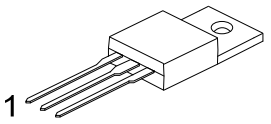
UT136N03

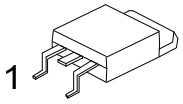
Preliminary

Power MOSFET

N-CHANNEL ENHANCEMENT MODE



TO-220



TO-263

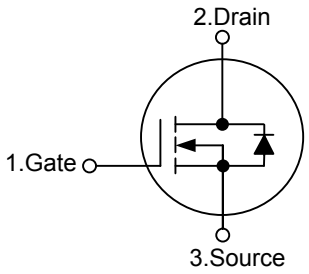
■ DESCRIPTION

The **UT136N03** 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

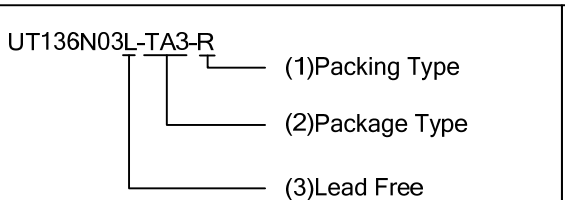
* V_{DS}(V)= 30 V
* I_D=136 A
* $R_{DS(ON)}$= 4.5mΩ@V_{GS}=10 V
* $R_{DS(ON)}$ = 5.6mΩ@V_{GS}=4.5 V

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT136N03L-TA3-R	UT136N03G-TA3-T	TO-220	G	D	S	Tube
UT136N03L-TQ2-T	UT136N03G-TQ2-T	TO-263	G	D	S	Tube
UT136N03L-TQ2-R	UT136N03G-TQ2-R	TO-263	G	D	S	Tape Reel



(1) R: Tape Reel, T: Tube

(2) TA3: TO-220, TQ2: TO-263

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

■ 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	136	A
Pulsed Drain Current (Note1)	I_{DM}	400	A
Single Pulsed Avalanche Energy (Note4)	E_{AS}	875	mJ
Power Dissipation	P_D	100	W
Junction Temperature	T_J	+175	°C
Storage Temperature	T_{STG}	-55 ~ +175	°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}	1.4	°C/W

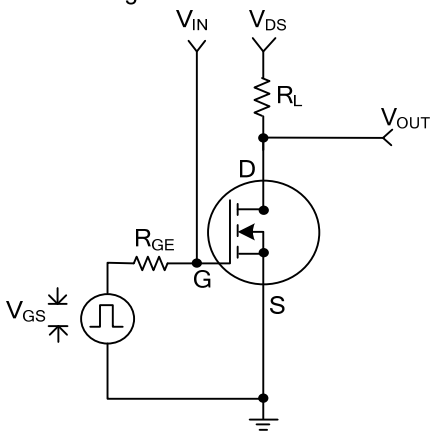
■ ELECTRICAL CHARACTERISTICS (T_J =25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0 V, I_D =250 μA	30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=30 V,V_{GS} =0 V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{DS} =0 V, V_{GS} = ±20 V			±100	nA
ON CHARACTERISTICS (Note2)						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} =V_{GS}, I_D =250 μA	1		3	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS} =10 V, I_D =40 A		3.6	4.5	mΩ
		V_{GS} =4.5 V, I_D =40 A			5.6	
DYNAMIC PARAMETERS (Note3)						
Input Capacitance	C_{ISS}	V_{DS} =15V, V_{GS} =0V, f=1.0MHz		3800		pF
Output Capacitance	C_{OSS}			800		
Reverse Transfer Capacitance	C_{RSS}			600		
SWITCHING PARAMETERS (Note3)						
Total Gate Charge	Q_G	V_{DS} =15V, V_{GS} =5V, I_D =16A		60	72	nC
Gate Source Charge	Q_{GS}			20.8		
Gate Drain Charge	Q_{GD}			22		
Turn-ON Delay Time	$t_{D(ON)}$	V_{DD}=15V, I_D =1A, R_{GEN} =6Ω V_{GS} =10 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 A,V_{GS}=0 V			1.5	V
Drain-Source Diode Forward Current	I_S				90	A

Note : 1. Pulse width limited by maximum junction temperature
2. Pulse Test : Pulse Width < 300μs, Duty Cycle < 2%.
3. Guaranteed by design, not subject to production testing.
4. L = 0.5mH, I_{AS} = 35A, V_{DD} = 25V, R_G = 25Ω, Starting T_J = 25°C.

■ TEST CIRCUIT AND WAVEFORM

Switching Time Test Circuit



Switching Waveforms