



UT100N03-Q

Power MOSFET

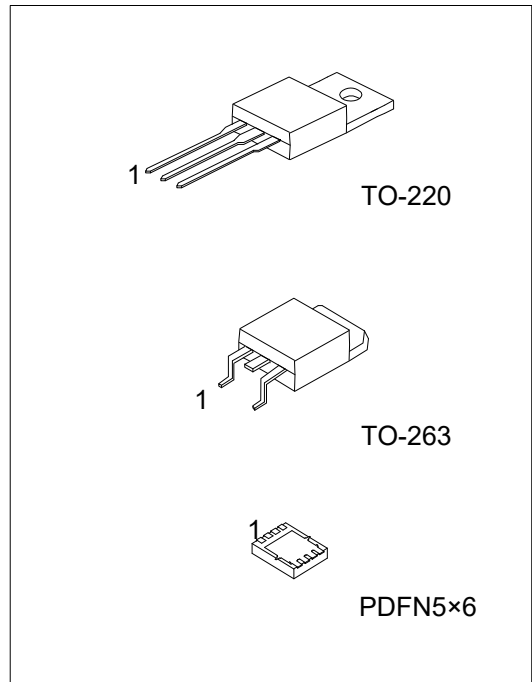
100A, 30V N-CHANNEL POWER MOSFET

■ DESCRIPTION

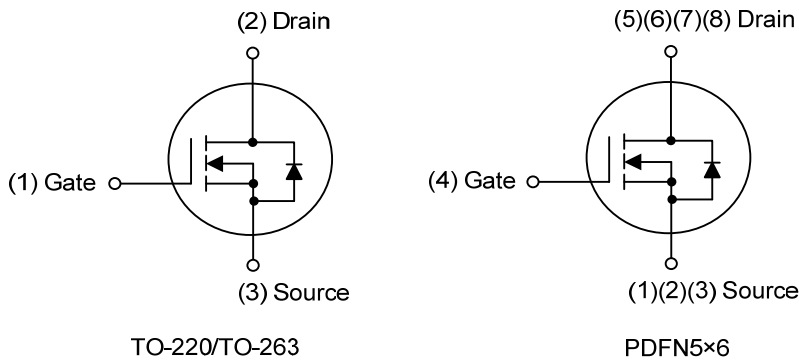
The **UT100N03-Q** uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with low gate voltages. This device is suitable for use as a load switch or in PWM applications.

■ FEATURES

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



■ SYMBOL



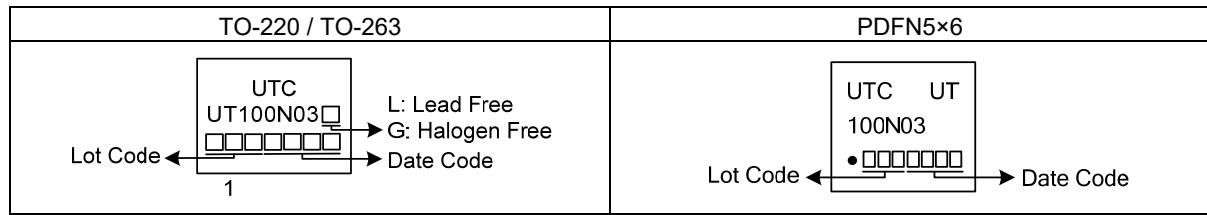
■ ORDERING INFORMATION

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
UT100N03L-P5060-R	UT100N03G-P5060-R	PDFN5x6	S	S	S	G	D	D	D	D	Tape Reel

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

<p>UT100N03G-TA3-T</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TQ2: TO-263, P5060: PDFN5x6</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING



■ 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}	200	A
Single Pulsed Avalanche Current (Note 3)	I_{AS}	31	A
Single Pulsed Avalanche Energy (Note 3)	E_{AS}	48	mJ
Power Dissipation	TO-220/TO-263	P_D	60
	PDFN5x6		30
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Strong Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

- 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. $L = 0.1\text{mH}$, $I_{AS} = 31\text{A}$, $V_{DD} = 20\text{V}$, $R_G = 25\Omega$, Starting $T_J = 25^{\circ}\text{C}$

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-263	θ_{JA}	62.5
	PDFN5x6		65 (Note 1, 2)
Junction to Case	TO-220/TO-263	θ_{JC}	2.08
	PDFN5x6		4.16 (Note 1, 2)

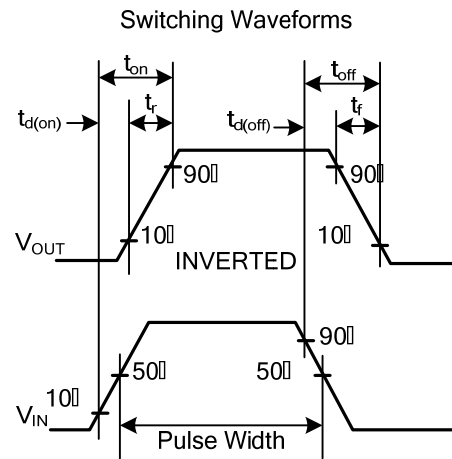
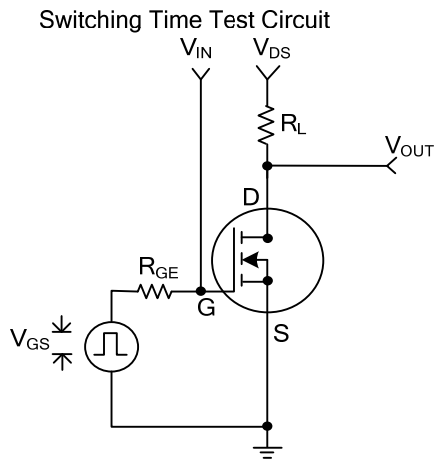
- Notes: 1. Maximum under Steady State conditions is 90°C/W .
 2. Surface Mounted on 1" x 1" FR4 board.

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

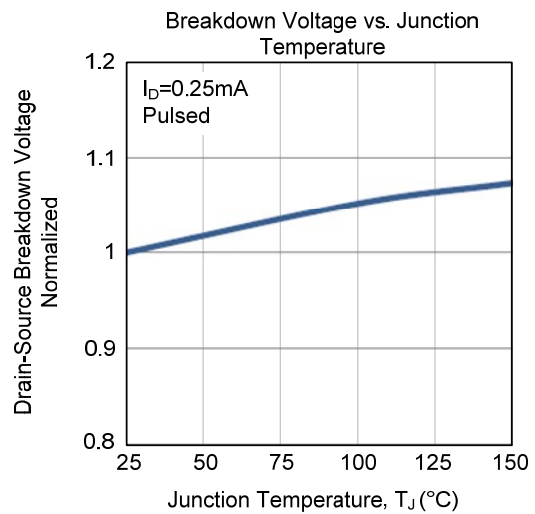
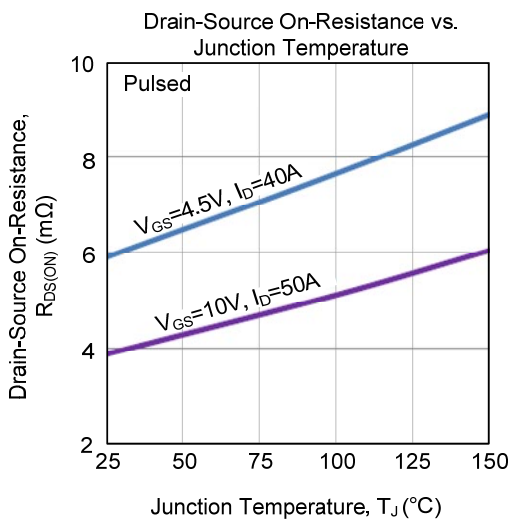
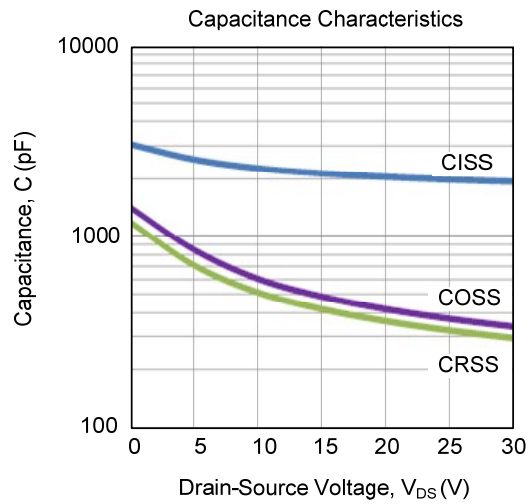
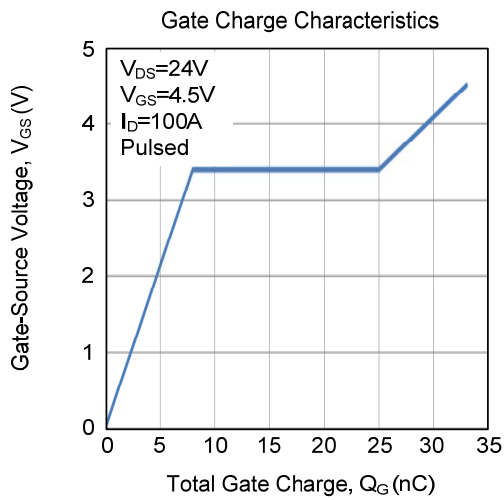
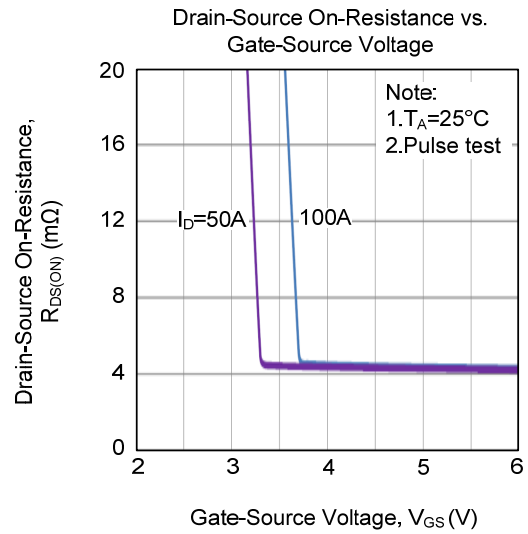
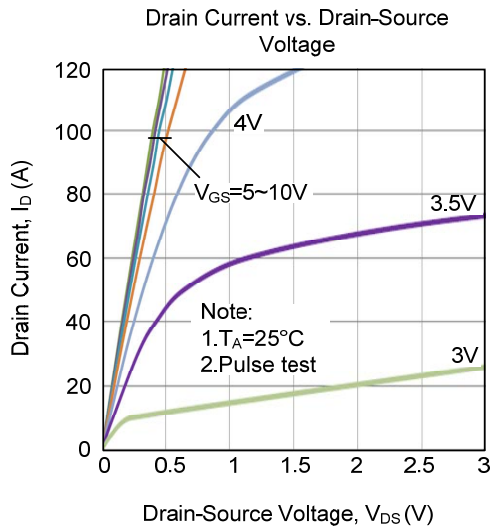
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	30			V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}$, $V_{GS}=0\text{V}$			1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{DS}=0\text{V}$, $V_{GS}=\pm 20\text{V}$			± 100	nA
ON CHARACTERISTICS (Note 2)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}$, $I_D=250\mu\text{A}$	1.0		3.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{V}$, $I_D=50\text{A}$			5.3	m Ω
		$V_{GS}=4.5\text{V}$, $I_D=40\text{A}$			8.0	
DYNAMIC PARAMETERS (Note 3)						
Input Capacitance	C_{ISS}	$V_{DS}=15\text{V}$, $V_{GS}=0\text{V}$, $f=1.0\text{MHz}$		2140		pF
Output Capacitance	C_{OSS}			490		
Reverse Transfer Capacitance	C_{RSS}			425		
SWITCHING PARAMETERS (Note 3)						
Total Gate Charge	Q_G	$V_{DS}=24\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=100\text{A}$ (Note 1, 2)		33		nC
Gate Source Charge	Q_{GS}			8		
Gate Drain Charge	Q_{GD}			17		
Turn-ON Delay Time	$t_{D(ON)}$	$V_{DD}=15\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=100\text{A}$, $R_G=3\Omega$ (Note 1, 2)		19		ns
Turn-ON Rise Time	t_R			26		
Turn-OFF Delay Time	$t_{D(OFF)}$			35		
Turn-OFF Fall-Time	t_F			33		
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Current	I_S				90	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_S=20\text{A}$, $V_{GS}=0\text{V}$			1.5	V

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

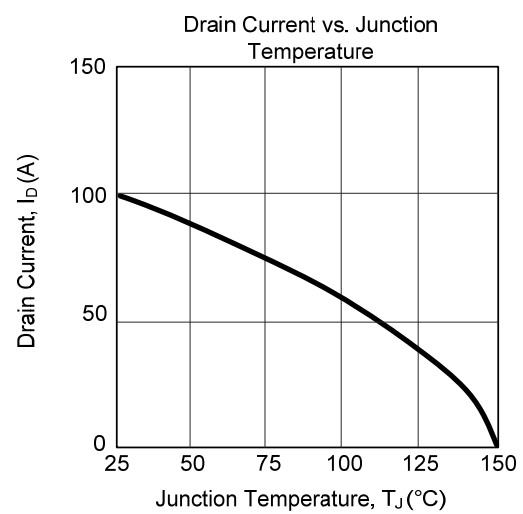
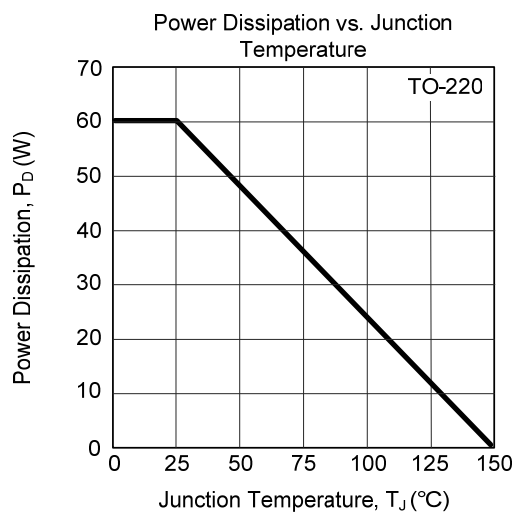
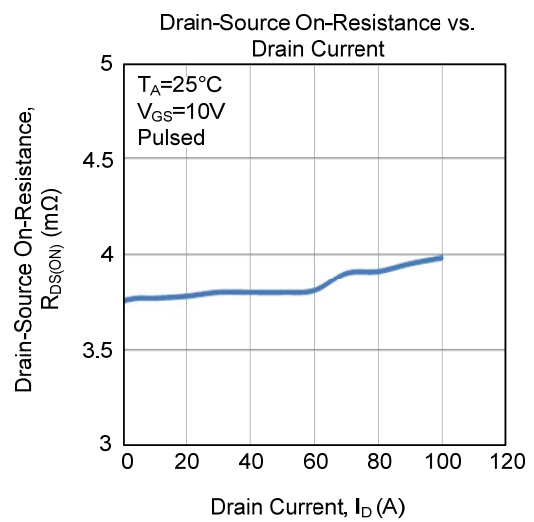
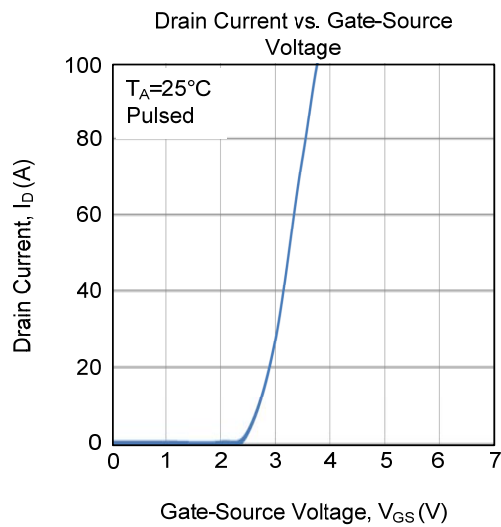
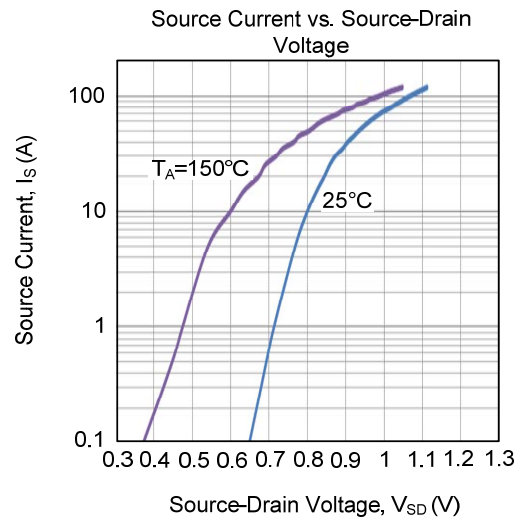
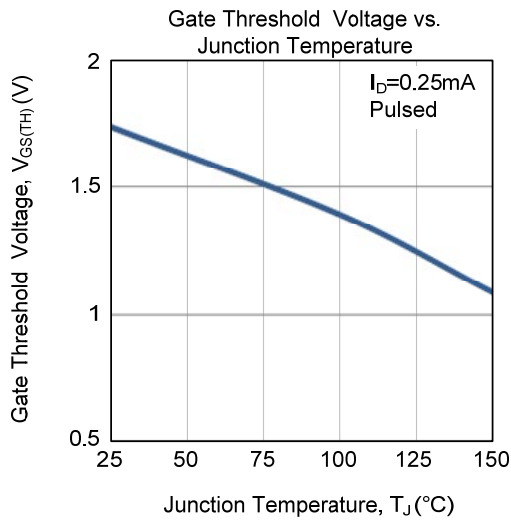
■ TEST CIRCUIT AND WAVEFORM



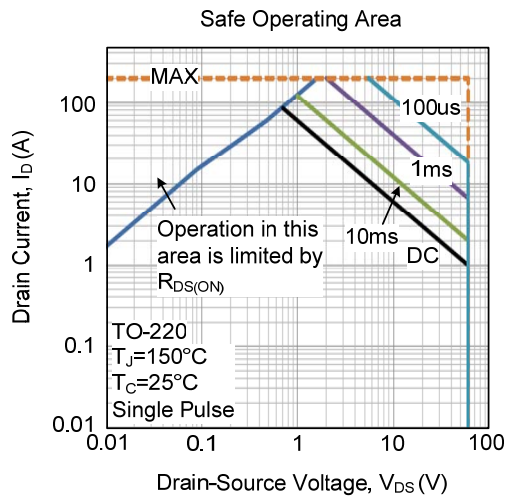
TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)



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