



UT100N03-Q

Power MOSFET

100A, 30V N-CHANNEL POWER MOSFET

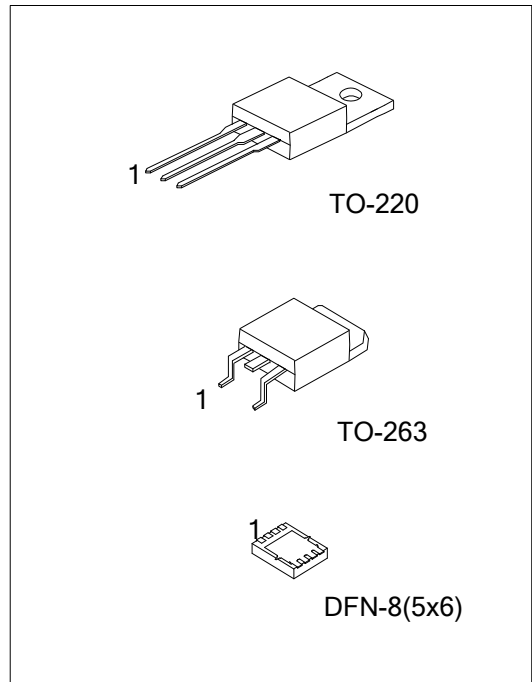
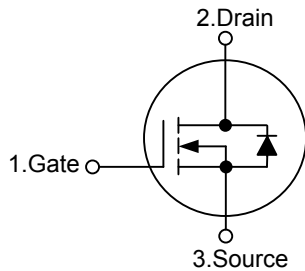
DESCRIPTION

The **UT100N03-Q** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

FEATURES

- * $R_{DS(ON)} < 5.3m\Omega @ V_{GS} = 10V, I_D = 50A$
- * $R_{DS(ON)} < 8.0m\Omega @ V_{GS} = 4.5V, I_D = 40A$

SYMBOL



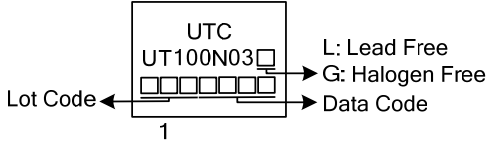
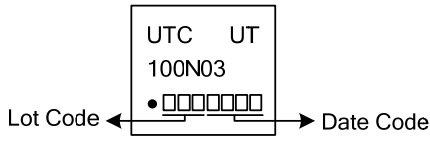
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
UT100N03L-TA3-T	UT100N03G-TA3-T	TO-220	G	D	S	-	-	-	-	-	Tube
UT100N03L-TQ2-T	UT100N03G-TQ2-T	TO-263	G	D	S	-	-	-	-	-	Tube
UT100N03L-TQ2-R	UT100N03G-TQ2-R	TO-263	G	D	S	-	-	-	-	-	Tape Reel
-	UT100N03G-K08-5060-R	DFN-8(5x6)	S	S	S	G	D	D	D	D	Tape Reel

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

	<p>(1) Packing Type (1) T: Tube, R: Tape Reel</p> <p>(2) Package Type (2) TA3: TO-220, TQ2: TO-263, K08-5060: DFN-8(5x6)</p> <p>(3) Green Package (3) L: Lead Free, G: Halogen Free and Lead Free</p>
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■ MARKING

TO-251 / TO-252 / TO-252D / TO-263	DFN-8(5×6)
 <p>UTC UT100N03</p> <p>1</p> <p>Lot Code ←</p> <p>→ Data Code</p> <p>L: Lead Free G: Halogen Free</p>	 <p>UTC UT 100N03</p> <p>Lot Code ←</p> <p>→ Date Code</p>

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

PARAMETER	SYMBOL	RATINGS	UNIT	
Drain-Source Voltage	V_{DSS}	30	V	
Gate-Source Voltage	V_{GSS}	± 20	V	
Continuous Drain Current	I_D	100	A	
Pulsed Drain Current (Note 2)	I_{DM}	400	A	
Single Pulsed Avalanche Current (Note 3)	I_{AS}	35	A	
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	875	mJ	
Power Dissipation	TO-220/TO-263	P_D	100	W
	DFN-8(5x6)		21	W
Derate above 25°C	TO-220/TO-263		0.67	$\text{W}/^\circ\text{C}$
	DFN-8(5x6)		0.168	$\text{W}/^\circ\text{C}$
Junction Temperature	T_J	+175	$^\circ\text{C}$	
Strong Temperature	T_{STG}	-55 ~ +175	$^\circ\text{C}$	

Notes: 1. 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.

2. Pulse width limited by maximum junction temperature

3. $L = 0.5\text{mH}$, $I_{AS} = 35\text{A}$, $V_{DD} = 25\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT	
Junction to Ambient	TO-220/TO-263	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
	DFN-8(5x6)		40.3 (Note 1, 2)	$^\circ\text{C}/\text{W}$
Junction to Case	TO-220/TO-263	θ_{JC}	1.5	$^\circ\text{C}/\text{W}$
	DFN-8(5x6)		6 (Note 1, 2)	$^\circ\text{C}/\text{W}$

Notes: 1. Maximum under Steady State conditions is $90^\circ\text{C}/\text{W}$.

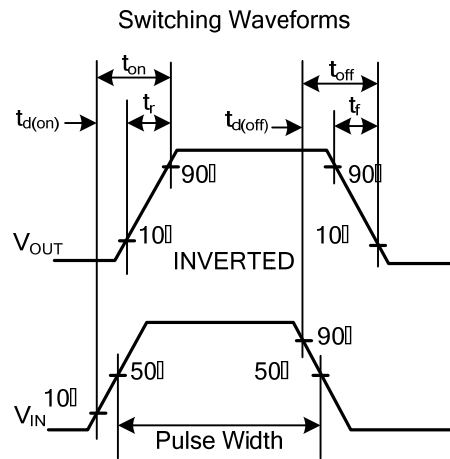
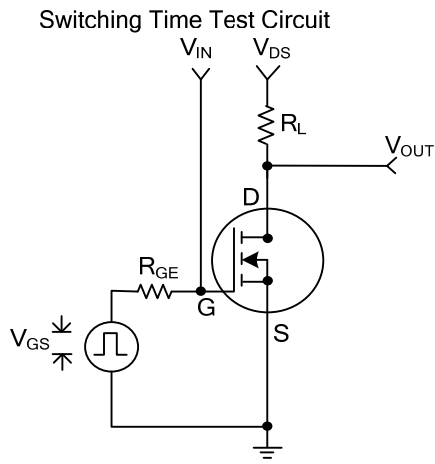
2. Surface Mounted on 1" x 1" FR4 board.

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

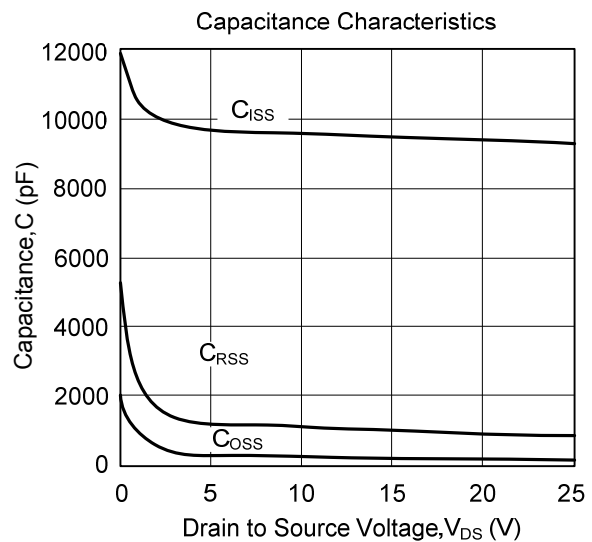
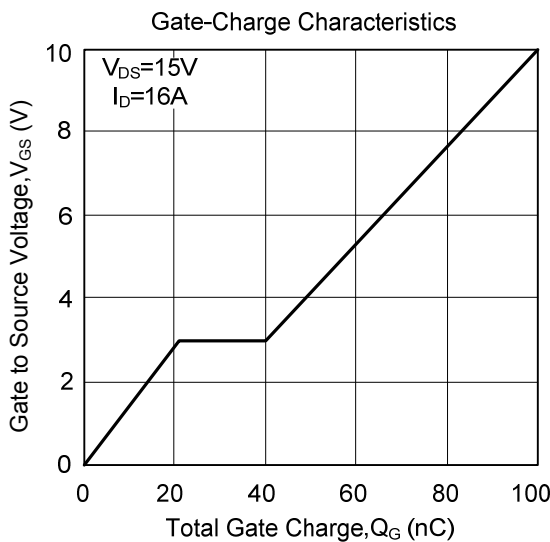
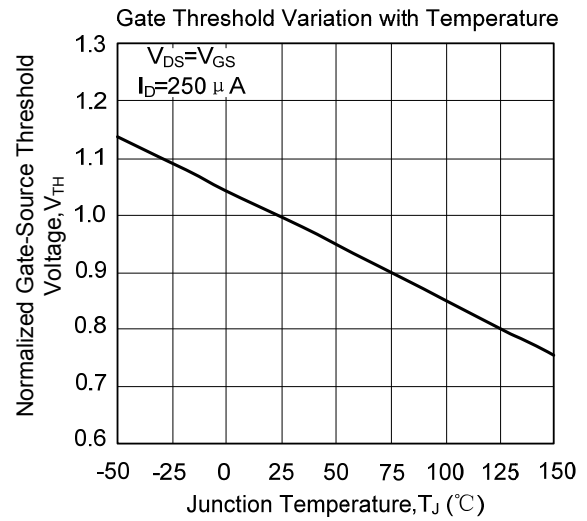
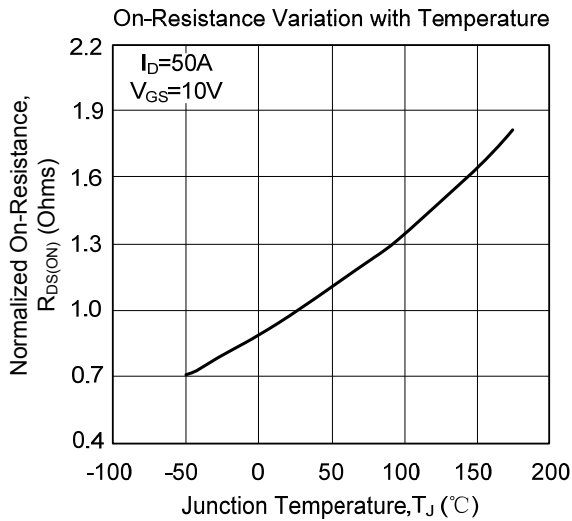
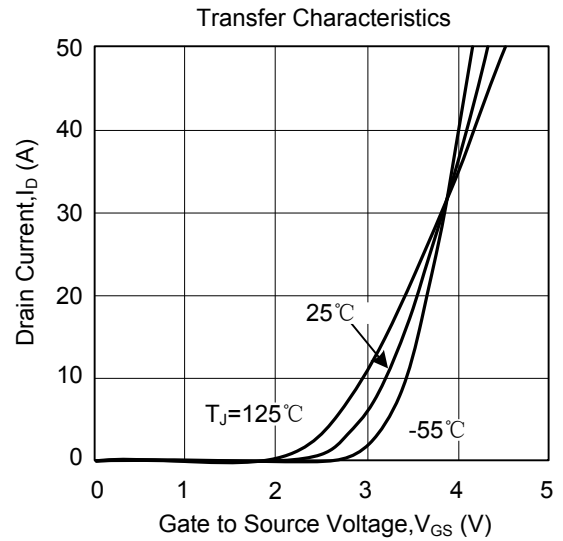
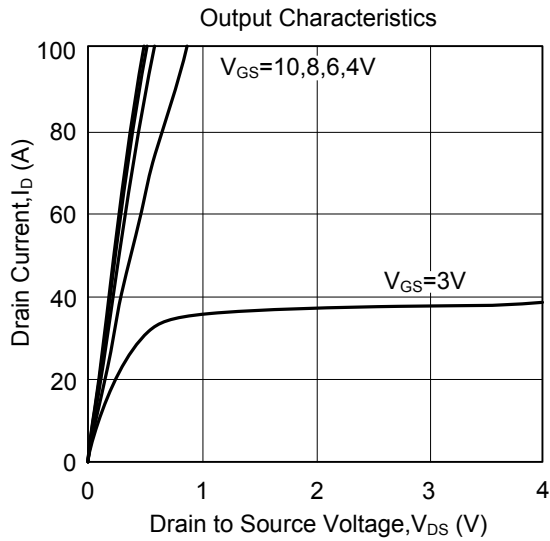
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0 V, I _D =250 μA	30			V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =30 V, V _{GS} =0 V			1	μA
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0 V, V _{GS} = ±20 V			±100	nA
ON CHARACTERISTICS (Note2)						
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} =V _{GS} , I _D =250 μA	1		3	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10 V, I _D =50 A			5.3	mΩ
		V _{GS} =4.5 V, I _D =40 A			8	
DYNAMIC PARAMETERS (Note3)						
Input Capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		3800		pF
Output Capacitance	C _{OSS}			700		
Reverse Transfer Capacitance	C _{RSS}			500		
SWITCHING PARAMETERS (Note3)						
Total Gate Charge	Q _G	V _{DS} =15V, V _{GS} =5V, I _D =16A		400		nC
Gate Source Charge	Q _{GS}			80		
Gate Drain Charge	Q _{GD}			100		
Turn-ON Delay Time	t _{D(ON)}	V _{DD} =15V, I _D =1A, R _{GEN} =6Ω V _{GS} =10 V		180		ns
Turn-ON Rise Time	t _R			400		
Turn-OFF Delay Time	t _{D(OFF)}			480		
Turn-OFF Fall-Time	t _F			400		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20 A, V _{GS} =0 V			1.5	V
Drain-Source Diode Forward Current	I _S				90	A

Notes: 1. Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%
 2. Guaranteed by design, not subject to production testing

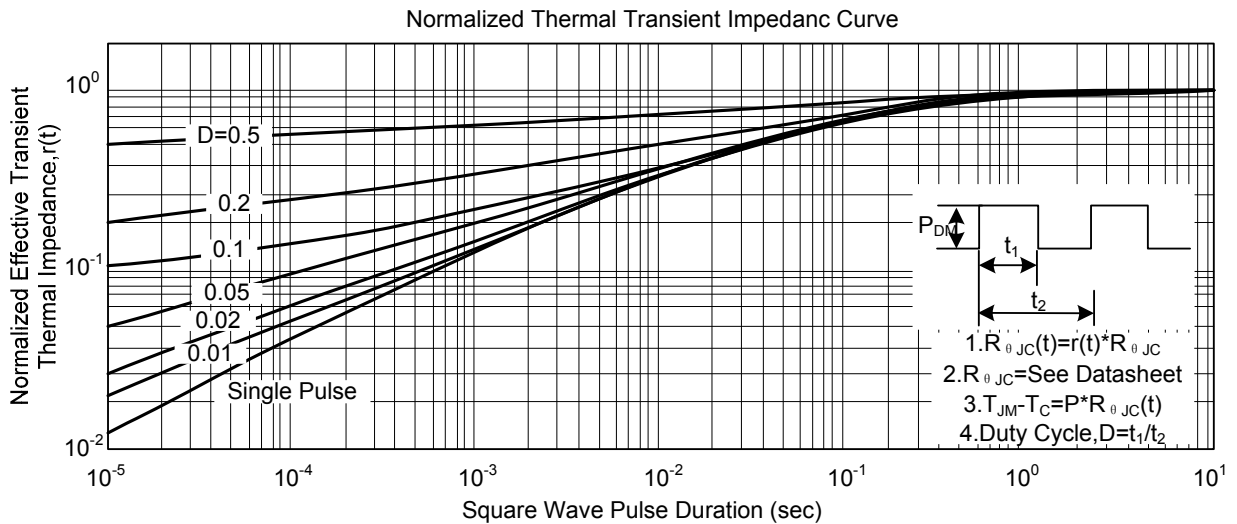
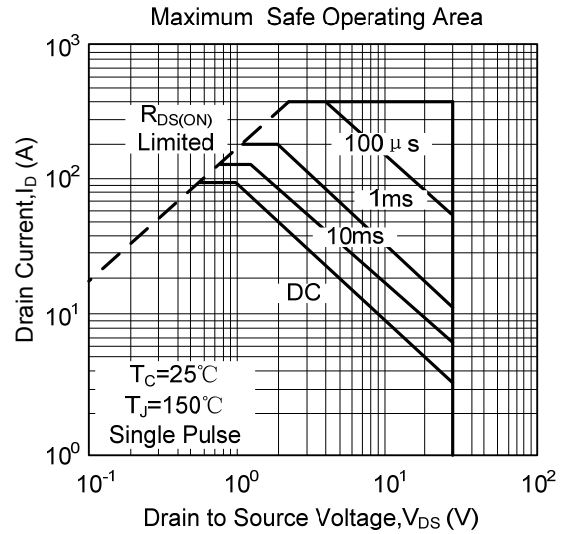
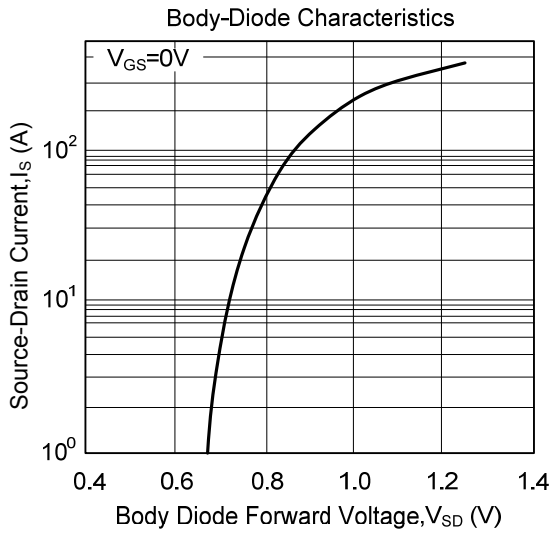
■ TEST CIRCUIT AND WAVEFORM



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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