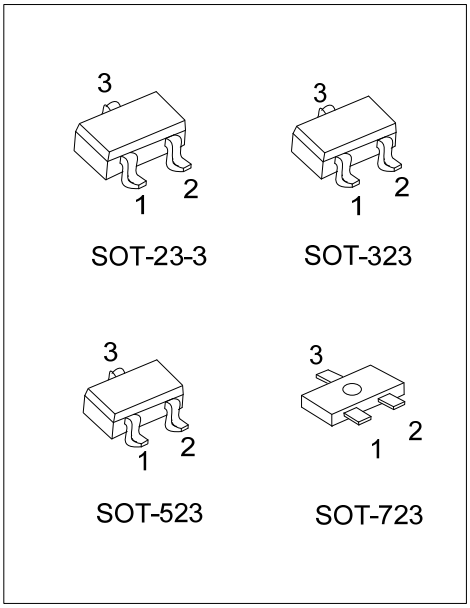
UT3P01Z

Power MOSFET

P-CHANNEL POWER MOSFET



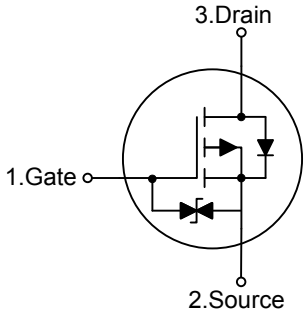
■ DESCRIPTION

The **UT3P01Z** uses UTC advanced technology to provide excellent R_{DS}(ON), low gate charge and operated with low gate voltages. This device can be applied to general-purpose switching devices applications.

■ FEATURES

* $R_{DS(ON)}$ ≤ 10.4 Ω @ V_{GS}=-4.0V, I_D=-50mA
* Fast Switching Capability
* Avalanche Energy Specified
* Improved dv/dt Capability, High Ruggedness

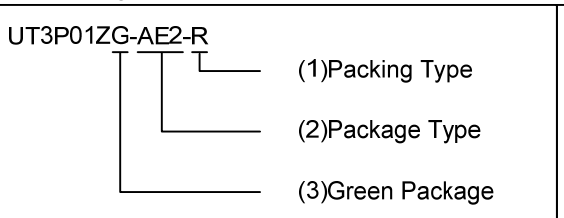
■ SYMBOL



■ ORDERING INFORMATION

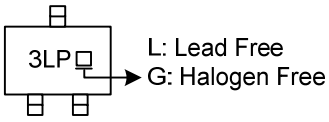
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UT3P01ZL-AE2-R	UT3P01ZG-AE2-R	SOT-23-3	G	S	D	Tape Reel
UT3P01ZL-AL3-R	UT3P01ZG-AL3-R	SOT-323	G	S	D	Tape Reel
UT3P01ZL-AN3-R	UT3P01ZG-AN3-R	SOT-523	G	S	D	Tape Reel
UT3P01ZL-AQ3-R	UT3P01ZG-AQ3-R	SOT-723	G	S	D	Tape Reel

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



(1) R: Tape Reel
(2) AE2: SOT-23-3, AE3: SOT-23, AB3: SOT-89
AQ3: SOT-723
(3) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Drain-Source Voltage		V_{DSS}	-30	V
Gate-Source Voltage		V_{GSS}	±10	V
Drain Current	DC	I_D	-0.1	A
	Pulse(Note 2)		-0.4	A
Power Dissipation	SOT-323/SOT-23-3	P_D	200	mW
	SOT-523		150	mW
	SOT-723		100	mW
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. Pulse width ≤ 10μs, Duty cycle ≤ 1%.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient	SOT-323/SOT-23-3	θ_{JA}	312	°C/W
	SOT-523		833	°C/W
	SOT-723		1250	°C/W

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

■ ELECTRICAL CHARACTERISTICS (T_A=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=-1mA	-30			V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0V			±10	μA
ON CHARACTERISTICS						
Cutoff Threshold Voltage	$V_{GS(OFF)}$	V_{DS}=-10V, I_D=-100μA	-0.4		-1.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.0V, I_D=-50mA		2.5	10.4	Ω
		V_{GS}=-2.5V, I_D=-30mA		3.5	15.4	Ω
		V_{GS}=-1.5V, I_D=-1mA		7.3	54	Ω
DYNAMIC PARAMETERS						
Input Capacitance	C_{ISS}	V_{DS}=-15V, V_{GS}=0 V, f=1.0MHz		29		pF
Output Capacitance	C_{OSS}			12		pF
Reverse Transfer Capacitance	C_{RSS}			5.6		pF
SWITCHING PARAMETERS						
Total Gate Charge	Q_G	V_{DS}=-10V, V_{GS}=-4.5V, I_D=-100mA		2.6		nC
Gate Source Charge	Q_{GS}			0.6		nC
Gate Drain Charge	Q_{GD}			0.4		nC
Turn-ON Delay Time	$t_{D(ON)}$	V_{GS}=-4.5V,V_{DS}=-15V, I_D=-100mA, R_G=3.0Ω		2.4		ns
Turn-ON Rise Time	t_R			16		ns
Turn-OFF Delay Time	$t_{D(OFF)}$			10		ns
Turn-OFF Fall-Time	t_F			20		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS						
Drain-Source Diode Forward Voltage	V_{SD}	I_S=-100mA, V_{GS}=0V		-0.83	-1.2	V

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

■ SWITCHING TIME TEST CIRCUIT