



UTD420

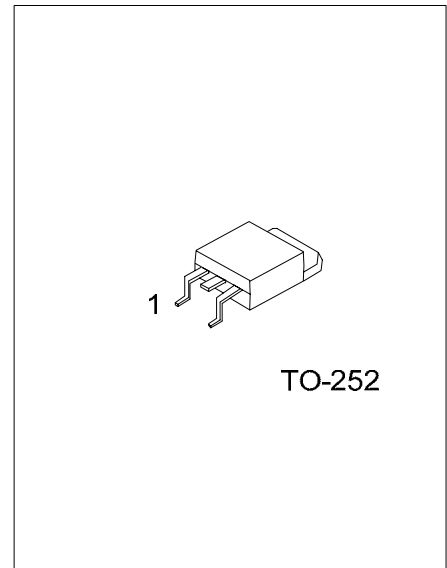
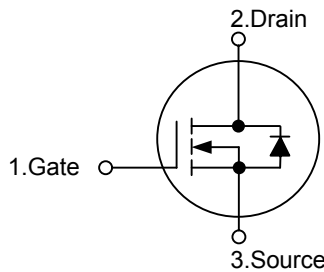
Power MOSFET

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

<p>UTD420L-TN3-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Plating</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TN3: TO-252</p> <p>(3) L: Lead Free Plating, Blank: Pb/Sn</p>
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■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DSS}	30	V
Gate-Source Voltage	V_{GSS}	± 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	
Strong Temperature	T_{STG}	-55 ~ +175	

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	/W

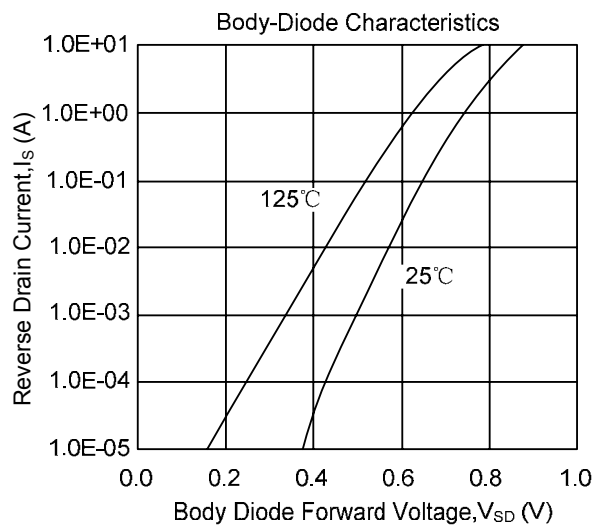
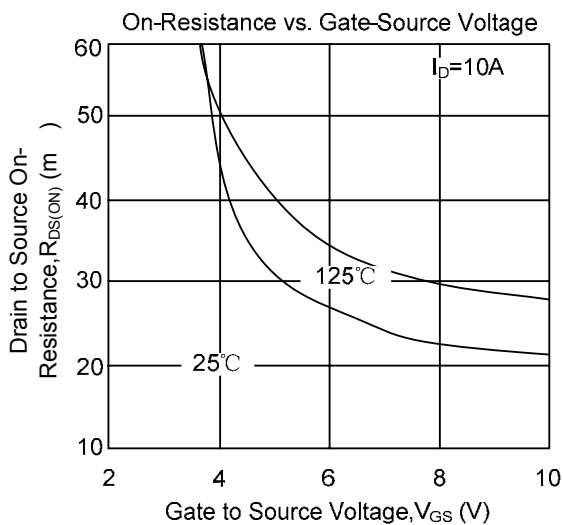
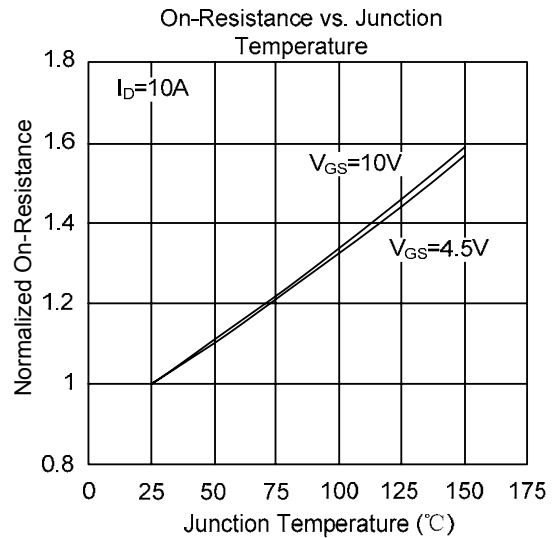
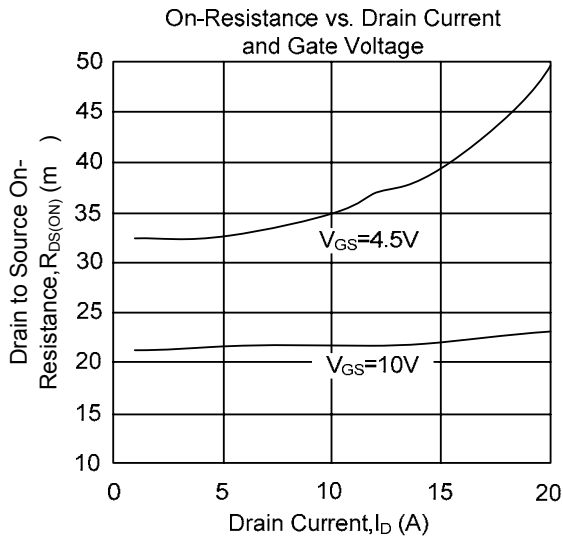
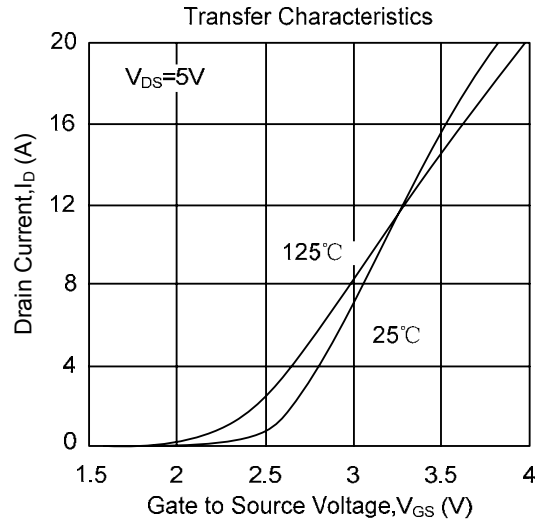
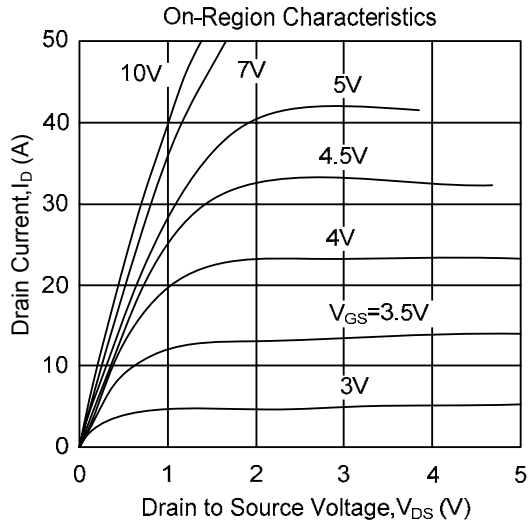
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 24\text{V}, V_{GS} = 0\text{ V}$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{V}$			100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1	1.8	3	V
On State Drain Current	$I_{D(ON)}$	$V_{DS} = 5\text{V}, V_{GS} = 4.5\text{V}$	40			A
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 10\text{A}$		21	28	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 7\text{A}$		32.5	42	m Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		710	850	pF
Output Capacitance	C_{OSS}			120		pF
Reverse Transfer Capacitance	C_{RSS}			72		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	$V_{DS} = 15\text{V}, V_{GS} = 10\text{V}, I_D = 10\text{A}$		14.4	18	nC
Gate Source Charge	Q_{GS}			2.6		nC
Gate Drain Charge	Q_{GD}			2.7		nC
Turn-ON Delay Time	$t_{D(ON)}$	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, R_L = 1.5\Omega,$ $R_{GEN} = 3\Omega$		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}	$I_S = 1\text{A}, V_{GS} = 0\text{V}$		0.75	1	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				10	A
Body Diode Reverse Recovery Time	t_{RR}	$I_F = 10\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$		13.4	21	ns
Body Diode Reverse Recovery Charge	Q_{RR}	$I_F = 10\text{ A}, dI/dt = 100\text{A}/\mu\text{s}$		4.4		nC

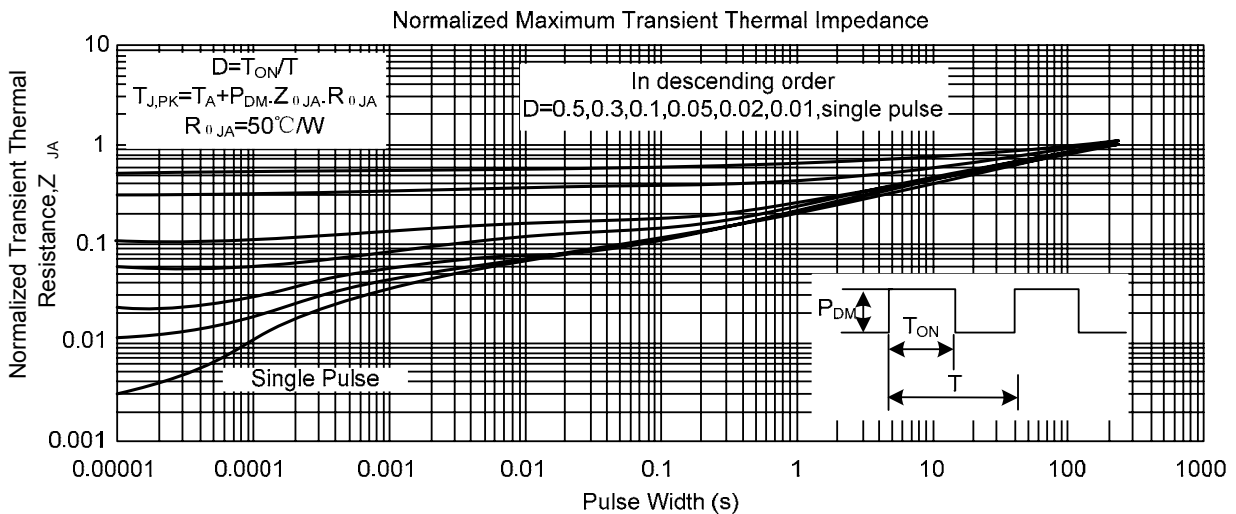
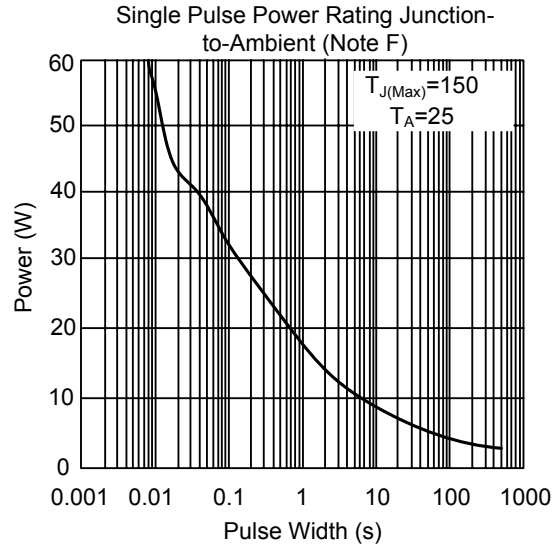
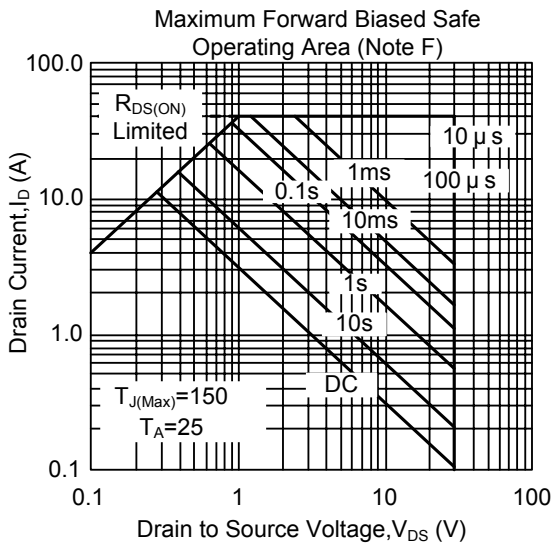
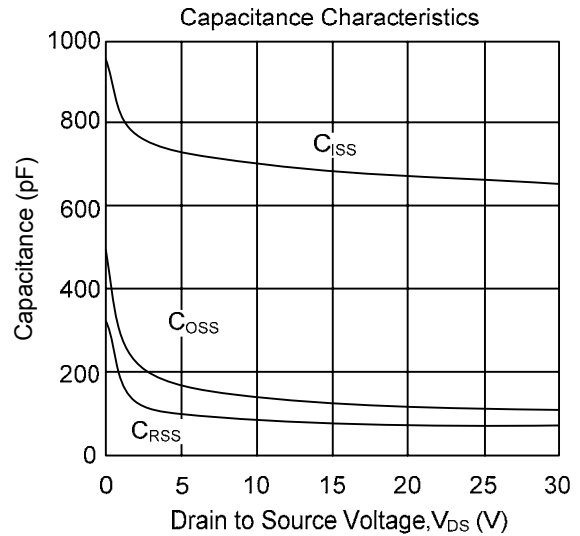
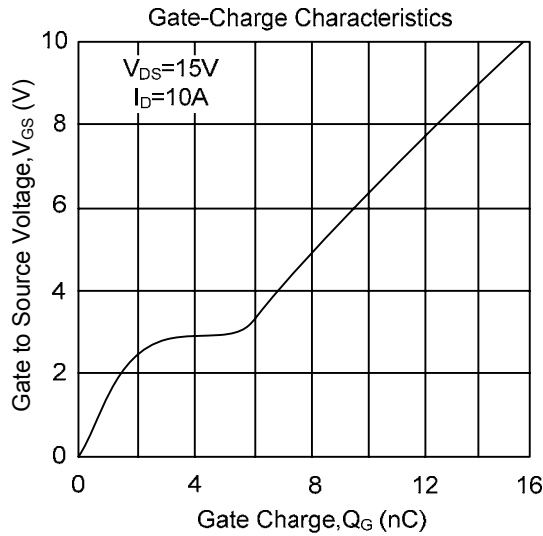
Notes: 1. Pulse width limited by $T_{J(MAX)}$

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

TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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