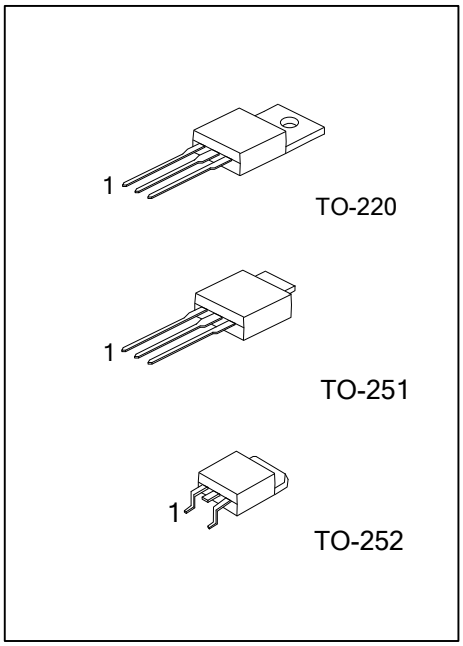
UT75N03

Power MOSFET

75A, 30V N-CHANNEL POWER MOSFET



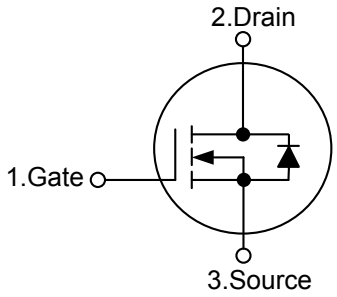
■ DESCRIPTION

The UTC **UT75N03** 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

* $R_{DS(ON)}$ < 7mΩ @ V_{GS}=10V, I_D=30A
* $R_{DS(ON)}$ <10mΩ @ V_{GS}=4.5V, I_D=20A

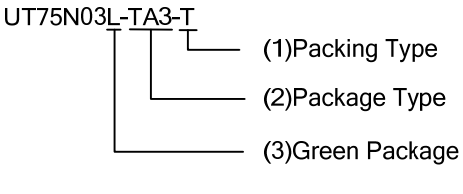
■ SYMBOL



■ ORDERING INFORMATION

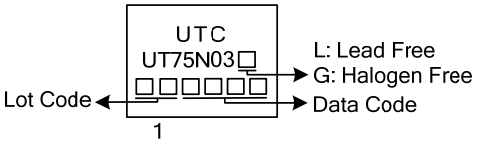
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT75N03L-TA3-T	UT75N03G-TA3-T	TO-220	G	D	S	Tube
UT75N03L-TM3-T	UT75N03G-TM3-T	TO-251	G	D	S	Tube
UT75N03L-TN3-R	UT75N03G-TN3-R	TO-252	G	D	S	Tape Reel

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



(1) T: Tube, R: Tape Reel
(2) TA3: TO-220, TM3: TO-251, TN3: TO-252
(3) L: Lead Free, G: Halogen Free and Lead Free

■ MARKING



■ 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	75	A
Pulsed Drain Current (Note 2)		I_{DM}	225	A
Single Pulsed Avalanche Current (Note 3)		I_{AS}	100	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	228	mJ
Power Dissipation (T_C = 25°C)	TO-220	P_D	75	W
	TO-251/ TO-252		89	
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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 $T_{J(MAX)}$
3. L=20μH, I_{AS}=100A, V_{DD}=24V, R_G=25Ω, Starting T_J=25°C

■ THERMAL RESISTANCES CHARACTERISTICS

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	°C/W
	TO-251/ TO-252		110	
Junction to Case	TO-220	θ_{JC}	2.0	°C/W
	TO-251/ TO-252		1.4	

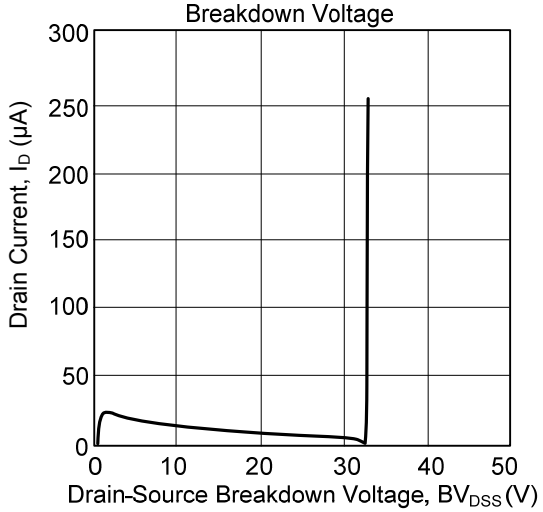
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage		BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=20V, V_{DS}=0V			100	nA
	Reverse		V_{GS}=-20V, V_{DS}=0V			-100	nA
ON CHARACTERISTICS (Note)							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=250μA	1		3	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		5	7	mΩ
			V_{GS}=4.5V, I_D=20A		7	10	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1.0MHz		3298		pF
Output Capacitance		C_{OSS}			1400		pF
Reverse Transfer Capacitance		C_{RSS}			287		pF
SWITCHING PARAMETERS							
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=15V, I_D=60A, V_{GS}=10V, R_{GEN}=6Ω		20	38	ns
Turn-ON Rise Time		t_R			12	23	ns
Turn-OFF Delay Time		$t_{D(OFF)}$			113	198	ns
Turn-OFF Fall-Time		t_F			40	78	ns
Total Gate Charge		Q_G	V_{DS}=15V, V_{GS}=10V, I_D=75A		48	55	nC
Gate-Source Charge		Q_{GS}			10		nC
Gate-Drain Charge		Q_{GD}			27		nC
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Diode Forward Voltage(Note)		V_{SD}	V_{GS}=0V, I_S=75A			1.5	V
Maximum Body-Diode Continuous Current		I_S				75	A

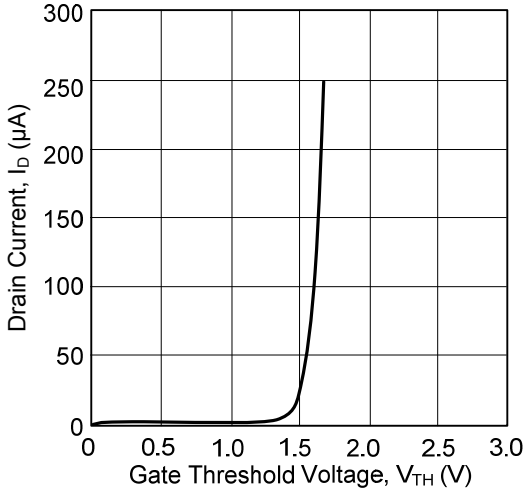
Note: Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

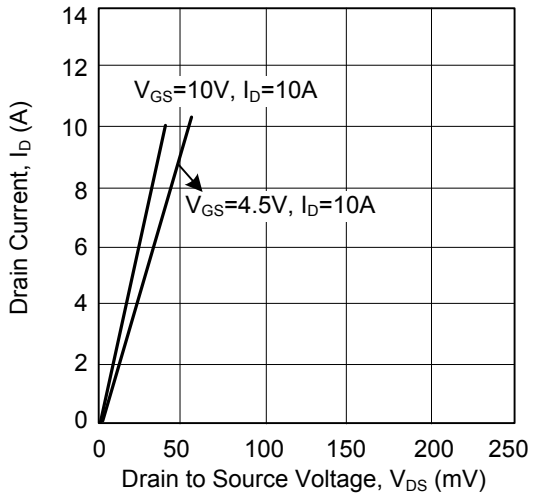
Drain Current vs. Drain-Source Breakdown Voltage



Drain Current vs. Gate Threshold Voltage



Drain-Source On-State Resistance Characteristics



Drain Current vs. Source to Drain Voltage