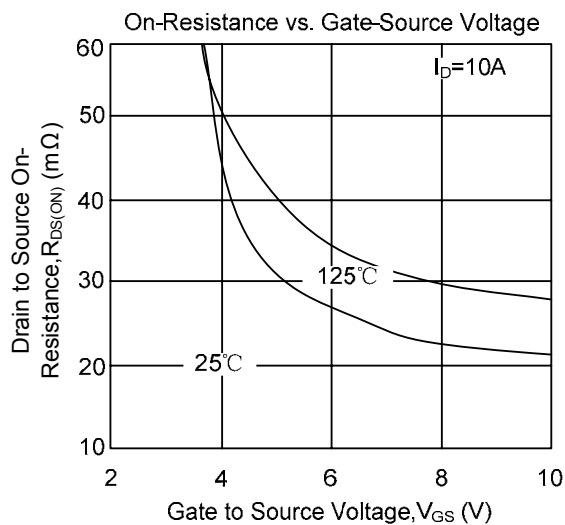
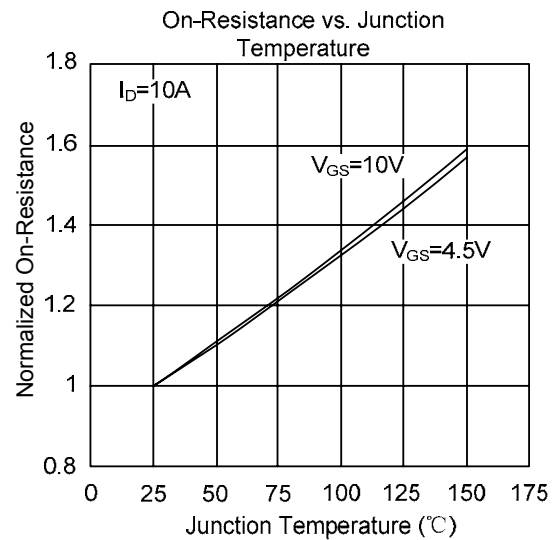
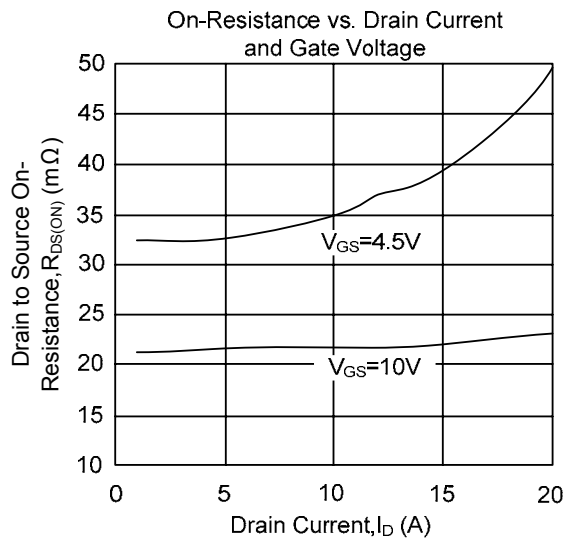
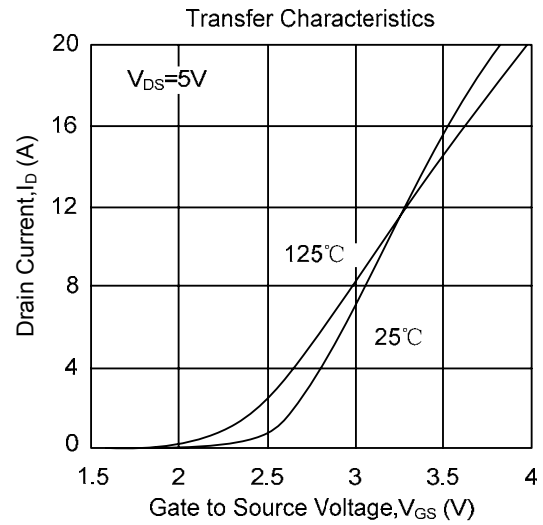
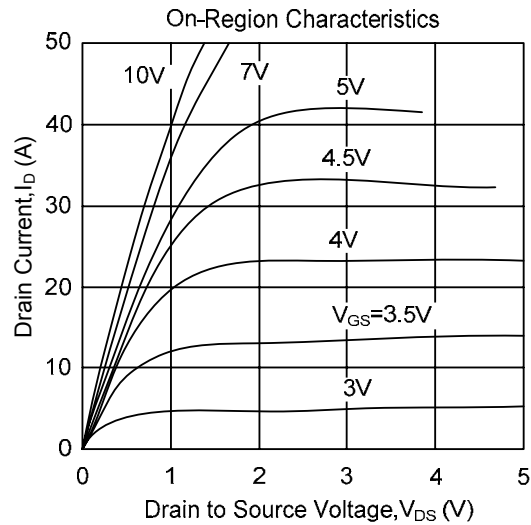
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =24V, V _{GS} =0 V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0 V, V _{GS} = ±20V			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1	1.8	3	V
On State Drain Current	I _{D(ON)}	V _{DS} =5V, V _{GS} =4.5V	40			A
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A		21	28	mΩ
		V _{GS} =4.5V, I _D =7A		32.5	42	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =15 V, V _{GS} =0V, f=1MHz		710	850	pF
Output Capacitance	C _{OSS}			120		pF
Reverse Transfer Capacitance	C _{RSS}			72		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =10V, I _D =10A		14.4	18	nC
Gate Source Charge	Q _{GS}			2.6		nC
Gate Drain Charge	Q _{GD}			2.7		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V,V _{DS} =15V,R _L =1.5Ω, R _{GEN} =3Ω		5.6		ns
Turn-ON Rise Time	t _R			2.4		ns
Turn-OFF Delay Time	t _{D(OFF)}			15.6		ns
Turn-OFF Fall-Time	t _F			2.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A,V _{GS} =0V		0.75	1	V
Maximum Continuous Drain-Source Diode Forward Current	I _S				10	A
Body Diode Reverse Recovery Time	t _{RR}	I _F =10 A, dI/dt=100A/μs		13.4	21	ns
Body Diode Reverse Recovery Charge	Q _{RR}	I _F =10 A, dI/dt=100A/μs		4.4		nC

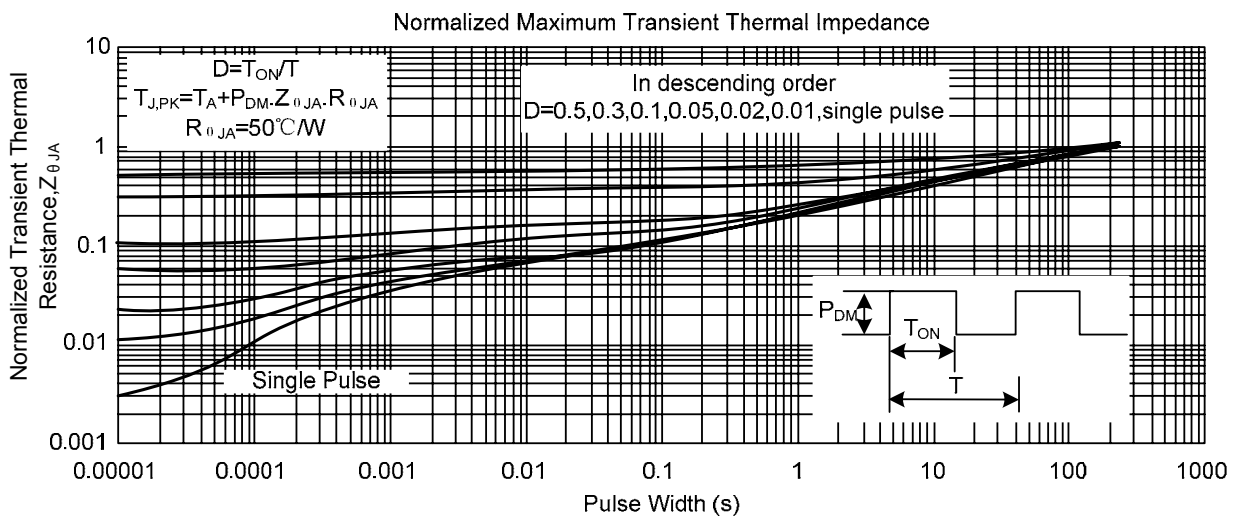
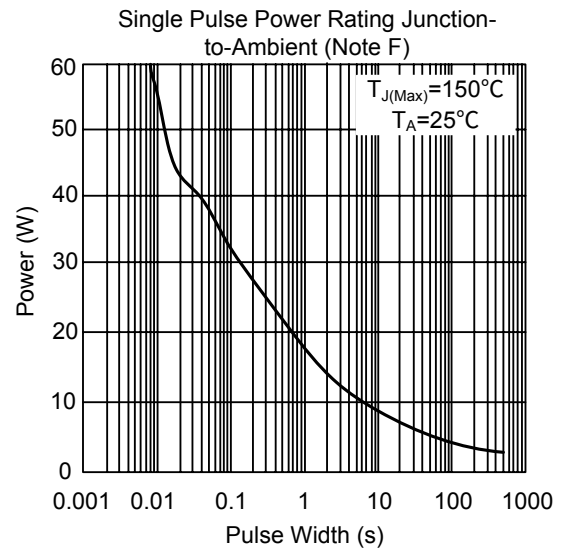
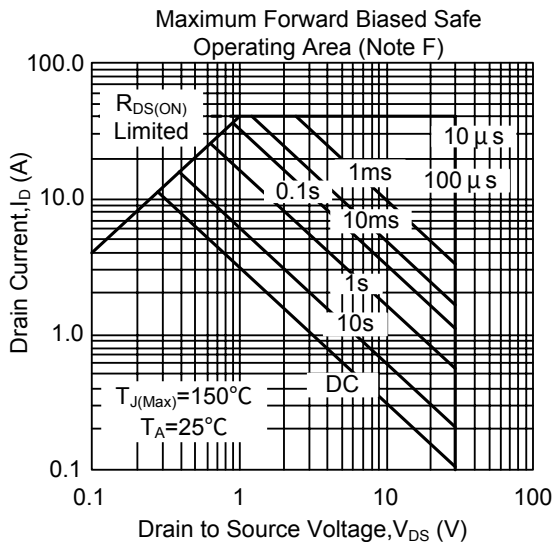
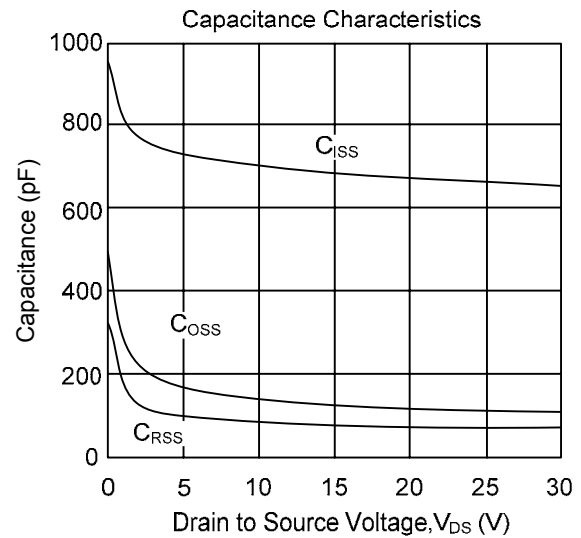
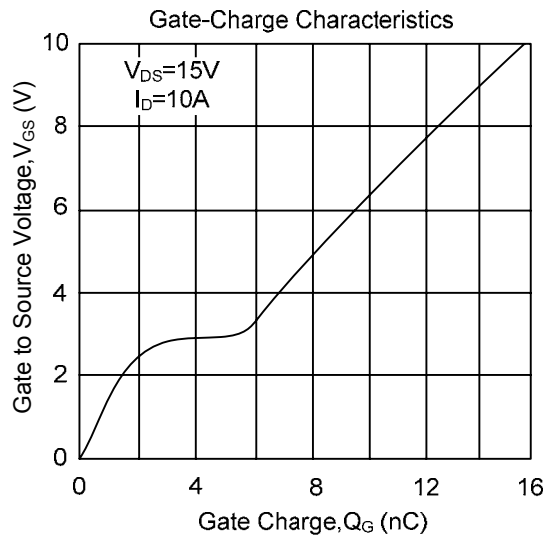
Notes: 1. Pulse width limited by $T_{J(MAX)}$

2. Pulse width $\leq 300\mu\text{s}$, duty cycle 0.5% max.

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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