

UT100N03

Power MOSFET

100A, 30V N-CHANNEL POWER MOSFET

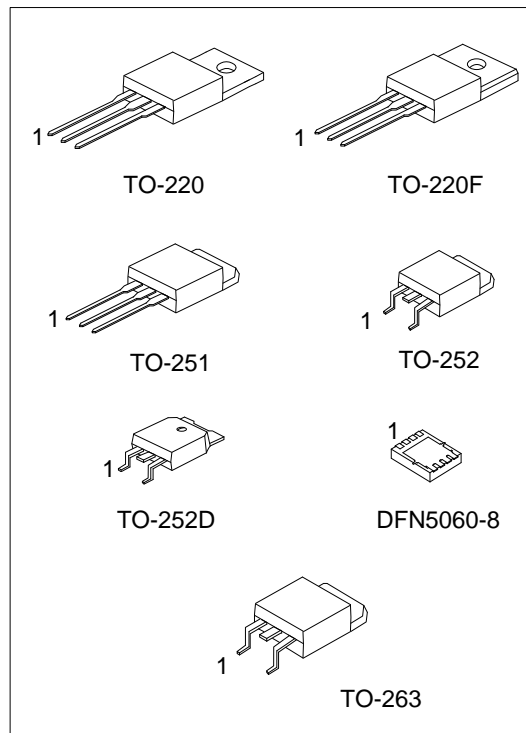
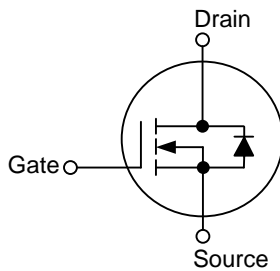
DESCRIPTION

The **UT100N03** 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



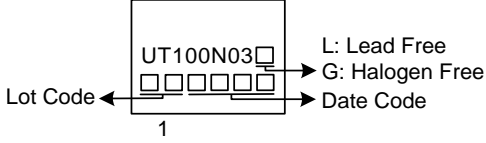
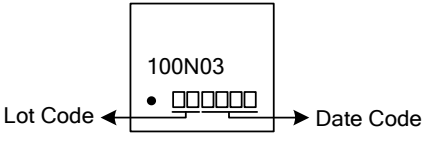
ORDERING INFORMATION

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-TF3-T	UT100N03G-TF3-T	TO-220F	G	D	S	-	-	-	-	-	Tube
UT100N03L-TM3-T	UT100N03G-TM3-T	TO-251	G	D	S	-	-	-	-	-	Tube
UT100N03L-TN3-R	UT100N03G-TN3-R	TO-252	G	D	S	-	-	-	-	-	Tape Reel
UT100N03L-TND-R	UT100N03G-TND-R	TO-252D	G	D	S	-	-	-	-	-	Tape Reel
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-K08-5060-R	UT100N03G-K08-5060-R	DFN5060-8	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)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p>	<p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TF3: TO-220F, TM3: TO-251, TN3: TO-252, TND: TO-252D, TQ2: TO-263, K08-5060: DFN5060-8</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

TO-220 / TO-220F / TO-251 TO-252 / TO-252D / TO-263	DFN5060-8
 <p>UT100N03</p> <p>Lot Code ←</p> <p>→ L: Lead Free → G: Halogen Free → Date Code</p> <p>1</p>	 <p>100N03</p> <p>Lot Code ←</p> <p>• □□□□□ → Date Code</p>

■ ABSOLUTE MAXIMUM RATINGS (T_C = 25°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	100	W
	TO-220F	36	W
	TO-251/TO-252 TO-252D	50	W
	DFN5060-8	21	W
		P _D	
Junction Temperature	T _J	+175	°C
Strong Temperature	T _{STG}	-55 ~ +175	°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 = 0.5mH, I_{AS} = 35A, V_{DD} = 25V, R_G = 25Ω, Starting T_J = 25°C.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220/TO-220F TO-263	62.5	°C/W
	TO-251/TO-252 TO-252D	110	°C/W
	DFN5060-8	40.3 (Note 1, 2)	°C/W
Junction to Case	TO-220/TO-263	1.5	°C/W
	TO-220F	3.47	°C/W
	TO-251/TO-252 TO-252D	3	°C/W
	DFN5060-8	6 (Note 1, 2)	°C/W
		θ _{JC}	

Notes: 1. Maximum under Steady State conditions is 90 °C/W.

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

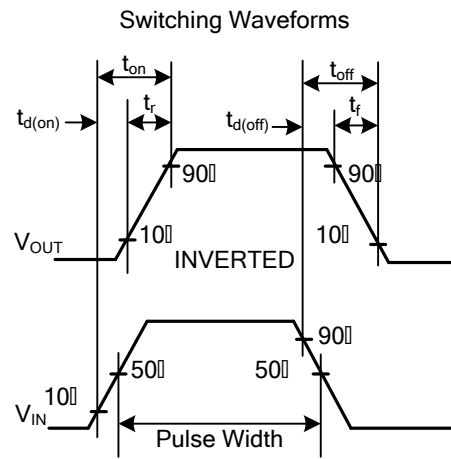
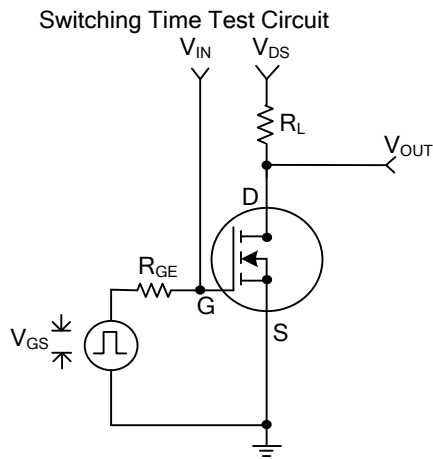
■ **ELECTRICAL CHARACTERISTICS** ($T_J = 25^\circ\text{C}$, unless otherwise noted)

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 (Note2)						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\ \mu\text{A}$	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10\text{ V}, I_D=50\text{ A}$		3.05	5.3	m Ω
		$V_{GS}=4.5\text{ V}, I_D=40\text{ A}$		4.2	8	
DYNAMIC PARAMETERS (Note3)						
Input Capacitance	C_{ISS}	$V_{DS}=15\text{ V}, V_{GS}=0\text{ V}, f=1.0\text{ MHz}$		9500		pF
Output Capacitance	C_{OSS}			800		
Reverse Transfer Capacitance	C_{RSS}			300		
SWITCHING PARAMETERS (Note3)						
Total Gate Charge	Q_G	$V_{DS}=15\text{ V}, V_{GS}=5\text{ V}, I_D=16\text{ A}$		50	65	nC
Gate Source Charge	Q_{GS}			20.8		
Gate Drain Charge	Q_{GD}			19		
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

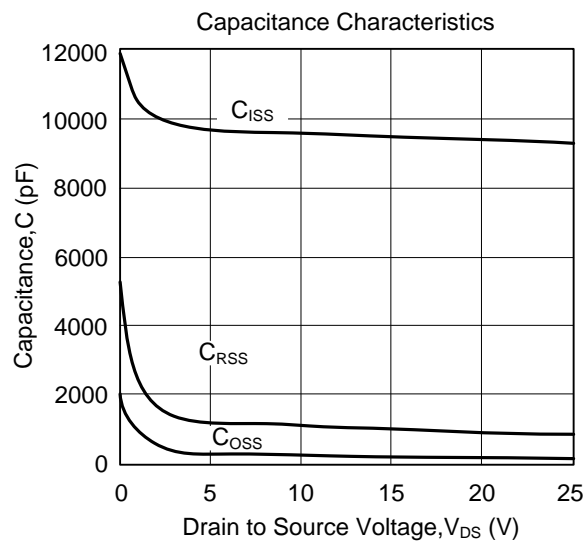
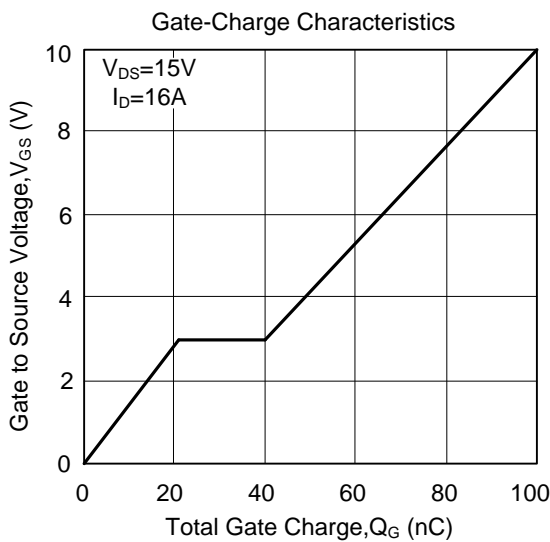
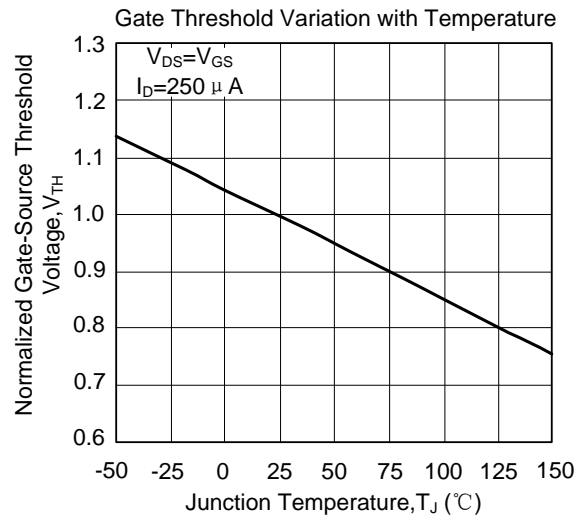
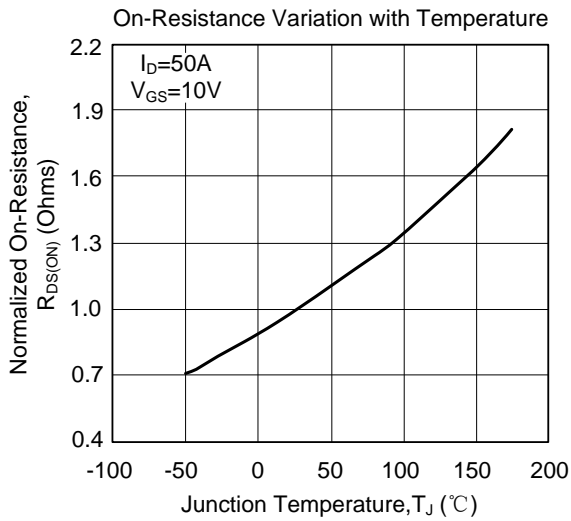
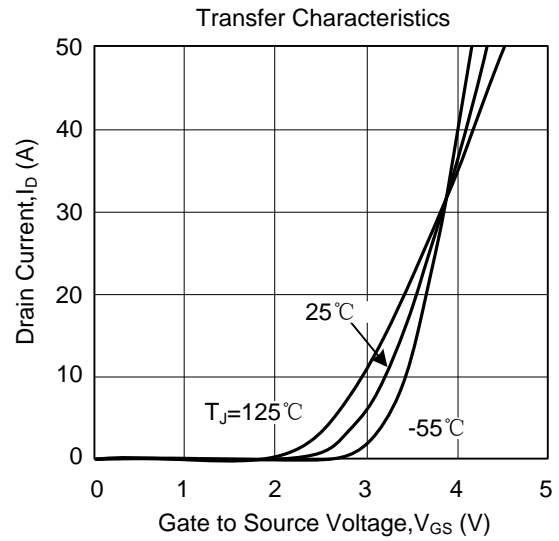
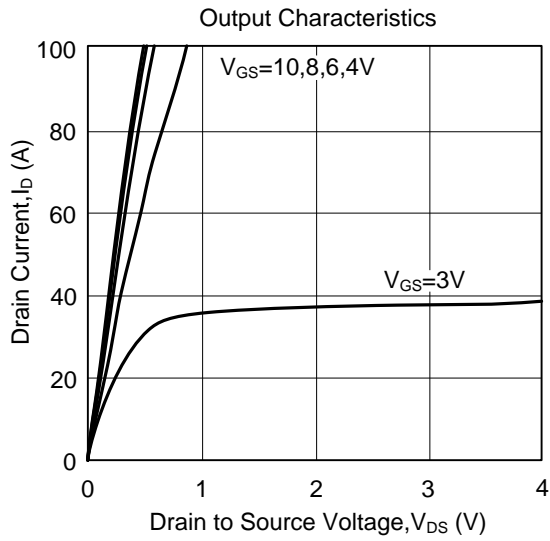
Notes: 1. Pulse Test : Pulse Width < 300 μs , Duty Cycle < 2%.

2. Guaranteed by design, not subject to production testing.

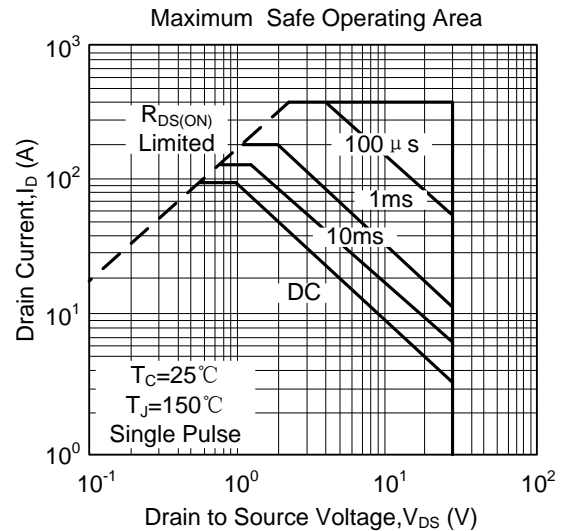
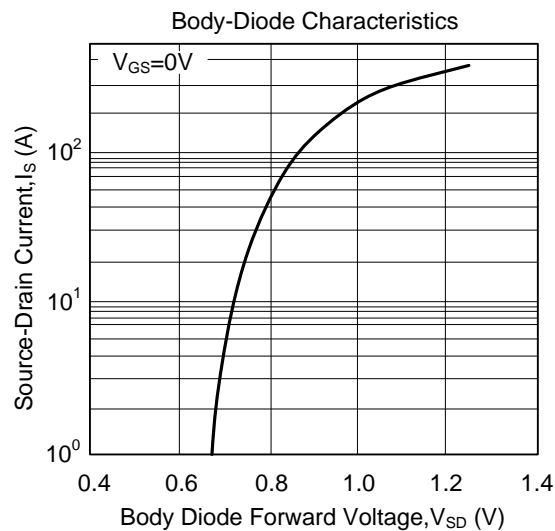
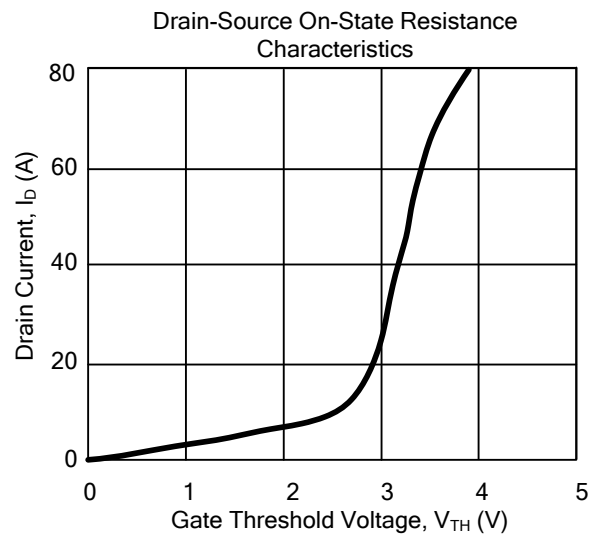
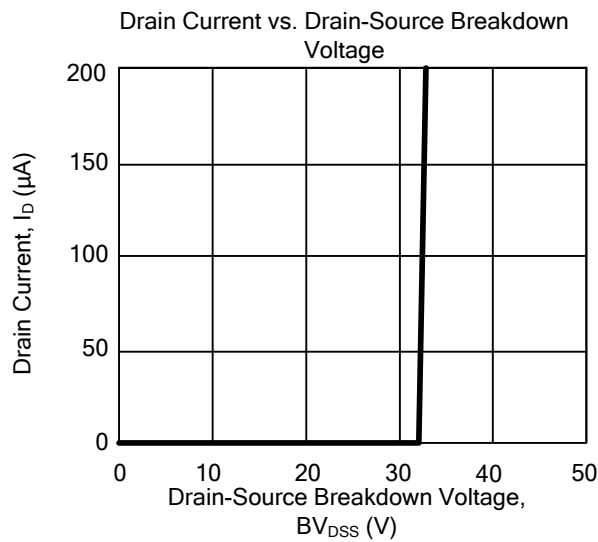
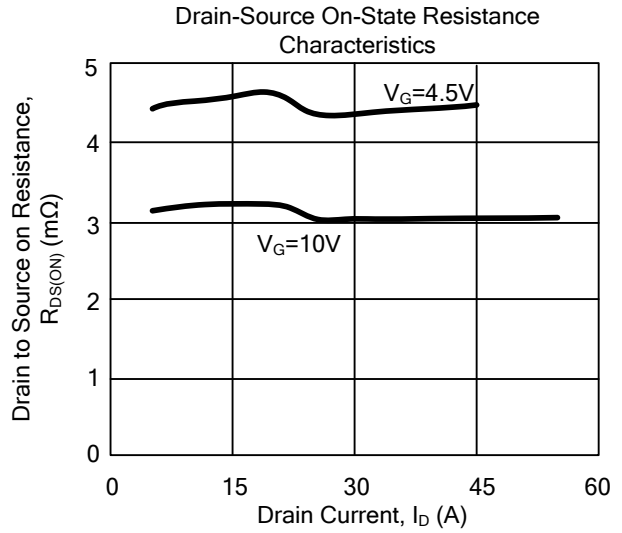
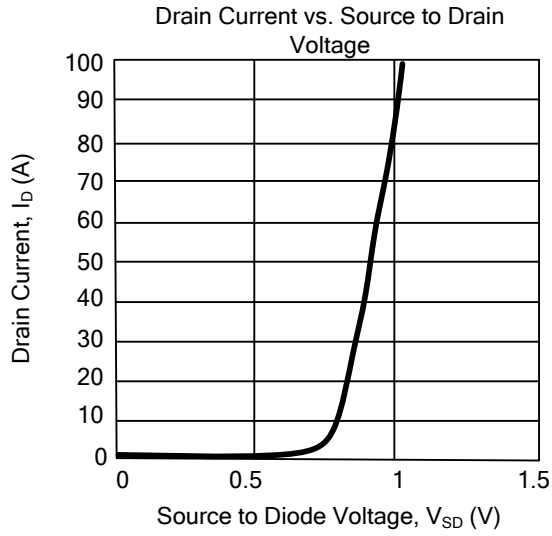
■ TEST CIRCUIT AND WAVEFORM



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS (Cont.)



■ TYPICAL CHARACTERISTICS (Cont.)

