



UT100N03-Q

Power MOSFET

**100A, 30V N-CHANNEL
POWER MOSFET**

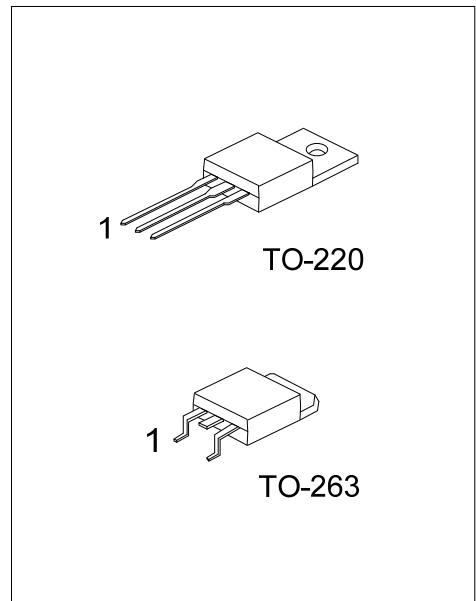
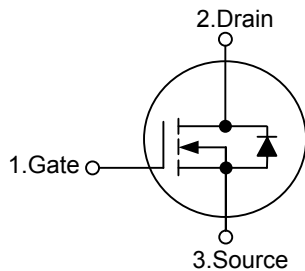
■ DESCRIPTION

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

- * $R_{DS(ON)} = 5.3m\Omega @ V_{GS} = 10V$
- * $R_{DS(ON)} = 8.0m\Omega @ V_{GS} = 4.5V$

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT100N03L-Q-TA3-T	UT100N03G-Q-TA3-T	TO-220	G	D	S	Tube
UT100N03L-Q-TQ2-R	UT100N03G-Q-TQ2-R	TO-263	G	D	S	Tape Reel
UT100N03L-Q-TQ2-T	UT100N03G-Q-TQ2-T	TO-263	G	D	S	Tube

<p>UT100N03L-Q-TA3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) TA3: TO-220, TQ2: TO-263</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ 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 Derate above 25°C	P_D	100 0.67	W W/ $^\circ\text{C}$
Junction Temperature	T_J	+175	$^\circ\text{C}$
Strong Temperature	T_{STG}	-55 ~ +175	$^\circ\text{C}$

Note: 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

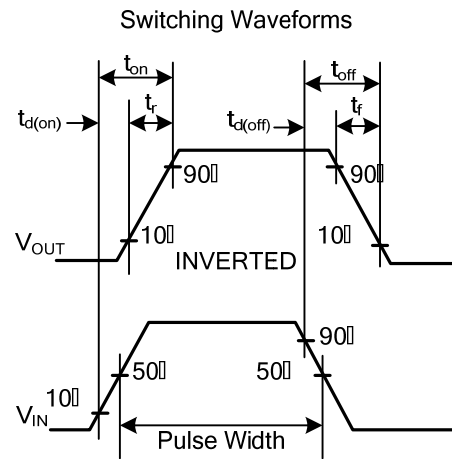
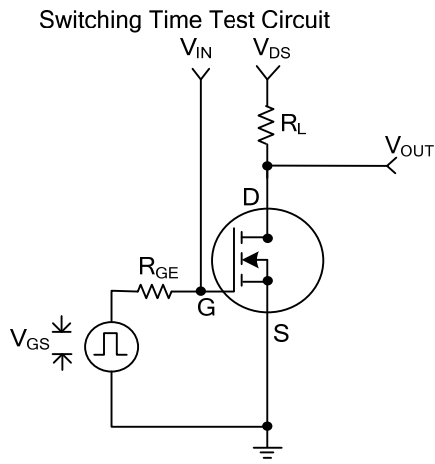
PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	62.5	$^\circ\text{C}/\text{W}$
Junction to Case	θ_{JC}	1.5	$^\circ\text{C}/\text{W}$

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

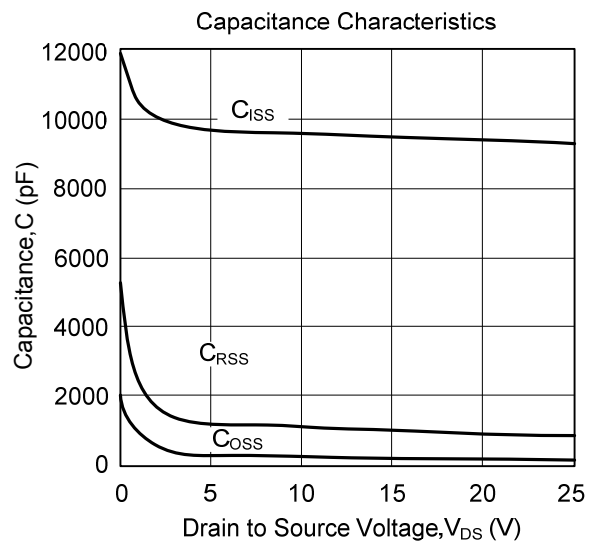
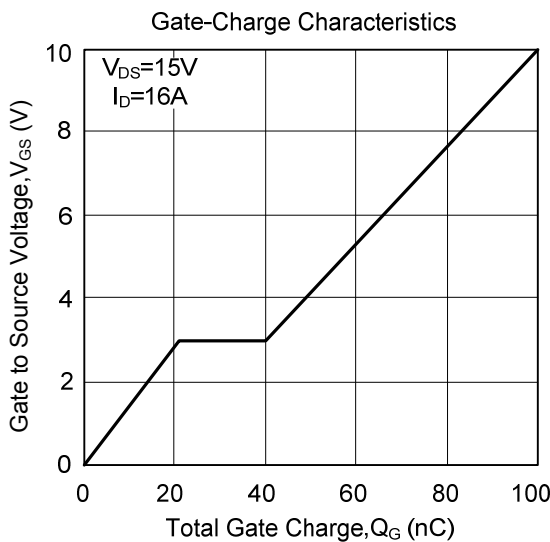
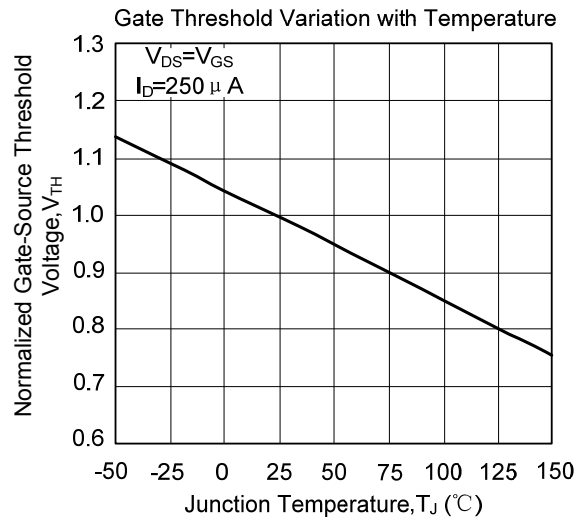
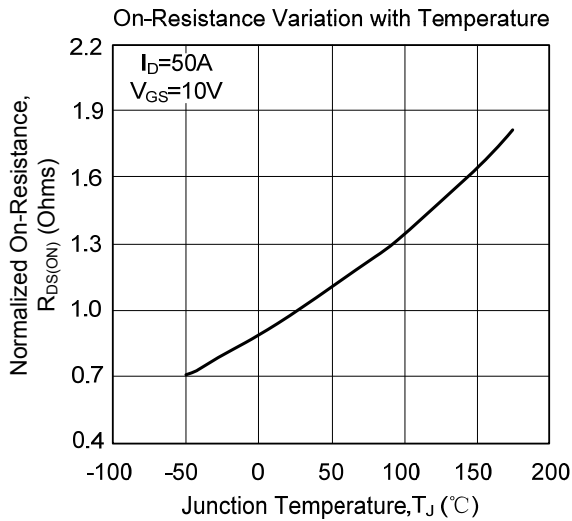
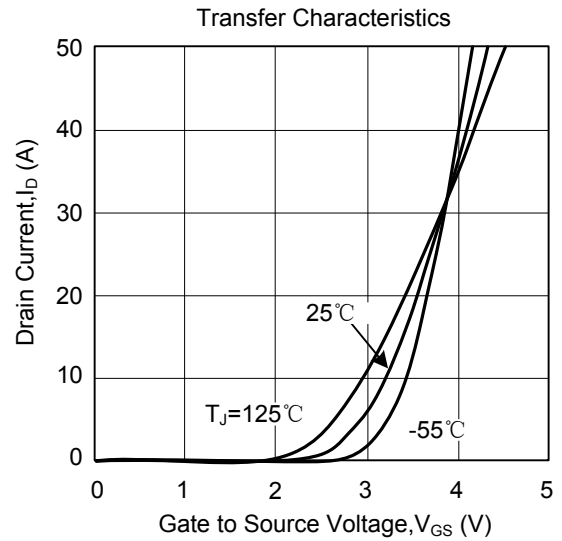
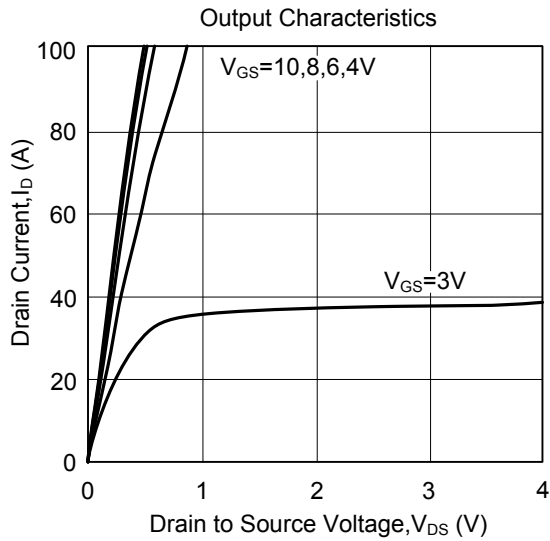
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{V}$, $I_D = 250\ \mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 30\text{V}$, $V_{GS} = 0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10\text{V}$, $I_D = 50\text{A}$		3.36	5.3	m Ω
		$V_{GS} = 4.5\text{V}$, $I_D = 40\text{A}$		5.25	8	
DYNAMIC PARAMETERS (Note 3)						
Input Capacitance	C_{ISS}	$V_{DS} = 15\text{V}$, $V_{GS} = 0\text{V}$, $f = 1.0\text{MHz}$		8075		pF
Output Capacitance	C_{OSS}			680		
Reverse Transfer Capacitance	C_{RSS}			255		
SWITCHING PARAMETERS (Note 3)						
Total Gate Charge	Q_G	$V_{DS} = 15\text{V}$, $V_{GS} = 5\text{V}$, $I_D = 16\text{A}$		42.5	55.25	nC
Gate Source Charge	Q_{GS}			17.68		
Gate Drain Charge	Q_{GD}			16.15		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD} = 15\text{V}$, $I_D = 1\text{A}$, $R_{GEN} = 6\Omega$ $V_{GS} = 10\text{V}$		25.7	50	ns
Turn-ON Rise Time	t_R			10	20	
Turn-OFF Delay Time	$t_{D(OFF)}$			128	200	
Turn-OFF Fall-Time	t_F			34	70	
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	$I_S = 20\text{A}$, $V_{GS} = 0\text{V}$			1.5	V
Drain-Source Diode Forward Current	I_S				90	A

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

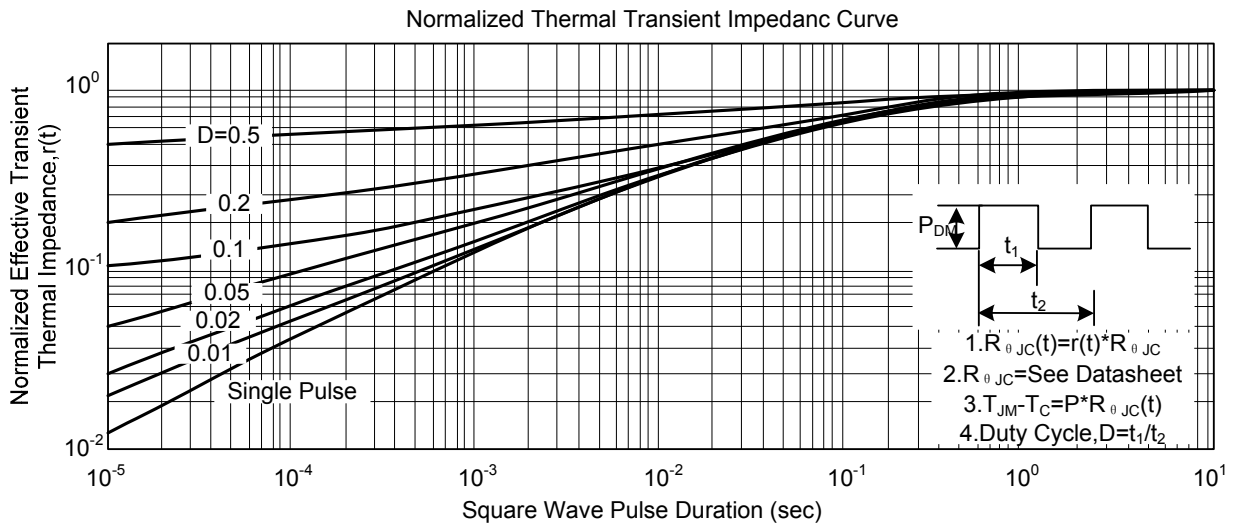
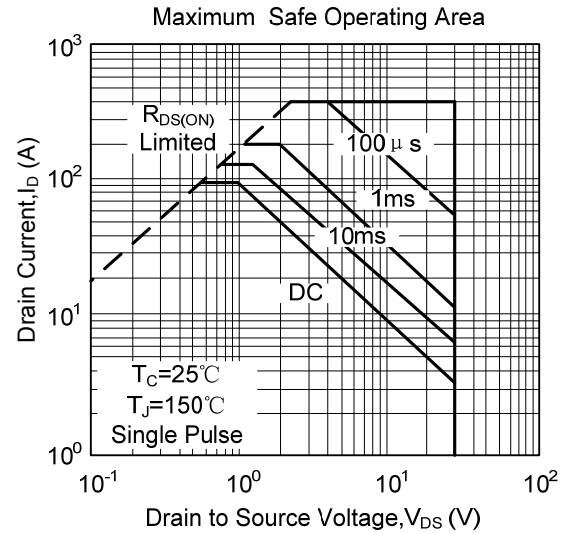
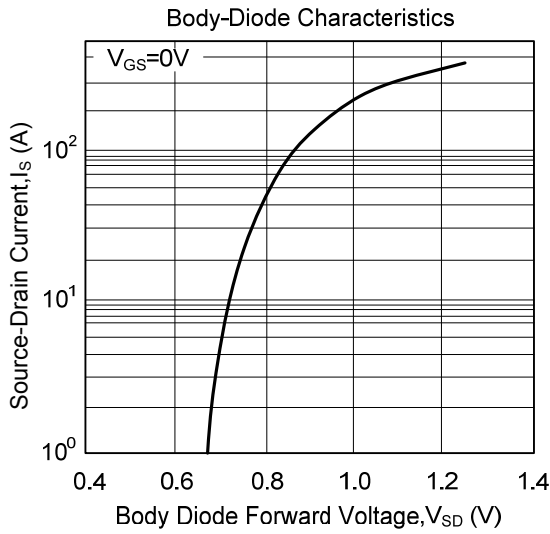
■ TEST CIRCUIT AND WAVEFORM



TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS(Cont.)



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