



UTD408

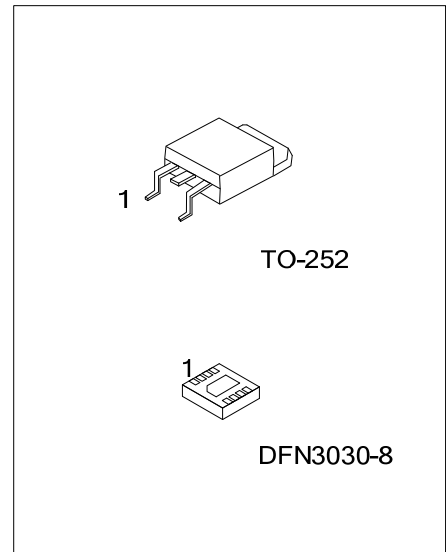
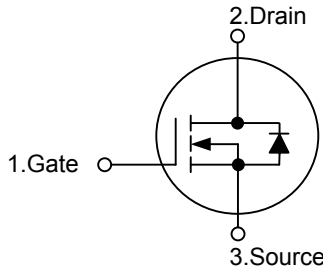
Power MOSFET

N-CHANNEL ENHANCEMENT MODE

FEATURES

- * $R_{DS(ON)} < 18\text{ m}\Omega @ V_{GS} = 10V, I_D = 18A$
- * $R_{DS(ON)} < 27\text{ m}\Omega @ V_{GS} = 4.5V, I_D = 10A$
- * Low capacitance
- * Optimized gate charge
- * Fast switching capability
- * Avalanche energy specified

SYMBOL



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UTD408L-TN3-R	UTD408G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UTD408L-K08-3030-R	UTD408G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UTD408G-TN3-R</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Green Package 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) TN3: TO-252, K08-3030: DFN3030-8 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

TO-252	DFN3030-8

■ ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT	
Drain-Source Voltage		V_{DSS}	30	V	
Gate-Source Voltage		V_{GSS}	± 20	V	
Continuous Drain Current ($T_C=25^\circ\text{C}$) (Note 4)		I_D	18	A	
Pulsed Drain Current (Note 3)		I_{DM}	40	A	
Avalanche Current (Note 3)		I_{AR}	18	A	
Repetitive Avalanche Energy ($L=0.1\text{mH}$) (Note 3)		E_{AR}	40	mJ	
Power Dissipation	TO-252	$T_A=25^\circ\text{C}$ (Note 1)	P_D	2.5	W
	DFN3030-8			1.5	W
	TO-252	$T_C=25^\circ\text{C}$ (Note 2)	P_D	60	W
	DFN3030-8			36	W
Junction Temperature		T_J	+150	$^\circ\text{C}$	
Strong Temperature		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 DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	TO-252	θ_{JA}	50	$^\circ\text{C/W}$
	DFN3030-8		65	$^\circ\text{C/W}$
Junction to Case (Note 3)	TO-252	θ_{JC}	2.08	$^\circ\text{C/W}$
	DFN3030-8		3.5	$^\circ\text{C/W}$

- Notes: 1. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, and the maximum temperature of 150°C may be used if the PCB or heat-sink allows it.
 2. The power dissipation P_D is based on $T_{J(MAX)} = 150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat-sinking is used.
 3. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)} = 150^\circ\text{C}$.
 4. The maximum current rating is limited by bond-wires.

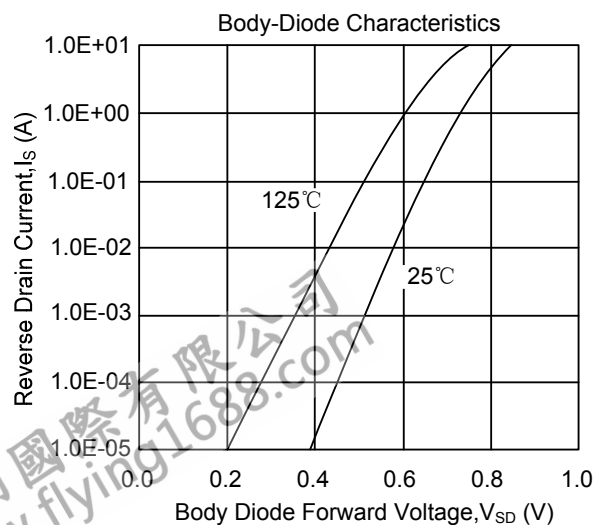
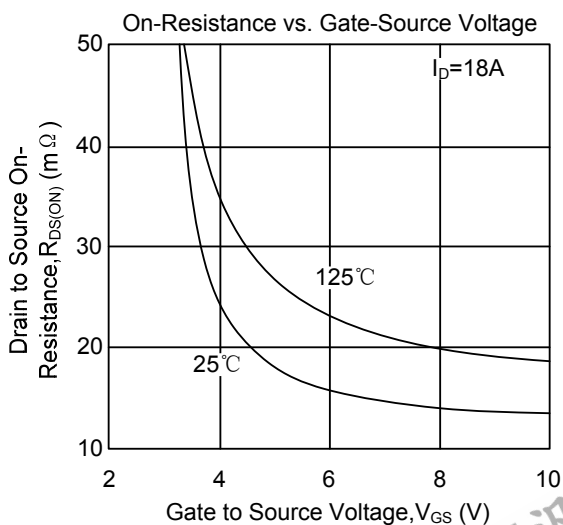
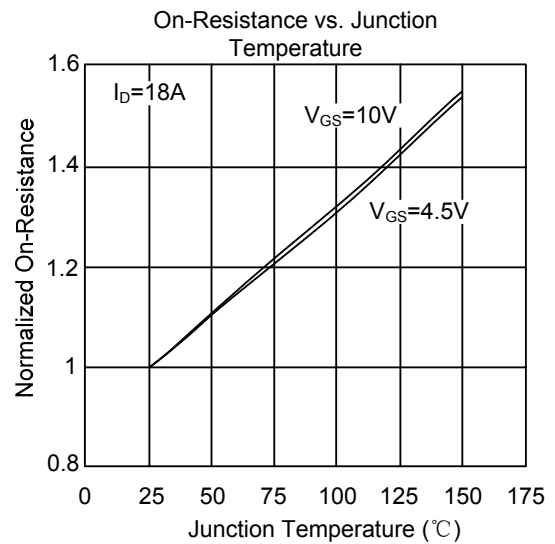
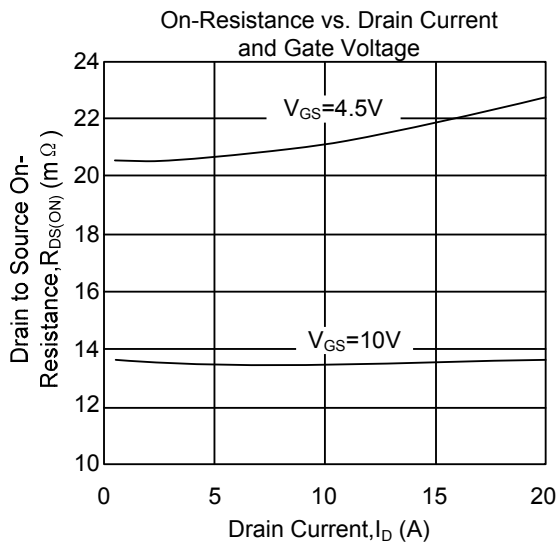
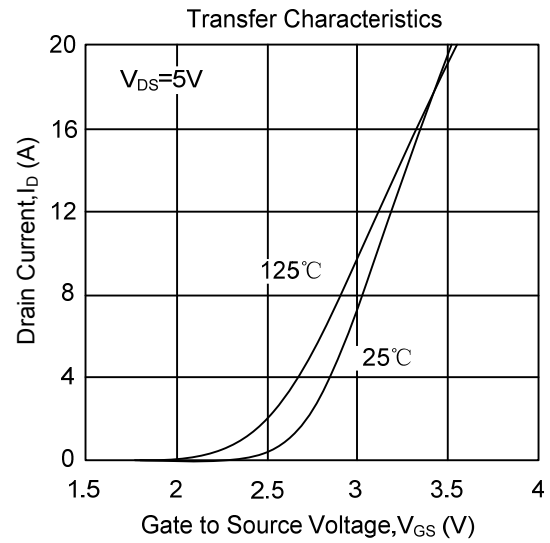
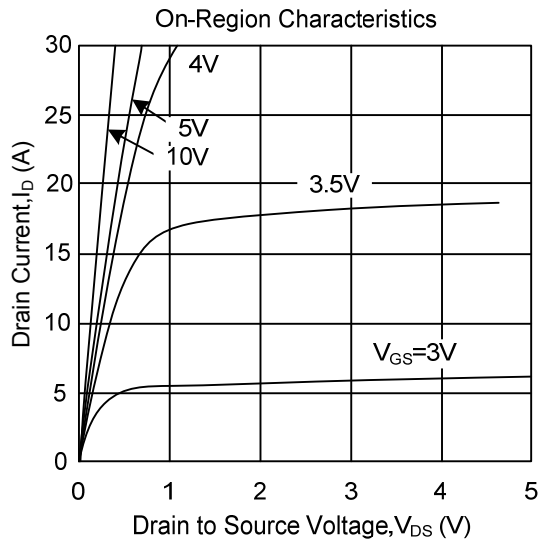
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise specified)

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	2.5	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 =18A		13.6	18	mΩ
		V _{GS} =4.5V, I _D =10A		20.6	27	mΩ
DYNAMIC PARAMETERS						
Input Capacitance	C _{ISS}	V _{DS} =15 V, V _{GS} =0V, f=1MHz		1040	1250	pF
Output Capacitance	C _{OSS}			180		pF
Reverse Transfer Capacitance	C _{RSS}			110		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =10V, I _D =18A		19.8	25	nC
Gate Source Charge	Q _{GS}			2.5		nC
Gate Drain Charge	Q _{GD}			3.5		nC
Turn-ON Delay Time	t _{D(ON)}	V _{GS} =10V, V _{DS} =15V, R _L =0.82Ω, R _{GEN} =3Ω		4.5		ns
Turn-ON Rise Time	t _R			3.9		ns
Turn-OFF Delay Time	t _{D(OFF)}			17.4		ns
Turn-OFF Fall-Time	t _F			3.2		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Maximum Continuous Drain-Source Diode Forward Current	I _S				18	A
Drain-Source Diode Forward Voltage	V _{SD}	I _S =1A, V _{GS} =0V		0.75	1	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =18 A, di/dt=100A/μs		19	25	ns
Body Diode Reverse Recovery Charge	Q _{rr}	I _F =18 A, di/dt=100A/μs		8		nC

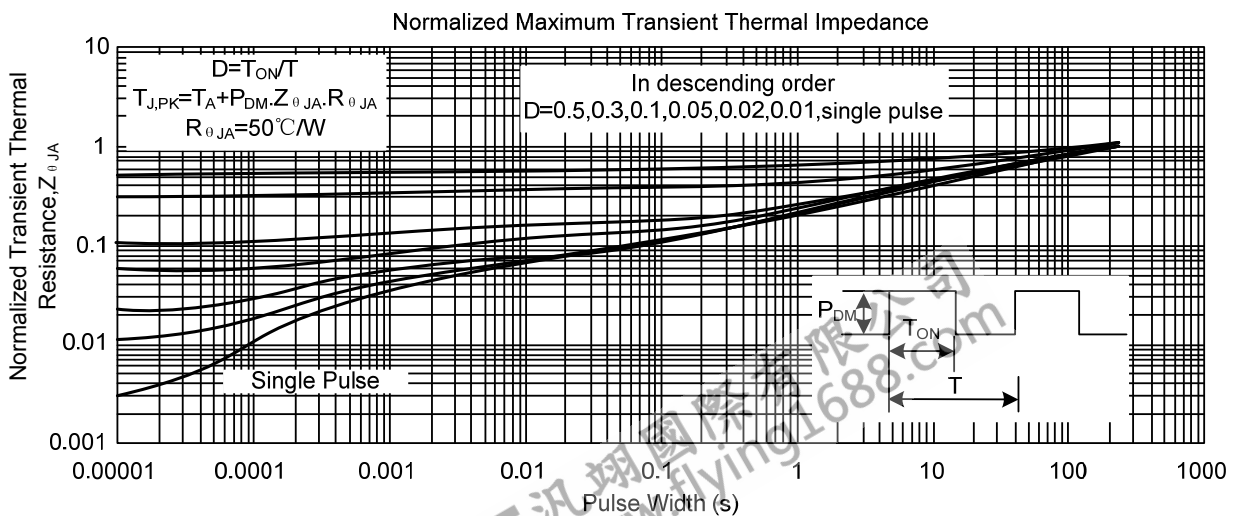
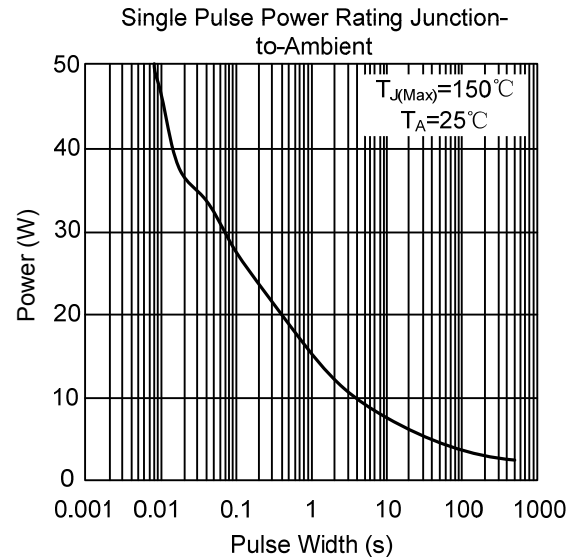
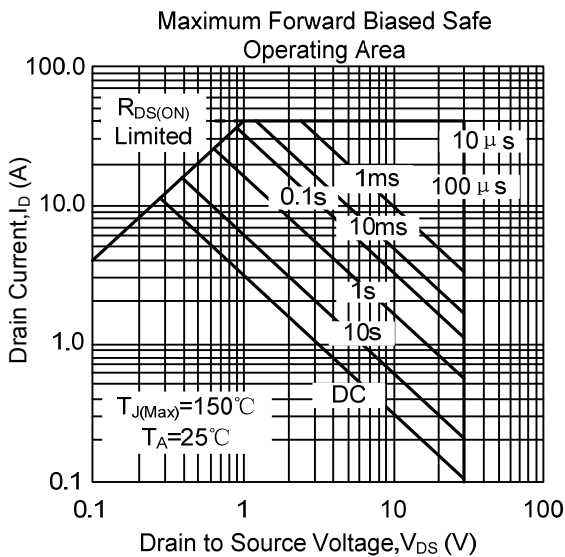
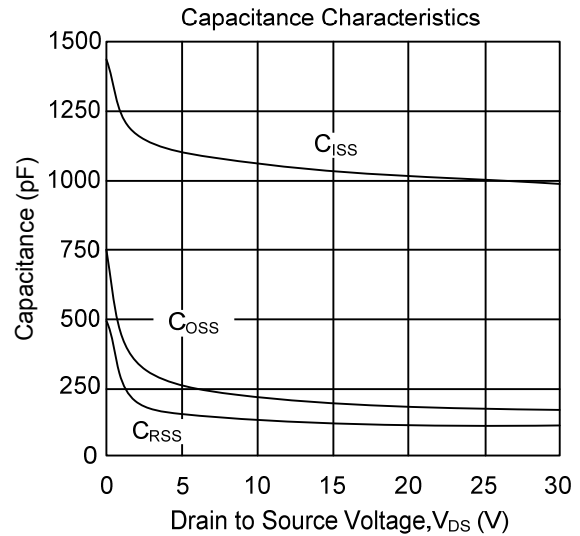
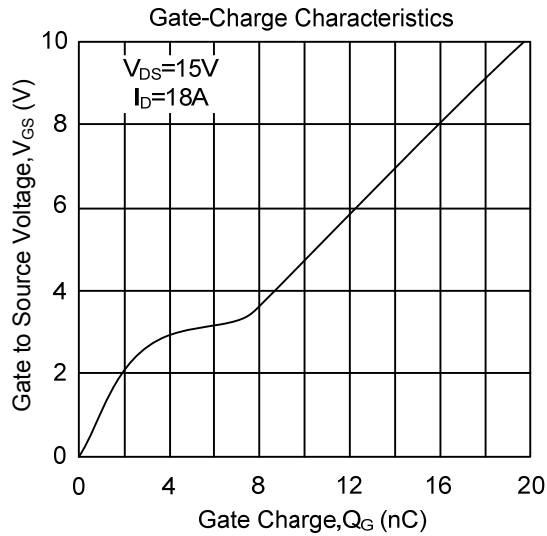
Notes: 5. Pulse width limited by T_{J(MAX)}

6. Pulse width ≤300us, duty cycle ≤2%.

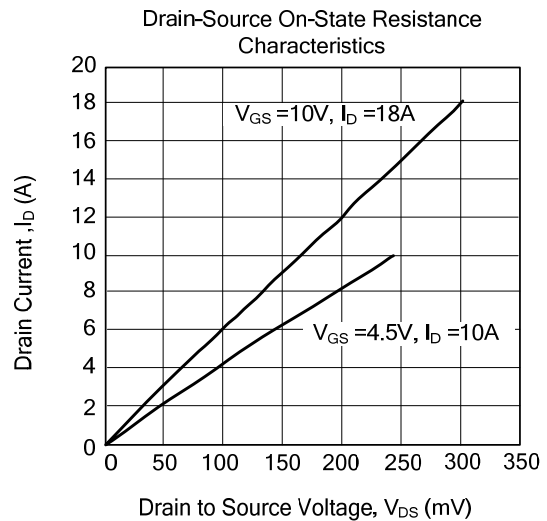
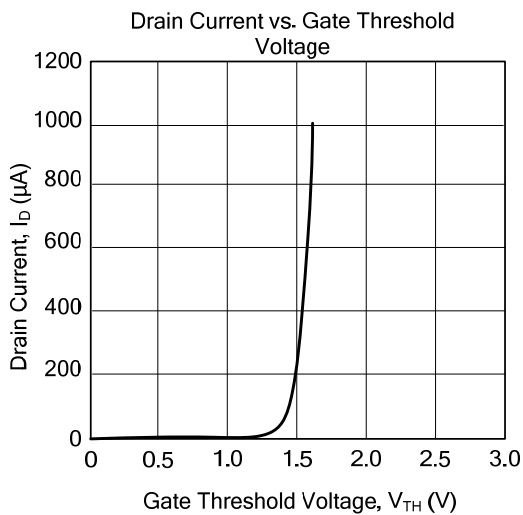
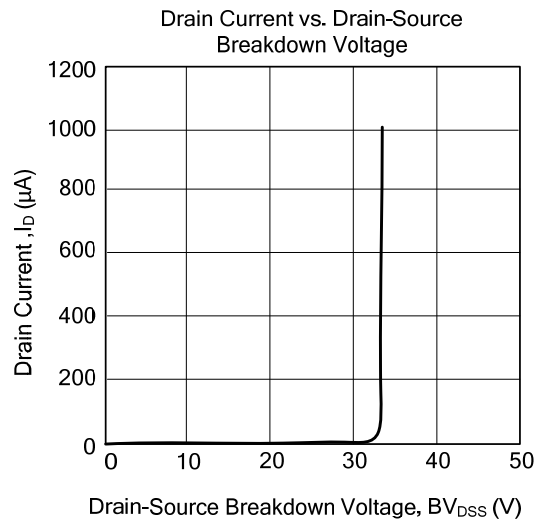
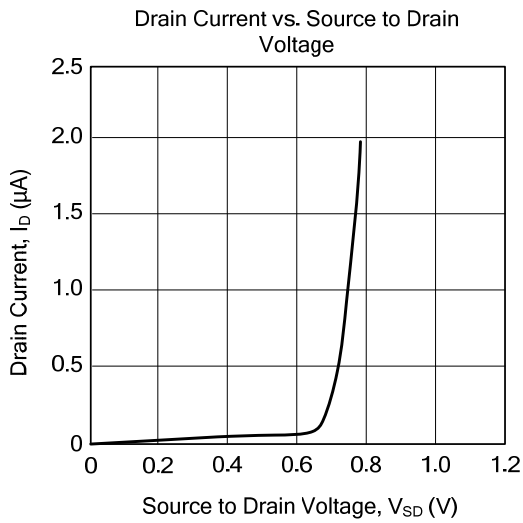
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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