



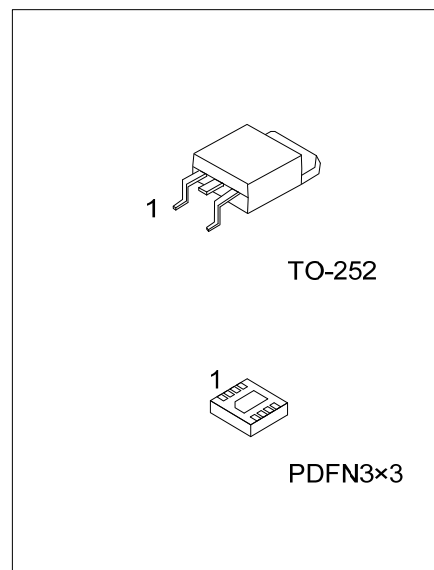
UTD408

Power MOSFET

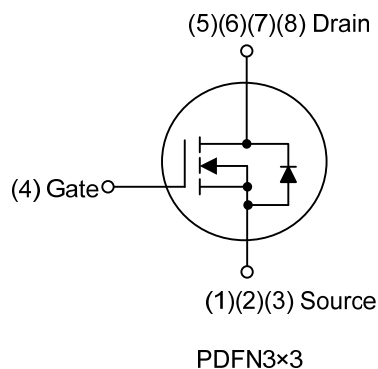
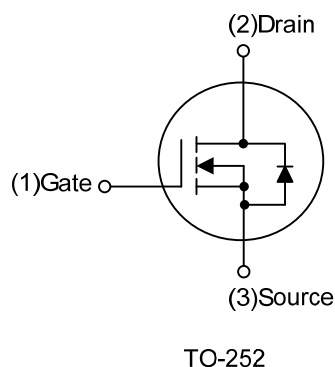
N-CHANNEL ENHANCEMENT MODE

FEATURES

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



SYMBOL



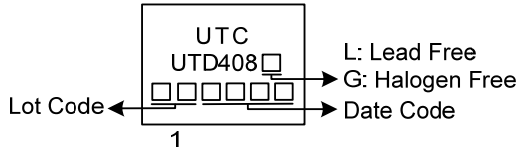
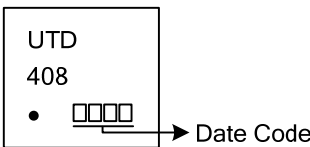
ORDERING INFORMATION

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-P3030-R	UTD408G-P3030-R	PDFN3x3	S	S	S	G	D	D	D	D	Tape Reel

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

UTD408G-TN3-R (1)Packing Type (2)Package Type (3)Green Package		(1) R: Tape Reel (2) TN3: TO-252, P3030: PDFN3x3 (3) G: Halogen Free and Lead Free, L: Lead Free
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MARKING

TO-252	PDFN3×3
 UTC UTD408 Lot Code ← [] [] [] [] [] → 1 → L: Lead Free → G: Halogen Free → Date Code	 UTD 408 • [] [] [] [] → Date Code

■ 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°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=0.1mH) (Note 3)			E _{AR}	40	mJ
Power Dissipation	TO-252	T _A =25°C (Note 1)	P _D	2.5	W
	PDFN3×3			1.5	W
	TO-252	T _C =25°C (Note 2)		60	W
	PDFN3×3			36	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.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient (Note 1)	TO-252	θ_{JA}	50	$^\circ\text{C/W}$
	PDFN3×3		65	$^\circ\text{C/W}$
Junction to Case (Note 3)	TO-252	θ_{JC}	2.08	$^\circ\text{C/W}$
	PDFN3×3		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 $T_{J(\text{MAX})} = 150^\circ\text{C}$, 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 $T_{J(\text{MAX})} = 150^\circ\text{C}$.
4. The maximum current rating is limited by bond-wires.

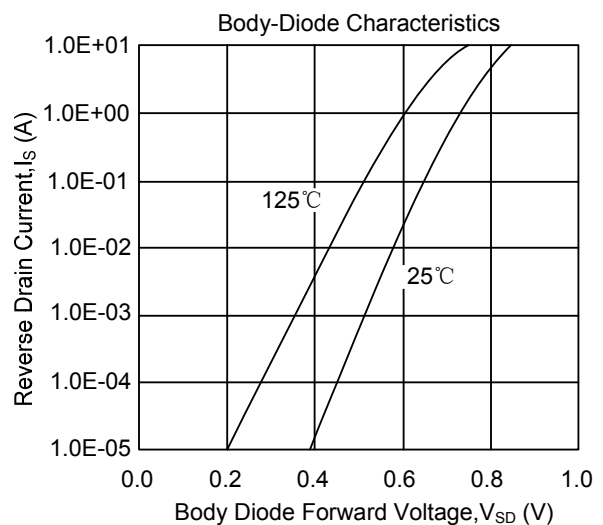
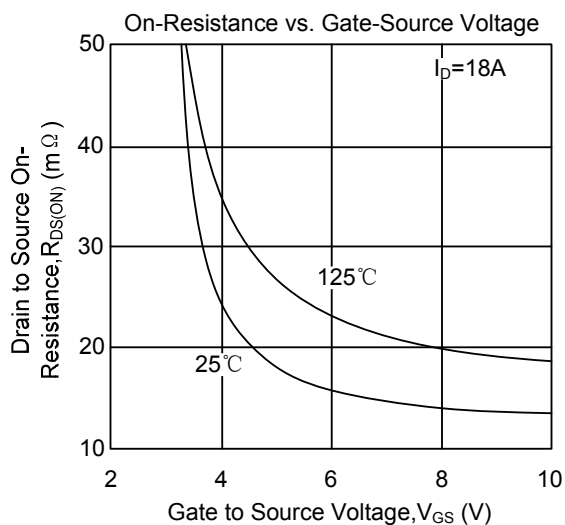
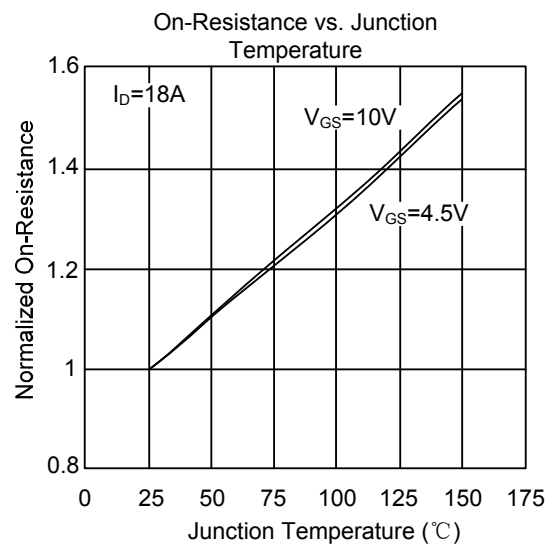
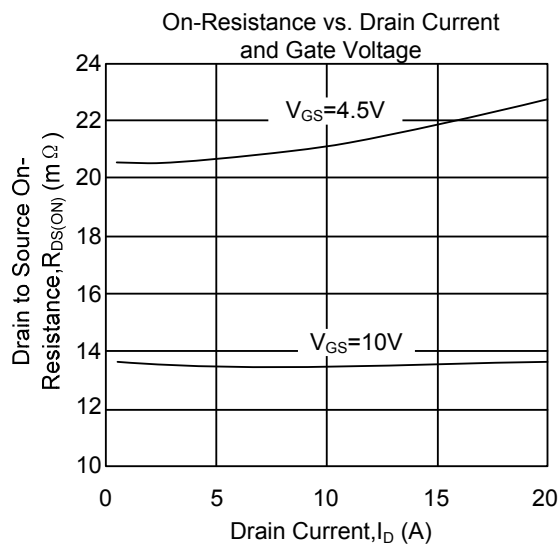
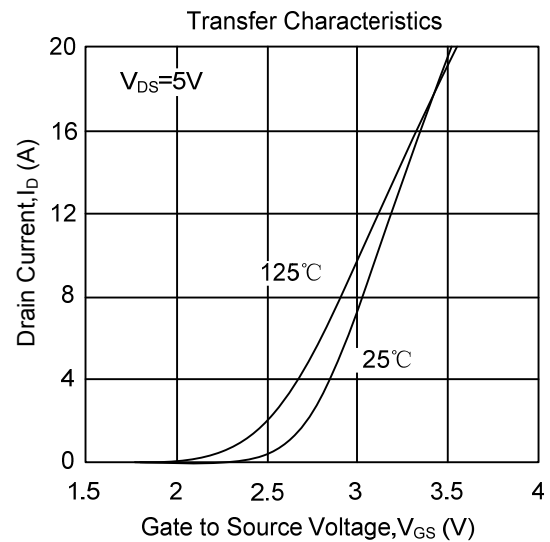
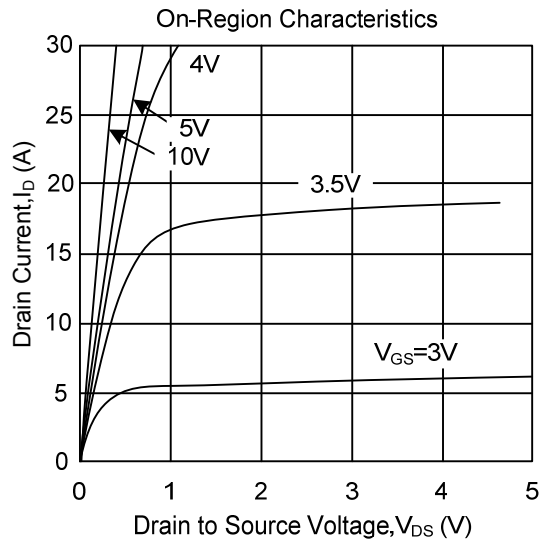
■ ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, unless otherwise specified)

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	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

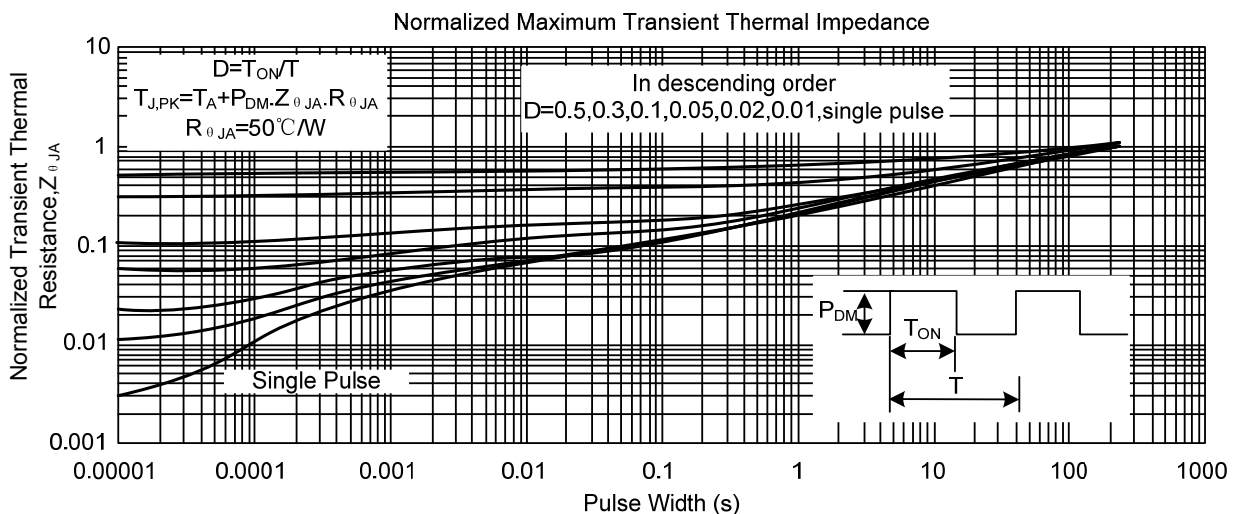
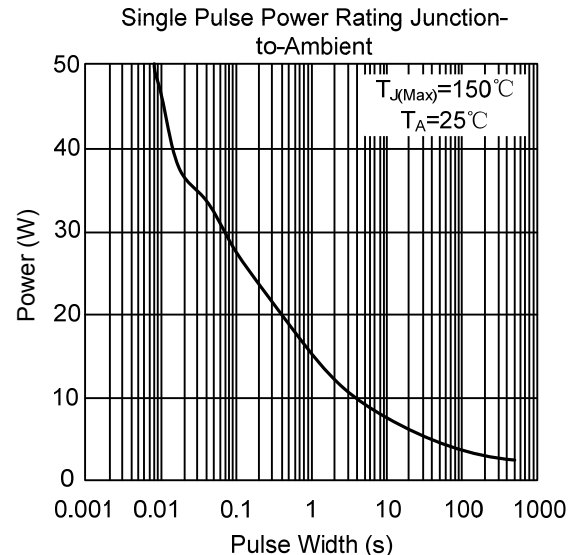
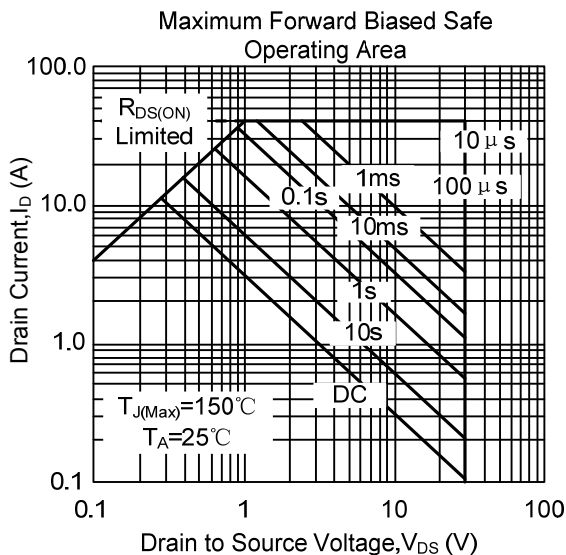
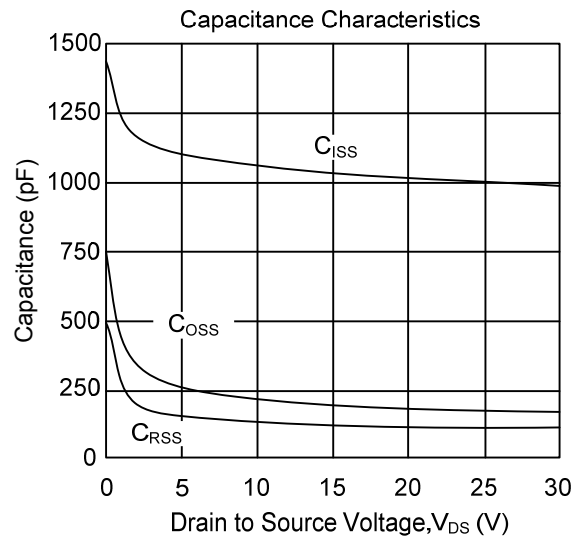
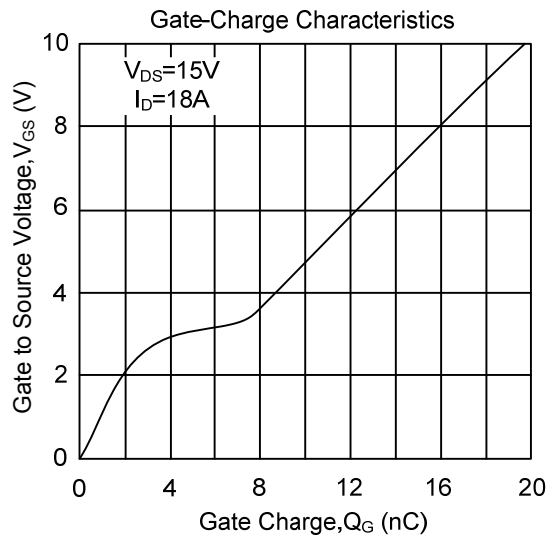
Notes: 1. Pulse width limited by $T_{J(MAX)}$

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

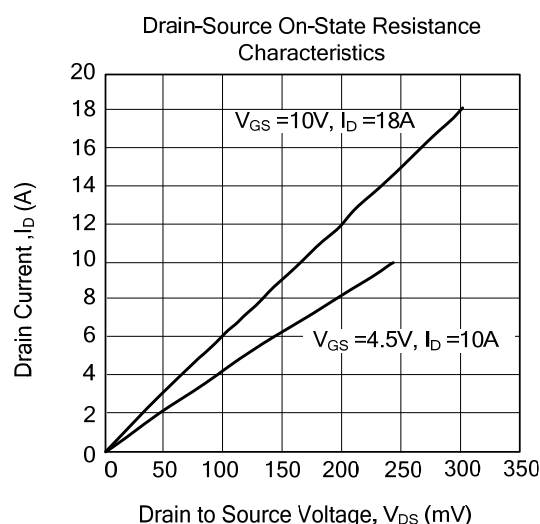
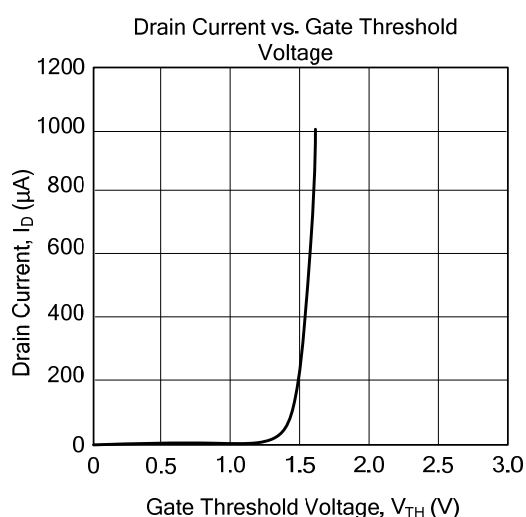
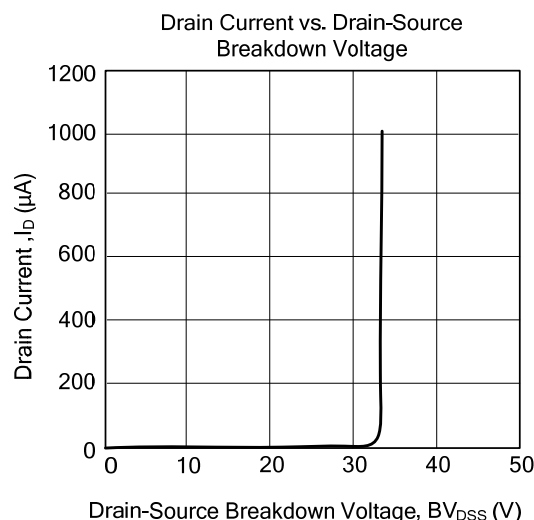
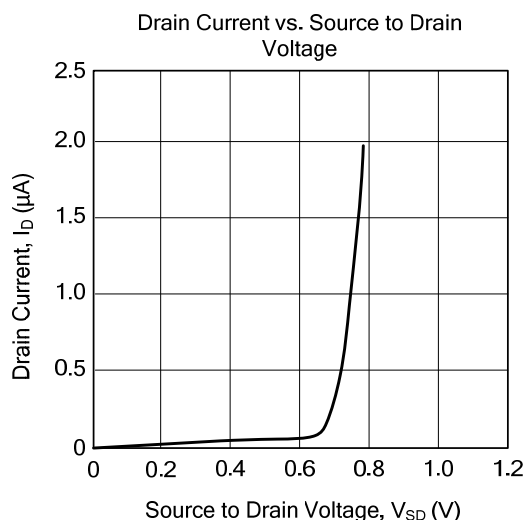
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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