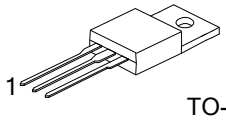
UF9Z24

Power MOSFET

12A, 55V P-CHANNEL POWER MOSFET



TO-220

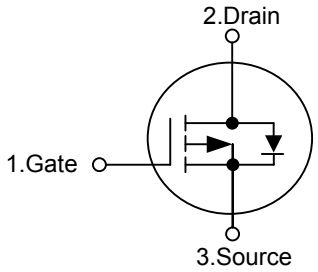
■ DESCRIPTION

The UTC **UF9Z24** is a P-channel power MOSFET using UTC's advanced technology to provide the customers with high switching speed, cost-effectiveness and minimum on-state resistance. It can also withstand high energy in the avalanche.

■ FEATURES

* $R_{DS(ON)}$=175mΩ V_{GS}=-55V, I_D=-12A
* High Switching Speed

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UF9Z24L-TA3-T	UF9Z24G-TA3-T	TO-220	G	D	S	Tube

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

UF9Z24L-TA3-T (1)Packing Type (2)Package Type (3)Lead Free	(1) R: Tape Reel, T: Tube (2) TA3: TO-220 (3) G: Halogen Free, L: Lead Free

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

PARAMETER			SYMBOL	RATINGS	UNIT
Drain-Source Voltage			V_{DSS}	-55	V
Gate-Source Voltage			V_{GSS}	±20	V
Drain Current	Continuous	T_C=25°C	I_D	-12	A
	Pulsed		I_{DM}	-48	A
Single Pulsed Avalanche Current (L=0.1mH)			I_{AS}	-7.2	A
Single Pulsed Avalanche Energy (L=0.1mH)(Note 1)			E_{AS}	96	mJ
Power Dissipation			P_D	38	W
Junction Temperature			T_J	+150	°C
Storage Temperature			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	°C/W
Junction to Case	θ_{JC}	3.3	°C/W

Notes: 1. Duty cycle≤1 %.

■ 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}	I_D=-250μA, V_{GS}=0V	-55			V
Drain-Source Leakage Current		I_{DSS}	V_{DS}=-55V, V_{GS}=0V			-25	μA
Gate-Source Leakage Current	Forward	I_{GSS}	V_{GS}=+20V			+100	nA
	Reverse		V_{GS}=-20V			-100	nA
ON CHARACTERISTICS							
Gate Threshold Voltage		$V_{GS(TH)}$	V_{DS}=V_{GS}, I_D=-250μA	-2.0		-4.0	V
Static Drain-Source On-State Resistance		$R_{DS(ON)}$	V_{GS}=-10V, I_D=-12A (Note 1)			0.175	Ω
On State Drain Current (Note 1)		$I_{D(ON)}$	V_{GS}=-10V, V_{DS}=-5V	-12			A
DYNAMIC PARAMETERS (Note 2)							
Input Capacitance		C_{ISS}	V_{GS}=0V, V_{DS}=-25V, f=1.0MHz (Note 2)		350		pF
Output Capacitance		C_{OSS}			170		pF
Reverse Transfer Capacitance		C_{RSS}			92		pF
SWITCHING PARAMETERS							
Total Gate Charge		Q_G	V_{GS}=-10V, V_{DS}=-44V, I_D=-7.2A (Note 3)			19	nC
Gate to Source Charge		Q_{GS}				5.1	nC
Gate to Drain Charge		Q_{GD}				10	nC
Turn-ON Delay Time		$t_{D(ON)}$	V_{DD}=-28V, I_D=-7.2A, R_G=24Ω , R_D=3.7Ω (Note 3)		13		ns
Rise Time		t_R			55		ns
Turn-OFF Delay Time		$t_{D(OFF)}$			23		ns
Fall-Time		t_F			37		ns
SOURCE- DRAIN DIODE RATINGS AND CHARACTERISTICS (Note 2)							
Maximum Body-Diode Continuous Current		I_S				-12	A
Maximum Body-Diode Pulsed Current		I_{SM}				-48	A
Drain-Source Diode Forward Voltage		V_{SD}	I_F=-12A, V_{GS}=0V (Note 1)			-1.6	V

Notes: 1. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature.

■ TYPICAL CHARACTERISTICS

Drain Current vs. Source to Drain Voltage