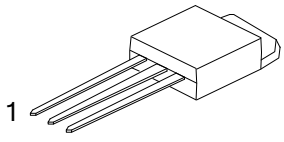
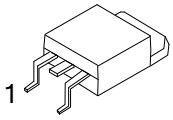
100A, 15V N-CHANNEL POWER TRENCH MOSFET



TO-251



TO-252

■ DESCRIPTION

The UTC **100N02** is an N-channel Power Trench MOSFET, it uses UTC's advanced technology to provide customers with a minimum on-state resistance, low gate charge and high switching speed.

The UTC **100N02** is generally applied in synchronous Rectification or DC to DC convertor.

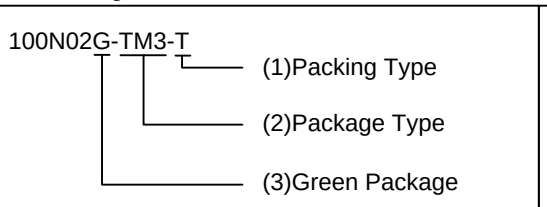
■ FEATURES

* $R_{DS(ON)}$ ≤ 7.5mΩ @ V_{GS}=4.5V, I_D=55A
  $R_{DS(ON)}$ ≤ 17mΩ @ V_{GS}=3.5V, I_D=30A
* Low Gate Charge (Typical 46nC)
* High Switching Speed
* High Power and Current Handling Capability

■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
100N02L-TM3-T	100N02G-TM3-T	TO-251	G	D	S	Tube
100N02L-TN3-R	100N02G-TN3-R	TO-252	G	D	S	Tape Reel

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

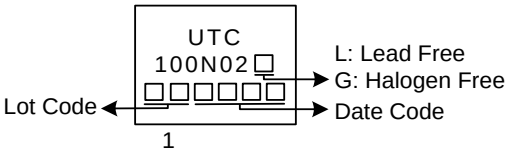


(1) R: Tape Reel, T: Tube

(2) TN3: TO-252, TM3: TO-251

(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	15	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current	Continuous	I_D	100	A
	Pulsed	I_{DM}	400	A
Avalanche Energy	Single Pulsed	E_{AS}	12	mJ
Power Dissipation		P_D	54	W
Junction Temperature		T_J	+150	°C
Storage Temperature Range		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	θ_{JA}	62.5	°C/W
Junction to Case	θ_{JC}	2.3	°C/W

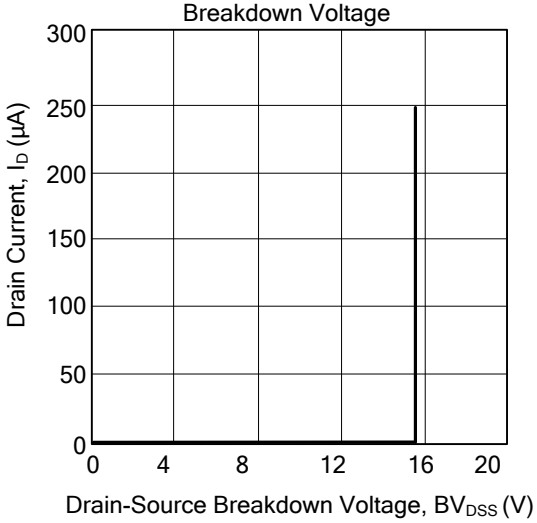
Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS

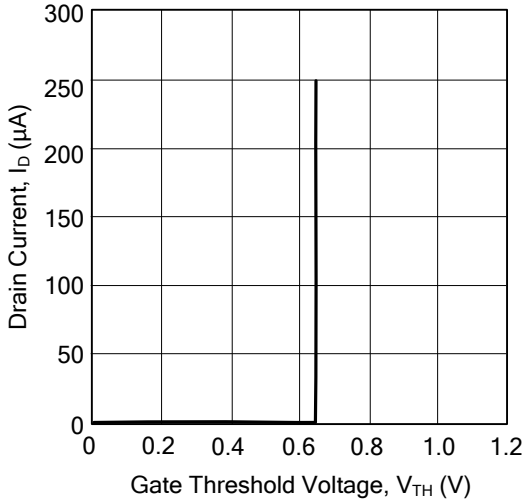
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	I_D=250μA, V_{GS}=0V	15			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=15V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+8V			±100	nA
	Reverse		V_{GS}=-8V			±100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	I_D=250μA	0.5		1.2	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=4.5V, I_D=55A			7.5	mΩ
			V_{GS}=3.5V, I_D=30A			17	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=20V, f=1.0MHz		3565		pF
Output Capacitance		C_{OSS}			1310		pF
Reverse Transfer Capacitance		C_{RSS}			395		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=10V, V_{DD}=12V, I_D=0.3A, I_G=100μA		46	60	nC
Gate to Source Charge		Q_{GS}			6.9		nC
Gate to Drain Charge		Q_{GD}			9.8		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=10V, I_D=0.16A, R_G=25Ω, V_{GS}=0~10V		9		ns
Rise Time		t_R			106		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			53		ns
Fall-Time		t_F			41		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS							
Drain-Source Diode Forward Voltage		V_{SD}	I_S=55A			1.3	V

■ TYPICAL CHARACTERISTICS

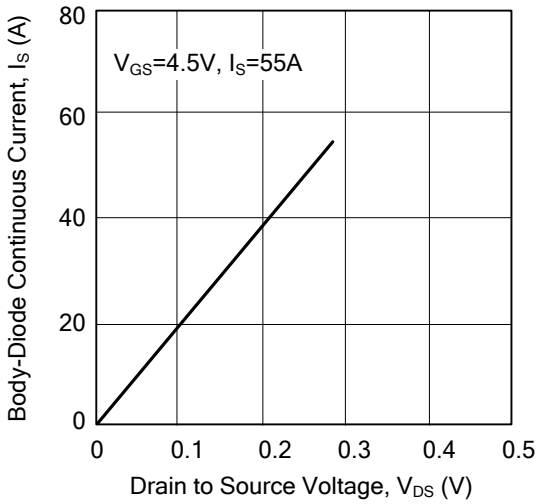
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Body-Diode Continuous Current vs. Source to Drain Voltage