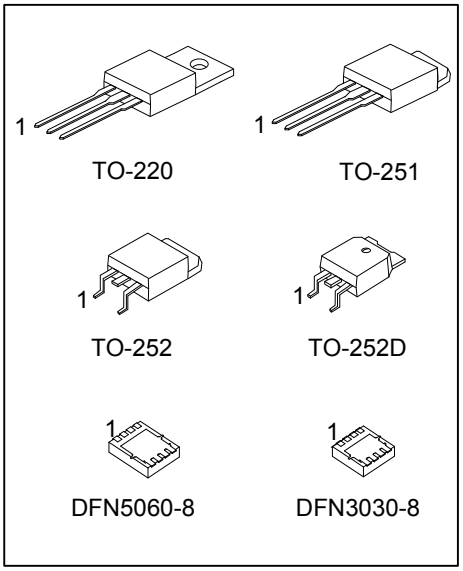
UT75N03

Power MOSFET

75A, 30V N-CHANNEL POWER MOSFET



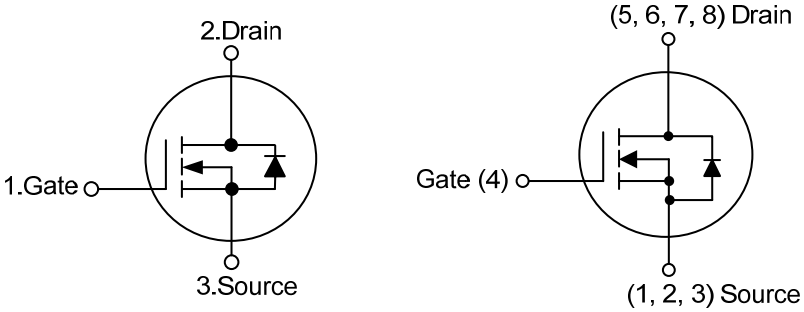
■ DESCRIPTION

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

* $R_{DS(ON)}$ ≤ 7.0 mΩ @ V_{GS}=10V, I_D=37.5A
* $R_{DS(ON)}$ ≤ 10 mΩ @ V_{GS}=4.5V, I_D=37.5A
* 100% Avalanche tested
* Improved dv/dt capability
* Fast switching

■ SYMBOL

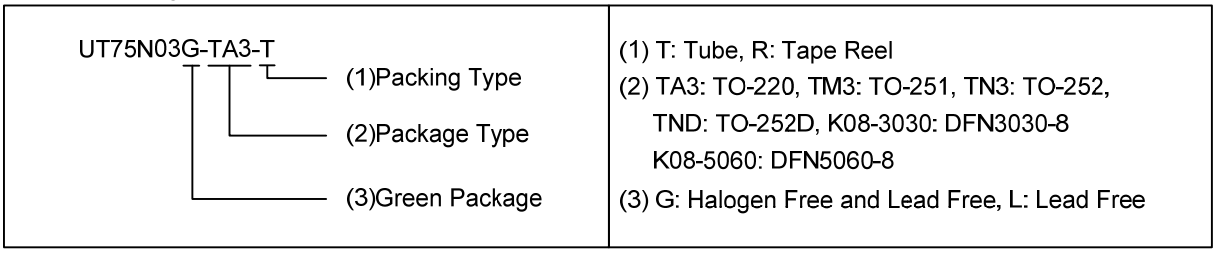


TO-252 DFN3030-8/DFN5060-8

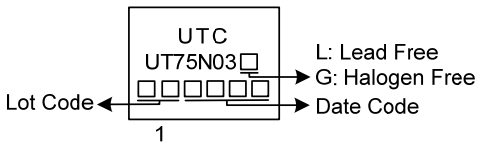
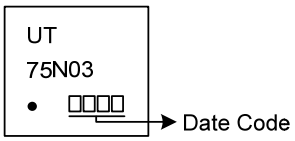
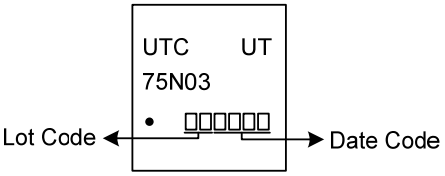
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment								Packing
Lead Free	Halogen Free		1	2	3	4	5	6	7	8	
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
UT75N03L-TND-R	UT75N03G-TND-R	TO-252D	G	D	S	-	-	-	-	-	Tape Reel
UT75N03L-K08-3030-R	UT75N03G-K08-3030-R	DFN3030-8	S	S	S	G	D	D	D	D	Tape Reel
UT75N03L-K08-5060-R	UT75N03G-K08-5060-R	DFN5060-8	S	S	S	G	D	D	D	D	Tape Reel

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



■ MARKING

Package	Marking
TO-220 / TO-251 TO-252 / TO-252D	
DFN3030-8	
DFN5060-8	

■ 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}	150	A
Single Pulsed Avalanche Current (Note 3)		I_{AS}	44.5	A
Single Pulsed Avalanche Energy (Note 3)		E_{AS}	99	mJ
Power Dissipation	TO-220	P_D	60	W
	TO-251/ TO-252 TO-252D		46	W
	DFN3030-8		28	W
	DFN5060-8		30	W
Junction Temperature		T_J	+150	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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. Repetitive Rating : Pulse width limited by maximum junction temperature.
3. L = 0.1mH, I_{AS} = 44.5 A, V_{DD} = 20V, R_G = 25 Ω, Starting T_J = 25°C

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	TO-220	θ_{JA}	62.5	°C/W
	TO-251/ TO-252 TO-252D		50 (Note)	°C/W
	DFN3030-8		60 (Note)	°C/W
	DFN5060-8		65 (Note)	°C/W
Junction to Case	TO-220	θ_{JC}	2.08	°C/W
	TO-251/ TO-252 TO-252D		2.7 (Note)	°C/W
	DFN3030-8		4.46 (Note)	°C/W
	DFN5060-8		4.16 (Note)	°C/W

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

■ 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	1.0		3.0	V
Static Drain-Source On-Resistance		$R_{DS(ON)}$	V_{GS}=10V, I_D=30A		5.0	7.0	mΩ
			V_{GS}=4.5V, I_D=20A		7.0	10	mΩ
DYNAMIC PARAMETERS							
Input Capacitance		C_{ISS}	V_{DS}=15V, V_{GS}=0V, f=1.0MHz		2020		pF
Output Capacitance		C_{OSS}			390		pF
Reverse Transfer Capacitance		C_{RSS}			350		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{DS}=15V, V_{GS}=10V, I_D=75A (Note1, 2)		58		nC
Gate-Source Charge		Q_{GS}			7.2		nC
Gate-Drain Charge		Q_{GD}			20		nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=15V, V_{GS}=10V, I_D=75A, R_G=3.0Ω (Note1, 2)		12		ns
Turn-ON Rise Time		t_R			18		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			42		ns
Turn-OFF Fall-Time		t_F			24		ns
DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS							
Maximum Body-Diode Continuous Current		I_S				75	A
Maximum Body-Diode Pulsed Current		I_{SM}				150	A
Drain-Source Diode Forward Voltage (Note 1)		V_{SD}	I_S=75A, V_{GS}=0V			1.5	V
Body Diode Reverse Recovery Time (Note 1)		t_{rr}	I_S=30A, V_{GS}=0V, dI_F/dt=100A/μs		260		ns
Body Diode Reverse Recovery Charge		Q_{rr}			1.1		μC

Notes: 1. Pulse Test: Pulse width ≤ 300μs, Duty cycle≤2%.
2. Essentially independent of operating temperature.